Engineering Sciences And Allied Engineering Sem-I

		A.Y. 2018-19, Sem-I
Sr.No.	Course code	Course outcome
	Course name	
	E	ngineering Sciences And Allied Engineering Sem-I
1	Subject code 107001 subject name :	 To Find the rank of Matrix, Linear Independence, Transformation. Solve the system of Linear Equations of any Engineering system using rank of matrix. To Find amplitude and argument of any complex number. Find nth power or root of a complex number using De-Moivre's theorem. Separate real and imaginary parts of circular and hyperbolic functions. To Apply test for convergence/divergence of series.Find nth derivative
1	Engineering Mathematics I	and can apply Lebnitz theorem.4. To Evaluate limit having indeterminate form. Apply Taylors series to evaluate any functional value
		 5. To Compute partial derivatives of functions of several variables Apply Eular's theorem on Homogeneous Functions 6. To find Jacobian of functions and implicit functions find maxima and minima of two variable and using Lagranges Method
	Subject code 107002	1. Students should be able to calculate radius of curvature of plano- convex lens by Newton's ring experiment, wavelength of light by plane diffraction grating, verify law of Malu's
2	subject name : Engineering Physics	2. Students should be able to calculate velocity of ultrasonic waves in different media, absorption coefficient of various surfaces by using decibel meter.
		3. Students should be able to demonstrate how LASER can be used for determination of diameter a wire.
		4. Students should be able to explain working of PN junction diode & NPN transistor on the basis of Energy band Diagrams.
		5. Students should be able to draw wave functions & their Probability densities for particle in rigid box & non rigid box, calculate Eigen energy values for particle inside a rigid box.
		6. Students should be able to differentiate between Type I & Type II superconductor, explain Meissner effect, explain synthesis of nanoparticles by physical & chemical method, explain properties of nanoparticles & their applications.
2	Subject code 107009	1.Demonstrate various techniques of water softining and refer green chemistry principles
	subject name : Engineering Chemistry	2.Use sophiscated electro analytical instuments

4 3. Illustrate engineering application of various polymers with reference to their ehemical structure and properties. 4 Demonstrate knowledge of fuel with reference to properties, application and future scope. 5. Use carbon nonmaterials for various engineering application and hydrogen as future fuel 6. Demonstrate chemical reaction of corrosion and its prevention 1. Understand fundamentals of computer system 3. Ability to develop basic C programs based on simple mathematical calculations. subject code 1. 1. Ability to develop C programs based on decision control structure 2. Ability to develop C programs based on simple mathematical concepts of electrical engineering such as emf, pd, current and resistance. 3. Subject 1. 6. Solve numericals based on work, power & energy by studying basic concepts of electrical a magnetic circuit stating similarities & dissimilarities 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Electronic 5. Differentiat e electrical networks & apply various network theorems to solve the circuit. 5. Subject 6. Differentiate electrical son file. 7. Verify the relationship between phase voltage, l	i	1	
4.Demonstrate knowledge of fuel with reference to properties, application and future scope 5.Use carbon nonmaterials for various engineering application and hydrogen as future fuel 6.Demonstrate chemical reaction of corrosion and its prevention 1.Understand fundamentals of computer system 2.Ability to develop basic C programs based on simple mathematical calculations. 3.upper subject code 1.Fundamental 3.Ability to develop C programs based on decision control structure Programming Languages -1 4.Ability to develop C programs based on strings and functions. 1.Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 2.Compare electrical & magnetic circuit stating similarities & dissimilarities 3.Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 6.R 0R Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 8 Subject 6. Differentiate electrice of amplificr, input resistance, output resistance. 9 Le			3.Illustrate engineering application of various polymers with reference to their
4 Future scope 5.Use carbon nonnaterials for various engineering application and hydrogen as future fuel 3 Subject code 1. Understand fundamentals of computer system 3 Subject code 2. Ability to develop basic C programs based on simple mathematical calculations. 3 "Fundamental Programming Languages -1" 3. Ability to develop C programs based on strings and functions. 4 Basic Electrical Engineering 3. Ability to develop C programs based on strings and functions. 4 Basic Electrical Engineering 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Subject code: 104012 Subject reductions in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 4 Electronic Engineering 1. Explain the various electronic components. 5 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 6 Explain logic gates and their usage in digital circuits. 7 Learn basic characteristics of BJT and MOSFET. 4 Explain logic gates and their usage in digital circuits. <tr< td=""><td></td><td></td><td></td></tr<>			
4 Subject code 110003 5.Use carbon nonmaterials for various engineering application and hydrogen as future fluel 3 Subject code 110003 1. Understand fundamentals of computer system 3 "Fundamental Programming Languages -1 3. Ability to develop basic C programs based on simple mathematical calculations. 4 Subject code: 103004 3. Ability to develop C programs based on strings and functions. 4 Subject code: 103004 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Subject code: 104012 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject massic 1. Explain the various electronic components. 3 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand dudescribe some orelectronic devices, transducers and app			
4 Future fuel 6.Demonstrate chemical reaction of corrosion and its prevention 3 Subject code 110003 1. Understand fundamentals of computer system 3 Programming Languages -1 3. Ability to develop basic C programs based on simple mathematical ealculations. 3 Programming Languages -1 3. Ability to develop C programs based on strings and functions. 4 Basic Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Subject code: 104012 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code: 104012 1. Explain the various electronic components. 5 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 4 Explain logic gates and their usage in digital circuits. 5 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 6 Explain logic gates and their usage in digital circuits. <t< td=""><td></td><td></td><td>*</td></t<>			*
4 6.Demonstrate chemical reaction of corrosion and its prevention 3 Subject code 3 Subject name :Fundamental Programming Languages -1 3 Subject name :Fundamental Programming Languages -1 4 Subject code:103004 Basic Engineering 5 Subject code:103004 Basic 6 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Engineering 3 Subject code:104012 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code:104012 1. Explain the various electronic components. 4 Subject code:104012 1. Explain the various electronic components. 4 Engineering 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 4 Subject code:104012 1. Explain the various electronic components. 4 Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 4 Electronic Engineering 3. Learn the working of some IC based circuits. 5 Understand working of some power			5.Use carbon nonmaterials for various engineering application and hydrogen as
4 1. Understand fundamentals of computer system 3 Subject code 110003 3 Fundamental Programming Languages -1 3 Ability to develop C programs based on simple mathematical calculations. 3 Ability to develop C programs based on decision control structure 4 Subject code:103004 4 Subject code:103004 5 Electrical Engineering 6 Compare electrical & magnetic circuit stating similarities & dissimilarities 3 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code:104012 subject name: 1. Explain the various electronic components. 4 Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 4 Learn the working of some IC based circuits. 5. Understand working of some IC based circuits. 5 Understand working of some power electronic devices, transducers a			future fuel
Subject code 110003 2. Ability to develop basic C programs based on simple mathematical calculations. 3 Programming Languages -1 3. Ability to develop C programs based on decision control structure Programming Languages -1 4 Subject code: 103004 3. Ability to develop C programs based on strings and functions. 4 Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code: 104012 subject name: 1. Explain the various electronic components. 4 Subject code: 104012 subject name: 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 4 Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 4 Learn the working of some IC based circuits. 5. Understand working of some IC based circuits. 5 Learn the working of some power electronic devi			6.Demonstrate chemical reaction of corrosion and its prevention
Subject code 110003 2. Ability to develop basic C programs based on simple mathematical calculations. 3 Programming Programming Languages -I 3. Ability to develop C programs based on decision control structure 4 Subject code: 103004 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 6 Norma electrical & magnetic circuit stating similarities & dissimilarities 3 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code: 104012 subject name: 1. Explain the various electronic components. 3 Learn basic characteristics of BJT and MOSFET. 1. Learn the concept of amplifier, input resistance, output resistance. 4 Electronic Engineering 3. Learn the working of some IC based circuits. 5. Understand working of some IC based circuits.			1. Understand fundamentals of computer system
110003 ealculations. 3 isubject name: Fundamental Programming Languages -1 3. Ability to develop C programs based on decision control structure 4 Subject code: 103004 Basic Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 6 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 7 A 8 Subject code: 104012 9 Ferify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 8 Subject name: Basic Electronic Engineering 1. Explain the various electronic components. 9 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 9 Learn the concept of amplifier, input resistance, output resistance. 9 Understand working of some IC based circuits. 9		Subject code	
3 subject name :Fundamental Programming Languages -1 3. Ability to develop C programs based on decision control structure 3 Maining Subject code: 103004 4. Ability to develop C programs based on strings and functions. 4 Subject code: 103004 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 6 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 9 - Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 7 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 3 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 9 Learn the concept of amplifier, input resistance, output resistance.		•	
3 :Fundamental Programming Languages -1 3. Ability to develop C programs based on decision control structure 4 Subject code:103004 4. Ability to develop C programs based on strings and functions. 4 Basic Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering 2. Compare electrical & magnetic circuit stating similarities & dissimilarities 3 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Electrical Engineering 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 4 Subject code:104012 subject name: Basic Electronic 1. Explain the various electronic components. 3 Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7 Learn the working of some IC based circuits. 7. Learn the working of some power electronic devices, transducers and appli			
3 Programming Languages -1 3. Ability to develop C programs based on decision control structure 4 Subject code:103004 Basic Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Electrical Engineering 2. Compare electrical & magnetic circuit stating similarities & dissimilarities 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 4 Subject code:104012 subject name: Basic 1. Explain the various electronic components. 3 Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. <td></td> <td>•</td> <td></td>		•	
Programming Languages -1 4. Ability to develop C programs based on strings and functions. Subject code:103004 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. Electrical Engineering 2. Compare electrical & magnetic circuit stating similarities & dissimilarities OR Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. OB Subject code:104012 Subject code:104012 1. Explain the various electronic components. Subject code:104012 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Basic Electronic 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic communication systems.	3		3. Ability to develop C programs based on decision control structure
4. Ability to develop C programs based on strings and functions. Subject code:103004 Basic Electrical Engineering OR Performing direct load test on it. S. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. G. Differentiate electrical networks & apply various network theorems to solve the circuit. Subject code:104012 I. Explain the various electronic components. Subject code:104012 Subject code:102004 Basic Electronic Engineering A. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. S. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. G. Differentiate electrical networks & apply various network theorems to solve the circuit. Subject I. Explain the various electronic components. Subject name: I. Learn basic characteristics of BJT and MOSFET. A. Learn the concept of amplifier, input resistance, output resist			
4 Subject code:103004 Basic Electrical Engineering 1. Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering 2. Compare electrical & magnetic circuit stating similarities & dissimilarities 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 5 Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 9 Basic Electronic Engineering 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3 Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of elect		Languages -I	
4 code:103004 Basic Electrical Engineering concepts of electrical engineering such as emf, pd, current and resistance. 4 Electrical Engineering concepts of electrical & magnetic circuit stating similarities & dissimilarities 0R 0. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 3 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 6 Explain logic gates and their usage in digital circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers.			4. Ability to develop C programs based on strings and functions.
4 code:103004 Basic Electrical Engineering concepts of electrical engineering such as emf, pd, current and resistance. 4 Basic Electrical Engineering concepts of electrical & magnetic circuit stating similarities & dissimilarities 0R 0. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 0R 4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 3. Learn basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.		Subject	1. Solve numericals based on work, power & energy by studying basic
4 Basic Electrical Engineering 2. Compare electrical & magnetic circuit stating similarities & dissimilarities 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 OR OR 4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.		-	
4 Electrical Engineering dissimilarities 3 Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 OR 4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. 8 Subject code:104012 1. Explain the various electronic components. 9 Electronic Engineering 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3 Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of electronic communication systems.		Basic	
4 Engineering dissimilarities 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. subject code:104012 subject name: Basic Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.	4	Electrical	
4 3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. subject 1. Explain the various electronic components. code:104012 1. Explain the various electronic components. subject name: 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			dissimilarities
4 Value to find form factor and peak factor for sinusoidal current & voltage. 4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5 Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6 Differentiate electrical networks & apply various network theorems to solve the circuit. subject code:104012 subject name: 1. Explain the various electronic components. Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of electronic communication systems.		Lingineering	2 Derive expression for PMS value & everage value in terms of neak
4 Estimate efficiency & regulation of single phase transformer by performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. subject 1. Explain the various electronic components. code:104012 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. a Basic 2. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			
4 Performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. Subject code:104012 subject name: Basic 1. Explain the various electronic components. 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Basic 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			
4 Performing direct load test on it. 5. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 8 Subject code:104012 subject name: Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.		OR	
4 phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 4 Subject code:104012 1. Explain the various electronic components. subject name: 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			
4 by drawing relevant phasor diagram. 6. Differentiate electrical networks & apply various network theorems to solve the circuit. Subject code:104012 subject name: Basic 1. Explain the various electronic components. 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			5. Verify the relationship between phase voltage, line voltage line current,
4 6. Differentiate electrical networks & apply various network theorems to solve the circuit. 4 Subject code:104012 subject name: Basic 1. Explain the various electronic components. 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 6. Differentiate electronic components. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			phase current in a three phase star and delta connected load analytically &
4 Subject code:104012 subject name: Basic 1. Explain the various electronic components. 4 Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 5 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 6 Explain logic gates and their usage in digital circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of electronic communication systems.			by drawing relevant phasor diagram.
4 Subject code:104012 subject name: Basic 1. Explain the various electronic components. 4 Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 5 Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 6 Explain logic gates and their usage in digital circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of electronic communication systems.			6. Differentiate electrical networks & apply various network theorems to
Subject code:1040121. Explain the various electronic components.4Basic Electronic Engineering2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits.3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits.6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			
4 I. Explain the various electronic components. 4 Basic Basic I. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Electronic I. Learn basic characteristics of BJT and MOSFET. 4 Learn the concept of amplifier, input resistance, output resistance. 5 Understand working of some IC based circuits. 6 Explain logic gates and their usage in digital circuits. 7 Learn the working of some power electronic devices, transducers and application of transducers. 8 Knowledge of the basic aspect of electronic communication systems.		Subject	
4 subject name: Basic 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. Engineering 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.		•	1. Explain the various electronic components.
4 Basic Electronic Engineering 2. Understand and describe specifications, features of electronic ideal diode and ideal diode circuits. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.			
 4 Electronic Engineering 3. Learn basic characteristics of BJT and MOSFET. 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 		5	2. Understand and describe anosifications, features of electronic ideal
Engineering 3. Learn basic characteristics of BJT and MOSFET. 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems.	4		-
 Learn basic characteristics of BJT and MOSFET. Learn the concept of amplifier, input resistance, output resistance. Understand working of some IC based circuits. Explain logic gates and their usage in digital circuits. Learn the working of some power electronic devices, transducers and application of transducers. Knowledge of the basic aspect of electronic communication systems. 			diode and ideal diode circuits.
 4. Learn the concept of amplifier, input resistance, output resistance. 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 		Engineering	
 5. Understand working of some IC based circuits. 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 			
 6. Explain logic gates and their usage in digital circuits. 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 			4. Learn the concept of amplifier, input resistance, output resistance.
 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 			5. Understand working of some IC based circuits.
 7. Learn the working of some power electronic devices, transducers and application of transducers. 8. Knowledge of the basic aspect of electronic communication systems. 			
application of transducers.8. Knowledge of the basic aspect of electronic communication systems.			
8. Knowledge of the basic aspect of electronic communication systems.			
			**
		Subject and	
Subject code 2. Identify the different materials and types of constructions used on field.		•	2. Identify the different materials and types of constructions used on field.
101005	I	101005	

1
1
_
1
et
р
ng
it
7
7
7 t,
_

1	1	5. Understand three dimensional Geometry
		6. Find and Evaluate multiple Integral Apply Multiple integration to Area,
		Volume, Moment of Inertia ,Centre of Gravity etc
		1.Demonstrate various techniques of water softining and refer green chemistry
		principles
	Subject code 107009	2.Use sophiscated electro analytical instuments
2	subject name : Engineering Chemistry	3.Illustrate engineering application of various polymers with reference to their chemical structure and properties
		4.Demonstrate knowledge of fuel with reference to properties, application and future scope
		5.Use carbon nonmaterials for various engineering application and hydrogen as future fuel
		6.Demonstrate chemical reaction of corrosion and its prevention
	Cultication de	1. Students should be able to calculate radius of curvature of plano-
	Subject code 107002	convex lens by Newton's ring experiment, wavelength of light by plane
	107002	diffraction grating, verify law of Malu's
	subject name :	2. Students should be able to calculate velocity of ultrasonic waves in
2	Engineering	different media, absorption coefficient of various surfaces by using decibel
	Physics	meter.
		3. Students should be able to demonstrate how LASER can be used for
		determination of diameter a wire.
		4. Students should be able to explain working of PN junction diode &
		NPN transistor on the basis of Energy band Diagrams.
		5. Students should be able to draw wave functions & their Probability
		densities for particle in rigid box & non rigid box, calculate Eigen energy
		values for particle inside a rigid box.
		6. Students should be able to differentiate between Type I & Type II
		superconductor, explain Meissner effect, explain synthesis of nanoparticles
		by physical & chemical method, explain properties of nanoparticles & their
		applications.
		1. Understand concept of object oriented Programming to develop
		programs.
3	Subject code	2. Understand concept of object oriented Programming to develop
	:110010	programs.
	subject name :	
	Fundamental Programming	3. Design and develop web pages using HTML.
	Languages II	
		4. Design and develop simple application and mobile application using
I	I	Embedded Programming and Android SDK.

r		
		1. Able to apply scalar and vector analytical techniques for analyzing forces in statically determinate structures and to reduce a system of forces acting on rigid body to a single equivalent force and compute its point of application as well as able to compute Centroid of plane lamina and wire bend.
		· · · · · · · · · · · · · · · · · · ·
	Subject code 101011	2. Apply fundamental concepts of Kinematics and kinetics of particles to the analysis of simple, practical problems in Rectilinear motion and will able to apply the basic Knowledge of Engineering Mechanics to solve real life problem for rectilinear motion.
4	subject name : Engineering Mechanics	3. Apply fundamental concepts of Kinematics and Kinetics of particles to the analysis of simple, practical problems in Curvilinear motion ,will able to solve real life problem for Curvilinear motion and Analyze the motion of vehicles on Curved road.
		4. Able to solve dynamics problems Appraise given information and determine which concepts can be appropriately applied to solve real life problems.
		5. Apply the concept of free body diagram and equilibrium to find out the resultant of the force system in 2-D and 3-D, reactions developed in structures like beam.
		6. Able to solve for internal forces acting on any member of a pined jointed
		truss structure and frame. Able to compute frictional force or coefficient
		for sliding motions and for belt and pulleys.
		1. Explain the various electronic components.
	Subject code	2. Understand and describe specifications, features of electronic ideal
	:104012	diode and ideal diode circuits.
5	subject name : Basic Electronic Engineering OR	3. Learn basic characteristics of BJT and MOSFET.
		4. Learn the concept of amplifier, input resistance, output resistance.
		5. Understand working of some IC based circuits.
		6. Explain logic gates and their usage in digital circuits.
		7. Learn the working of some power electronic devices, transducers and application of transducers.
		8. Knowledge of the basic aspect of electronic communication systems.
	Subject and	 Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance. Compare electrical & magnetic circuit stating similarities &
	Subject code :103004 Basic	2. Compare electrical & magnetic circuit stating similarities & dissimilarities
5	Basic Electrical Engineering	3. Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage.
		4. Estimate efficiency & regulation of single phase transformer by performing direct load test on it.

1		
		5. Verify the relationship between phase voltage, line voltage line current,
		phase current in a three phase star and delta connected load analytically &
		by drawing relevant phasor diagram.
		6. Differentiate electrical networks & apply various network theorems to
		solve the circuit.
	Subject code :102013 subject name : Basic Mechanical Engineering	 understand power transmission through mechanical elements and understand the mechanisms of power transmission in a machine. Understand the fundamentals of theory of kinematics, motion of machines, Mechanism and their components. Learn and identify steps in machine design process, various materials, their properties and their applications in human life as well as industrial practices. Also understand the process of selection of engineering materials. Understand maximum methods of selection of engineering materials.
6		3. Understand various manufacturing process and its mechanical application. The manufacturing process are casting, metal forming, Fabrication process.
		4. Understand concepts of various machining processes and will be able to work in workshop on machining tools like lathe, drilling, grinding etc.
		5.Impart knowledge of basic concepts in thermodynamics and heat transfer, different laws and processes involved in it to understand energy conversions.
		6. Learn industrial applications of thermodynamics like power plants, refrigerators, automobile engines, pumps and similar energy conversion devices and its applications.
	Subject code : 102014	1. UnderstandUsefulness of Engg. Graphics subject and Autocad Software.
7	subject name : Engineering Graphics II	2. Know about different types of lines, lettering standards & dimensioning
		3. Understand the meaning of first and third angle method of projection
		4. Use basic commands like how to set limit to screen, drawing in metric unit, commands like draw, modify for 2D, use of layer manager, isometric views setting.
		5. Draw solutions on topics like projection of solid, engineering curves, development of solid & orthographic projection by using Autocad software
		6. Draw orthographic projections and sections of 3D componants
		7. Draw 3d componants by using isometric setting of software
		8. Implement different dimensioning methods on 2Ds

Computer Department

Г

A.Y. 2018-19, Sem-1		
Sr.No.	Course code	Course outcome
	Course name	
		SE Computer Sem-I (2015 COURSE)

	210241	1. To Analyse and synthesis real world problems
	Discrete Mathematics	2. To construct mathematical constructs by using relations and functions
		3. To solve problems based on probability
		4. To solve travelling salesman Problem and network problem
		5. To find easily shortest path by using different algorithms
1		6. Analyze and synthesize the real world problems using discrete
1		mathematics.
		1. Realize & simplify Boolean algebraic assignments for designing digital
		circuits using K-map.
	210242	2. Design & implement sequential digital circuits as per specification.
	Digital	
2	Electronics and Logic Design	3. Design simple system using VHDL
	Design	4. Design programmable logic devices such as PLA,PAL,PLDs
		5. Explain logic families in detail
		6. Draw the architecture & write a instruction set.
		1. Define the terms such as data structure, time complexity and to calculate
		time complexity of given program segment.
	210243 Data Structures and Algorithms	2. Solve problem of sparse matrix using array data structure.
3		3. Apply dynamic memory management using linked list in problem. Also
		state its advantages and disadvantages.
		4. Translate the expression from one form to another form using stack.
		5. Explain dferent types of queues with their application.
		6. Sort the given data using any type of sorting technique and state time
		complexity of that sorting technique.
		1. solve basic binary math operations and define system architecture and
		various components of system
		2. Demonstrate the use of cache memory and Internal and External
	210244	memories.
		3. State and explain the I/O module and its working along with DMA.
	Computer	
4	Organization	4. Differentiate between different types of Instructions and write a program
	and	using and understanding different instructions.
	Architecture	
		5. Recall and define the Processor organization and superscalar processor
		6. Analyses and define Basic Processing Unit functions and write the micro-
		instructions for the task.
		1. Define & explain basic concepts of object oriented programming & apply
		features of object oriented programming language.
	210245	2. Explain concept of virtual & friend function with example & types of
I		pointers

5	Object Oriented Programming	3. Describe templates & types of templates, to analyze and design a computer program using template
		4. Explain & analyze the strengths of exception handling mechanism in
		program with keyword.
		5. Describe different file handling classes & stream manipulators.
		6. To design & apply Standard Template Library for effective
		programming, describe components of STL & types of containers.
		1. Study of logic gates and realization of OR,AND,NOT AND XOR
		Functions using universal gates
		2. Design and implement combinational circuits like half adder/full adder,
		half subtractor/full subtractor, code converters, comparators,
		MUX/DEMUX
	210246	3. Design and implement sequential circuits like flip-flops, counters and
		shift registers
6	Digital Electronics Lab	4. Design & Implement the VHDL programs using software
		5. Study of TTL characteristics & microprocessor 8051
		1. Analyze problem and select suitable data structure for given problem
7	210247	2. Implement data structurein different programming environment
	Data Structures Lab	3. Identify the data structure and compare all of them
		1. The Students must be able to understand problem statement
		2. Ability to understand class, object, method concepts in object oriented
		environment.
	210248	3. Ability to develop logic of division of the complete problem statement
		into multiple modules.
	Object	
8	Oriented	4. Better understanding of technological aspects, utility and recent trends
	Programming	related to the topic
	Lab	
		5. Understanding of coding standards such as appropriate use of proper
		Indentation and comments.
		6. Practicing programming on open source software.
		1. Effectively communicate through verbal/oral communication and
		improve her listening skill.
		 Write precise briefs or reports and technical documents. Activaly participate in group discussion (mactings (interviews and
	210249	3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations.
		4. Follow Ethics as an engineering professional and adopt good standards
9	Soft Skills	& norms of engineering practice.
		5. Become more effective individual through goal/target setting, self-
		motivation and practicing creative thinking.
		6. Function effectively in multi-disciplinary teams through the knowledge of
		team work
L	1	

		TE Computer Sem-I (2015 COURSE)
		1. Define the basic properties of formal languages, Design NFA and DFA,
		Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε
		and inter-conversion of Malay and Moore machine .
		2. Inter-conversion between DFA to RE, Prove language is not regular
		using pumping lemma, find RE for given language and explain closure
		properties and applications of RE.
1	310241	3. Write CFG for given language, simplify given CFG, convert given CFG
1	510241	to CNF and inter-conversion of right linear and left linear grammar.
	Theory of	4. Define PDA and write its applications, design PDA, inter-conversion of
	Computation	CFG and PDA.
		5. Explain types of Turing machine, Design TM, Differentiate between
		PDA and TM.
		6. Differentiate and derive the class P, NP hard and NP complete problems.
		1. Design E-R Model for given requirements and convert the same into
		database tables.
		2. Use database techniques such as SQL & PL/SQL
2	310242	3. Apply database design approaches for covering conceptual design,
	D (1	logical design and normalize database
	Database	
	Management	4. Explain transaction Management in relational database System
	Systems (DRMS)	
	(DBMS)	5. Describe different database architecture and analyses the use of
		appropriate architecture in real time environment.
		6. Use modern database techniques such as NOSQL
		1. Compare and chose a process model for a software project development
		2. Analyze and model software requirements of a software system
		3. Apply Fundamental knowledge in mathematics, computer science,
3	310243	programming and computer systems, which support the software
		engineering discipline
	Software	
	Engineering &	4. Design and Modeling of a software system with tool
	Project	4. Design and Widdening of a software system with tool
	Management	
		5. Designing test cases of a software system
		6. Prepare the SRS, Design document, Project plan of a given software
		system
		7. To work as an effective member or leader in software engineering teams.
		and also should be able to communicate and coordinate competently for
		technical and general purpose
		1. Understand the role of information system in modern organization
4	310244	2. Analyze different managerial issues relating to information system

1	I	2. It is the stand of the second standard in the second standard in the second standard in the second standard is the second standard in the second standard in the second standard in the second standard is the second standard in
		3. Understand the role of engineering in organizational decision making
		process
	Information	
	Systems &	4. Identify various options in information system in the organization
	Engineering	······································
	Economics	
		5. Analyze cost revenue data in engineering decisions and select the best
		possible alternative
		6. Perform and evaluate present worth, future worth and annual worth
		analyses on one of more economic alternatives
		1. To understand network reference models and technologies
		2. Demonstrate design issues, flow control and error control using different
		protocol
	310245	3. To understand different IEEE standards and frame formats
	Computer	4. To identify network protocols and demonstrate different routing
	Networks	algorithms.
		5. To understand transport layer protocol and to demonstrate client server
5		communication using socket programming.
		6. To understand various application layer protocols.
		1. Evaluate problems and analyze data using current technologies
	310246	2. Incorporate best practices for building applications
	Skills	2. meerporate best practices for building applications
6	Development	3. Install android studio & develop android app
0	Lab	5. Instan android studio & develop android app
	Luo	4. Construct software solutions by evaluating alternate architectural
		patterns.
		5. Develop a mini project in the form of android app
		6. Implement program using advanced data structure in Java
		1. Use fundamental database techniques such as Create, Modify and Delete
	310247	2. Use advance database techniques such as Trigger ,Cursor and PL/SQL
	Database	
7	Management	3. Use of CRUD operations on unstructured database such as MongoDB.
1	System Lab	5. Ose of OROD operations on anstructured database such as WongoDD.
		4. Develop the ability to handle databases of varying complexities
		1. Setup of LAN of four computer using layer-2 switch in wired network.
	310248	2. To identify network protocols and layers
	Computer	
8	Network Lab	3. To understand and configure a DHCP server
		4. To apply concept of Socket programming in TCP and UDP.
		5. To analyze network tools and network programming.
		6. To understand and configure a RIP, OSPF and BGP using packet tracer.
	•	BE Computer Sem-I (2015 COURSE)

		1. Understand opportunities of HPC systems, describe different parallel architectures.
		2. Understand the fundamental concepts, principles of parallel algorithm
		design
1	410241	3. List basic communication operations
1	High	
	Performance	4. To analyze & measure performance of modern parallel computing system
	Computing	
	1 0	5. To develop an efficient parallel algorithm to solve a given problem.
		6. Make use of CUDA programming & explain working of CUDA.
		1. Identify and apply suitable Intelligent agents for various AI applications.
		2. Design smart systems using different informed search / uninformed
		search or heuristic search approaches
2	410242	3. Identify knowledge associated and represent it
	Artificial	4. Analyze and identify given problem by ontological engineering to plan a
	Intelligence	strategy.
		5. Apply the suitable algorithms to solve AI problems.
		6. Define the concept of Robotics.
		1. Capacity building of problem solving approach with respect to multiple
		use case.
		2. Ability to understand statistics and apply to given problem.
3	410243	3. Preparedness to apply suitable algorithmic strategies.
	Data Analytics	4. Expertise in developing time efficient algorithms.
		5. Expertise in developing space efficient algorithms
		6. Ability to develop scalability in algorithms.
		1. Apply basic, intermediate and advanced techniques to mine the data
4		2. To define the concepts of data warehousing
	410244	3. To solve many pattern recognition problems such as clustering and
	410244	classification
	Elective I	4. Explore the hidden patterns in the data
	(Data Mining	
	and	5. Optimize the mining process by choosing best data mining technique
	Warehousing)	
	/	6. To solve the problems in machine learning
		1. Explain Distributed System concept Web Challenges and Architecture
		models.
		2. Explain Interprocesses communication methods in DS.
5	410245	3. Describe the working of clocks used in synchronous working of DS.
	Elective II	4. Explain various File System and File server architectures in DS.
	Distributed Systems	5. Explain various types of consistency models and design in DS.
	ž	6. Describe and implement the security in DS applications serving over Web
		1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe game using minmax algorithm

	1	2. Study Heuristic search technique to implement Hill-Climbing algorithm
6	410246	3. Implement Best First search and A* algorithm.
0	Laboratory Practice I	4. Implement 8-Queens problem using Backtracking algorithm
		5. Mini project using PROLOG: Medical Diagnosis System.
		6. Mini project using PROLOG: Monkey Banana Problem
	410247	1. To develop and analyze ETL model and Visualize the effectiveness of K- means Algorithm
	Laboratory	2. Create association rules which can be used for product recommendations
	Practice II	depending on the confidences of the rules
7		3. To see a word list containing all the different words in your document
/		and their occurrence count next to it in the "Total Occurrences" column.
		4. Explain Distributed System concept Web Challenges and Architecture
		models.
		5. Explain Interprocesses communication methods in DS.
		6. Describe the working of clocks used in synchronous working of DS.
		1. Solve real life problems by applying knowledge.
8	410248	2. Write precise reports and technical documents in a nutshell.
	Project Work	3. Analyze alternative approaches, apply and use most appropriate one for
	Stage I	feasible solution
		4. Participate effectively in teams exhibiting team work, Inter-personal
		relationships, conflict management and leadership quality.

A.Y. 2018-19, Sem-II		
Sr.No.	Course code	Course outcome
	Course name	
		SE Computer Sem-II (2015 COURSE)
		1. To Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits
	207003	2. To Solve problems related to Fourier transform, Z-transform and applications to Communication systems and Signal processing
1	Engineering Mathematics III	3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions
		4. To Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.
		5. To Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.
		6. To Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics.
		1. Basic concepts, input and output devices

210253 4 Microprocesso 5 Principles of Programming Languages 210255	2. Identify the installed graphics drivers and graphics modes. DDA and
2 Graphics Graphics 3 210252 Advanced Data Structure 4 Microprocesso 5 Programming Languages 210254 9	Bresenham's algorithms for line and circle.
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	3. Solve 2D and 3D transformations problems on polygon
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	4. Analyze and identify different algorithms for back-face removal surfaces,
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	color models.
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	5. Define terms in Multimedia Animation and gaming programs.
3Advanced Data Structure3Advanced Data Structure42102534Microprocesso4Microprocesso5210254 Principles of Programming Languages5210254 Programming Languages	6. Define the concept of Curves and Fractals
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	1. Define terms such as complete binary tree, full binary tree, skewed tree
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	and identify traversals on binary tree.
3 Advanced Data Structure 210253 4 Microprocesso 5 Principles of Programming Languages 210255	2. Define terms such as weighted graphs, subgraph, complete graph etc.
3 Data Structure 210253 4 4 Microprocesso 5 Principles of Programming Languages 1 210254 5 Principles of Programming Languages 210255 210255	and apply algorithm for finding minimum distance.
Data Structure 210253 4 Microprocesso 210254 Principles of 5 Programming Languages 210255	3. Describe hashing functions and to apply proper hashing technique for
4 Microprocesso 210254 5 Principles of Programming Languages 210255	es given problem.
4 Microprocesso 210254 5 Principles of Programming Languages 210255	4. Apply technique of optimal binary search tree to reduce searching time.
4 Microprocesso 210254 5 Principles of Programming Languages 210255	5. Explain indexing techniques and to prepare B tree or B+ tree for given
4 Microprocesso 210254 5 Principles of Programming Languages 210255	data.
4 Microprocesso 210254 5 Principles of Programming Languages 210255	6. Explain different types of file organization and its operations.
4 Microprocesso 210254 5 Principles of Programming Languages 210255	1. Write a program by using instructions & explain the memory
4 Microprocesso 210254 5 Principles of Programming Languages 210255	organization.
4 Microprocesso 210254 5 Principles of Programming Languages 210255	2. Describe the architecture and classify segmentation & paging. Calculate
210254 5 Principles of Programming Languages 210255	physical address.
210254 5 Principles of Programming Languages 210255	3. Understand the system level features & protection levels, Illustrate
5Principles of Programming Languages210255	multitasking.
5Principles of Programming Languages210255	4. Explain IDT, IDT descriptors, error code format, identifying interrupts
5Principles of Programming Languages210255	etc, I/O addressing & instructions
5Principles of Programming Languages210255	5. Understand reset state, switching from mode, difference between the
5Principles of Programming Languages210255	modes
5Principles of Programming Languages210255	6. Understand the co-processor instructions & applying it in program
5Principles of Programming Languages210255	1. To analyze the strengths and weaknesses of programming languages for
5Principles of Programming Languages210255	effective and efficient program development.
5Principles of Programming Languages210255	2. To inculcate the principles underlying the programming languages
5 Programming Languages 210255	enabling to learn new programming languages.
Languages 210255	
210255	
	4. To use the programming paradigms effectively in application
	development. 5. To use concept of Inheritance, Polymorphism and Encapsulation to
	6. To use Exception handling in Java
	1. Understand the basic concepts of computer graphics.
	2. Apply clipping and filling techniques for modifying an object
Computer	3. Understand the concepts of different type of geometric transformation of
6 Graphics Lab	b objects in 2D and 3D.
6	 Understand the basic concepts of computer graphics. Apply clipping and filling techniques for modifying an object Understand the concepts of different type of geometric transformation of

I	I	
		4. Understand the practical implementation of modeling, rendering, viewing
		of objects in 2D.
		1. Use tree data structure for solving real life applications and perform
		conversions of tree.
	210256	2. Apply various algorithms to find out minimum distance for traversing in
		real life application.
-	Advanced	
7	Data	3. Apply proper hashing technique to improve search results.
	Structures Lab	
		4. Solve problem with use of proper multiway trees.
		5. Use different file organization for maintenance of data.
		6. Apply appropriate data structure for given problem.
	210257	1. Write a programs by using instruction set
	210257	2. Write a programs using coprocessor instruction set
8	Microprocessor Lab	3. Execute a program using different assemblers
		4. Understand the interrupt vector table & use of interrupts in program
		TE Computer Sem-II (2015 COURSE)
		1. Discuss role of algorithm design of algorithm with related issue and
		confirmining correlation of algorithm
		2. Explain and compare with different models and derive proof rules,
		decide and write algorithmic strategies to solve given problem
		3. Discuss and apply algorithmic strategies like divide and conquer, greedy
1	310250	approach, dynamic programming and compare algorithmic strategies
	Design &	4. Explain and analyzing asymptotic growth ,deterministic and non-
	Analysis of	deterministic growth and compare NP problem algorithm
	Algorithms	
		5. Discuss amortized analysis with its methods and write approximate
		embedded, randomized algorithms, Dijkstra's shortest path algorithm 6. To analyze and evaluate problem using multithreaded and distributed
		string matching algorithm
		1. Define various system software & their role
		2. Analyze and synthesize system software
2	310251	3. Write program using tools like LEX and YACC
	Systems	
	Programming	
	& Operating	4. Implement operating systems functions
	System	
		5. Analyze and compare memory management algorithm
		6. Analyze different file & I/O management concepts
	1	1. Explain Embedded System and basics of IoT like protocols and
		communication models and levels.
		2. Identify and state various steps involved in design methodology of IoT
		platform.
	1	4

3	310252	3. Describe the working of various IoT pillars and Hardware of IoT
	Embedded	
	Systems &	4. Explain various protocols and security in IoT.
	Internet of	4. Explain various protocols and security in for.
	Things	
		5. Understand application of Cloud Computing in IoT.
		6. Describe various Cloud models in IoT with various case studies.
		1. To apply basic concept of UML for designing use case diagram of object
4	210252	oriented based application
4	310253	2. Design a model using static modeling using appropriate modern tool.
	Software	2 Design a madel vaine demonsion and aline vaine annuanista madem to al
	Modeling and Design	3. Design a model using dynamic modeling using appropriate modern tool.
	Design	4. Design a model using dynamic modeling using appropriate modern tool.
		5. Apply design patterns to understand reusability in object oriented design
		6. Apply appropriate test tool for testing application.
		1. Analyze given assignment to select sustainable web development design
		methodology.
		2. Develop Client Side Web Application using Java Script
5	310254	3. Describe difference between Servlet and JSP Server Side Technologies
	Web Technology	4. Use PHP technology for application development
		5. Explain different client and server framework
		6. Develop solution to complex problems using appropriate method,
		technologies, frameworks, web services and content management
	310255	1. define problem statement for seminars
	Seminar &	
6	Technical	2. perform literature survey and generate proof of concept.
	Communication	
		3. present technical contents
		1. develop web based application using suitable client and Server side
		scripting such as JSP
7	310256	2. develop web based application using suitable client and Server side
	XX 7 1	scripting such as PHP
	Web	
	Technology	3. develop web based application using Server side Framework
	Lab	4. develop web based application using Client side Framework
		1. Design & implement language translator
		2. Implement two pass macroprocessor
8	310257	3. Write program using tools like LEX and YACC
0	510257	5. Write program using tools like LLA and TACC

	System Programming &Operating System Lab	4. Implement CPU scheduling algorithms
		5. Write a program for system calls
		6. Implement different page replacement algorithms
		1. Install and configure Raspberry Pi and Aurdino microcontrollers.
9		2. Connect various sensors to Raspberry Pi and Aurdino.
	310258	3. Write a program to control various sensors and devices
	Embedded	
	Systems & Internet of Things Lab	4. Write a program to control multiple sensors and devices in coordination
	Things Eac	5. Write a program to create a web interface using IOT.
		6. Develop a real time application in IOT.
		BE Computer Sem-II (2015 COURSE)
		1. Understanding human learning aspects and relate it with machine
		learning concepts.
		2. Applying statistical techniques to solve problem statements.
1	410250	3. Learning different machine learning algorithms.
1	Machine	4. Understanding nature of the problem and applying machine learning
	Learning	algorithm.
	Dearning	5. Finding optimized solution for given problem
		6. Learning input, output mapping
		1. Define the different attacks on Information. Find problems with existing
		ciphers.
		2. Identify the problems with private cryptography method.
2	410251	3. Apply public cryptography on information for security.
2	Information	5. Apply public oryptography on mornation for security.
	and Cyber	4. Apply authentication methods on user end.
	Security	
	2 county	5. Apply intrusion detection system to existing system
		6. Apply Security services. Analyze email security.
		1. To understand basics of embedded system and its components.
		2. To learn selection process of memory and processor for real time
		applications
		3. To learn devices, communication buses and various communication
3	410252	protocols of embedded system.
		4. To learn real time operating system and various approaches of real time
	Elective III	scheduling.
	Embedded and	Server and the server
	Real Time	5. To understand inter process communication and resource and resource
	Operating	access control in RTOS
	System	
	System	

		6. To learn real time communication and software development process for
		embedded system.
		1. To understand the need of cloud based solution
4		2. To understand Storage and Security mechanisms in various cloud systems
	410253	3. To explore effective techniques to program cloud systems
	Elective IV	4. To explore amazon web service in detail
	Cloud Computing	5. To understand trends, current challenges and trade-off in cloud computing
		6. To understand the emerging future trends in cloud computing
		1. The Students must be able achieve practical hands on skills.
		2. Enhancement of employability of learner.
5	410254	3. Enhancement of technical competency of learner
	Laboratory Practice III	4. Understanding and analyzing problem statement clearly
		5. Learning practical machine learning algorithms
		6. Applying practical machine learning algorithms
		1. To study and explore various platforms for cloud computing.
		2. Setup cloud environment in laboratory
6	410255	3. Develop the mini-project for parallel processing and execution
	Laboratory Practice IV	4. Develop the basic parallel programs using open MP
		5. Develop the parallel programs using CUDA.
		6. Develop the mini-project for parallel processing and execution
		1. Show evidence of independent investigation
7	410256	2. Critically analyze the results and their interpretation
	Project Work	3. Report and present the original results in an orderly way and placing the
	Stage II	open questions in the right perspective.
		4. Link techniques and results from literature as well as actual research and future research lines with the research
		5. Appreciate practical implications and constraints of the specialist subject
	Electro	nics and Telecommunication Department
		A.Y. 2018-19, Sem-I
Sr.No.	Course code	Course outcome
	Course name	
	SE 1	Electronics and Telecommunication-Sem-I (2015 COURSE)
		1. Understand mathematical description and representation of continuous
		and discrete time signals and systems.
	204181	2. Develop input output relationship for linear shift invariant system and
		able to use convolution operator for continuous and discrete time system.
1	Signals and Systems	3. Analyze linear shift invariant system using transform domain technique.

	l	
		4. Resolve the signals in frequency domain using Fourier series and Fourier
		transforms.
		5. Develop the ability to analyze the system in s domain using Laplace
		Transform.
		6. Evaluate probability, CDF, PDF, autocorrelation and crosscorrelation
		1. Understand and apply semiconductor principles to the device to observe
		its performance.
		2. Design and analyze the concept of feedback to improve stability of
	204182	circuits.
	Electronic	3. Simulate amplifier, switch and oscillator circuits using computer
2	Devices and	simulation software to obtain desired results.
	Circuits	
		4. Implement amplifier, switch and oscillator hardwired circuits to test
		performance and application.
		5. Explain behavior of FET at low and high frequency.
		6. Design an adjustable voltage regulator circuits.
		1. Revise and solve basic AC &DC circuit by using KVL,KCL & network
	204183	theorem.
	Electrical	2. Examine performance of single phase and three phase transformer.
3	Circuits and	2. Examine performance of single phase and three phase transformer.
5	Machines	
	waenines	3. Explain working and principle of different electrical machines.
		4. Identify application of DC machines and motors.
		5. To compare performance of generator and motor.
		6.Explain proper electrical motor for given application.1. Define and illustrate computational efficiency of the algorithms such as
		sorting & searching.
4	204104	2. Identify and implement different data structures such as
4	204184	Array, Structure, linked list, stack, queue, tree, graph by using C as the
		programming language.
	Data structures	3. Implement stacks & queues for various applications.
	& Algorithms	
	-	A Explain manipulation from the last state and the second state of the
		4. Explain various terminologies and traversals of trees.
		5. Explain various terminologies and traversals of graph.
		6. Design and implement C programs for various data structure.
	• • • • • -	1. Implement the combinational circuit according to the specification
	204185	2. Identify and build Synchronous and Asynchronous Sequential circuits.
5	Digital	3. To design the ASM & FSM Machine according to the specification.
-	Electronics	
		4. Explain the basics of Digital Electronics with different logic families.
		5. To design the state mealy and moore machine according to the
		specifications.
		6. To explain the basics of microcontroller and their instruction set .
		1. Perform operations on the measuring instruments.

	204107	2. Identify analog and digital instruments and evaluate some properties like
	204186	Mean, Deviation, Probable error etc.
	Electronic	3. Solve problems using different power supply.
	Measuring	
6	Instruments	
	and Tools	
		4. Analyze the performance of Observing type instruments
		5. Apply the concept of digital to analyze and store the waveform.
		6. Define terms in statistical analysis, error etc. Calculate statistical
		parameters such as mean, standard deviation and variance.
	TE]	Electronics and Telecommunication-Sem-I (2015 COURSE)
		1. Select the blocks in a design of digital communication system.
	304181	2. Analyze the performance of various line codes .
	DIGITAL	3. Perform the time and frequency domain analysis of the signals in a digital
1	COMMUNICAT ION	communication system.
		4. Define various random processes. Calculate mean autocorrelation and
		variance.
		5. Comparison of all modulation techniques.
		6. Analyze the performance and applications of a baseband and pass band
		digital modulation systems in terms of error rate and spectral efficiency.
		1. Perform different operations on signals.
	304182	2. Computer Linear & Circular convolution, DFT, IDFT, DCT, I DCT of
	504102	discrete time sequence and properties of DFT.
	DIGITAL	3. Evaluate Z transform of sequence, identify its region of Convergence and
2	SIGNAL	compute inverse Z transform and properties of Z transform
	PROCESSING	
		4. Design & analyze IIR filters
		5. Design & analyze FIR filters. Solve the problems on multistage sampling
		6. Study different applications of DSP .
		1.Study & derive electrostatic laws & theorem (Coulombs Law, Gauss's
		Law, Divergence Theorem).
	304183	2. Analyze the electric fields and apply boundary conditions in different
	504185	media.
		3.Study & derive Magnetostaticlaws & theorem (Biot- Savart Law,
3	Electomagnetics	Ampere Circuital law, Stokes theorem).
		4. Write & analyse Maxwell's equation for static and time varying field in
		point and integral form.
		5. Study transmission line and analyze its parameters (VSWR, Return loss,
		Reflection Coefficient). Solve numerical using Smith Chart.
		6. To understand thephsasor form of Maxwell equation and solve it for
		Uniform planewave.
1	I	

·		
		1.Description of MCS 8051 in detail with its architecture and its features
		like memory organization, timer and its instruction set overview.
	304184	2. Designing and interface the Microcontroller 8051 with real world input
	504104	output devices like LCD, Keypad, and ADC. With its codes in assembly
		3. Designing the system like Digital Acquisition system and Frequency
4	MICROCONTR	counter with microcontroller 8051.
	OLLERS	
		4. Description of PIC18F in detail with its architecture and its features like
		memory organization, oscillator option and its instruction set overview.
		5.Designing and interface the PIC Microcontroller with real world input
		output devices like LCD, Keypad etc and timers with interrupt. With its
		codes in Embedded C.
		6. Classified different Serial Communication Protocol like RS232, RS 485,
		I2C, SPI.
		1. Describe the key elements of Mechatronics system with daily life
		examples and explain design approach of Mechatronics system.
		2. Explain working principles of different sensors with its advantages,
	304185	disadvantages and applications.
5	Mechatronics	3. Draw and explain typical Hydraulic system.
C		4. Differentiate between Hydraulic and Pneumatic system and also explain
		physical components of Pneumatic system.
		5. Explain different electrical actuators and electromechanical actuator.
		6. Explain various case studies with its construction, working, applications
		and suitable sketch.
		1. Shall be able to understand the specifications
		 Shall be able to understand the specifications Shall be able to select appropriate design topologies.
		 Shall be able to select appropriate design topologies. Shall be able to interpret datasheets & select components & devices as
6	304193	per requirement
0	Electronica	
	Electronics System Design	4. Shall be able to use simulation tools like MULTISIM etc for validating
	System Design	the results
	ם דיו	6. Demonstrate and Interpret various OS functions used in Linux/ Ubuntu. Electronics and Telecommunication-Sem-I (2015 COURSE)
	BE]	1. Design digital circuits with HDL
	404181	
	704101	 Analyze different CMOS circuit issues. Model digital aircuits with HDL and implement protecture on different.
	VLSI DESIGN	3. Model digital circuits with HDL and implement prototype on different
	&	PLDs
1	æ TECHNOLOGY	
		4. Design CMOS circuits for specific applications.
		5. Analyze various ASIC design issues
		6. Explain need of design for testability with different fault models and
		different testing techniques.
		1. Describe fundamental principles of computer networking
I	I	2. Compare and recognize errors in existing protocols.

	404182	3. Identify requirements for a given organizational structure and select
2	COMPLETED	suitable networking architecture.
	COMPUTER NETWORK &	4. Apply the knowledge of cryptography and network security.
	SECURITY	
	SECONT	5. Analyze the hardware, software, components of a network
		6. Design a Routing table for finding shortest path for data communication
		1. Define and differentiate various performance parameters of radiating
		elements.
	404183	2. Analyze various radiating elements and arrays.
	Radiation and	3. Apply the knowledge of waveguide fundamentals in design of
	Microwave	transmission lines.
3	Techniques	
		4. Design and set up a system consisting of various passive microwave
		components.
		5. Analyze tube based and solid state active devices along with their
		application.
		6. Measure various performance parameters of microwave components.
		Understand radiations effects and hazards.
		1. Define the image mathematically and Perform basic operations on the
		given image.
		2. Perform basic image enhancement and restoration operations on the given image.
	404184	3. Perform different compression techniques on given image
	101101	4. Perform basic image segmentation and morphological operations on the
	Digital Image	given image Analyze the result.
4	Video Processing	
		5. Apply the concept to represent and describe image.
		6. Define basic concept of video processing
		1. Explain and apply the various stages of hardware design in product
		design and development.
		2. Analyze different design considerations for analog, digital and mixed
	404185	circuits design process.
5	PRODUCT	3. Describe and apply the various stages of software design in product
		4. Describe the various techniques for PCB design.
		5. Apply and describe the steps of debugging and techniques for
		troubleshooting
		6. Explain and apply the methods of documentation
Sr No	Course code	A.Y. 2018-19
51.190.	Course code Course name	Course outcome
		ME First Year E&TC(VLSI & ES)-Sem-I
		1. Understand different MOSFET models and their characteristics.
1	504201	i charistana anterent most Er models und then endracteristics.
	•	

	Digital CMOS	2. Understand different performance parameters
	Design	3. Design CMOS logic circuits
		4. Design and Develop different FSM systems
		5. Understand advance trends in CMOS technology
		1. Define the basic concepts of Embedded Systems and Architecture of
		Embedded System
1		2. Identify Design Methodology, and understand design challenges and
		Design Metrics and problem solving.
		3. Use Life-Cycle Models. Understand design process and System
		specifications versus system requirements
		4. Understand ARM Processor based Embedded System design and exhibit
	504103	the knowledge of ARM.
	Embedded	5. Understand Embedded Linux. And Linux kernel construction.
2	System Design	
		6. Understand and apply the concept of android operating system
	50.4000	1. Describe Reconfigurable Device Characteristics, Configurable,
2	504203	Programmable, and Fixed Function Devices
3	Decenformalite	2. Designing reconfigurable circuits using PLD.
	Reconfigurable Computing	3. Explain Metrics, Partitioning and Placement, Routing, ALU and CLB.
	Computing	4. Describe architectures of PDSPs, RALU, VLIW, Vector Processors,
		Memories, CPLDs, FPGA
		1. Define research problem & its scope, objectives, and errors.
	504104	2. State basic instrumentation schemes & data collection methods.
4	Research	3. Perform analysis with various statistical techniques.
		4. Perform modeling and predict the performance of experimental system
		5. Develop the research proposals.
		1. Gain knowledge of Architecture of WSN network.
		2. Understand Physical, Data link and Network layer aspects with their
	504205	protocols.
		3. Learn different techniques of power management and security.
-	Wireless Sensor	
5	Network	
		4. Exhibit the knowledge of operating systems in WSN systems.
1	604201	ME Second Year E&TC(VLSI & ES)-Sem-I
1	Fault Tolerant	 The student will learn functional modeling. The student will use theory of logical fault models for testing single
	Systems	stuck fault.
	Systems	3. The student will show skills for fault simulation for statistical fault
		analysis.
		4. The student will exhibit the knowledge of self-checking for design of self-
		checking combinational circuits.
		5. The student will exhibit the self-testing for memory, processor and PLA
		according to the specifications .

2	604202	1. Explain design steps of ASIC design.
	ASIC Design	2. Explain steps of Analog and Digital (Mixed signal) ASIC design
		3. Describe different steps in ASIC construction
		4. Understand different ASIC testing methods
		1. Define disasters. Define Various terms involved in it. Explain
3	604103	Vulnerability profile of India.
	A- Disaster	2. Enlist the types of disasters. Compare the disasters on the basis of
	management	major and minor. Study various disasters in details.
		3. To explain the impact of disasters on environment, social, economical,
		ecological etc.
		4. Define disaster risk and disaster risk reduction methods.
		5. Enlist various government and non government organizations for
		disaster management. Draw and explain disaster management cycle.
4	604103	1. Explain the fuzzy logic and its properties. Compare fuzzy with crisp.
	B-Fuzzy	2. Explain the fuzzy inference models Mamdani, Sugeno and Tsukamoto.
	mathematics	
		A.Y. 2018-19, Sem-II
Sr.No.	Course code	Course outcome
	Course name	
	SE I	Electronics and Telecommunication-Sem-II (2015 COURSE)
	2070005	1. To Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
	Engineering	2. To Solve problems related to Fourier transform, Z-transform and applications to
	Mathematics III	Communication systems and Signal processing.
		3. To Obtain Interpolating polynomials, numerically differentiate and integrate
1		functions, numerical solutions of differential equations using single step and multi-
		step iterative methods used in modern scientific computing.
		4. To Perform vector differentiation and integration, analyze the vector fields and
		apply to Electro-Magnetic fields.
		5. To Analyze conformal mappings, transformations and perform contour
		integration of complex functions in the study of electrostatics and signal processing
		1. Unerstand the charactristics of Op Amp, it's internal structure and its
		parameters.
	204187	2. Identify various performance based paramters and their significance for
	201107	Op Amp.
2	Integrated	3. Analyze and identify various Linear and Nonlinear applications of Op
_	Circuits	Amp.
		4. Design, build and test some circuits for various applications.
		5. Apply the functionalities of PLL to understand different applications as
		frequency synthesizer, multiplier, AM and FM demodulators.
		6. Analyze and design Active filters.
		1. Learn and utilize models of physical systems in different forms suitable
		for use in the analysis of control systems.

1 1		
	204188	2. Perform time domain and frequency domain analysis of control systems
	201100	required for stability analysis.
3	Control	3. Apply Routh-Hurwitz criterion to determine the domain of stability of
5	Systems	linear time-invariant systems in the parameter space.
		4. Perform time domain and frequency domain correlation analysis.
		5. Apply root-locus, Bode plot techniques to analyze control systems
		6. Express and solve system equations in state variable form
		7. Explain the concepts of PID and PLC controllers and digital control
		system.
		1. Understand fundamental concepts of different analog communication
	204189	schemes with mathematical analysis.
4	Analog	2. Describe Analog receivers with their performance characteristics.
4	Communication	
		3. Compare different Analog modulation systems
		4. Understand different types of noise with performance parameters .
		5. Compare the behavior of Analog communication systems in presence of
		noise
		6. Describe various pulse and digital modulation techniques.
5	204190	1. State the features of object oriented programming.
	Object	2. Explain the concepts of data encapsulation, inheritance in C++.
	Oriented	
	Programming	
		3. Understand basic program constructs in Java
		4. Describe how the class mechanism supports encapsulation and
		information hiding.
		5. Apply the concepts of classes, methods and inheritance to write
		programs Java.
		6. Design and implement simple programs in an object-oriented
		programming language
6	204191	1. Able to solve aptitude test.
	Employability	2. Analyze presentation skill, listening skill and be ready for facing job
	Skill	interviews
	Development	
		3. Able to write story, paragraph and letter.
	TE F	Electronics and Telecommunication-Sem-II (2015 COURSE)
		1. List different power electronics devices. Sketch and Explain the
		construction and characteristic of SCR, MOSFET & IGBT. Compare these
		devices. State and explain device specifications. Design a UJT triggering
		circuit for SCR. Explain gate drive circuit for MOSFET/IGBT.
		2. Differentiate between Ordinary rectifiers and Controlled Rectifiers.
		Explain 1. phase controlled rectifier with R and RL load. Compare
	304186	HWCR and FWCR. Explain 3. phase controlled rectifier with R load.
		Determine output V/I and other performance parameters of 1. phase/3.
		phase circuits. Identify applications of 1. /3. phase CR.

1	Power Electronics	3. Explain 1. phase Inverter with R and RL load. Explain 3. phase Inverter with 120 and 180 degree conduction mode. Determine output V and other performance parameters of 1. phase circuit. Identify applications of Inverter. Explain Harmonic reduction techniques of Inverter.
		4. Explain step up and step down DC chopper. Derive an expression for output V and Determine output V, other parameters. TRC and Duty cycle voltage control techniques. Classify choppers. Identify applications of 1. /3.
		phase CR. Explain 1. phase AVC.
		5. Explain the need of Resonant converters. Explain the operation of
		ZVS/ZCS. Explain different causes of EMI and techniques to reduce it.
		6. Over voltage and current protection circuits for SCR. Identify and
		Explain applications of power electronics.
		1.Perform information theoretic analysis of communication system
	304187	2.Design a data compression scheme using suitable source coding
	Information	technique.
	Theory and	
2	Coding	
	Techniques	3.Design a channel coding scheme for a communication system
	*	4.Understand and apply fundamental principles of data communication and
		networking.
		5. Apply flow and error control techniques in communication networks.
		1. Define domains of Industrial Management
	304188	2. Be familiar with Quality Management, Financial Management and
		Project Management
3	BUSINESS	3. Identify importance of Human Resource Management
	MANAGEMEN T	
	1	4. Apply the knowledge of entrepreneurship.
		1. Compare features of different ARM Series processor
	304189	2. Describe the architecture of ARM 7 microprocessor
	Advanced	3. Interface the peripherals to ARM based microcontroller
4	Processors	
4		4. Interface advanced peripherals with ARM based microcontroller and
		develop Embedded system
		5. Explain features of DSP processor over ARM processor.
	ļ	6. Explain Detail architecture of DSP processor.
		1. Explain the concepts of system programming and develop skills to design
		Assembler and Macro Processor.
	304190	2. Explain the basics of Compiler, Linker and Loader and use it in
l	I	demonstration.

1	System	3. Define OS and list different types of OS and also implement various
	Programming	process scheduling techniques.
5	and	process seneduling teeninques.
5	Operating	
	System	
		4. Explain inter process communication and implement deadlock avoidance
		schemes in OS.
		5. Implement memory management concepts and replacement algorithm.
		6. Explain I/O management and file management with example.
	BE I	Electronics and Telecommunication-Sem-II (2015 COURSE)
		1. Explain and apply the concepts telecommunication switching for voice
		and data.
	404189	2. Analyze the telecommunication traffic.
	Mobile	3. Analyze radio channel and cellular capacity.
1	Communication	
		4. Explore the architecture of GSM.
		5. Knowledge of GSM channels and services.
		6. Differentiate thoroughly the generations of mobile technologies.
		1. To explain the function of each block in the optical communication
		system. Compare various types of optical fibers. Define and compare
		different optical sources.
		2. To draw point to point optical link and power loss model. To solve
		numerical based on optical power budget and rise time budget. To evaluate
		bandwidth length product.
	40.4100	3. Understand and draw WDM optical link. Enlist WDM components.
	404190	Explain need of Optical amplifiers.
	Broadband	4. Describe orbital parameters of satellite, launching of satellite. Explain
	Communication System	
		5. Describe function of various satellite subsystems and draw the block
		diagram of the same. Describe the need of satellite subsystems.
		6. Solve and evaluate simple satellite link design problem considering
2		Uplink and downlink.
	404191	1. Define the basic concepts of machine Learning.
	Machine	2. Perform basic regression and classification task.
	Learning	
3		3. Perform and analyze clustering technique
		4. Mathematically analyze various machine learning approaches.
		5. Apply the concept to classification problem.
		6. Define basic concept of deep learning and CNN
	40.4100	1. Keep himself updated on latest wireless technologies and trends in the
Δ	404192	communication field
4	Wireless Sensor	2. Understand the transmission of voice and data through various networks.
	Networks	
	TICIWOIKS	

	A.Y. 2018-19		
Sr.No.	Course code	Course outcome	
	Course name		
	•	ME First Year E&TC(VLSI & ES)-Sem-II	
1	504207	1. Understand and design basic COMS sub-circuits.	
	Analog CMOS		
	Design		
		2. Udestand and Design CMOS Op-amp	
		3. Understand low and high bandwidth CMOS designs.	
		4. Understand and design Low Noise Amplifiers .	
2	504208	1. Learn Design flow graphs and flow modeling.	
		2. Understand SoC modeling and interfacing.	
	System On Chip		
		3. Gain knowledge of SoC memory system design, embedded software and	
		energy, management techniques for SoC design, SoC prototyping,	
		verification, testing and physical design.	
		4. Design, implement and test SoC.	
		1. Define the basic concepts of Real-Time Embedded Signal Processing.	
		2. Realize the FIR filter.	
3		3. Use the concept of Digital Systems, Moving-Average Filters, and	
	504209	problem solving on Structures and Equations	
	Embedded	4. Use properties of DFT, Algorithm and problem solving on DFT and FFT	
	Signal		
	Processors	5 Design the UD filter	
		5. Design the IIR filter	
		6. Understand digital signal processing and key components of DSP and	
		code optimization 7. Understand the Prestical DSP Applications like Audio Coding and Audio	
		7. Understand the Practical DSP Applications like Audio Coding and Audio Effects	
		1. Define Software and hardware defined radio. State properties of SDR.	
		Draw and explain the structure of SCA.	
	504210	2. Explain the function of RF front end blocks. Enlist types of RF front end	
	504210	topologies. Draw their block diagram.	
4	Software	3. Enlist various DDS systems. Compare them. Draw PN sequence	
4	Defined Radio	generator and derive the output.	
		4. Enlist various smart antenna configurations. Define various adaptive	
		antenna array algorithms. Draw the block diagram for various beam	
		forming antenna arrays. Compare DSPs, ASIC and FPGA.	
		5. Understand JTRS, CORBA and MAE in SDR	

Department of Information Technology A.Y. 2018-19, Sem-I

	A.Y. 2018-19, Sem-I		
Sr.No.	Course code	Course outcome	
	Course name		

	SE (Information Technology) 2015 pattern Sem-I		
	214441	1. Calculate probability of a particular event in a given situation.	
		2. Translate English statements in mathematical propositions and	
		quantifiers.	
		3. Classify different relations and functions types and relate problems to	
1	Discrete	particular type.	
_	Structure	4. Translate real life problems into graphs and solve using graph theory	
		concepts.	
		5. To use different types of trees for various applications	
		6. Solve examples of groups and rings	
		1.Explain processor structure, functions of different units in it and solve	
	214442	problems based on computer arithmetic and computer performance.	
		2.Explaindetails of CPU and MIPs, RISC and CISC architectures.	
	Computer	3.Explaintypes of control unit with details.	
2	Organization	4.Explain concepts related to memory and I/O organization.	
	and	5. Acquire knowledge about instruction level parallelism.	
	Architecture	6. Acquire knowledge about instruction level parallelism.	
	Alemicetule	multi core systems.	
	214443	1. Understand the Number system, codes and logic family.	
	217773	2. Use logic function representation for simplification with K-Maps and	
		analyze as well as design Combinational logic circuits using SSI & MSI	
		chips.	
	Digital Electronics &	3. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation	
3		table), their conversion & design the applications like counters, etc.	
3			
	Logic design	4. Design and implement different sequential logic designs.5. To understand concept of programmable logic devices and ASM chart	
		and get acquainted with design of synchronous state machines.6. Use VHDL programming technique with different modeling styles for	
		any digital circuits.	
		1. Develop 'C' programs using appropriate constructs and coding	
	214444	standards.	
		2. Use pointers to define and access arrays, structures, files.	
		3. Evaluate the efficiency of algorithms.	
4	Fundamentals	4. Choose the appropriate searching / sorting algorithm for a given	
-	of Data	application.	
	Structure	5. Represent linear data structures using sequential organization.	
	Sildeluie	6. Show the representation of linear data structures using	
		linkedorganization.	
		1. Breakdown problem into smaller components, propose and evaluate	
	214445	different solutions for solving problems.	
		2. Design an algorithmic solution to a problem using problem	
	Problem	decomposition and step-wise refinement.	
5	Solving and	3. Explain features of object oriented programming.	
5	Object	4. Program using C++ features such as composition of objects, operator	
	Oriented	overloads, dynamic memory allocation, inheritance and polymorphism, etc	
		overloads, dynamic memory anocation, interitance and porymorphism, etc	

	Programming	5. Explain advanced Features of C++ like virtual function, templates.
	110 granning	6. Understand exception handling and File I/O in C++
		1. Simplify Logic function using K-map and design Combinational logic
	214446	circuits using SSI & MSI chips.
		2. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation
		table) & design the applications like Asynchronous and Synchronous
		Counters.
6		
0	Digital	3. Design and implement Sequential Logic circuits like synchronous
	Laboratory	/asynchronous counters, MOD counters and Sequence generator using
		registers/Counters.
		4. Understand the design Steps and implement the main programming
		technique with different modeling styles for any digital circuits with VHDL
		Programming.
	214447	1. Apply proper constructs of C language and coding standards for program
		development.
		2.Develop programs using dynamic memory allocation.
7	Programming	3.Develop programs using linear data structures.
	Laboratory	4.Use searching and sorting algorithms.
	Lucolucoly	5.Employ primitive operations on sequential file.
		6.Create and manipulate single, double, circular and generalized linked list.
	214448	1. Breakdown problem into smaller components, propose and evaluate
	214440	different solutions for solving problems.
		2. Develop and implement algorithms for solving simple problems using
	Object Oriented Programming Lab.	modular programming concept.
8		3. Abstract data and entities from the problem domain, build object models
		and design software solutions using object-oriented principles and
		strategies.
		4. Develop programs that appropriately utilize key object-oriented concepts
		1. Provides an ability to understand, analyze and interpret the essentiality of
	214449	grammar and its proper usage.
		2. Build the students' vocabulary by means of communication via web,
		direct
9	Communication	
	Skills	3. Understanding the various rules and means of written communication.
	Skiiis	4. Effective communication with active listening, facing problems while
		communication and how to overcome it.
	I.	TE (Information Technology) 2015 pattern Sem-I
	314441	1.Explain finite state machines to solve problems on it.
		2.Construct Regular Expression by solving related problems.
	Theory of Computation	3.Explain Regular Grammar and language also different types of grammar
1		4.Explain concept of Push Down Automata and Post Machine by solving
1		related problems.
		5.Explain Turing Machine by simplifying related problems.
		6.Explain decidability and computational complexity.

	314442	1. Explain basic concepts of DBMS & RDBMS. Analyze different database models.
		knowledge to the normalization of a database.
		3. Query a database using different SQL commands as well as Design and implement a database schema for a given problem domain.
2	Database	 4. Explain basic issues of transaction processing and concurrency control.
	Management	5. Describe and compare various database architectures with its
	Systems	applications.
		6. Describe emerging database technologies.
		7. Explain basics of data warehousing and data mining.
	214442	1. Identify unique features of various software application domains and
	314443	
		2. Choose and apply appropriate lifecycle model of software development.
		3. Describe principles of agile development, discuss the SCRUM process
3	Software	and distinguish agile process model from other process models
5	Engineering &	4. Analyze software requirements by applying various modeling techniques.
	Project	
	Management	5. Llist and classify CASE tools and discuss recent trends and research in
		software engineering.
		6. Understand IT project management through life cycle of the project and
	214444	future trends in IT Project Management
	314444	1. Explain working of operating system and shell
		2. Understand process, thread and scheduling
4	Operating System	3. Apply the concept of process synchronization, mutual exclusion and the deadlock
4		
		4. Understand main and virtual memory management
		5. Realize the concept of I/O management and File system.
		6. Understand Linux operating system with its function1. Explain importance of HCI study and principles of user-centred design
	314445	(UCD) approach.
		2. Develop understanding of human factors in HCI design.
		3. Develop understanding of models, paradigms and context of interactions.
5	Human-	5. Develop understanding of models, paradignis and context of interactions.
5	Computer	4. Design effective user-interfaces following a structured and organized
	Interaction	UCD process.
		5. Evaluate usability of a user-interface design.
		6. Apply cognitive models for predicting human-computer-interactions.
	314446	1. Install and configure database systems.
		2. Analyze database models & entity relationship models.
	Software Laboratory-I	3. Design and implement a database schema for a given problem-domain
6		4. Understand the relational and document type database systems.
		5. Populate and query a database using SQL DML/DDL commands.
		6. Populate and query a database using MongoDB commands.
	1	In the first of the sense of the Bobb commander

	314447	1. Understand the basics of Linux commands and program the shell of Linux.
		2. Develop various system programs for the functioning of operating
		system.
		3. Implement basic building blocks like processes, threads under the Linux.
7	Software	5. Implement busic bundling blocks like processes, threads under the Emax.
		4 Develop verious system programs for the functioning of OS concents in
	Laboratory-II	4. Develop various system programs for the functioning of OS concepts in
		user space like concurrency control and file handling in Linux
		5. Design and implement Linux Kernel Source Code.
		6. Develop the system program for the functioning of OS concepts in
	314448	1.Describe a HTML5 program using frame, and to create table, registration
		form add images, links.
		2. Create a page using CSS properties Border, margins, Padding,
		Navigation, dropdown list.
		3. Create form in HTML with all form elements apply form validations (e.g.
8		Email, mobile, Pin code, Password).
0	Software	4. Validate URL, Email, Required using functions empty, preg_match,
	Laboratory -III	filter_var in PHP.
		5. Describe servlet life cycle, create login page and apply proper validations
		with appropriate messages using doGet()/ doPost() methods.
		6. Design a website using Content management tool (Word Press).
		7. Describe phpMyAdmin and its features.
		BE (Information Technology) 2015 pattern Sem-I
	414453	1. Understand basics of security services
		2. Use basic cryptographic techniques in application development
	Information	3. Apply methods for authentication, access control, intrusion detection and
1	and Cyber	prevention.
	-	4. Understand risks and vulnerability terms
	Security	5. Classify different cybercrimes
		6. Develop computer forensics awareness.
	414454	1. Build the learning model.
		2. Developed an appreciation for what is involved in learning from data.
	Machine	3. Find out solution to real world problems
2		4. Implement some basic machine learning algorithms
	Learning and	5. Using different method evaluate the performance of learning models
	Application	6. Apply machine learning algorithms to solve problems of moderate
		complexity
	414455	1. Understand the fundamental aspects of different object oriented
	414455	methodologies
		2. Explore and analyze use case modeling, domain/ class modeling.
2	C a A	3. Understand Interaction and behaviour modeling
3	Software	4. Analyse design process in software development
	Design &	5. Understand software design principles and patterns.
I	Modeling	

	modeling	
		6. Learn the architectural design guidelines in various type of application
		development.
	414456	1. Justify the need to study human-computer-interaction or human-factors
		while designing software.
		2. Discuss the process of designing user-friendly software based on
_		usability engineering guidelines.
4	Elective - I	3. Apply interaction design and UI design process in enhancing user-
	(Usability	experience of an application.
	Engineering)	4. Conduct usability evaluation of user-interfaces or software applications.
		5. Discuss industry standards for designing and evaluating user-interfaces.
		6. Discuss current trends in usability engineering
	414457	1. Understand importance of testing and tester's role in a software
		development organization.
	ELECTIVE II:	2. Understand Testing Approaches.
5	Software	3. Explore Software Test Automation, Quality Management Metrics.
	Testing and	4. Understand Software quality assurance.
	Quality	5. Choose appropriate quality assurance models and develop quality.
	Assurance	6. Understand Software Process, Internal Auditing and Assessments.
	414458	1. Implement basic security meachanisms
6	Computer	2. Understand the machine learning principles and analytics of learning
Ũ	Laboratory VII	algorithms.
		3. Apply Machine Learning Principles for various applications
	414459	1. Understand Unified Modeling Language (UML 2.0)
	Computer	2. Identify different software artifacts at analysis and design phase.
7	Laboratory	3. Explore and analyze use case modeling.
	VIII	4. Understand Interaction and Behavior Modeling.
		5. Explore and analyze domain/ class modeling.
	414460	1. Implement their ideas/real time industrial problem/ currentapplications
		from their engineering domain.
		2. Develop plans with help of team members to achieve the project's goals.
8		3. Break work down into tasks and determine appropriate procedures.
0	Project Phase-I	4. Allocate roles with clear lines of responsibility and accountability and
	1 Tojeet 1 hase 1	learn team work ethics.
		5. Estimate and cost the human and physical resources required, and make
		plans to obtain the necessary resources.
		A.Y. 2018-19, Sem-II
~		Course outcome
Sr.No.	Course code	
	Course name	
		SE (Information Technology) 2015 pattern Sem-II
		1. To Solve higher order linear differential equation using appropriate
	207003	techniques for modeling and analyzing electrical circuits
		2. To Solve problems related to Fourier transform, Z-transform and
		applications to Communication systems and Signal processing

Ĩ	I	
		3. To Obtain Interpolating polynomials, numerically differentiate and
		integrate functions
1	Engineering	4. To Apply statistical methods like correlation, regression analysis and
-	Mathematics -	probability theory for analysis and prediction of a given data as applied to
	III	machine intelligence.
	111	5. To Perform vector differentiation and integration to analyze the vector
		fields and apply to compute line, surface and volume integrals.
		6. To Analyze conformal mappings, transformations and perform contour
		integration of complex functions required in Image processing, Digital
		filters and Computer graphics.
	214450	1. Explain terms related to computer graphics and apply mathematics and
	214430	logic to develop computer programs for elementary graphic operations.
		2. Solve problems related to Fourier transform, Z-Transform and
		applications to Signal and Image processing.
2	Computer	3. Apply statistical methods like correlation, regression analysis and
	Graphics	nrobability theory for analysis and prediction of a given data as annlied to
	Graphies	4. Perform vector differentiation and integration to analyze the vector fields
		5.Explain techniques to create realistic views using shading and animation
		6.Explain methods to draw curves and random surfaces.
	214451	1. Explain ALP tools and architecture details of 80386 microprocessor
		2. Explain the memory management of 80386 microprocessor
		3. Explain Paging, multitasking, Real and Protected mode Interrupt
	Processor	structure?
3	Architecture & Interfacing	4. Differentiate between microprocessor and microcontroller. Understand
		architecture and memory organization of 8051microcontroller.
		5. Explain ports, interrupts and timers/ counters of 8051.
		6. Explain the Features, Architecture, Operating modes 8255. Understand
		the interfacing and application of 8051.
	214452	1. Explain linear data structures i.e. stack and queue with their applications
		2. Explain the basic terminologies and types of trees.
4	Data	3. Illustrate the use of various graphs algorithms.
	Structures and	4. Explain symbol table applications and use the different hashing methods.
	Files	5. Describe the use of advanced tree data structures.
		6. Explain different file organizations with their primitive operations.
	214453	1.Understand data/signal transmission over communication media
	Foundations of	2. Recognize usage of various modulation techniques in communication
5	Communication	3. Analyze various spread spectrum and multiplexing techniques
5	and Computer	4. Use concepts of data communication to solve various related problems
	Network	5. Understand error correction and detection techniques.
	THERWOIK	6. Acquaint with transmission media and their standards
	214454	1. Explain concepts related to assembly language programming
		2. Write and execute assembly language program to perform array addition,
	Processor	code conversion, block transfer and string operations
6		3. Write program of 8051 microcontroller and implement the same using
	Interfacing Laboratory	8051 development board.
•	- i anoratory	

I	Lautiatury			
	-	4. Explain interfacing of real world input and output devices to 8051		
		microcontroller		
7	214455	1. Apply proper constructs of C++ and coding standards for program		
		development.		
	Data	2. Implement stack and queue.		
	Structures and	3.Implement non-linear data structures such as trees, graphs etc.		
	Files	4. Implement primitive operations on sequential file.		
	Laboratory	5. Use various hashing techniques for implementing direct access file.		
l	214456	1. Apply and implement line drawing and circle drawing algorithms to draw		
		specific shape given in the problem		
8	Computer Graphics Laboratory	2. Apply and implement polygon filling algorithm for a given polygon.		
		3. Apply and implement 2-D and 3-D transformation algorithms for given		
		input shape		
		4. Apply and implement polygon clipping algorithm for given input polygon		
		5. Apply and implement fractal generation algorithm for a given input.		
		6. Apply and implement animation concepts for generating simple		
		animation without using any animation tool		
TE (Information Technology 2015 pattern) Sem-II				
	314450	1. Know Responsibilities, services offered and protocol used at each layer		
	514450	of network.		
		2. Understand different addressing techniques used in network.		
1	Computer	3. Know the difference between different types of network.		
1	Computer Network Technology	4. Know the different wireless technologies and IEEE standards		
		5. Use and apply the standards and protocols learned, for application		
		development.		
		6. Understand and explore recent trends in network domain.		
	314451	1. Explain independently modern software development tools and creates		
		novel solutions for language processing applications.		
	System Programming	2. esign and implement assemblers and macro processors.		
2		3. Use tool LEX for generation of Lexical Analyzer.		
		4. Use YACC tool for generation of syntax analyzer.		
		5. Generate output for all the phases of compiler.		
		6. Apply code optimization in the compilation process.		
3	314452	1. practice principle of Optimality to solve problems using Dynamic		
		Programming		
		2. Apply Divide & Conquer as well as Greedy approach to design		
		algorithms.		
	Design and	3. Classify different problems into appropriate design solutions.		
	Analysis of	4. Illustrate different problems using Backtracking.		
	Algorithms	5. Compare different methods of Branch and Bound strategy.		
	i ilgoritiliti	6. Identify the nature of nondeterministic algorithms and classify		
		deterministic algorithms into P classes.		
	314453	1. Understand the need of Cloud based solutions.		
		2. Understand Security Mechanisms and issues in various Cloud		
		Applications		
l	I	- The second sec		

6 Software 2. Understand security issues in cloud computing. 6 Software 2. Understand emerging trends in cloud computing. 7 Software 2. Understand big Data primitives in cloud computing. 7 Software 2. Understand Big Data primitives. 7 Software 2. Understand Big Data primitives. 7 Software 3. Demonstrate their Big Data learning skills by developing industry or research applications. 7 Software 3. Demonstrate their Big Data learning skills by developing industry or research applications. 6 314455 5. Understand needs, challenges and techniques for big data visualization. 6 Learn different programming platforms for big data visualization. 7 Software 2. Understand and use various networking and simulations tools. 7 Software 1. Implement small size network and its use of various networking commands. 7 Software 1. Onderstand the protocol design at various layers. 7 Software 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software 1. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such a
6 Understand current challenges and trade-offs in Cloud Computing. 314454 1. Understand Big Data primitives. 2 Learn and apply different mathematical models for Big Data. 3. Demonstrate their Big Data learning skills by developing industry or research applications. 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 5 Understand needs, challenges and techniques for big data visualization. 6 Learn different programming platforms for big data visualization. 6 Learn different programming platforms for big data analytics. 1 Implement small size network and its use of various networking commands. 2 Understand the protocol design at various layers. 5 Explore use of protocols in various wired and wireless applications. 6 Develop applications on emerging trends. 7 Software Laboratory-IV 2. To design and implement two pass assembler for hypothetical machine instructions. 7 Software Laboratory-V 3. To use the compile generation tools such as "Lex" and "YACC". 4 To analyze the solution using recurrence relation. 314456 To analyze the solution using recurrence relation. 5. To compare various algorithmic strat
6. Understand emerging trends in cloud computing. 314454 1. Understand Big Data primitives. 2. Learn and apply different mathematical models for Big Data. 3. Demonstrate their Big Data learning skills by developing industry or research applications. 4. Analytics 4. Analytics and it will perform different datasets. 5. Understand needs, challenges and techniques for big data visualization. 6. Learn different programming platforms for big data analytics. 6 314455 1. Implement small size network and its use of various networking commands. 6 2. Understand the protocol design at various layers. 5. Configure various client/server environments to use applications in structions. 6 314456 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software 3. To use the compile generation tools such as "Lex" and "YACC". 8 5. To compare various algorithmic strategies.
5 Data Sciece and Big Data Analytics 2. Learn and apply different mathematical models for Big Data. 5 Data Sciece and Big Data Analytics 3. Demonstrate their Big Data learning skills by developing industry or research applications. 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 5. Understand needs, challenges and techniques for big data visualization. 6 6. Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 6 Software Laboratory-IV 2. Understand and use various networking and simulations tools. 3 314456 3. Configure various client/server environments to use application layer protocols 7 Software Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 Software Laboratory-IV 1. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software Laboratory-V 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals.
5 Data Sciece and Big Data Analytics 3. Demonstrate their Big Data learning skills by developing industry or research applications. 5 Data Sciece and Big Data Analytics 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 6 5. Understand needs, challenges and techniques for big data visualization. 6 6. Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement timp different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals.
5 Data Sciece and Big Data Analytics 3. Demonstrate their Big Data learning skills by developing industry or research applications. 5 Data Sciece and Big Data Analytics 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 6 5. Understand needs, challenges and techniques for big data visualization. 6 6. Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement timp different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals.
5 Data Sciece and Big Data Analytics research applications. 6 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 6 5. Understand needs, challenges and techniques for big data visualization. 6 6. Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 2. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6 Develop applications on emerging trends. 7 314456 7 Software Laboratory-IV 8 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand He different Big data processing techniques.
5 and Big Data Analytics 4. Analyze each learning model come from a different algorithmic approach and it will perform differently under different datasets. 6 5. Understand needs, challenges and techniques for big data visualization. 6 1. Implement small size network and its use of various networking commands. 7 314455 7 Software Laboratory-IV 8 1. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 314456 7 Software Laboratory-IV 8 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software Laboratory-V 8 314456 10 10 use the compile generation tools such as "Lex" and "YACC". 4 To apply algorithmic strategies for solving various problems. 5 To compare various algorithmic strategies. 6 6 To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2 Understand the different Big data processing techniques.
and Big Data and it will perform Analytics and it will perform differently under different datasets. 5. Understand needs, challenges and techniques for big data visualization. 6. Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 6 314455 1. Implement small size network and its use of various networking commands. 7 Software 2. Understand and use various networking and simulations tools. 3 Configure various client/server environments to use application layer protocols Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data proces
6 314455 5. Understand needs, challenges and techniques for big data visualization. 6 Learn different programming platforms for big data analytics. 1. Implement small size network and its use of various networking commands. 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6. Learn different programming platforms for big data analytics. 314455 314455 analytics. 1. Implement small size network and its use of various networking commands. 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6 314455 1. Implement small size network and its use of various networking commands. 6 Software 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 3. Configure various client/server environments to use application layer 6 Software 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 314456 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6 314455 1. Implement small size network and its use of various networking commands. 6 Software 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 3. Configure various client/server environments to use application layer 6 Software 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 314456 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6 314455 commands. 6 Software 2. Understand and use various networking and simulations tools. 3. Configure various client/server environments to use application layer protocols 3. Configure various client/server environments to use application layer Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 7 Software 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6 Software 3. Configure various client/server environments to use application layer protocols Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 314456 7 Software 2. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6 Software 3. Configure various client/server environments to use application layer protocols Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 7 314456 7 Software 2. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
Software protocols Laboratory-IV 4. Understand the protocol design at various layers. 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 1. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
7 5. Explore use of protocols in various wired and wireless applications. 6. Develop applications on emerging trends. 314456 1. To design and implement two pass assembler for hypothetical machine instructions. 7 Software Laboratory-V 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6. Develop applications on emerging trends. 314456 314456 1. To design and implement two pass assembler for hypothetical machine instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
3144561. To design and implement two pass assembler for hypothetical machine instructions.73144561. To design and implement two pass assembler for hypothetical machine instructions.7Software Laboratory-V2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation)3. To use the compile generation tools such as "Lex" and "YACC".4. To apply algorithmic strategies for solving various problems.5. To compare various algorithmic strategies.6. To analyze the solution using recurrence relation.3144571. Understand Big data primitives and fundamentals.2. Understand the different Big data processing techniques.
7 314456 instructions. 7 Software 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
7 Instructions. 2. To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". Laboratory-V 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
7 Software Analyzer, Parser, Intermediate code generation) 3. To use the compile generation tools such as "Lex" and "YACC". 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
7 Software 3. To use the compile generation tools such as "Lex" and "YACC". Laboratory-V 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
Software 3. To use the compile generation tools such as "Lex" and "YACC". Laboratory-V 4. To apply algorithmic strategies for solving various problems. 5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
5. To compare various algorithmic strategies. 6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
6. To analyze the solution using recurrence relation. 314457 1. Understand Big data primitives and fundamentals. 2. Understand the different Big data processing techniques.
3144571. Understand Big data primitives and fundamentals.2. Understand the different Big data processing techniques.
2. Understand the different Big data processing techniques.
3. Understand the application and impact of Big Data
8 Software
Laboratory-VI 4. Understand and apply the Analytical concept of Big data using R/Python
5. Understand emerging trends in Big data analytics
6. Understand different data visualization techniques for Big Data.
314458 1. Gather, organize, summarize and interpret technical literature with the
purpose of formulating a project proposal
2. Write a technical report summarizing state-of-the-art on an identified
topic.
9 Project Based 3. Present the study using graphics and multimedia presentations.
4. Define intended future work based on the technical review.
5. Explore and enhance the use of various presentation tools and techniques.
6. Understand scientific approach for literature survey and paper writing.

BE (Information Technology) 2015 pattern Sem-II				
	414462	1.Understand the fundamentals of distributed systems.		
1		2.Describe various ways of communication and coordination in a		
		distributed system.		
	Distributed	3.Discuss the importance of replication and fault tolerance.		
	Computing	4.Describe the various file systems used in distributed systems.		
	Systems	5.Understand the distributed Web based system.		
	- <u>j</u>	6.Discuss the various security issues and security management in a		
		distributed system.		
	414463	1. Demonstrate and explain the knowledge of design of UbiComp and its		
		applications.		
		2. Explain smart devices and services used UbiComp.		
		3. Explain the significance of actuators and controllers in real time		
		application design.		
2		4. Use the concept of HCI to understand the design of automation		
_	Ubiquitous	applications.		
	Computing	5. Classify UbiComp privacy and explain the challenges associated with		
		UbiComp privacy.		
		6. Get the knowledge of ubiquitous and service oriented networks along with		
		Ubicomp management		
		1. Describe the concept of the Internet of Things, IoT definitions and		
	414464	physical and logical design of IoT.		
	Ele-III:	2. Explain architecture of IoT.		
3		3. Describe the objects connected in IoT.		
5	Internet of	4. Understand addressing techniques for IoT.		
	Things	5. Understand the platforms in IoT.		
		6. Understand cloud interface to IoT.		
	414465	1. Understand the basics of Social Media Analytics.		
	Elective IV: Social Media Analytics	2. Explain the significance of Data mining in Social media.		
		3. Demonstrate the algorithms used for text mining.		
4		4. Apply network measures for social media data.		
4		5. Explain Behavior Analytics techniques used for social media data.		
		6. Apply social media analytics for Face book and Twitter kind of		
		applications.		
	414466	1.Demonstrate knowledge of the core concepts and techniques in		
5		distributed systems.		
		2.Learn how to apply principles of state-of-the-Art Distributed systems in		
	Computer Laboratory - IX	practical application.		
		3.Design, build and test application programs on distributed systems.		
		1. Describe Android development environment. Installing and setting up the		
	414467	environment. Hello world application.		
		2.Design a User Interface(Android) using pre-built UI components such as		
		structured layout objects, UI controls and special interfaces such as dialogs,		
		notifications, and menus.		
I	I	normanono, ana menuo.		

6	COMPUTER LABORATOR Y-X	 3. Explain Android-database Connectivity and create a SQLite Database for an Android Application and perform CRUD (Create, Read, Update and Delete) database operations. 4. Design a Smart Application that senses environment temperature using temperature sensor (DHT 11). 5. Describe a Smart Light System (Light that automatically switched on in evening and gets off in morning) using open source Hardware platform like Arduino and some sensors (Light dependent resistor) and actuator (An
		LED). 6. Explain Android Security and design a system which connect hardware to Android Smart Phone with unique identifier Security i.e Authentication token. 7.Explain the Evolution of cellular networks all the way up to 7G.
	414468	1. Extend further the investigative study
7	Project Work	 Product development cycle using industrial experience, use of state of art technologies. Participate in National/International paper presentation activities and funding agency for sponsored projects. Use learning and knowledge access techniques using Conferences, Journal papers and anticipation in research activities. Evaluate the various validation and verification methods. Analyze professional issues, including ethical, legal and security issues, related to computing projects.

Engineering Sciences And Allied Engineering Sem-I

		A.Y. 2019-20, Sem-I
Sr.N o.	Course code	Course outcome
	Course name	
	Eng	ineering Sciences And Allied Engineering Sem-I
		1. To learn Mean value theorems and its generalizations leading to
		Taylors and Maclaurin's series useful in the analysis of engineering
		problems.
	Subject code :	2. To learn the Fourier series representation and harmonic analysis for
	107001	design and analysis of periodic continuous and discrete systems.
	subject name :	3. To deal with derivative of functions of several variables that are
1	Engineering	essential in various branches of Engineering.
	Mathematics I	
		4.to apply the concept of Jacobian to find partial derivative of implicit
		function and functional dependence. Use of partial derivatives in
		estimating error and approximation and finding extreme values of the
		5. To the essential tool of matrices and linear algebra in a comprehensive
		manner for analysis of system of linear equations, finding linear and
		6. To the essential tool of matrices and linear algebra in a comprehensive
		manner for analysis of Eigen values and Eigen vectors applicable to
		1. Apply different water softening methods and techniques as commodity.
	Subject code 107009	2.Select suitable electro-analytic technique and system for material
		investigation.
	subject name :	3. Reveal the information of advanced engineering materials for various
2	Engineering	engineering applications.
	Chemistry	
		4. Analysis of fuel and recommend alternative fuels.
		5.Determination of organic compound based on their structure.
		6. Identify causes of corrosion and preventive measures to minimize
		corrosion.
		1. Develop understanding of interference, diffraction and polarization;
		connect it to few engineering applications.
	Subject code 107002	2.Learn basics of lasers and optical fibers and their use in some
		applications.
3	subject name :	3. Understand concepts and principles in quantum mechanics. Relate them
5	Engineering Physics	to some applications.
		4. Understand theory of semiconductors and their applications in some
		semiconductor devices.
		5.Summarize basics of magnetism and superconductivity. Explore few of
		their technological applications.
		6. Comprehend use of concepts of physics for Non Destructive Testing.
		Learn some properties of nanomaterials and their application.

]	1 Describe and commons the conversion of changes from non-available and
		1.Describe and compare the conversion of energy from renewable and
	0.1 1	non-renewable energy sources
	Subject code	2. Explain basic laws of thermodynamics, heat transfer and their
	:102003	applications
	subject name :	
4	Systems in	
т	Mechanical	
	Engineering	3. List down the types of road vehicles and their specifications
		4.Illustrate various basic parts and transmission system of a road vehicle
		5. Discuss several manufacturing processes and identify the suitable
		6.Explain various types of mechanism and its application.
		1. To learn and understand the principle of electronics and working
		principle of PN junction diode and special purpose diodes.
	Subject code	2. To learn and understand the functioning of transistors like BJT,
	:104010	MOSFETs and OPAMP.
	subject name : Basic	2 To learn and understand basics of various losis actor disited simulta
5	Electronic	3. To learn and understand basics of various logic gates, digital circuits
	Engineering OR	and their applications.
		4. To learn and understand working and functions of various electronic
		instruments.
		5. To learn and understand the operating principles and applications of
		various active and passive sensors.
		6. To learn and understand basic principles of communication systems.
		1.Compare electrical & magnetic circuit stating similarities &
		dissimilarities
		2.Calculate series, parallel and composite capacitor as well as
	Subject code	characteristics parameters of alternating quantity and phasor arithmetic
	:103004	Derive expression for RMS value & average value in terms of peak value
		to find form factor and peak factor for sinusoidal current & voltage.
		3.Estimate efficiency & regulation of single phase transformer by
	Basic Electrical	performing direct load test on it. Derive expression for impedance,
6	Engineering	current, power in series and parallel RLC circuit with AC supply along
		with phasor diagram
		4. Verify the relationship between phase voltage, line voltage line current,
		phase current in a three phase star and delta connected load analytically &
		by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to
		solve the circuit. Apply and analyze the resistive circuits using star-delta
		conversion KVL, KCL
		6.Solve numericals based on work, power & energy by studying basic
		concepts of electrical engineering such as emf, pd, current and resistance.
		1. Determine the resultant of various force system.
		2. Determine Centroid, moment of Inertia and solve problems related to
	Subject code 101011	friction
I	I	

	subject name :	3. Determine reactions of beam, and apply principle of equilibrium to
7	Engineering	forces in space.
	Mechanics	
		4. for internal forces acting on any member of a pined jointed truss
		structure ,frame and cables
		5. Calculate position, velocity and acceleration of particle using principle
		of kinematics.
		6. Calculate position, velocity and acceleration of particle using principle
		of kinetics and Work Power, Energy.6.
		1. Apply various skills in problem solving and also explain basic features
	Subject and	and future of python programming to solve the problem.
	Subject code :110005	2.Discuss various types of data types with it's methods and to solve problem by using decision control and loop statement.
	subject name :	3.Define functions and discuss various modules, packages.
8	Programming and	5.Denne functions and discuss various modules, packages.
0	Problem Solving	
	1 Iobiciii Solving	4.Enlist strings methods & operations
		5. To solve problem by object oriented programming using python & apply
		various features, methods to solve problem.
		6. To perform various operations & methods on files & dictionaries
		1. Familiar with safety norms to prevent any mishap in workshop
	Subject code :	2. Able to handle appropriate hand tool, cutting tool and machine tools to
9	111006	manufacture a job
	subject name :	3. Able to understand the construction, working and functions of machine
	Workshop	tools and their parts
		4. Able to know simple operations (Turning and Facing) on a centre lathe.
		1. Demonstrate an integrative approach to environmental issues with a
		focus on sustainability
10		2. Explain and identify the role of the organism in energy transfers in
10	Subject code : 101007	different ecosystems.
	subject name :	2 Distinguish between and provide evenues of reneweble and
	Environmenta Studies	3. Distinguish between and provide examples of renewable and
	I (Audit course)	nonrenewable resources and analyze personal consumption of resources.
		4. Identify key threats to biodiversity and develop appropriate policy
		options for conserving biodiversity in different settings.

Engineering Sciences And Allied Engineering Sem-II

		A.Y. 2019-20, Sem-II	
Sr.N o.	Course code	Course outcome	
	Course name		
	Eng	ineering Sciences And Allied Engineering Sem-II	

		1. To know the effective mathematical tools for solutions of first order
		differential equations.
	Subject code :	
1	107008	2. To model physical processes such as Newton's law of cooling,
	107008	electrical circuit, rectilinear motion, mass spring systems, heat transfer etc.
	subject name :	3. To know advanced integration techniques such as Reduction formulae,
	Engineering	Beta functions, Gamma functions, Differentiation under integral sign and
		4. To trace the curve for a given equation and measure arc length of
		various curves.
		5. To konw the concepts of solid geometry using equations of sphere,
		cone and cylinder in a comprehensive manner.
		bounded by curves, volume bounded by surfaces, Centre of gravity and
		Moment of inertia.
		1. Apply different water softening methods and techniques as commodity.
		representation in a containing methods and commiques as commodity.
		2. Select suitable electro-analytic technique and system for material
2	Subject code 107009	investigation.
	subject name :	3. Reveal the information of advanced engineering materials for various
	Engineering	engineering applications.
	Chemistry	engineering applications.
	Chemistry	4. Analysis of fuel and recommend alternative fuels.
		· · · · ·
		5. Determination of organic compound based on their structure.
		6. Identify causes of corrosion and preventive measures to minimize
		corrosion.
		1. Develop understanding of interference, diffraction and polarization;
		connect it to few engineering applications.
3	Subject code 107002	2. Learn basics of lasers and optical fibers and their use in some
	1.1.1	applications.
	subject name :	3. Understand concepts and principles in quantum mechanics. Relate them
	Engineering Physics	to some applications.
		4. Understand theory of semiconductors and their applications in some
		semiconductor devices.
		5. Summarize basics of magnetism and superconductivity. Explore few of
		their technological applications.
		6.Comprehend use of concepts of physics for Non Destructive Testing.
		Learn some properties of nanomaterials and their application.
		1. To learn and understand the principle of electronics and working
		principle of PN junction diode and special purpose diodes.
4	Subject code	2. To learn and understand the functioning of transistors like BJT,
-	:104010	MOSFETs and OPAMP.
	subject name : Basic	3. To learn and understand basics of various logic gates, digital circuits
	Electronic	
	Engineering OR	and their applications.
	Engineering OR	

1 1		
		4. To learn and understand working and functions of various electronic
		instruments.
		5. To learn and understand the operating principles and applications of
		various active and passive sensors.
		6. To learn and understand basic principles of communication systems.
		1.Compare electrical & magnetic circuit stating similarities &
		dissimilarities
		2.Calculate series, parallel and composite capacitor as well as
-	Subject code	characteristics parameters of alternating quantity and phasor arithmetic
5	:103004	Derive expression for RMS value & average value in terms of peak value
		to find form factor and peak factor for sinusoidal current & voltage.
		3.Estimate efficiency & regulation of single phase transformer by
	Basic Electrical	performing direct load test on it. Derive expression for impedance,
	Engineering	current, power in series and parallel RLC circuit with AC supply along
	Engineering	with phasor diagram
		4. Verify the relationship between phase voltage, line voltage line current,
		phase current in a three phase star and delta connected load analytically &
		by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to
		solve the circuit. Apply and analyze the resistive circuits using star-delta
		conversion KVL, KCL
		6.Solve numericals based on work, power & energy by studying basic
		concepts of electrical engineering such as emf, pd, current and resistance.
		1. Apply various skills in problem solving and also explain basic features
		and future of python programming to solve the problem.
6	Subject code	2.Discuss various types of data types with it's methods and to solve
Ū	:110005	problem by using decision control and loop statement.
	subject name :	3.Define functions and discuss various modules, packages.
	Programming and	
	Problem Solving	
		4.Enlist strings methods & operations
		5.To solve problem by object oriented programming using python & apply
		various features, methods to solve problem.
		6.To perform various operations & methods on files & dictionaries
		1. Determine the resultant of various force system.
_		2. Determine Centroid, moment of Inertia and solve problems related to
7	Subject code 101011	friction
	subject name :	3. Determine reactions of beam, and apply principle of equilibrium to
	Engineering	forces in space.
	Mechanics	-r
	1.1001101100	4. Able to solve for internal forces acting on any member of a pined
		jointed truss structure, frame and cables
		5. Calculate position, velocity and acceleration of particle using principle
		of kinematics.
		or kinematics.

		6. Calculate position, velocity and acceleration of particle using principle
		of kinetics and Work Power, Energy.6.
		1. Draw the fundamental engineering objects using basic rules and able to
		construct the simple geometries
8	Subject code : 102012	2. Construct the various engineering curves using the drawing instruments
	subject name : Engineering	3. Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical state
	Graphics II	of the object
	-	4. Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment.
		5. Draw the development of lateral surfaces for cut section of geometrical solids
		6. Draw fully-dimensioned 2D, 3D drawings using computer aided
		drafting tools.
		1. Project based learning will increase their capacity and learning through
		shared cognition.
9	Subject code :	2. Students able to draw on lessons from several disciplines and apply
9	110013	them in practical way.
	subject name :	3. Learning by doing approach in PBL will promote long-term rettention
	Project Based	of material and relpicable skill, as well as improve teacher, s and students
	Learning	attitudes towards learning.
		1. Have an understanding of environmental pollution and the science
		behind those problems and potential solutions.
10	Subject code :	2. Have knowledge of various acts and laws and will be able to identify
10	101014	the industries that are violating these rules.
	subject name :	
	Environmental	3. Asess theimpact of ever increasing human population on the biosphere:
	Studies -II (Audit	social, economic issues and role of humans in conservation of natural
	course)	resources.
		4. Learn skills required to research and analyze environmental issues
		scientifically and learn how to use those skills in applied situations such as
		careers that may involve environmenatl problems/ and or issues.

Computer Department

A.Y. 2019-20, Sem-I		
Sr.N o.	Course code	Course outcome
	Course name	
		SE Computer Sem-I (2015 COURSE)
		1. To Analyse and synthesis real world problems
	210241	2. To construct mathematical constructs by using relations and functions
1	Discrete Mathematics	3. To solve problems based on probability

		4. To solve travelling salesman Problem and network problem
		5. To find easily shortest path by using different algorithms
		6. Analyze and synthesize the real world problems using discrete
		mathematics.
		1. Realize & simplify Boolean algebraic assignments for designing digital
		circuits using K-map.
	210242	2. Design & implement sequential digital circuits as per specification.
2	Digital Electronics and Logic Design	3. Design simple system using VHDL
		4. Design programmable logic devices such as PLA,PAL,PLDs
		5. Explain logic families in detail
		6. Draw the architecture & write a instruction set.
		1. Define the terms such as data structure, time complexity and to
		calculate time complexity of given program segment.
	210243	2. Solve problem of sparse matrix using array data structure.
3	Data Structures and	3. Apply dynamic memory management using linked list in problem. Also
3	Algorithms	state its advantages and disadvantages.
		4. Translate the expression from one form to another form using stack.
		5. Explain dferent types of queues with their application.
		6. Sort the given data using any type of sorting technique and state time
		complexity of that sorting technique.
		1. solve basic binary math operations and define system architecture and
		various components of system
		2. Demonstrate the use of cache memory and Internal and External
		memories.
	210244	3. State and explain the I/O module and its working along with DMA.
4	Computer Organization and Architecture	4. Differentiate between different types of Instructions and write a program using and understanding different instructions.
		5. Recall and define the Processor organization and superscalar processor
		6. Analyses and define Basic Processing Unit functions and write the micro-instructions for the task.
		1. Define & explain basic concepts of object oriented programming &
		apply features of object oriented programming language.
	210245	2. Explain concept of virtual & friend function with example & types of
	210243	pointers
5	Object Oriented	3. Describe templates & types of templates, to analyze and design a
5	Programming	computer program using template
		4. Explain & analyze the strengths of exception handling mechanism in
		program with keyword.
		5. Describe different file handling classes & stream manipulators.
		6. To design & apply Standard Template Library for effective
		programming, describe components of STL & types of containers.

9 210246 1. Study of logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates 6 210246 5. Design and implement combinational circuits like half adder/full adder, half subtractor/full subtractor, code converters, comparators, MUX/DEMUX 7 Digital Electronics Lab 4. Design & Implement the VHDL programs using software 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure and compare all of them 8 1. Hanlyze problem and select suitable data structure for given problem 3. Identify the data structure and compare all of them 210248 3. Identify the data structure and compare all of them 210248 3. Ability to develop logic of division of the complete problem statement environment. 8 Object Oriented Programming Lab 1. Better understanding of technological aspects, utility and recent trends related to the topic 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations.			
6 210246 2. Design and implement combinational circuits like half adder/full adder, half subtractor/full subtractor, code converters, comparators, MUX/DEMUX 6 210246 3. Design and implement sequential circuits like flip-flops, counters and shift registers 1 Digital Electronics Lab 4. Design & Implement the VHDL programs using software 7 210247 5. Study of TTL characteristics & microprocessor 8051 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 3. Identify the data structure in different programming environment 210248 3. Identify the data structure in different programming environment 210248 3. Identify the data structure in different programming the mobiles. 8 Object Oriented 4. Better understand less, object, method concepts in object oriented environment. 8 Object Oriented 4. Better understanding of technological aspects, utility and recent trends related to the topic 5 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6 6. Practicing programming soil. 2. Write precise briefs or reports and technical documents. 8 210249 3. Actively participate in group discusion / meetings / interviews and pr			
6 210246 half subtractor/full subtractor, code converters, comparators, MUX/DEMUX 6 210246 3. Design and implement sequential circuits like flip-flops, counters and shift registers 7 210247 4. Design & Implement the VHDL programs using software 7 210247 2. Implement data structures & microprocessor 8051 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure and compare all of them 8 1. The Students must be able to understand problem statement 2. Ability to understand class, object, method concepts in object oriented environment. 8 0bject Oriented 1. Ability to develop logic of division of the complete problem statement into multiple modules. 8 Object Oriented 1. Editor understanding of tochnological aspects, utility and recent trends related to the topic 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 1. Effectively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 1. Effectively multi-disciplinary teams through the knowledge of team work 9 210249 1. Defin			
MUX/DEMUX 6 210246 3. Design and implement sequential circuits like flip-flops, counters and shift registers 7 Digital Electronics Lab 4. Design & Implement the VHDL programs using software 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure in different programming environment 9 210248 3. Identify the data structure and compare all of them 1 The Students must be able to understand problem statement 2. Ability to understand class, object, method concepts in object oriented environment. 8 Object Oriented Programming Lab 4. Better understand ig of technological aspects, utility and recent trends related to the topic 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and prepare & deliver prostens of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with e to N			
6 210246 3. Design and implement sequential circuits like flip-flops, counters and shift registers 9 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 1. Analyze problem and select suitable data structure for given problem 8 1. dentify the data structure and compare all of them 1. The Students must be able to understand problem statement 2.10248 3. Ability to understand class, object, method concepts in object oriented environment. 3. Ability to develop logic of division of the complete problem statement into multiple modules. 8 Object Oriented Programming Lab 4. Better understanding of technological aspects, utility and recent trends related to the topic 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & dcliver presentations. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & dcliver presentations. 9 210249 3. Ceriting programating			
b 210246 shift registers Digital Electronics Lab 4. Design & Implement the VHDL programs using software 7 210247 2. Implement data structure in different programming environment 0ata Structures Lab 3. Identify the data structure and compare all of them 1 1. The Students must be able to understand problem statement 2. Ability to develop logic of division of the complete problem statement into multiple modules. 3. Ability to develop logic of division of the complete problem statement into multiple modules. 8 Object Oriented Programming Lab 6. Practicing programming on open source software. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective linking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work 6. Function effectively in multi-disciplinary teams through the knowledge of team work 9 210249 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion			MUX/DEMUX
9 210248 4. Design & Implement the VHDL programs using software 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure in different programming environment 9 2.10248 1. The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand problem statement 2.10248 3. Identify the data structure and compare all of them 8 210248 1. The Students must be able to understand problem statement 9 210248 3. Ability to develop logic of division of the complete problem statement into multiple modules. 8 Object Oriented 4. Better understanding of technological aspects, utility and recent trends related to the topic 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming con open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 Soft Skills 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 9 210249 Soft Skills 4. Follow Ethics as an engineering professional and a	6	210246	3. Design and implement sequential circuits like flip-flops, counters and
Lab 4. Design & implement the VFDL programs using soltware 7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure and compare all of them 8 1. The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand problem statement 8 Object Oriented 4. Better understanding of technological aspects, utility and recent trends related to the topic 8 Object Oriented 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of	0	210240	shift registers
7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure in different programming environment 3. Identify the data structure and compare all of them 1. The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand concepts in object oriented environment. 3. Ability to develop logic of division of the complete problem statement into multiple modules. 4. Bettre understanding of technological aspects, utility and recent trends related to the topic 8 Object Oriented Programming Lab 6. Practicing programming on open source software. 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 1. Define the basic pro			4. Design & Implement the VHDL programs using software
7 210247 1. Analyze problem and select suitable data structure for given problem 7 210247 2. Implement data structure in different programming environment 3. Identify the data structure and compare all of them 1. The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand concepts in object oriented environment. 3. Ability to develop logic of division of the complete problem statement into multiple modules. 4. Bettre understanding of technological aspects, utility and recent trends related to the topic 8 Object Oriented Programming Lab 6. Practicing programming on open source software. 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 9 210249 1. Define the basic pro			5. Study of TTL characteristics & microprocessor 8051
7 210247 2. Implement data structure in different programming environment Data Structures Lab 3. Identify the data structure and compare all of them 1 The Students must be able to understand problem statement 2.10248 1. The Students must be able to understand problem statement into multiple modules. 0bject Oriented 4. Better understanding of technological aspects, utility and recent trends related to the topic 5 Understanding of coding standards such as appropriate use of proper Indentation and comments. 6 Practicing programming on open source software. 1 Effectively communicate through verbal/oral communication and improve her listening skill. 2 Write precise briefs or reports and technical documents. 3 Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 Soft Skills 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5 Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6 Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-1 (2015 COURSE) 1 Define the basic prope			
Data Structures Lab 3. Identify the data structure and compare all of them 1. The Students must be able to understand problem statement 2. Ability to understand class, object, method concepts in object oriented environment. 210248 3. Ability to develop logic of division of the complete problem statement into multiple modules. 0bject Oriented 4. Better understanding of technological aspects, utility and recent trends related to the topic 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 5. Become more effective individual through goal/target setting, self-motivation and precipare & deliver presentations. 9 210249 5. Become more effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-1 (2015 COURSE) 1 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with e to NFA with e to NFA with or to NFA with e to NFA withe tre-conversion of MEA to RE, Prove language	7	210247	
9 210249 1. The Students must be able to understand problem statement 8 210248 3. Ability to understand class, object, method concepts in object oriented environment. 9 Object Oriented Programming Lab 4. Better understanding of technological aspects, utility and recent trends related to the topic 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 2 Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 310241 1 310241 Theory of 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of		Data Structures Lab	
2 Ability to understand class, object, method concepts in object oriented environment. 3 Ability to develop logic of division of the complete problem statement into multiple modules. 4 Better understanding of technological aspects, utility and recent trends related to the topic 5 Understanding of coding standards such as appropriate use of proper Indentation and comments. 6 Practicing programming on open source software. 1 Effectively communicate through verbal/oral communication and improve her listening skill. 2 Write precise briefs or reports and technical documents. 3 Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4 Follow Ethics as an engineering professional and adopt good standards & an orgineering professional and adopt good standards & norms of engineering practice. 5 Become more effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-1 (2015 COURSE) 1 310241 1 310241 1 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4 Define PDA and write its applications, design PDA, inter-conversion of			· · · ·
8 210248 and an environment. 9 210249 3. Ability to develop logic of division of the complete problem statement into multiple modules. 9 210249 4. Better understanding of technological aspects, utility and recent trends related to the topic 9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-1 (2015 COURSE) 1 10 211 2. Inter-conversion of Malay and Moore machine . 2. Inter-conversion of Malay and Moore machine . 2. Inter-conversion of Malay and Moore machine . 1 310241 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 1 <			i
8 210248 3. Ability to develop logic of division of the complete problem statement into multiple modules. 8 Object Oriented Programming Lab 4. Better understanding of technological aspects, utility and recent trends related to the topic 9 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA to DFA, Conversion of NFA with e to NFA without e and inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 1 310241 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 1 Allo241 3. Write CFG for given language, simplify given CFG, conv			
8 210248 into multiple modules. 8 Object Oriented Programming Lab 4. Better understanding of technological aspects, utility and recent trends related to the topic 5 Understanding of coding standards such as appropriate use of proper Indentation and comments. 6 Practicing programming on open source software. 1 Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 Soft Skills 2. Write precise briefs or reports and technical documents. 3 Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4 Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5 Become more effective individual through goal/target setting, self- motivation and practicing creative thinking. 6 Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 1 Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language, simplify given CFG, convert given CFG to CNF and inter-c			
8 Object Oriented Programming Lab 4. Better understanding of technological aspects, utility and recent trends related to the topic 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 5. Understanding of oopen source software. 9 Practicing programming on open source software. 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 Soft Skills 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 9 Become more effective individual through goal/target setting, self- motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 1 310241 Theory of 4. Define PDA and write its applications, desig		210248	
δ Programming Lab related to the topic 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 6. Practicing programming on open source software. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 9 Soft Skills 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effectively in multi-disciplinary teams through the knowledge of team work 6. Function effectively in multi-disciplinary teams through the knowledge of team work 7 TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 1 310241 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of RE. 1 Mite CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.		Object Oriented	
9 210249 5. Understanding of coding standards such as appropriate use of proper Indentation and comments. 9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 310241 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with e to NFA without e and inter-conversion of Malay and Moore machine . 1 310241 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 1 310241 4. Define PDA and write its applications, design PDA, inter-conversion of	8		
9 210249 Indentation and comments. 9 210249 I. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 Soft Skills 8 Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with e to NFA without e and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 1 310241 Theory of 4. Define PDA and write its applications, design PDA, inter-conversion of right linear and left linear grammar.		1 Togramming Lao	1 · · · · · · · · · · · · · · · · · · ·
9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1 310241 2. Inter-conversion of Malay and Moore machine . 2 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.			
9 210249 1. Effectively communicate through verbal/oral communication and improve her listening skill. 9 210249 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
 9 210249 9 210249 Soft Skills 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work 1 Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
 9 210249 9 210249 9 210249 9 Soft Skills 2 Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of 			
 9 210249 Soft Skills Bott Skills Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work 7 TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA to DFA, Conversion of NFA with \varepsilon to NFA without \varepsilon and inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 1. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of 			
9 210249 prepare & deliver presentations. Soft Skills 4. Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice. 5. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 1 310241 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
1 310241 1 310241 1 310241 1 310241 1 Soft Skills	9	210249	
Soft Skills & norms of engineering practice. 5. Become more effective individual through goal/target setting, self- motivation and practicing creative thinking. 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
1 310241 1 310241 1 310241 1 0.00000000000000000000000000000000000		Soft Skills	
Importationmotivation and practicing creative thinking.6. Function effectively in multi-disciplinary teams through the knowledge of team workTE Computer Sem-I (2015 COURSE)1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine .2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE.1310241Theory of4. Define PDA and write its applications, design PDA, inter-conversion of Ist Ist applications, design PDA, inter-conversion of Ist Ist applications, design PDA, inter-conversion of Ist			
1 310241 6. Function effectively in multi-disciplinary teams through the knowledge of team work 6. Function effectively in multi-disciplinary teams through the knowledge of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
of team work TE Computer Sem-I (2015 COURSE) 1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar. 4. Define PDA and write its applications, design PDA, inter-conversion of			
TE Computer Sem-I (2015 COURSE)1. Define the basic properties of formal languages, Design NFA and DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine .2. Inter-conversion of Malay and Moore machine .2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE.1310241 Theory of3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.			
131024113102411Theory of101			
1310241 Theory ofConversion of NFA to DFA, Conversion of NFA with ε to NFA without ε and inter-conversion of Malay and Moore machine . 2. Inter-conversion between DFA to RE, Prove language is not regular using pumping lemma, find RE for given language and explain closure properties and applications of RE. 3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.1310241 4. Define PDA and write its applications, design PDA, inter-conversion of			· · · · · · · · · · · · · · · · · · ·
1310241Theory of3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.			
13102411310241Theory of4. Define PDA and write its applications, design PDA, inter-conversion of			
1310241Theory of4. Define PDA and write its applications, design PDA, inter-conversion of			· · · · · · · · · · · · · · · · · · ·
1310241properties and applications of RE.3. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.4. Define PDA and write its applications, design PDA, inter-conversion of			
13102413. Write CFG for given language, simplify given CFG, convert given CFG to CNF and inter-conversion of right linear and left linear grammar.1Theory of4. Define PDA and write its applications, design PDA, inter-conversion of			
1310241Theory ofto CNF and inter-conversion of right linear and left linear grammar.4. Define PDA and write its applications, design PDA, inter-conversion of			
to CNF and inter-conversion of right linear and left linear grammar.Theory of4. Define PDA and write its applications, design PDA, inter-conversion of	1	310241	
•			
Computation CFG and PDA.		•	
		Computation	CFG and PDA.
		•	

	1	
		5. Explain types of Turing machine, Design TM, Differentiate between
		PDA and TM.
		6. Differentiate and derive the class P, NP hard and NP complete
		problems.
		1. Design E-R Model for given requirements and convert the same into
		database tables.
		2. Use database techniques such as SQL & PL/SQL
		3. Apply database design approaches for covering conceptual design,
2	310242	logical design and normalize database
	Database	
	Management	4. Explain transaction Management in relational database System
	Systems (DBMS)	4. Explain transaction Management in relational database System
	Systems (DDWS)	5 Describe different detabase architecture and englyings the use of
		5. Describe different database architecture and analyses the use of
		appropriate architecture in real time environment.
		6. Use modern database techniques such as NOSQL
		1. Compare and chose a process model for a software project development
		2. Analyze and model software requirements of a software system
2	210242	3. Apply Fundamental knowledge in mathematics, computer science,
3	310243	programming and computer systems, which support the software
		engineering discipline
	Software	
	Engineering &	4. Design and Modeling of a software system with tool
	Project Management	
		5. Designing test cases of a software system
		6. Prepare the SRS, Design document, Project plan of a given software
		system
		7. To work as an effective member or leader in software engineering
		teams. and also should be able to communicate and coordinate
		competently for technical and general purpose
		1. Understand the role of information system in modern organization
4	310244	2. Analyze different managerial issues relating to information system
	Information Systems	3. Understand the role of engineering in organizational decision making
	& Engineering	process
	Economics	
		4. Identify various options in information system in the organization
		5. Analyze cost revenue data in engineering decisions and select the best
		possible alternative
		6. Perform and evaluate present worth, future worth and annual worth
		analyses on one of more economic alternatives
		1. To understand network reference models and technologies
		2. Demonstrate design issues, flow control and error control using
		different protocol
5	310245	3. To understand different IEEE standards and frame formats
5	510245	5. 10 understand unterent IEEE standards and frame formats

		4. To identify network protocols and demonstrate different routing
	Computer Networks	algorithms.
		5. To understand transport layer protocol and to demonstrate client server
		communication using socket programming.
		6. To understand various application layer protocols.
		1. Evaluate problems and analyze data using current technologies
	310246	2. Incorporate best practices for building applications
6	Skills Development Lab	3. Install android studio & develop android app
	Lao	4. Construct software solutions by evaluating alternate architectural
		patterns.
		5. Develop a mini project in the form of android app
		6. Implement program using advanced data structure in Java
		1. Use fundamental database techniques such as Create, Modify and Delete
	310247	2. Use advance database techniques such as Trigger ,Cursor and PL/SQL
	Database	
7		3. Use of CRUD operations on unstructured database such as MongoDB.
		4. Develop the ability to handle databases of varying complexities
		1. Setup of LAN of four computer using layer-2 switch in wired network.
	310248	2. To identify network protocols and layers
8	Computer Networks Lab	3. To understand and configure a DHCP server
		4. To apply concept of Socket programming in TCP and UDP.
		5. To analyze network tools and network programming.
		6. To understand and configure a RIP, OSPF and BGP using packet
		tracer.
		BE Computer Sem-I (2015 COURSE)
		1. Understand opportunities of HPC systems, describe different parallel
		architectures.
		2. Understand the fundamental concepts, principles of parallel algorithm
		design
1	410241	3. List basic communication operations
	High Performance	4. To analyze & measure performance of modern parallel computing
	Computing	system
		5. To develop an efficient parallel algorithm to solve a given problem.
		6. Make use of CUDA programming & explain working of CUDA.
		1. Identify and apply suitable Intelligent agents for various AI applications.
		2. Design smart systems using different informed search / uninformed
		search or heuristic search approaches
	I	Trease

2	410242	3. Identify knowledge associated and represent it
	Artificial	4. Analyze and identify given problem by ontological engineering to plan a
	Intelligence and	strategy.
		5. Apply the suitable algorithms to solve AI problems.
		6. Define the concept of Robotics.
		1. Capacity building of problem solving approach with respect to multiple
		use case.
		2. Ability to understand statistics and apply to given problem.
3	410243	3. Preparedness to apply suitable algorithmic strategies.
	Data Analytics	4. Expertise in developing time efficient algorithms.
		5. Expertise in developing space efficient algorithms
		6. Ability to develop scalability in algorithms.
		1. Apply basic, intermediate and advanced techniques to mine the data
4		2. To define the concepts of data warehousing
	410244	3. To solve many pattern recognition problems such as clustering and
		classification
	Elective I	4. Explore the hidden patterns in the data
	(Data Mining and Warehousing)	5. Optimize the mining process by choosing best data mining technique
		6. To solve the problems in machine learning
		1. Explain Distributed System concept Web Challenges and Architecture
		models.
_		2. Explain Interprocesses communication methods in DS.
5	410245	3. Describe the working of clocks used in synchronous working of DS.
	Elective II	4. Explain various File System and File server architectures in DS.
	Distributed Systems	5. Explain various types of consistency models and design in DS.
		6. Describe and implement the security in DS applications serving over
		1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe game
		using minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing algorithm
6	410246	3. Implement Best First search and A* algorithm.
0	410240	5. Implement Best First search and A algorithm.
	Laboratory Practice I	4. Implement 8-Queens problem using Backtracking algorithm
		5. Mini project using PROLOG: Medical Diagnosis System.
		6. Mini project using PROLOG: Monkey Banana Problem
		1. To develop and analyze ETL model and Visualize the effectiveness of
		K-means Algorithm
		2. Create association rules which can be used for product
		recommendations depending on the confidences of the rules
7	410247	3. To see a word list containing all the different words in your document
		and their occurrence count next to it in the "Total Occurrences" column.
	Laboratory Practice	4. Explain Distributed System concept Web Challenges and Architecture
	II	models.
		5. Explain Interprocesses communication methods in DS.

		6. Describe the working of clocks used in synchronous working of DS.
		1. Solve real life problems by applying knowledge.
8	410248	2. Write precise reports and technical documents in a nutshell.
	Project Work Nigge II	3. Analyze alternative approaches, apply and use most appropriate one for
		feasible solution
		4. Participate effectively in teams exhibiting team work, Inter-personal
		relationships, conflict management and leadership quality.

Computer Department

A.Y. 2019-20, Sem-II Sr.N Course code **Course outcome** 0. Course name SE Computer Sem-II (2015 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits 2. To Solve problems related to Fourier transform, Z-transform and 207003 applications to Communication systems and Signal processing Engineering 3. To Obtain Interpolating polynomials, numerically differentiate and 1 Mathematics III integrate functions 4. To Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence. 5. To Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals. 6. To Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics. 1. Basic concepts, input and output devices 2. Identify the installed graphics drivers and graphics modes. DDA and 210251 Bresenham's algorithms for line and circle. 3. Solve 2D and 3D transformations problems on polygon... 2 **Computer Graphics** 4. Analyze and identify different algorithms for back-face removal surfaces, color models. 5. Define terms in Multimedia Animation and gaming programs. 6. Define the concept of Curves and Fractals.. 1. Define terms such as complete binary tree, full binary tree, skewed tree and identify traversals on binary tree. 2. Define terms such as weighted graphs, subgraph, complete graph etc. 210252 and apply algorithm for finding minimum distance. Advanced Data 3. Describe hashing functions and to apply proper hashing technique for 3 Structures given problem. 4. Apply technique of optimal binary search tree to reduce searching time. 5. Explain indexing techniques and to prepare B tree or B+ tree for given

data.

	l	6. Explain different types of file organization and its operations.
		1. Write a program by using instructions & explain the memory
		organization.
	210253	2. Describe the architecture and classify segmentation & paging. Calculate
		physical address.
4	Microprocessor	3. Understand the system level features & protection levels, Illustrate
	1	multitasking.
		4. Explain IDT, IDT descriptors, error code format, identifying interrupts
		etc, I/O addressing & instructions
		5. Understand reset state, switching from mode, difference between the
		modes
		6. Understand the co-processor instructions & applying it in program
		1. To analyze the strengths and weaknesses of programming languages for
		effective and efficient program development.
	210254	2. To inculcate the principles underlying the programming languages
		enabling to learn new programming languages.
	Principles of	
5	Programming	3. To grasp different programming paradigms
	Languages	
		4. To use the programming paradigms effectively in application
		development.
		5. To use concept of Inheritance, Polymorphism and Encapsulation to
		develop complex Applications
		6. To use Exception handling in Java
		1. Understand the basic concepts of computer graphics.
	210255	2. Apply clipping and filling techniques for modifying an object
6	Computer Graphics	3. Understand the concepts of different type of geometric transformation
-	Lab	of objects in 2D and 3D.
		4. Understand the practical implementation of modeling, rendering,
		viewing of objects in 2D.
		1. Use tree data structure for solving real life applications and perform
		conversions of tree.
	210256	2. Apply various algorithms to find out minimum distance for traversing in
		real life application.
7	Advanced Data	3. Apply proper hashing technique to improve search results.
	Structures Lab	
		4. Solve problem with use of proper multiway trees.
		5. Use different file organization for maintenance of data.
		6. Apply appropriate data structure for given problem.
	210257	1. Write a programs by using instruction set
0	210257	2. Write a programs using coprocessor instruction set
8	Microprocessor Lab	3. Execute a program using different assemblers
		4. Understand the interrupt vector table & use of interrupts in program
		TE Computer Sem-II (2015 COURSE)

· · · · ·		
		1. Discuss role of algorithm design of algorithm with related issue and
		confirmining correlation of algorithm
		2. Explain and compare with different models and derive proof rules,
		decide and write algorithmic strategies to solve given problem
		3. Discuss and apply algorithmic strategies like divide and conquer,
1	310250	greedy approach, dynamic programming and compare algorithmic
		strategies
	Design & Analysis	4. Explain and analyzing asymptotic growth ,deterministic and non-
	of Algorithms	deterministic growth and compare NP problem algorithm
	C	5. Discuss amortized analysis with its methods and write approximate
		embedded, randomized algorithms, Dijkstra's shortest path algorithm
		6. To analyze and evaluate problem using multithreaded and distributed
		string matching algorithm
		1. Define various system software & their role
		2. Analyze and synthesize system software
2	310251	3. Write program using tools like LEX and YACC
	Systems Programming &	4. Implement operating systems functions
		5. Analyze and compare memory management algorithm
		6. Analyze different file & I/O management concepts
		1. Explain Embedded System and basics of IoT like protocols and
		communication models and levels.
		2. Identify and state various steps involved in design methodology of IoT
		platform.
3	310252	3. Describe the working of various IoT pillars and Hardware of IoT
	Embedded Systems & Internet of Things	4. Explain various protocols and security in IoT.
	a internet of Things	5. Understand application of Cloud Computing in IoT.
		6. Describe various Cloud models in IoT with various case studies.
		1. To apply basic concept of UML for designing use case diagram of
		object oriented based application
4	310253	2. Design a model using static modeling using appropriate modern tool.
•	Software Modeling	
	and Design	3. Design a model using dynamic modeling using appropriate modern tool.
		4. Design a model using dynamic modeling using appropriate modern tool.
		5. Apply design patterns to understand reusability in object oriented design
		6. Apply appropriate test tool for testing application.
		1. Analyze given assignment to select sustainable web development design
		methodology. 2. Develop Client Side Web Application using Java Script
		2. Develop Client Side Web Application using Java Script
5	310254	3. Describe difference between Servlet and JSP Server Side Technologies
	Web Technology	4. Use PHP technology for application development

		5. Explain different client and server framework
		6. Develop solution to complex problems using appropriate method,
		technologies, frameworks, web services and content management
	310255	1. Define problem statement for seminars
	Seminar &	
6	Technical	2. Perform literature survey and generate proof of concept.
Ũ	Communication	
	Communication	3. Present technical contents
		1. develop web based application using suitable client and Server side
		scripting such as JSP
		2. develop web based application using suitable client and Server side
7	310256	scripting such as PHP
	Web Technology	
	Lab	3. develop web based application using Server side Framework
		4. develop web based application using Client side Framework
		1. Design & implement language translator
		2. Implement two pass macroprocessor
8	310257	3. Write program using tools like LEX and YACC
	System	
	Programming	4 June Lowert CDI Local a half and a local three
	&Operating System	4. Implement CPU scheduling algorithms
	Lab	
		5. Write a program for system calls
		6. Implement different page replacement algorithms
		1. Install and configure Raspberry Pi and Aurdino microcontrollers.
9		2. Connect various sensors to Raspberry Pi and Aurdino.
	310258	3. Write a program to control various sensors and devices
	Embedded Systems	
	& Internet of Things	4. Write a program to control multiple sensors and devices in coordination
	Lab	
		5. Write a program to create a web interface using IOT.
		6. Develop a real time application in IOT.
		BE Computer Sem-II (2015 COURSE)
		1. Understanding human learning aspects and relate it with machine
		learning concepts.
		2. Applying statistical techniques to solve problem statements.
1	410250	3. Learning different machine learning algorithms.
	Mashina Lasmina	4. Understanding nature of the problem and applying machine learning
	Machine Learning	algorithm.
		5. Finding optimized solution for given problem
		6. Learning input, output mapping
		1. Define the different attacks on Information. Find problems with existing
		ciphers.
		2. Identify the problems with private cryptography method.

ents. al time unication s of real time and resource
al time unication s of real time
al time unication s of real time
al time unication s of real time
unication s of real time
s of real time
s of real time
nd resource
nd resource
nt process
arious cloud
off in cloud
ing
ng.
ition
tion
nd placing
l research

		5. Appreciate practical implications and constraints of the specialist subject
		A.Y. 2019-20, Sem-I
Sr.No		A.1. 2017-20, Sem-1
	Course code Course name	Course outcome
	SE Ele	ctronics and Telecommunication-Sem-I (2015 COURSE)
		1. Understand mathematical description and representation of continuous and discrete time signals and systems.
	204181	 Develop input output relationship for linear shift invariant system and able to use convolution operator for continuous and discrete time system. Analyze linear shift invariant system using transform domain technique.
1	Signals and Systems	 Analyze linear sint invariant system using transform domain technique. Resolve the signals in frequency domain using Fourier series and
		Fourier transforms.
		 5. Develop the ability to analyze the system in s domain using Laplace Transform. 6. Evaluate matchebility. CDE BDE autocompletion and processor multipletion.
		6. Evaluate probability, CDF, PDF, autocorrelation and crosscorrelation1. Understand and apply semiconductor principles to the device to
		observe its performance.
	204182	2. Design and analyze the concept of feedback to improve stability of circuits.
2	Electronic Devices and Circuits	3. Simulate amplifier, switch and oscillator circuits using computer simulation software to obtain desired results.
		4. Implement amplifier, switch and oscillator hardwired circuits to test performance and application.
		5. Explain behavior of FET at low and high frequency.
		6. Design an adjustable voltage regulator circuits.
	204183	1. Revise and solve basic AC &DC circuit by using KVL,KCL & network theorem.
3	Electrical Circuits and Machines	2. Examine performance of single phase and three phase transformer.
		3. Explain working and principle of different electrical machines.
		4. Identify application of DC machines and transformer.
		5. To compare performance of generator and motor.
	-	6.Explain proper electrical motor for given application.
		1. Define and illustrate computational efficiency of the algorithms such as sorting & searching.
		2. Identify and implement different data structures such as
4	204184	Array,Structure,linked list, stack, queue, tree, graph by using C as the programming language.
	Data structures & Algorithms	3. Implement stacks & queues for various applications.
		4. Explain various terminologies and traversals of trees.
		5. Explain various terminologies and traversals of graph.

		6. Design and implement C programs for various data structure.
		1. Implement the combinational circuit according to the specification
		 Identify and build Synchronous and Asynchronous Sequential circuits.
	204185	
5	Digital Electronics	3. To design the ASM & FSM Machine according to the specification .
	C	4. Explain the basics of Digital Electronics with different logic families.
		5. To design the state mealy and moore machine according to the
		specifications.
		6. To explain the basics of microcontroller and their instruction set .
		1. Perform operations on the measuring instruments.
	204107	2. Identify analog and digital instruments and evaluate some properties
	204186	like Mean, Deviation, Probable error etc.
		3. Solve problems using different power supply.
	Electronic Measuring	
6	Instruments and Tools	
		4. Analyze the performance of Observing type instruments
		5. Apply the concept of digital to analyze and store the waveform.
		6. Define terms in statistical analysis, error etc. Calculate statistical
		parameters such as mean, standard deviation and variance.
	TE Ele	ctronics and Telecommunication-Sem-I (2015 COURSE)
		1. Select the blocks in a design of digital communication system.
	304181	2. Analyze the performance of various line codes .
	DIGITAL	3. Perform the time and frequency domain analysis of the signals in a
1	COMMUNICATION	digital communication system.
		4. Define various random processes. Calculate mean autocorrelation and
		variance.
		5. Comparison of all modulation techniques.
		6. Analyze the performance and applications of a baseband and pass band
		digital modulation systems in terms of error rate and spectral efficiency.
		1. Perform different operations on signals.
		2. Computer Linear & Circular convolution, DFT, IDFT, DCT, I DCT of
	304182	discrete time sequence and properties of DFT.
	DIGITAL SIGNAL	3. Evaluate Z transform of sequence, identify its region of Convergence
2	PROCESSING	and compute inverse Z transform and properties of Z transform
		4. Design & analyze IIR filters
		5. Design & analyze FIR filters. Solve the problems on multistage sampling
		rate converter .
		6. Study different applications of DSP .
		1.Study & derive electrostatic laws & theorem (Coulombs Law, Gauss's
		Law, Divergence Theorem).

		2. Analyze the electric fields and apply boundary conditions in different
	304183	media.
		3.Study & derive Magnetostaticlaws & theorem (Biot- Savart Law,
3	Electomagnetics	Ampere Circuital law, Stokes theorem).
		4. Write & analyse Maxwell's equation for static and time varying field in
		point and integral form.
		5.Study transmission line and analyze its parameters (VSWR, Return loss,
		Reflection Coefficient). Solve numerical using Smith Chart.
		6.To understand thephsasor form of Maxwell equation and solve it for
		Uniform planewave.
		1.Description of MCS 8051 in detail with its architecture and its features
		like memory organization, timer and its instruction set overview.
		2.Designing and interface the Microcontroller 8051 with real world input
		output devices like LCD, Keypad, and ADC. With its codes in assembly
	204194	language. Explanation of different hardware and software developing
	304184	tools.
		3. Designing the system like Digital Acquisition system and Frequency
4	MICROCONTROLLE	counter with microcontroller 8051.
	RS	
		4. Description of PIC18F in detail with its architecture and its features like
		memory organization, oscillator option and its instruction set overview.
		5.Designing and interface the PIC Microcontroller with real world input
		output devices like LCD, Keypad etc and timers with interrupt. With its codes in Embedded C.
		6. Classified different Serial Communication Protocol like RS232, RS 485, I2C, SPI.
		1. Describe the key elements of Mechatronics system with daily life
		examples and explain design approach of Mechatronics system.
		2. Explain working principles of different sensors with its advantages,
	304185	disadvantages and applications.
5	Mechatronics	3. Draw and explain typical Hydraulic system.
		4. Differentiate between Hydraulic and Pneumatic system and also explain
		physical components of Pneumatic system.
		5. Explain different electrical actuators and electromechanical actuator.
		6. Explain various case studies with its construction, working,
		applications and suitable sketch.
		1. hall be able to understand the specifications
		2. Shall be able to select appropriate design topologies.
	204102	3. Shall be able to interpret datasheets & select components & devices as
6	304193	per requirement
0	Electronics System	4. Shall be able to use simulation tools like MULTISIM etc for validating
	Design	the results
	-	

		6. Demonstrate and Interpret various OS functions used in Linux/ Ubuntu
	BE Ele	ctronics and Telecommunication-Sem-I (2015 COURSE)
		1. Design digital circuits with HDL
	404181	2. Analyze different CMOS circuit issues.
	VLSI DESIGN &	3. Model digital circuits with HDL and implement prototype on different
1	TECHNOLOGY	PLDs
		4. Design CMOS circuits for specific applications.
		5. Analyze various ASIC design issues
		6. Explain need of design for testability with different fault models and
		different testing techniques.
		1. Describe fundamental principles of computer networking
		2. Compare and recognize errors in existing protocols.
	40.4100	3. Identify requirements for a given organizational structure and select
2	404182	suitable networking architecture.
	COMPUTER	4. Apply the knowledge of cryptography and network security.
	NETWORK &	
	SECURITY	
		5. Analyze the hardware, software, components of a network
		6. Design a Routing table for finding shortest path for data
		communication
		1. Define and differentiate various performance parameters of radiating
	40.4102	elements.
	404183	2. Analyze various radiating elements and arrays.
	Radiation and	3. Apply the knowledge of waveguide fundamentals in design of
3	Microwave Techniques	transmission lines.
5	Where wave Teeninques	4. Design and set up a system consisting of various passive microwave
		components.
		5. Analyze tube based and solid state active devices along with their
		application.
		6. Measure various performance parameters of microwave components.
		Understand radiations effects and hazards.
		1. Define the image mathematically and Perform basic operations on the
		given image.
		2. Perform basic image enhancement and restoration operations on the
		given image.
	404184	3. Perform different compression techniques on given image
	Digital Image Video	4. Perform basic image segmentation and morphological operations on the
4	Processing	given image Analyze the result.
		5. Apply the concept to represent and describe image.
		6. Define basic concept of video processing
		1. Explain and apply the various stages of hardware design in product
		design and development.

	404185 ELECTRONICS PRODUCT	 Analyze different design considerations for analog, digital and mixed circuits design process. Describe and apply the various stages of software design in product design and development.
5	DESIGN	
		4. Describe the various techniques for PCB design.
		5. Apply and describe the steps of debugging and techniques for
		troubleshooting
		6. Explain and apply the methods of documentation
		A.Y. 2019-20, Sem-I
Sr.No		
	Course code	Course outcome
	Course name	
	<u> </u>	ME First Year E&TC(VLSI & ES)-Sem-I
		1. Understand different MOSFET models and their characteristics.
1	504201	
	Digital CMOS Design	2. Understand different performance parameters
		3. Design CMOS logic circuits
		4. Design and Develop different FSM systems
		5. Understand advance trends in CMOS technology
		1. Define the basic concepts of Embedded Systems and Architecture of
		Embedded System
		2. Identify Design Methodology, and understand design challenges and
l		Design Metrics and problem solving.
		3. Use Life-Cycle Models. Understand design process and System
		specifications versus system requirements
		4. Understand ARM Processor based Embedded System design and
	504103	exhibit the knowledge of ARM.
	Embedded System	5. Understand Embedded Linux. And Linux kernel construction.
3	Design	
		6. Understand and apply the concept of android operating system
		1. Describe Reconfigurable Device Characteristics, Configurable,
	504203	Programmable, and Fixed Function Devices
3		2. Designing reconfigurable circuits using PLD.
	Reconfigurable	3. Explain Metrics, Partitioning and Placement, Routing, ALU and CLB.
	Computing	
		4. Describe architectures of PDSPs, RALU, VLIW, Vector Processors,
		Memories, CPLDs, FPGA
		1. Define research problem & its scope, objectives, and errors.
	504104	2. State basic instrumentation schemes & data collection methods.
л	Research	3. Perform analysis with various statistical techniques.
4		
		4. Perform modeling and predict the performance of experimental system
		5. Develop the research proposals.
		1. Gain knowledge of Architecture of WSN network.

1	1			
		2. Understand Physical, Data link and Network layer aspects with their		
	504205	protocols.		
5	Wireless Sensor Network	3. Learn different techniques of power management and security.		
		4. Exhibit the knowledge of operating systems in WSN systems.		
		ME Second Year E&TC(VLSI & ES)-Sem-I		
1	604201	1. The student will learn functional modeling.		
		2. The student will use theory of logical fault models for testing single		
	Fault Tolerant Systems	stuck fault.		
		3. The student will show skills for fault simulation for statistical fault		
		analysis.		
		4. The student will exhibit the knowledge of self-checking for design of		
		self-checking combinational circuits.		
		5. The student will exhibit the self-testing for memory, processor and PLA		
		according to the specifications.		
2	604202	1. Explain design steps of ASIC design.		
	ASIC Design	2. Explain steps of Analog and Digital (Mixed signal) ASIC design		
		3. Describe different steps in ASIC construction		
		4. Understand different ASIC testing methods		
		1. Define disasters. Define Various terms involved in it. Explain		
3	604103	Vulnerability profile of India.		
	A- Disaster	2. Enlist the types of disasters. Compare the disasters on the basis of		
	management	major and minor. Study various disasters in details.		
		3. To explain the impact of disasters on environment, social, economical,		
		ecological etc.		
		4. Define disaster risk and disaster risk reduction methods.		
		5. Enlist various government and non government organizations for		
		disaster management. Draw and explain disaster management cycle.		
4	604103	1. Explain the fuzzy logic and its properties. Compare fuzzy with crisp.		
	B-Fuzzy mathematics	2. Explain the fuzzy inference models Mamdani, Sugeno and Tsukamoto.		
A.Y. 2019-20, Sem-II				
Sr.No				
•	Course code	Course outcome		
	Course name			
	SE Elec	ctronics and Telecommunication-Sem-II (2015 COURSE)		
		1. To Solve higher order linear differential equation using appropriate techniques		
		for modeling and analyzing electrical circuits.		
	207005	2. To Solve problems related to Fourier transform, Z-transform and applications		
		to Communication systems and Signal processing.		
		3. To Obtain Interpolating polynomials, numerically differentiate and integrate		
1		functions, numerical solutions of differential equations using single step and		
	Engineering Mathematic	multi-step iterative methods used in modern scientific computing.		
	66	4. To Perform vector differentiation and integration, analyze the vector fields and		
		apply to Electro-Magnetic fields.		
•				

	1	
		5. To Analyze conformal mappings, transformations and perform contour
		integration of complex functions in the study of electrostatics and signal
		processing
		1. Unerstand the charactristics of Op Amp, it's internal structure and its
		parameters.
	204187	2. Identify various performance based paramters and their significance
	204107	for Op Amp.
2	Later and a 1 Circuite	3. Analyze and identify various Linear and Nonlinear applications of Op
2	Integrated Circuits	Amp.
		4. Design, build and test some circuits for various applications.
		5. Apply the functionalities of PLL to understand different applications as
		frequency synthesizer, multiplier, AM and FM demodulators.
		6. Analyze and design Active filters.
		1. Learn and utilize models of physical systems in different forms suitable
		for use in the analysis of control systems.
		 Perform time domain and frequency domain analysis of control
	204188	systems required for stability analysis.
		3. Apply Routh-Hurwitz criterion to determine the domain of stability of
3	Control Systems	
		linear time-invariant systems in the parameter space.
		4. Perform time domain and frequency domain correlation analysis.
		5. Apply root-locus, Bode plot techniques to analyze control systems
		6. Express and solve system equations in state variable form
		7. Explain the concepts of PID and PLC controllers and digital control
		system.
		1. Understand fundamental concepts of different analog communication
	204189	schemes with mathematical analysis.
4	Analog	2. Describe Analog receivers with their performance characteristics.
	Communication	
		3. Compare different Analog modulation systems
		4. Understand different types of noise with performance parameters .
		5. Compare the behavior of Analog communication systems in presence
		of noise
		6. Describe various pulse and digital modulation techniques.
4	204190	1. State the features of object oriented programming.
	Object Oriented	2. Explain the concepts of data encapsulation, inheritance in C++.
	Programming	
		3. Understand basic program constructs in Java
		4. Describe how the class mechanism supports encapsulation and
		information hiding.
		5. Apply the concepts of classes, methods and inheritance to write
		programs Java.
		6. Design and implement simple programs in an object-oriented
		programming language
5	204191	1. Able to solve aptitude test.
5		

	Employability Strill	2 Analyze presentation skill listoning skill and he ready for fasing ich	
	Employability Skill Development	2. Analyze presentation skill, listening skill and be ready for facing job interviews	
	Development		
	נהד הורדי	3. Able to write story, paragraph and letter.	
	TE Electronics and Telecommunication-Sem-II (2015 COURSE)		
		1. List different power electronics devices. Sketch and Explain the	
		construction and characteristic of SCR, MOSFET & IGBT. Compare	
		these devices. State and explain device specifications. Design a UJT	
		triggering circuit for SCR. Explain gate drive circuit for MOSFET/IGBT.	
		2. Differentiate between Ordinary rectifiers and Controlled Rectifiers.	
	204106	Explain 1. phase controlled rectifier with R and RL load. Compare	
	304186	HWCR and FWCR. Explain 3. phase controlled rectifier with R load.	
		Determine output V/I and other performance parameters of 1. phase/3.	
		phase circuits. Identify applications of 1. /3. phase CR.	
		3. Explain 1. phase Inverter with R and RL load. Explain 3. phase	
1		Inverter with 120 and 180 degree conduction mode. Determine output V	
1	Power Electronics	and other performance parameters of 1. phase circuit. Identify	
		applications of Inverter. Explain Harmonic reduction techniques of	
		Inverter.	
		4. Explain step up and step down DC chopper. Derive an expression for	
		output V and Determine output V, other parameters. TRC and Duty cycle	
		voltage control techniques. Classify choppers. Identify applications of 1.	
		/3. phase CR. Explain 1. phase AVC.	
		5. Explain the need of Resonant converters. Explain the operation of	
		ZVS/ZCS. Explain different causes of EMI and techniques to reduce it.	
		6. Over voltage and current protection circuits for SCR. Identify and	
		Explain applications of power electronics.	
		1.Perform information theoretic analysis of communication system	
	304187	2.Design a data compression scheme using suitable source coding	
		technique.	
2	Information Theory		
4	and Coding Techniques	3 Design a channel coding scheme for a communication system	
		3.Design a channel coding scheme for a communication system4.Understand and apply fundamental principles of data communication	
		and networking.	
		5. Apply flow and error control techniques in communication networks.	
		1. Define domains of Industrial Management	
		2. Be familiar with Quality Management, Financial Management and	
	304188	Project Management	
3	BUSINESS	3. Identify importance of Human Resource Management	
	MANAGEMENT	5. Identity importance of fruman Resource Management	
		4. Apply the knowledge of entrepreneurship.	
		1. Compare features of different ARM Series processor	
	304189	2. Describe the architecture of ARM 7 microprocessor	
		3. Interface the peripherals to ARM based microcontroller	
	Advanced Processors	et internet die perspherale to riteri oused interocontroner	
1	I		

4	1	
		4. Interface advanced peripherals with ARM based microcontroller and
		develop Embedded system
		5. Explain features of DSP processor over ARM processor.
		6. Explain Detail architecture of DSP processor.
		1. Explain the concepts of system programming and develop skills to
		design Assembler and Macro Processor.
	204100	2. Explain the basics of Compiler, Linker and Loader and use it in
	304190	demonstration.
	System Programming	3. Define OS and list different types of OS and also implement various
5	and	process scheduling techniques.
	Operating System	
		4. Explain inter process communication and implement deadlock
		avoidance schemes in OS.
		5. Implement memory management concepts and replacement algorithm.
		6. Explain I/O management and file management with example.
	BE Ele	ctronics and Telecommunication-Sem-II (2015 COURSE)
		1. Explain and apply the concepts telecommunication switching for voice
		and data.
	404189	2. Analyze the telecommunication traffic.
	Mobile	3. Analyze radio channel and cellular capacity.
1	Communication	5. Analyze ladio chamiel and centular capacity.
1	Communication	4. Explore the architecture of GSM.
		•
		5. Knowledge of GSM channels and services.
		6. Differentiate thoroughly the generations of mobile technologies.
		1. To explain the function of each block in the optical communication
		system. Compare various types of optical fibers. Define and compare
		different optical sources.
		2. To draw point to point optical link and power loss model. To solve
		numerical based on optical power budget and rise time budget. To
		evaluate bandwidth length product.
		3. Understand and draw WDM optical link. Enlist WDM components.
	404190	Explain need of Optical amplifiers.
	Broadband	4. Describe orbital parameters of satellite, launching of satellite. Explain
	Communication System	satellite launch vehicles.
	,	5. Describe function of various satellite subsystems and draw the block
		diagram of the same. Describe the need of satellite subsystems.
		6. Solve and evaluate simple satellite link design problem considering
2		Uplink and downlink.
	404191	1. Define the basic concepts of machine Learning.
	Machine Learning	2. Perform basic regression and classification task.
	wiaching	
3		3. Perform and analyze clustering technique
		4. Mathematically analyze various machine learning approaches.
		5. Apply the concept to classification problem.
		6. Define basic concept of deep learning and CNN

]	1. Keep himself updated on latest wireless technologies and trends in the	
	404192	communication field	
4	Wireless Sensor	2. Understand the transmission of voice and data through various	
	Networks	networks.	
		A.Y. 2019-20	
Sr.No			
	Course code	Course outcome	
	Course name		
		ME First Year E&TC(VLSI & ES)-Sem-II	
1	504207	1. Understand and design basic COMS sub-circuits.	
	Analog CMOS Design		
		2. Udestand and Design CMOS Op-amp	
		3. Understand low and high bandwidth CMOS designs.	
		4. Understand and design Low Noise Amplifiers .	
2	504208	1. Learn Design flow graphs and flow modeling.	
	System On Chip	2. Understand SoC modeling and interfacing.	
		3. Gain knowledge of SoC memory system design, embedded software	
		and energy, management techniques for SoC design, SoC prototyping,	
		verification, testing and physical design.	
		4. Design, implement and test SoC.	
		1. Define the basic concepts of Real-Time Embedded Signal Processing.	
		2. Realize the FIR filter.	
3		3. Use the concept of Digital Systems, Moving-Average Filters, and	
	504209	problem solving on Structures and Equations	
	Embedded Signal	4. Use properties of DFT, Algorithm and problem solving on DFT and	
	Processors	FFT	
		5. Design the IIR filter	
		6. Understand digital signal processing and key components of DSP and	
		code optimization	
		7. Understand the Practical DSP Applications like Audio Coding and	
		Audio Effects	
		1. Define Software and hardware defined radio. State properties of SDR.	
		Draw and explain the structure of SCA.	
	50.4010	2. Explain the function of RF front end blocks. Enlist types of RF front	
	504210	end topologies. Draw their block diagram.	
4	Software Defined	3. Enlist various DDS systems. Compare them. Draw PN sequence	
4	Radio	generator and derive the output.	
		4. Enlist various smart antenna configurations. Define various adaptive	
		antenna array algorithms. Draw the block diagram for various beam	
		forming antenna arrays. Compare DSPs, ASIC and FPGA.	
	N	5. Understand JTRS, CORBA and MAE in SDR	
	Department of Information Technology		
A.Y. 2019-20, Sem-I			

Sr.N		Course outcome
0.	Course code	
	Course name	
	SI	E (Information Technology) 2015 pattern Sem-I
	214441	1. Calculate probability of a particular event in a given situation.
		2. Translate English statements in mathematical propositions and
		quantifiers.
		3. Classify different relations and functions types and relate problems to
1	D : 0	particular type.
	Discrete Structure	4. Translate real life problems into graphs and solve using graph theory
		concepts.
		5. To use different types of trees for various applications
		6. Solve examples of groups and rings
	214442	1.Explain processor structure, functions of different units in it and solve
	214442	problems based on computer arithmetic and computer performance.
		2.Explaindetails of CPU and MIPs, RISC and CISC architectures.
2	Computer	3.Explaintypes of control unit with details.
2	Organization and	4.Explain concepts related to memory and I/O organization.
	Architecture	5. Acquire knowledge about instruction level parallelism.
	Themteeture	6.Acquire knowledge about parallel organization of multi-processors and
		multi core systems.
	214443	1. Understand the Number system, codes and logic family.
		2. Use logic function representation for simplification with K-Maps and
		analyze as well as design Combinational logic circuits using SSI & MSI
		chips.
		3. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation
3	Digital Electronics	table), their conversion & design the applications like counters, etc.
	& Logic design	4. Design and implement different sequential logic designs.
		5. To understand concept of programmable logic devices and ASM chart
		and get acquainted with design of synchronous state machines.
		6. Use VHDL programming technique with different modeling styles for
		any digital circuits.
	214444	1. Develop 'C' programs using appropriate constructs and coding standards.
		2. Use pointers to define and access arrays, structures, files.
4		 3. Evaluate the efficiency of algorithms. 4. Chaosa the appropriate searching / searting algorithm for a given
4	Fundamentals of	4. Choose the appropriate searching / sorting algorithm for a given application.
	Data Structure	5. Represent linear data structures using sequential organization.
		6. Show the representation of linear data structures using
		linkedorganization.
		1. Breakdown problem into smaller components, propose and evaluate
	214445	different solutions for solving problems.
		2. Design an algorithmic solution to a problem using problem
		decomposition and step-wise refinement.
	I	accomposition and step while reminiment.

5	Problem Solving and	3. Explain features of object oriented programming.
		4. Program using C++ features such as composition of objects, operator
	Object Oriented	overloads, dynamic memory allocation, inheritance and polymorphism, etc
	Programming	
		5. Explain advanced Features of C++ like virtual function, templates.
		6. Understand exception handling and File I/O in C++
	214446	1. Simplify Logic function using K-map and design Combinational logic
	214440	circuits using SSI & MSI chips.
		2. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation
		table) & design the applications like Asynchronous and Synchronous
		Counters.
6		3. Design and implement Sequential Logic circuits like synchronous
	Digital Laboratory	/asynchronous counters, MOD counters and Sequence generator using
		registers/Counters.
		4. Understand the design Steps and implement the main programming
		technique with different modeling styles for any digital circuits with
		VHDL Programming.
	214447	1. Apply proper constructs of C language and coding standards for
	211117	program development.
		2.Develop programs using dynamic memory allocation.
7		3.Develop programs using linear data structures.
	Programming	4.Use searching and sorting algorithms.
	Laboratory	5.Employ primitive operations on sequential file.
		6.Create and manipulate single, double, circular and generalized linked list.
	214448	1. Breakdown problem into smaller components, propose and evaluate
	214440	different solutions for solving problems.
		2. Develop and implement algorithms for solving simple problems using
		modular programming concept.
8	Object Oriented	3. Abstract data and entities from the problem domain, build object
	Programming Lab.	models and design software solutions using object-oriented principles and
	1 logranning Lao.	strategies.
		4. Develop programs that appropriately utilize key object-oriented
		concepts
	214449	1. Provides an ability to understand, analyze and interpret the essentiality
		of grammar and its proper usage.
9		2. Build the students' vocabulary by means of communication via web,
		direct
	Communication Skills	Communication and indirect communication.
		3. Understanding the various rules and means of written communication.
		4. Effective communication with active listening, facing problems while
		communication and how to overcome it.
TE (Information Technology) 2015 pattern Sem-I		
	314441	1.Explain finite state machines to solve problems on it.
		2. Construct Regular Expression by solving related problems.

	Theory of Computation	3.Explain Regular Grammar and language also different types of grammar
1		and normal forms by solving related problems.
		4.Explain concept of Push Down Automata and Post Machine by solving related problems.
		5.Explain Turing Machine by simplifying related problems.
		6.Explain decidability and computational complexity.
	314442	1. Explain basic concepts of DBMS & RDBMS. Analyze different database models.
		2. Demonstrate an understanding of normalization theory and apply such
		knowledge to the normalization of a database.
		3. Query a database using different SQL commands as well as Design and
n	Detahasa	implement a database schema for a given problem domain.
2	Database Management	4. Explain basic issues of transaction processing and concurrency control.
	Systems	5. Describe and compare various database architectures with its
		applications.
		6. Describe emerging database technologies.
		7. Explain basics of data warehousing and data mining.
	314443	1. Identify unique features of various software application domains and
	51445	classify software applications.
		2. Choose and apply appropriate lifecycle model of software development.
	Software Engineering & Project Management	3. Describe principles of agile development, discuss the SCRUM process
3		and distinguish agile process model from other process models
5		4. Analyze software requirements by applying various modeling
		techniques.
		5. Llist and classify CASE tools and discuss recent trends and research in
		software engineering.
		5. Understand IT project management through life cycle of the project and
		future trends in IT Project Management
	314444	1. Explain working of operating system and shell
	Operating System	2. Understand process, thread and scheduling
		3. Apply the concept of process synchronization, mutual exclusion and the
4		deadlock
	Operating System	4. Understand main and virtual memory management
		5. Realize the concept of I/O management and File system.
		6. Understand Linux operating system with its function
	314445	1. Explain importance of HCI study and principles of user-centred design
5	514445	(UCD) approach.
		2. Develop understanding of human factors in HCI design.
		3. Develop understanding of models, paradigms and context of
	Human Computer	interactions.
	Human-Computer Interaction	4. Design effective user-interfaces following a structured and organized
		UCD process.
		5. Evaluate usability of a user-interface design.
	I	

		6. Apply cognitive models for predicting human-computer-interactions.
	314446	1. Install and configure database systems.
		2. Analyze database models & entity relationship models.
6	Software	3. Design and implement a database schema for a given problem-domain
0		4. Understand the relational and document type database systems.
	Laboratory-I	5. Populate and query a database using SQL DML/DDL commands.
		6. Populate and query a database using MongoDB commands.
	314447	1. Understand the basics of Linux commands and program the shell of
	514447	Linux.
		2. Develop various system programs for the functioning of operating
		system.
		3. Implement basic building blocks like processes, threads under the Linux.
7	Software	
	Laboratory-II	4. Develop various system programs for the functioning of OS concepts in
	20001001911	user space like concurrency control and file handling in Linux
		5. Design and implement Linux Kernel Source Code.
		6. Develop the system program for the functioning of OS concepts in
		kernel space like embedding the system calls in any calls
	314448	1.Describe a HTML5 program using frame, and to create table,
		registration form add images, links.
		2. Create a page using CSS properties Border, margins, Padding,
		Navigation, dropdown list.
		3.Create form in HTML with all form elements apply form validations
8	Software	(e.g. Email, mobile, Pin code, Password).
	Laboratory -III	4. Validate URL, Email, Required using functions empty, preg_match, filter var in PHP.
		5. Describe servlet life cycle, create login page and apply proper
		validations with appropriate messages using doGet()/ doPost() methods.
		6. Design a website using Content management tool (Word Press).
		7. Describe phpMyAdmin and its features.
	В	E (Information Technology) 2015 pattern Sem-I
	414453	1. Understand basics of security services
		2. Use basic cryptographic techniques in application development
		3. Apply methods for authentication, access control, intrusion detection
1	Information and	and prevention.
	Cyber Security	4. Understand risks and vulnerability terms
		5. Classify different cybercrimes
		6. Develop computer forensics awareness.
	414454	1. Build the learning model.
		2. Developed an appreciation for what is involved in learning from data.
		3. Find out solution to real world problems
2	Machine Learning	4. Implement some basic machine learning algorithms
	and Application	5. Using different method evaluate the performance of learning models
		6. Apply machine learning algorithms to solve problems of moderate
		complexity

<u> </u>		
	414455	1. Understand the fundamental aspects of different object oriented
		methodologies
		2. Explore and analyze use case modeling, domain/ class modeling.
3		3. Understand Interaction and behaviour modeling
3	Software Design &	4. Analyse design process in software development
	Modeling	5. Understand software design principles and patterns.
	6	6. Learn the architectural design guidelines in various type of application
		development.
		1. Justify the need to study human-computer-interaction or human-factors
	414456	while designing software.
		2. Discuss the process of designing user-friendly software based on
		usability engineering guidelines.
		3. Apply interaction design and UI design process in enhancing user-
4	Elective - I	experience of an application.
	(Usability	4. Conduct usability evaluation of user-interfaces or software applications.
	Engineering)	
		5. Discuss industry standards for designing and evaluating user-interfaces.
		6. Discuss current trends in usability engineering
	414457	1. Understand importance of testing and tester's role in a software
	414437	development organization.
	ELECTIVE II:	2. Understand Testing Approaches.
5		3. Explore Software Test Automation, Quality Management Metrics.
	Software Testing and Quality	4. Understand Software quality assurance.
		5. Choose appropriate quality assurance models and develop quality.
	Assurance	6. Understand Software Process, Internal Auditing and Assessments.
	414458	1. Implement basic security meachanisms
c.		2. Understand the machine learning principles and analytics of learning
6	Computer Laboratory VII	algorithms.
		3. Apply Machine Learning Principles for various applications
	414459	1. Understand Unified Modeling Language (UML 2.0)
		2. Identify different software artifacts at analysis and design phase.
7	Computer Laboratory VIII	3. Explore and analyze use case modeling.
,		4. Understand Interaction and Behavior Modeling.
	Lubblutbry	
	414460	
		2. Develop plans with help of learn members to achieve the project's goals.
	Project Phase-I	
8		
		5. Estimate and cost the human and physical resources required, and make
		plans to obtain the necessary resources.
8		 5. Explore and analyze domain/ class modeling. 1. Implement their ideas/real time industrial problem/ currentapplications from their engineering domain. 2. Develop plans with help of team members to achieve the project's goals 3. Break work down into tasks and determine appropriate procedures. 4. Allocate roles with clear lines of responsibility and accountability and learn team work ethics. 5. Estimate and cost the human and physical resources required, and make

	A.Y. 2019-20, Sem-II		
Sr.N		Course outcome	
0.	Course code		
	Course name		
	SE	(Information Technology) 2015 pattern Sem-II	
	207003	1. To Solve higher order linear differential equation using appropriate	
	207003	techniques for modeling and analyzing electrical circuits	
		2. To Solve problems related to Fourier transform, Z-transform and	
		3. To Obtain Interpolating polynomials, numerically differentiate and	
		integrate functions	
		4. To Apply statistical methods like correlation, regression analysis and	
1	Engineering	probability theory for analysis and prediction of a given data as applied to	
	Mathematics - III	machine intelligence.	
	Wathematics - III	5. To Perform vector differentiation and integration to analyze the vector	
		fields and apply to compute line, surface and volume integrals.	
		6. To Analyze conformal mappings, transformations and perform contour	
		integration of complex functions required in Image processing, Digital	
		filters and Computer graphics.	
		1.Explain terms related to computer graphics and apply mathematics and	
	214450	logic to develop computer programs for elementary graphic operations.	
		2.Solve problems for performing graphical transformations.	
		3. Apply mathematics and graphical techniques to achieve realism using	
2		3D transformations and projections.	
	Computer Graphics	4.Explain segment, windowing and clipping concepts and apply	
	Computer Oraphies	algorithms to solve problems related to them.	
		5.Explain techniques to create realistic views using shading and animation	
		sequences and learn gaming platforms.	
		6.Explain methods to draw curves and random surfaces.	
	214451	1. Explain ALP tools and architecture details of 80386 microprocessor	
		2. Explain the memory management of 80386 microprocessor	
		3. Explain Paging, multitasking, Real and Protected mode Interrupt	
		structure?	
3	Processor	4. Differentiate between microprocessor and microcontroller. Understand	
5	Architecture &	architecture and memory organization of 8051microcontroller.	
	Interfacing		
		5. Explain ports, interrupts and timers/ counters of 8051.	
		6. Explain the Features, Architecture, Operating modes 8255. Understand	
		the interfacing and application of 8051.	
	214452	1. Explain linear data structures i.e. stack and queue with their applications	
		2. Explain the basic terminologies and types of trees.	
Δ		3. Illustrate the use of various graphs algorithms.	

7	Data Structures and Files	4. Explain symbol table applications and use the different hashing methods.
	1 1105	5. Describe the use of advanced tree data structures.
		6. Explain different file organizations with their primitive operations.
	214453	1.Understand data/signal transmission over communication media
	211100	2. Recognize usage of various modulation techniques in communication
		3. Analyze various spread spectrum and multiplexing techniques
5	Foundations of	
-	Communication and Computer Network	4. Use concepts of data communication to solve various related problems
		5. Understand error correction and detection techniques.
		6. Acquaint with transmission media and their standards
	214454	1. Explain concepts related to assembly language programming
		2. Write and execute assembly language program to perform array
	Processor	addition, code conversion, block transfer and string operations
6	Interfacing	3. Write program of 8051 microcontroller and implement the same using
	Laboratory	8051 development board.
	Laboratory	4. Explain interfacing of real world input and output devices to 8051
		microcontroller
	214455	1. Apply proper constructs of C++ and coding standards for program
	214433	development.
7		2. Implement stack and queue.
/	Data Structures and	3.Implement non-linear data structures such as trees, graphs etc.
	Files Laboratory	4. Implement primitive operations on sequential file.
		5. Use various hashing techniques for implementing direct access file.
	214456	1. Apply and implement line drawing and circle drawing algorithms to
	211130	draw specific shape given in the problem
		2. Apply and implement polygon filling algorithm for a given polygon.
		3. Apply and implement 2-D and 3-D transformation algorithms for given
8		input shape
Ũ	Computer Graphics	4. Apply and implement polygon clipping algorithm for given input
	Laboratory	polygon
		5. Apply and implement fractal generation algorithm for a given input.
		6. Apply and implement animation concepts for generating simple
		animation without using any animation tool
	ТЕ	(Information Technology 2015 pattern) Sem-II
	314450	1. Know Responsibilities, services offered and protocol used at each layer
1		of network.
		2. Understand different addressing techniques used in network.
		3. Know the difference between different types of network.
	Computer Network	4. Know the different wireless technologies and IEEE standards
	Technology	5. Use and apply the standards and protocols learned, for application
		development.
		6. Understand and explore recent trends in network domain.
	314451	1. Explain independently modern software development tools and creates
	21	novel solutions for language processing applications.

		2. esign and implement assemblers and macro processors.
2	System Programming	3. Use tool LEX for generation of Lexical Analyzer.
		4. Use YACC tool for generation of syntax analyzer.
		5. Generate output for all the phases of compiler.
		6. Apply code optimization in the compilation process.
	314452	1. practice principle of Optimality to solve problems using Dynamic
		Programming
		2. Apply Divide & Conquer as well as Greedy approach to design
		algorithms.
3	Denie en 1 Auglacia	3. Classify different problems into appropriate design solutions.
	Design and Analysis	4. Illustrate different problems using Backtracking.
	of Algorithms	5. Compare different methods of Branch and Bound strategy.
		6. Identify the nature of nondeterministic algorithms and classify
		deterministic algorithms into P classes.
	314453	1. Understand the need of Cloud based solutions.
		2. Understand Security Mechanisms and issues in various Cloud
		Applications
4		3. Explore effective techniques to program Cloud Systems.
	Cloud Computing	4. Understand security issues in cloud computing.
		5. Understand current challenges and trade-offs in Cloud Computing.
		6. Understand emerging trends in cloud computing.
	314454	1. Understand Big Data primitives.
		2. Learn and apply different mathematical models for Big Data.
	Data Sciece and Big Data Analytics	3. Demonstrate their Big Data learning skills by developing industry or
5		research applications.
5		4. Analyze each learning model come from a different algorithmic
		approach and it will perform differently under different datasets.
		5. Understand needs, challenges and techniques for big data visualization.
		6. Learn different programming platforms for big data analytics.
	214455	1. Implement small size network and its use of various networking
	314455	commands.
		2. Understand and use various networking and simulations tools.
6		3. Configure various client/server environments to use application layer
6	Software	protocols
	Laboratory-IV	4. Understand the protocol design at various layers.
		5. Explore use of protocols in various wired and wireless applications.
		6. Develop applications on emerging trends.
	214456	1. To design and implement two pass assembler for hypothetical machine
	314456	instructions.
		2. To design and implement different phases of compiler (Lexical
7		Analyzer, Parser, Intermediate code generation)
7	Software	3. To use the compile generation tools such as "Lex" and "YACC".
	Laboratory-V	4. To apply algorithmic strategies for solving various problems.
	-	5. To compare various algorithmic strategies.
		6. To analyze the solution using recurrence relation.

-		
8	314457	1. Understand Big data primitives and fundamentals.
	Software Laboratory-VI	2. Understand the different Big data processing techniques.
		3. Understand the application and impact of Big Data
		4. Understand and apply the Analytical concept of Big data using R/Python
		5. Understand emerging trends in Big data analytics
		6. Understand different data visualization techniques for Big Data.
	314458	1. Gather, organize, summarize and interpret technical literature with the
		purpose of formulating a project proposal
		2. Write a technical report summarizing state-of-the-art on an identified
		topic.
9	Project Based	3. Present the study using graphics and multimedia presentations.
	Seminar	4. Define intended future work based on the technical review.
	Seminar	5. Explore and enhance the use of various presentation tools and
		techniques.
		6. Understand scientific approach for literature survey and paper writing.
	BE	(Information Technology) 2015 pattern Sem-II
	414462	1.Understand the fundamentals of distributed systems.
		2.Describe various ways of communication and coordination in a
		distributed system.
1	Distributed	3.Discuss the importance of replication and fault tolerance.
1	Computing Systems	4.Describe the various file systems used in distributed systems.
	Computing Systems	5.Understand the distributed Web based system.
		6.Discuss the various security issues and security management in a
		distributed system.
	414463	1. Demonstrate and explain the knowledge of design of UbiComp and its
	111105	applications.
		2. Explain smart devices and services used UbiComp.
		3. Explain the significance of actuators and controllers in real time
		application design.
2	Ubiquitous Computing	4. Use the concept of HCI to understand the design of automation
		applications.
		5. Classify UbiComp privacy and explain the challenges associated with
		UbiComp privacy.
		6. Get the knowledge of ubiquitous and service oriented networks along with
		Ubicomp management
	414464	1. Describe the concept of the Internet of Things, IoT definitions and
3		physical and logical design of IoT.
		2. Explain architecture of IoT.
	Ele-III: Internet of Things	3. Describe the objects connected in IoT.
		4. Understand addressing techniques for IoT.
		5. Understand the platforms in IoT.
		6. Understand cloud interface to IoT.
	414465	1. Understand the basics of Social Media Analytics.
		2. Explain the significance of Data mining in Social media.

		3. Demonstrate the algorithms used for text mining.
4	Elective IV: Social Media Analytics	4. Apply network measures for social media data.
		5. Explain Behavior Analytics techniques used for social media data.
		6. Apply social media analytics for Face book and Twitter kind of
		applications.
	414466	1.Demonstrate knowledge of the core concepts and techniques in
	414400	distributed systems.
5	Computer	2.Learn how to apply principles of state-of-the-Art Distributed systems in
	Laboratory - IX	practical application.
	Laboratory - IX	3.Design, build and test application programs on distributed systems.
	414467	1. Describe Android development environment. Installing and setting up
	414407	the environment. Hello world application.
		2.Design a User Interface(Android) using pre-built UI components such
		as structured layout objects, UI controls and special interfaces such as
		dialogs, notifications, and menus.
		3. Explain Android-database Connectivity and create a SQLite Database
		for an Android Application and perform CRUD (Create, Read, Update
		and Delete) database operations.
6	COMPUTER	4. Design a Smart Application that senses environment temperature using
0		temperature sensor (DHT 11).
	LABORATORY-X	5. Describe a Smart Light System (Light that automatically switched on in
		evening and gets off in morning) using open source Hardware platform
		like Arduino and some sensors (Light dependent resistor) and actuator
		(An LED).
		6. Explain Android Security and design a system which connect hardware
		to Android Smart Phone with unique identifier Security i.e Authentication
		token.
		7.Explain the Evolution of cellular networks all the way up to 7G.
	414468	1. Extend further the investigative study
		2. Product development cycle using industrial experience, use of state of
7		art technologies.
	Project Work	3. Participate in National/International paper presentation activities and
		funding agency for sponsored projects.
		4. Use learning and knowledge access techniques using Conferences,
		Journal papers and anticipation in research activities.
		5. Evaluate the various validation and verification methods.
		6. Analyze professional issues, including ethical, legal and security issues,
		related to computing projects.

Engineering Sciences And Allied Engineering Sem-I

Sr.No.	Course and a	A.Y. 2020-21, Sem-I
Sr.No.	Course code	Course outcome
	Course name	aismoog And Allied Engineering Som L (2010 COUDSE)
	Engineering S	cciences And Allied Engineering Sem-I (2019 COURSE)
		1. To learn Mean value theorems and its generalizations leading to
		Taylors and Maclaurin's series useful in the analysis of engineering
	Subject code :	2. To learn the Fourier series representation and harmonic analysis for
	107001	design and analysis of periodic continuous and discrete systems.
1	subject name :	3. To deal with derivative of functions of several variables that are
	Engineering	essential in various branches of Engineering.
		4.to apply the concept of Jacobian to find partial derivative of implicit
		function and functional dependence. Use of partial derivatives in
		estimating error and approximation and finding extreme values of the
		5. To the essential tool of matrices and linear algebra in a
		6. To the essential tool of matrices and linear algebra in a
		comprehensive manner for analysis of Eigen values and Eigen vectors
		applicable to engineering problems.
		1. Apply different water softening methods and techniques as
		commodity.
	Subject code	2. Select suitable electro-analytic technique and system for material
	107009	investigation.
	subject name :	3. Reveal the information of advanced engineering materials for various
2	Engineering	engineering applications.
	Chemistry	
		4. Analysis of fuel and recommend alternative fuels.
		5. Determination of organic compound based on their structure.
		6. Identify causes of corrosion and preventive measures to minimize
		corrosion.
		1. Develop understanding of interference, diffraction and polarization;
		connect it to few engineering applications.
	Subject code	2. Learn basics of lasers and optical fibers and their use in some
	107002	applications.
2	subject name :	3. Understand concepts and principles in quantum mechanics. Relate
2		them to some applications.
		4. Understand theory of semiconductors and their applications in some
		semiconductor devices.
		5. Summarize basics of magnetism and superconductivity. Explore few
		of their technological applications.
		6. Comprehend use of concepts of physics for Non Destructive Testing
		Learn some properties of nanomaterials and their application.
		1. Apply various skills in problem solving and also explain basic features
		and future of python programming to solve the problem.

	Subject code :110005 subject name :	2.Discuss various types of data types with it's methods and to solve problem by using decision control and loop statement.
3	Programming and Problem Solving	3.Define functions and discuss various standard library modules, packages.
		4.Enlist built in strings methods, strings formatting operator and perform the operations on strings
		5. To solve problem by object oriented programming using python & apply various features, methods to solve problem.
		6. To perform various operations, methods on files & dictionaries
		1. Determine the resultant of various force system.
	Subject code 101011	 Determine the resultant of various force system. Determine Centroid, moment of Inertia and solve problems related to friction
4	subject name : Engineering Mechanics	3. Determine reactions of beam, and apply principle of equilibrium to forces in space.
		4. Able to solve for internal forces acting on any member of a pined jointed truss structure ,frame and cables
		5. Calculate position, velocity and acceleration of particle using principle of kinematics.
		6. Calculate position, velocity and acceleration of particle using principle of kinetics and Work Power, Energy.6.
		1.Explain the working of P-N junction diode and its circuits.
	Subject code :104010	2.Understand and describe specifications, features of electronic ideal diode and ideal diode circuits.
5	subject name : Basic Electronic Engineering OR	3.Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET.
		4.Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to measure various electrical parameters.
		6.Select sensors for specific applications.
		1.Compare electrical & magnetic circuit stating similarities &
		dissimilarities
		2.Calculate series, parallel and composite capacitor as well as
	Subject code	characteristics parameters of alternating quantity and phasor arithmetic
	:103004	Derive expression for RMS value & average value in terms of peak
		value to find form factor and peak factor for sinusoidal current &
		voltage.
	Basic Electrical	3.Estimate efficiency & regulation of single phase transformer by
5	Engineering	performing direct load test on it. Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along
		with phasor diagram
l	I	

1	I	
		4. Verify the relationship between phase voltage, line voltage line
		current, phase current in a three phase star and delta connected load
		analytically & by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to
		solve the circuit. Apply and analyze the resistive circuits using star-delta
		conversion KVL, KCL.
		6.Solve numericals based on work, power & energy by studying basic
		concepts of electrical engineering such as emf, pd, current and
		resistance.
		1.Describe and compare the conversion of energy from renewable and
		non-renewable energy sources
	Subject code	2.Explain basic laws of thermodynamics, heat transfer and their
	:102003	applications
	subject name :	
6	Systems in	3.List down the types of road vehicles and their specifications
	Mechanical	
	Engineering	
		4.Illustrate various basic parts and transmission system of a road vehicle
		5.Discuss several manufacturing processes and identify the suitable
		process
		6.Explain various types of mechanism and its application
		1.Familiar with safety norms to prevent any mishap in workshop
7	Subject code :	2. Able to handle appropriate hand tool, cutting tool and machine tools
/	111006	to manufacture a job
	subject name :	3. Able to understand the construction, working and functions of
	Workshop	machine tools and their parts
		$(\mathbf{T}_{1}, \mathbf{t}_{1}, \mathbf{t}_{2}, t$
		4. Able to know simple operations (Turning and Facing) on a centre lathe
		1. Demonstrate an integrative approach to environmental issues with a
		focus on sustainability
	Subject code :	2. Explain and identify the role of the organism in energy transfers in
8	101007	different ecosystems.
	subject name :	
	Environmenta	3. Distinguish between and provide examples of renewable and
	Studies I (Audit	nonrenewable resources and analyze personal consumption of resources.
	course)	
		4. Identify key threats to biodiversity and develop appropriate policy
		options for conserving biodiversity in different settings.
		Engineering Sciences And Allied Engineering Sem-II

Engineering Sciences And Allied Engineering Sem-II

A.Y. 2020-21, Sem-II		
Sr.No.	Course code	Course outcome
	Course name	
Engineering Sciences And Allied Engineering Sem-II (2019 COURSE)		

		1. To know the effective mathematical tools for solutions of first order
		differential equations.
	0.1 (1)	2. To model physical processes such as Newton's law of cooling,
1	Subject code :	electrical circuit, rectilinear motion, mass spring systems, heat transfer
	107008	etc.
	1. (3. To know advanced integration techniques such as Reduction
	subject name :	formulae, Beta functions, Gamma functions, Differentiation under
	Engineering	integral sign and Error functions needed in evaluating multiple integrals
	Mathematics -II	and their applications.
		4. To trace the curve for a given equation and measure arc length of
		various curves.
		5. To konw the concepts of solid geometry using equations of sphere,
		6. To evaluation of multiple integrals and its application to find area
		bounded by curves, volume bounded by surfaces, Centre of gravity and
		Moment of inertia.
		1. Apply different water softening methods and techniques as
		commodity.
2	Subject code	2. Select suitable electro-analytic technique and system for material
2	107009	investigation.
	subject name :	3. Reveal the information of advanced engineering materials for various
	Engineering	engineering applications.
	Chemistry	
		4. Analysis of fuel and recommend alternative fuels.
		5. Determination of organic compound based on their structure.
		6. Identify causes of corrosion and preventive measures to minimize
		corrosion.
		1. Develop understanding of interference, diffraction and polarization;
	Subject code 107002 subject name :	connect it to few engineering applications.
2		2. Learn basics of lasers and optical fibers and their use in some
		applications. 3. Understand concepts and principles in quantum mechanics. Relate
	5	them to some applications.
	Elignicering Thysics	4. Understand theory of semiconductors and their applications in some
		semiconductor devices.
		5. Summarize basics of magnetism and superconductivity. Explore few
		of their technological applications.
		6. Comprehend use of concepts of physics for Non Destructive Testing.
		Learn some properties of nanomaterials and their application.
		1. Apply various skills in problem solving and also explain basic features
		and future of python programming to solve the problem.
2	Subject code	2.Discuss various types of data types with it's methods and to solve
3	:110005	problem by using decision control and loop statement.
	subject name :	
	Programming and	3.Define functions and discuss various standard library modules,
	Problem Solving	packages.

		4.Enlist built in strings methods, strings formatting operator and
		perform the operations on strings
		5. To solve problem by object oriented programming using python &
		apply various features, methods to solve problem.
		6.To perform various operations, methods on files & dictionaries
	~	1. Determine the resultant of various force system.
4	Subject code	2. Determine Centroid, moment of Inertia and solve problems related to
	101011	friction
	subject name :	3. Determine reactions of beam, and apply principle of equilibrium to
	Engineering Mechanics	forces in space.
		4. Able to solve for internal forces acting on any member of a pined
		jointed truss structure ,frame and cables
		5. Calculate position, velocity and acceleration of particle using principle
		of kinematics.
		6. Calculate position, velocity and acceleration of particle using
		principle of kinetics and Work Power, Energy.6.
		1.Explain the working of P-N junction diode and its circuits.
	Subject code	2.Understand and describe specifications, features of electronic ideal
5	:104010	diode and ideal diode circuits.
	subject name :	
	Basic Electronic	3.Identify types of diodes and plot their characteristics and also can
	Engineering OR	compare BJT with MOSFET.
		4.Build and test analog circuits using OPAMP and digital circuits using
		universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to measure various
		•
		electrical parameters.
		6.Select sensors for specific applications.
		1.Compare electrical & magnetic circuit stating similarities &
		dissimilarities
	Subject code :103004	2.Calculate series, parallel and composite capacitor as well as
-		characteristics parameters of alternating quantity and phasor arithmetic
6		Derive expression for RMS value & average value in terms of peak
		value to find form factor and peak factor for sinusoidal current &
		voltage.
		3.Estimate efficiency & regulation of single phase transformer by
	Basic Electrical	performing direct load test on it. Derive expression for impedance,
	Engineering	current, power in series and parallel RLC circuit with AC supply along
		with phasor diagram
		4. Verify the relationship between phase voltage, line voltage line
		current, phase current in a three phase star and delta connected load
		analytically & by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to
		solve the circuit. Apply and analyze the resistive circuits using star-delta
		conversion KVL, KCL.
	I	

		6.Solve numericals based on work, power & energy by studying basic
		concepts of electrical engineering such as emf, pd, current and
		resistance.
		1. To acquire basic knowledge about engineering drawing language, line
		types, dimension methods, and simple geometrical construction.
7	Subject code :	2. To draw conic sections by various methods, involutes, cycloid and
7	102012	spiral.
	subject name :	3. To acquire basic knowledge about physical realization of engineering
	Engineering	objects and shall be able to draw its different views.
	Graphics	
		4. To visualize three dimensional engineering objects and shall be able to
		draw their isometric views.
		5.To imagine visualization of lateral development of solids.
		6. To acquire basic knowledge about the various CAD drafting
		software's and its basic commands required to construct the simple
		engineering objects.
		1. Project based learning will increase their capacity and learning
	~ 1	through shared cognition
8	Subject code :	2. Students able to draw on lessons from several disciplines and apply
	110013	them in practical way.
	subject name :	3. Learning by doing approach in PBL will promote long-term retention of material and
	Project Based	
	Learning	replicable skill, as well as improve teachers' and students' attitudes
		towards learning. 1. Have an understanding of environmental pollution and the science
		behind those problems and potential solutions.
	Subject code :	2. Have knowledge of various acts and laws and will be able to identify
9	101014	the industries that are violating these rules.
	subject name :	
	Environmental	3. Asess theimpact of ever increasing human population on the biosphere:
	Studies -II (Audit	social, economic issues and role of humans in conservation of natural
	course)	resources.
)	4. Learn skills required to research and analyze environmental issues
		scientifically and learn how to use those skills in applied situations such
		as careers that may involve environmenatl problems/ and or issues.
	-	Computer Department

A.Y. 2020-21, Sem-I		
Sr.No.	Course code	Course outcome
	Course name	
		SE Computer Sem-I (2019 COURSE)
		1.Design and analyze real world engineering problems by applying set
		theory prapositional logic and construct proofs using mathematical
		Induction
	210241	2.Specify Manipulate and apply equivalence relations, Construct and use
	210241	functions and apply these concepts to solve new problem

	D' (3.Calculate number of possible outcomes using permutation and
1	Discrete	combination, to model and analyse computational processes using
	Mathematics	combinotrics
		4. Apply appropriate mathematical concepts and skills to solve problems
		in both familier and unfamilier situations including those in real life
		context
		5.Model and solve computing problem using tree and graph and solve
		problems using appropriate algorithms
		6. Analyze the propertie of binary operations, apply abstract algebra in
		coding theory and evaluate the algebraic structure
		1. Define the terms such as data structure, time complexity and to
		calculate time complexity of given program segment.
	210242	2. Solve problem of sparse matrix using array data structure.
2	Fundamentals of	3. Sort the given data using any type of sorting technique and state time
	Data Structures	complexity of that sorting technique.
		4. Apply dynamic memory management using linked list in problem.
		Also state its advantages and disadvantages.
		5. Translate the expression from one form to another form using stack.
		6. Explain deferent types of queues with their application.
		1. Describe the procedural and object oriented paradigm with concepts
		of streams, classes, functions, data and objects etc
	010040	2. Understand dynamic memory management techniques using pointers,
	210243	constructors, destructors, etc
3	Object Oriented Programming	3. Describe the concept of function overloading, operator overloading,
		virtual
		functions and polymorphism.
		4. Demonstrate the use of various OOPs concepts with the help of
		programs
		5. Classify inheritance with the understanding of early and late binding,
		usage of
		exception handling, generic programming
		6. Develop applications using object orinted programming language.
		1. Identify the basic terminologies of Computer Graphics and interpret
		the mathematical foundation of the concepts of computer graphics.
	210244	2. Apply mathematics to develop Computer programs for elementary
		graphic operations.
	Computer Graphics	3. Illustrate the concepts of windowing and clipping and apply various
	company company	algorithms to fill and clip polygons.
		4. Understand and apply the core concepts of computer graphics,
4		including transformation in two and three dimensions, viewing and
		projection
		5. Understand the concepts of color models, lighting, shading models
		and hidden surface elimination.

1		6. Create effective programs using concepts of curves, fractals,
		animation and gaming.
		Course Contents
		1. Realize & simplify boolean algebric assignments for designing digital
	210245	circuits using k-map.
	210245	2. Design & implement combinational circuits.
5	Digital Electronics & Logic Design	3.Design & implement sequential digital circuits as per specification.
		4.Draw a ASM chart and Develop programmable logic devices for real
		world applications.
		5. Choose appropriate logic families according to their speciications.
		6. Explain architecture and units of computer system.
		1. Analyze problem and select suitable data structure for given problem
	210246	2. Implement data structure in different programming environment.
	Data structures	
6	Laboratory	3. Identify the data structure and compare all of them.
		1.Understand and apply the concept like
		inheritance, polymorphism, exception handling and generic structure for
		implementing reusable programming codes.
		2. Analyze the concept of file and apply it while storing and retriving the
	210247	data from secondary storage.
	OOP & Computer	3. Analyze and apply computer graphics algorithms for line-circle
	Graphics	drawing scan conversion and filling with the help of object oriented
	Laboratory	programming concepts.
	Lucolucory	4.Understand the concept of windowing and clipping and apply various
7		algorithm to fill and clip polygon.
		5. Apply Logic to implement, curves, fractals, animations and gaming
		programs.
		1. Identify the various digital ICs and understand their operation.
	210248	2. Apply Boolean laws , k-map to simplify the digital circuits.
	210248 Digital Electronics Labpratory	2. Apply boolean laws, k-map to simplify the digital circuits.
		3. Capable to design simple logic diagram as per specification
8		4. Apply knowledge to appropriate IC as per design specification.
		5. Design and implement combinational circuits such as Mux, Demux,
		Adder etc ans sequential circuits such as FF, Counter etc as per
		specifiction
		6. Learn about shift register
		1. Express effectively through communication skills and improve listing
		and reading skills.
	210249	2. Write well formatted reports and technical documents.
	Business	
9	Communication Skills	3. Prepare for public speaking, group discussion, interviews and
7		presentations.
	SKIIIS	4. Explore target setting, self-motivation and practicing creative
l	I	thinking.

		5. Prepare for writing telephone and e-mail etiquettes
		6. Write SWOT analysis and shot team and long term goals
		1. Aware of the various issues concerning humans and society
	210250	2. Aware about their responsibilities towards society.
	Humanity and	3. Sensitized about broder issues regarding social cultural ,economic
	Social Science	aspects of the society.
10		4. Ability to understand the nature of the individual and relationship
10		between self and community
		5. Ability to understand major ideas, values, beliefs and experiences.
		TE Computer Sem-I (2015 COURSE)
		1. Define the basic properties of formal languages, Design NFA and
		DFA, Conversion of NFA to DFA, Conversion of NFA with ε to NFA
		without ε and inter-conversion of Malay and Moore machine
		2. Inter-conversion between DFA to RE, Prove language is not regular
		using pumping lemma, find RE for given language and explain closure
		properties and applications of RE.
		3. Write CFG for given language, simplify given CFG, convert given
1	310241	CFG to CNF and inter-conversion of right linear and left linear grammar.
	Theory of	4. Define PDA and write its applications, design PDA, inter-conversion
	Computation	of CFG and PDA.
		5. Explain types of Turing machine, Design TM, Differentiate between
		PDA and TM.
		6. Differentiate and derive the class P, NP hard and NP complete
		problems.
		1. Design E-R Model for given requirements and convert the same into
		database tables.
		2. Use database techniques such as SQL & PL/SQL
2	310242	3. Apply database design approaches for covering conceptual design,
	D (1	logical design and normalize database
	Database	
	Management	4. Explain transaction Management in relational database System
	Systems (DBMS)	5. Describe different detabase architecture and analyzes the use of
		5. Describe different database architecture and analyses the use of
		appropriate architecture in real time environment.
		6. Use modern database techniques such as NOSQL1. Compare and chose a process model for a software project
		development
		2. Analyze and model software requirements of a software system
		3. Apply Fundamental knowledge in mathematics, computer science,
3	310243	programming and computer systems, which support the software
5	510245	engineering discipline

5 Designing test cases of a software system 6 Prepare the SRS, Design document, Project plan of a given software system 7 To work as an effective member or leader in software engineering teams. and also should be able to communicate and coordinate competently for technical and general purpose 4 310244 Information 2. Analyze different managerial issues relating to information system 3 Understand the role of engineering in organizational decision mak process 4 Information Systems & Engineering 3. Understand the role of engineering in organizational decision mak process 4 Identify various options in information system in the organization 5 Analyze cost revenue data in engineering decisions and select the the possible alternative 6 Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1 To understand network reference models and technologies 2 Demonstrate design issues, flow control and error control using different protocol 3 To understand different IEEE standards and frame formats 4 To identify network protocols and demonstrate client server communication using socket programming. 6 To understand various application layer protocols. 1 Evaluate p		Software Engineering & Project Management	4. Design and Modeling of a software system with tool
6. Prepare the SRS, Design document, Project plan of a given softwar system 7. To work as an effective member or leader in software engineering teams, and also should be able to communicate and coordinate competently for technical and general purpose 4 310244 Information Systems & Engineering Economics 1. Understand the role of information system in modern organization 2. Analyze different managerial issues relating to information system process 4. Identify various options in information system in the organization Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 5. Analyze cost revenue data in engineering decisions and select the to possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 5. 310245 1. To understand network reference models and technologies 5. 310245 3. To understand different IEEE standards and frame formats 6 310246 6 Skills Development Lab 6 310246 7. Install android studio & develop android app 6. To understand various application layer protocols. 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 6. Impl		0	5. Designing test cases of a software system
4 310244 1. Understand the role of information system in modern organization competently for technical and general purpose 4 310244 1. Understand the role of information system in modern organization Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 4 310244 1. Understand the role of engineering in organizational decision mak Engineering Economics 3. Understand the role of engineering in organizational decision mak process 5 Allentify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the t possible alternative 6 Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 7 To understand network reference models and technologies 7 To understand different IEEE standards and frame formats 6 Stills Development Lab 6. To understand various application layer protocols. 1 I. valuate problems and analyze data using current technologies 2 I. evaluate problems and analyze data using current technologies 3 I. Istall android studio & develop android app 4 Construct software solutions by evaluating alternate architectural patterns. 5 Develop a mini projeet in the form of android app<			
4 310244 4 310244 1. Understand the role of information system in modern organization Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 4 310244 1. Information Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the bossible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols. 6 310246 1. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6 310247 2. Use advance database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL 2. Use advance database techniques s			
4 310244 1. Understand the role of information system in modern organization 4 310244 2. Analyze different managerial issues relating to information systems & Engineering Economics 3 Understand the role of engineering in organizational decision mak process 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the transport of the possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats Computer A. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 3. Install android studio & develop android app 3. Install android studio & develop android app 6 Levelop an min project in the form of android app 1. Use fundamental database techniques such as Create, Modify and Delete 3.10247 2. Use advance database techniques such as Trigger , Cursor and PL/SQL			
4 310244 1. Understand the role of information system in modern organization 4 310244 2. Analyze different managerial issues relating to information system 5 Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 5 310245 4. Identify various options in information system in the organization 5 Analyze cost revenue data in engineering decisions and select the topossible alternative 6 Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 5 310245 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5. To understand various application layer protocols. 6 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 3.10247 2. Use advance database techniques suc			
4 310244 1. Understand the role of information system in modern organization 4 310244 2. Analyze different managerial issues relating to information system Systems & Engineering 3. Understand the role of engineering in organizational decision mak process Economics 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the b possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 5 310245 3. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 4 To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2 1. Evaluate problems and analyze data using alternate architectural patterns. 5. Develop a mini project in the form of android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as			
4 310244 2. Analyze different managerial issues relating to information system 5 3. Understand the role of engineering in organizational decision mak process 4 Information 5 310245 6 3. Understand the role of engineering in organizational decision mak process 6 310246 5 310246 6 310246 3 1. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 310246 3 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Trigger ,Cursor and PL/SQL			
Information Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the b possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more cconomic alternatives 7. Jone understand network reference models and technologies 7. Dounderstand different IEEE standards and frame formats 8. Understand different IEEE standards and frame formats 9. To understand transport layer protocol and to demonstrate different routing algorithms. 9. To understand transport layer protocol and to demonstrate client server communication using socket programming. 9. To understand various application layer protocols. 9. Skills Development Lab 9. Skills Development Lab 9. Subsect to software solutions by evaluating alternate architectural patterns. 9. Develop a mini project in the form of android app 9. Develop a mini project in the form of android app 9. Develop a mini project in the form of android app 9. Use fundamental database techniques such as Create, Modify and Delete 9. Use advance database techniques such as Trigger ,Cursor and PL/SQL	4	310244	
Systems & Engineering Economics 3. Understand the role of engineering in organizational decision mak process 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the the possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 5 310245 6 To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats Computer Networks 3. To understand transport layer protocols and demonstrate different routing algorithms. 5. To understand various application layer protocols. 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL	Т		2. Thatyze different managerial issues relating to information system
Engineering Economics process 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the tepossible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 5 310245 6 Store protection of the protocol 7 310245 6 Skills Development Lab 8 310246 9 Skills Development Lab 310246 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use davance database techniques such as Trigger ,Cursor and PL/SQL			3 Understand the role of engineering in organizational decision making
Economics 4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the brossible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 5 310245 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use duvance database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL		•	
4. Identify various options in information system in the organization 5. Analyze cost revenue data in engineering decisions and select the te possible alternative 6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats Computer A. To identify network protocols and demonstrate different routing algorithms. 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols. 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			process
5. Analyze cost revenue data in engineering decisions and select the bessible alternative 6. Perform and evaluate present worth, future worth and annual woanalyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols. 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL		Leonomies	4. Identify you and a section in information system in the anomization
6 possible alternative 5 310245 5 310245 6 Networks 1 To understand network reference models and technologies 2 Demonstrate design issues, flow control and error control using different protocol 3 To understand different IEEE standards and frame formats 4 To identify network protocols and demonstrate different routing algorithms. 5.To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
6. Perform and evaluate present worth, future worth and annual wo analyses on one of more economic alternatives 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5.To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols. 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Trigger ,Cursor and PL/SQL			
6 310245 1. To understand network reference models and technologies 2. Demonstrate design issues, flow control and error control using different protocol 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5.To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 310246 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Trigger ,Cursor and PL/SQL			
5 310245 1. To understand network reference models and technologies 5 310245 2. Demonstrate design issues, flow control and error control using different protocol 3 To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 310246 5 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			-
5 310245 2. Demonstrate design issues, flow control and error control using different protocol 5 310245 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 3. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 5. To understand various application layer protocols. 1 Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
5 310245 Computer Networks 3. To understand different IEEE standards and frame formats 4. To identify network protocols and demonstrate different routing algorithms. 5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 310246 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
5 310245 3. To understand different IEEE standards and frame formats Computer Networks 4. To identify network protocols and demonstrate different routing algorithms. State 5.To understand transport layer protocol and to demonstrate client server communication using socket programming. 6 To understand various application layer protocols. 1 Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
Computer Networks4. To identify network protocols and demonstrate different routing algorithms.6Stills Development Lab5. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols.63102461. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications63102463. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns.75. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java3102471. Use fundamental database techniques such as Trigger ,Cursor and PL/SQL	-	210245	· · · · · · · · · · · · · · · · · · ·
Networks algorithms. 5.To understand transport layer protocol and to demonstrate client server communication using socket programming. 5.To understand various application layer protocols. 6 310246 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL	5		
65. To understand transport layer protocol and to demonstrate client server communication using socket programming. 6. To understand various application layer protocols.631024651. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications63. Install android studio & develop android app4. Construct software solutions by evaluating alternate architectural patterns.5. Develop a mini project in the form of android app6. Implement program using advanced data structure in Java1. Use fundamental database techniques such as Create, Modify and Delete2. Use advance database techniques such as Trigger ,Cursor and PL/SQL		-	
6server communication using socket programming. 6. To understand various application layer protocols.631024671. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications831024683. Install android studio & develop android app4. Construct software solutions by evaluating alternate architectural patterns.5. Develop a mini project in the form of android app6. Implement program using advanced data structure in Java1. Use fundamental database techniques such as Create, Modify and Delete2. Use advance database techniques such as Trigger ,Cursor and PL/SQL		Networks	
6 To understand various application layer protocols. 1 Evaluate problems and analyze data using current technologies 2 Incorporate best practices for building applications 3 Install android studio & develop android app 4 Construct software solutions by evaluating alternate architectural patterns. 5 Develop a mini project in the form of android app 6 Implement program using advanced data structure in Java 1 Use advance database techniques such as Trigger ,Cursor and PL/SQL			
6 310246 310246 310246 Skills Development Lab 1. Evaluate problems and analyze data using current technologies 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
310246 6 310246 2. Incorporate best practices for building applications 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
6 Skills Development Lab 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
6 Lab 3. Install android studio & develop android app 4. Construct software solutions by evaluating alternate architectural patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			2. Incorporate best practices for building applications
patterns. 5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL	6	-	3. Install android studio & develop android app
5. Develop a mini project in the form of android app 6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			4. Construct software solutions by evaluating alternate architectural
6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			patterns.
6. Implement program using advanced data structure in Java 1. Use fundamental database techniques such as Create, Modify and Delete 310247 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			5. Develop a mini project in the form of android app
1. Use fundamental database techniques such as Create, Modify and Delete 310247 1. Use fundamental database techniques such as Create, Modify and Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
310247 Delete 2. Use advance database techniques such as Trigger ,Cursor and PL/SQL			
PL/SQL			
PL/SQL		210245	2. Use advance database techniques such as Trigger, Cursor and
		310247	
Database 2 LL CORUM		Database	
7 Management 3. Use of CRUD operations on unstructured database such as	7	Management	-
System Lab MongoDB.		-	MongoDB.

		4. Develop the ability to handle databases of varying complexities
		1. Setup of LAN of four computer using layer-2 switch in wired
		network.
	310248	2. To identify network protocols and layers
8	Computer Networks Lab	3. To understand and configure a DHCP server
		4. To apply concept of Socket programming in TCP and UDP.
		5. To analyze network tools and network programming.
		6. To understand and configure a RIP, OSPF and BGP using packet
		tracer.
		BE Computer Sem-I (2015 COURSE)
		1. Understand opportunities of HPC systems, describe different parallel
		architectures.
		2. Understand the fundamental concepts, principles of parallel algorithm
		design
1	410241	3. List basic communication operations
	High Performance	4. To analyze & measure performance of modern parallel computing
	Computing	system
	1 0	5. To develop an efficient parallel algorithm to solve a given problem.
		6. Make use of CUDA programming & explain working of CUDA.
		1. Identify and apply suitable Intelligent agents for various AI
		applications.
		2. Design smart systems using different informed search / uninformed
		search or heuristic search approaches
2	410242	3. Identify knowledge associated and represent it
	Artificial	
	Intelligence and	4. Analyze and identify given problem by ontological engineering to plan
	Robotics	a strategy.
		5. Apply the suitable algorithms to solve AI problems.
		6. Define the concept of Robotics.
		1. Capacity building of problem solving approach with respect to
		multiple use case.
		2. Ability to understand statistics and apply to given problem.
3	410243	3. Preparedness to apply suitable algorithmic strategies.
	Data Analytics	4. Expertise in developing time efficient algorithms.
		5. Expertise in developing space efficient algorithms
		6. Ability to develop scalability in algorithms.
		1. Apply basic, intermediate and advanced techniques to mine the data
4		2. To define the concepts of data warehousing
	410244	3. To solve many pattern recognition problems such as clustering and
	410244	classification
	Elective I	4. Explore the hidden patterns in the data
	(Data Mining and Warehousing)	5. Optimize the mining process by choosing best data mining technique
	6 /	6. To solve the problems in machine learning

5 410245 5 410245 Elective II 2. Explain Interprocesses communication methods in DS. 3. Describe the working of clocks used in synchronous working of I 4. Explain various File System and File server architectures in DS. 5. Explain various types of consistency models and design in DS. 6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe gusing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing algorithm	er
5 410245 5 410245 Elective II 3. Describe the working of clocks used in synchronous working of I 4. Explain various File System and File server architectures in DS. 5. Explain various types of consistency models and design in DS. 6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe guing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	er
5 410245 Elective II 3. Describe the working of clocks used in synchronous working of I 4. Explain various File System and File server architectures in DS. 5. Explain various types of consistency models and design in DS. 6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe guing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	er
Elective II 4. Explain various File System and File server architectures in DS. Distributed Systems 5. Explain various types of consistency models and design in DS. 6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe gusing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	er
Distributed Systems 5. Explain various types of consistency models and design in DS. 6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe guing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	
6. Describe and implement the security in DS applications serving or Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe gusing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	
Web 1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe gusing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	
1. Analysis of non-AI and AI technique to implement Tic-Tac-Toe gusing minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	ime
using minmax algorithm 2. Study Heuristic search technique to implement Hill-Climbing	ame
2. Study Heuristic search technique to implement Hill-Climbing	
algorithm	
6 410246 3. Implement Best First search and A* algorithm.	
Laboratory Practice I 4. Implement 8-Queens problem using Backtracking algorithm	
5. Mini project using PROLOG: Medical Diagnosis System.	
6. Mini project using PROLOG: Monkey Banana Problem	
1. To develop and analyze ETL model and Visualize the effectivener	; of
K-means Algorithm	
2. Create association rules which can be used for product	
recommendations depending on the confidences of the rules	
3. To see a word list containing all the different words in your docur	ent
7 410247 410247 and their occurrence count next to it in the "Total Occurrences" colu	
Laboratory 4. Explain Distributed System concept Web Challenges and	
Practice II Architecture models.	
5. Explain Interprocesses communication methods in DS.	
6. Describe the working of clocks used in synchronous working of I	S.
1. Solve real life problems by applying knowledge.	
8 410248 2. Write precise reports and technical documents in a nutshell.	
Project Work 3. Analyze alternative approaches, apply and use most appropriate of	ie
Stage I for feasible solution	
4. Participate effectively in teams exhibiting team work, Inter-person	1
relationships, conflict management and leadership quality.	1 1
Computer Department	11

A.Y. 2020-21, Sem-II			
Sr.No.	Course code	Course outcome	
	Course name		
SE Computer Sem-II (2019 COURSE)			
		1. To Solve Linear differential equations, essential in modelling and	
		design of computer-based systems.	
	207002	2. To Apply concept of Fourier transform and Z-transform and its	
	207003	applications to continuous and discrete systems and image processing.	

	.	3. To Apply Statistical methods like correlation and regression analysis
1	Engineering Mathematics-III	and probability theory for data analysis and predictions in machine
		learning.
		4. To Solve Algebraic and Transcendental equations and System of linear
		equations using numerical techniques.
		5. To Obtain Interpolating polynomials, numerical differentiation and
		integration, numerical solutions of ordinary differential equations used in
		modern scientific computing.
		1. Describe the benefits of good hashing and identify hashing scheme for
		solving real world problem.
		2. Define terms such as weighted graphs, subgraph, complete graph etc.
	210252	and apply algorithm for finding minimum distance.
	Data Structures &	3. Describe hashing functions and to apply proper hashing technique for
2		
	Algorithms	given problem. 4. Apply technique of optimal binary search tree to reduce searching
		time.
		5. Explain indexing techniques and to prepare B tree or B+ tree for
		given data.
		6. Explain different types of file organization and its operations.
		1. Compare software process models used for software development.
	210253	2. Identify and analyze the software requirements required for software
		development.
3	Software	3. Explain the software project estimation techniques.
	Engineering	
		4. Formulate the design solution using software engineering.
		5. Explain and justify the importance of Software Configuration
		Management.
		6. Describe and compare the various testing techniques.
		1. Describe the general architecture of a microprocessor, write an
		assembly language program by using instruction set.
	210254	2. Differentiate read and write bus cycles, Explain debug, control, test
		and system registers.
4	Microprocessor	3. Calculate the physical address using segmentation and paging,
•	mereprocessor	Explain GDT,IDT,LDT etc.
		4. Illustrate the privilege levels and page & segment protection
		5. Compare different processor modes, describe TSS, Task gate
		descriptor, TR etc
		6. Classify the microprocessor and microcontroller. Explain handling of
		interrupts and exceptions.
		1. Make use of Basic principals of Programming Languages
	210255	2. Develop a program with data representation and computition
	Principals of	
5	Programming	3. Develop a program using Object Oriented Programming Language :
	Languages	Java

1	I	
		4. Develop application using Encapsulation Inheritance and
		Polymorphism
		5. Explain the concept of Multithreading in Java
		6. Develop a simple program using functional and logical programming
		paradigm
		1. Use tree data structure for solving real life applications and perform
		conversions of tree.
		2. Apply various algorithms to find out minimum distance for traversing
	210256	in real life application.
	Data Structures	
6	and algorithms	3. Apply proper hashing technique to improve search results.
0		5. Apply proper hashing technique to improve search results.
	laboratory	
		4. Solve problem with use of proper multi way trees.
		5. Use different file organization for maintenance of data.
		6. Apply appropriate data structure for given problem.
		1. Apply knowledge and demonstrate programming proficiency using the
		various addressing modes and instructions of microprocessor.
	210257	2. Write a programs using co processor instruction set.
7	Microprocessor	3. Execute & debug a programs using 64 bit assembler.
/	Laboratory	5. Execute & debug a programs using 64 on assembler.
		4. Create an interrupt & use it in a program.
		5. Apply the programming knowledge and create a simple arithmetic,
		logical, string and real time applications.
		6. Demonstrate the use of procedures, macros with suitable example
		programs.
		1. Identify the real-life problem from societal need point of view.
	210258	2. Identify the tools and techniques to solve the problem.
_	Project Based	
8	Learning II	3.Select feasible approach for solving the problem.
	Louining II	4. Design the reliable and scalable solution for the selected problem.
		5. Specify the Hardware software requirements of the project.
		6. Prepare the brief report of their project
		1. To promote ethics, honesty and professionalism.
	210259	2. To set standards that are expected to follow and to be aware that if
		one acts unethically what are the consequences.
9		3. To provide basic knowledge about engineering Ethics, Veriety of
	Code of Conduct	moral issues and Moral dilemmas, Professional ideals and virtues.
		4. To provide basic familarity about Engineers as responsible
		Experimenters, Research Ethics, Codes of Etics, Industrial standards.
		5. To provide awareness about Risks and Exposure to safety and Risk,
		Risk Benifit Analysis.
		6. To have an idea about the collegiality and Loyalty.
		TE Computer Sem-II (2015 COURSE)
		1. Discuss role of algorithm design of algorithm with related issue and
		confirmining correlation of algorithm

	1	
		2. Explain and compare with different models and derive proof rules,
		decide and write algorithmic strategies to solve given problem
		3. Discuss and apply algorithmic strategies like divide and conquer,
1	310250	greedy approach, dynamic programming and compare algorithmic
		strategies
	Design & Analysis	4. Explain and analyzing asymptotic growth ,deterministic and non-
	of Algorithms	deterministic growth and compare NP problem algorithm
	orragorium	5. Discuss amortized analysis with its methods and write approximate
		embedded, randomized algorithms, Dijkstra's shortest path algorithm
		6. To analyze and evaluate problem using multithreaded and distributed
		string matching algorithm
		1. Define various system software & their role
		2. Analyze and synthesize system software
2	310251	3. Write program using tools like LEX and YACC
	Systems	
	Programming &	4. Implement operating systems functions
	Operating System	
		5. Analyze and compare memory management algorithm
		6. Analyze different file & I/O management concepts
		1. Explain Embedded System and basics of IoT like protocols and
		communication models and levels.
		2. Identify and state various steps involved in design methodology of
		IoT platform.
3	310252	3. Describe the working of various IoT pillars and Hardware of IoT
	Embedded Systems	
	& Internet of	4. Explain various protocols and security in IoT.
	Things	
	6	5. Understand application of Cloud Computing in IoT.
		6. Describe various Cloud models in IoT with various case studies.
		1. To apply basic concept of UML for designing use case diagram of
		object oriented based application
4	310253	2. Design a model using static modeling using appropriate modern tool.
	510255	2. Design a moder using static modering using appropriate modern tool.
	Software Modeling	3. Design a model using dynamic modeling using appropriate modern
	and Design	tool.
		4. Design a model using dynamic modeling using annuanista modern
		4. Design a model using dynamic modeling using appropriate modern
		5. Apply design patterns to understand reusability in object oriented
		design
		6. Apply appropriate test tool for testing application.
		1. Analyze given assignment to select sustainable web development
		design methodology.
		2. Develop Client Side Web Application using Java Script
5	310254	3. Describe difference between Servlet and JSP Server Side
5	510257	Technologies

	Web Technology	4. Use PHP technology for application development
		5. Explain different client and server framework
		6. Develop solution to complex problems using appropriate method,
		technologies, frameworks, web services and content management
	310255	1. Student will be able to define problem statement for seminars
6	Seminar & Technical Communication	2. Student will be able to perform literature survey and generate proof of concept.
		3. Student will be able to present technical contents
		1. develop web based application using suitable client and Server side scripting such as JSP
7	310256	2. develop web based application using suitable client and Server side scripting such as PHP
	Web Technology Lab	3. develop web based application using Server side Framework
		4. develop web based application using Client side Framework
		1. Design & implement language translator
		2. Implement two pass macroprocessor
8	310257	3. Write program using tools like LEX and YACC
	System	
	Programming &Operating System Lab	4. Implement CPU scheduling algorithms
	System Lab	5. Write a program for system calls
		6. Implement different page replacement algorithms
		1. Install and configure Raspberry Pi and Aurdino microcontrollers.
9		2. Connect various sensors to Raspberry Pi and Aurdino.
,	310258	3. Write a program to control various sensors and devices
	Embedded Systems & Internet of Things Lab	4. Write a program to control multiple sensors and devices in coordination
		5. Write a program to create a web interface using IOT.
		6. Develop a real time application in IOT.
		BE Computer Sem-II (2015 COURSE)
		1. Understanding human learning aspects and relate it with machine
		learning concepts.
		2. Applying statistical techniques to solve problem statements.
1	410250	3. Learning different machine learning algorithms.
	Machine Learning	4. Understanding nature of the problem and applying machine learning algorithm.
		5. Finding optimized solution for given problem
		6. Learning input, output mapping
		1. Define the different attacks on Information. Find problems with existing ciphers.

		2. Identify the problems with private cryptography method.
2	410251	3. Apply public cryptography on information for security.
	Information and Cyber Security	4. Apply authentication methods on user end.
		5. Apply intrusion detection system to existing system
		6. Apply Security services. Analyze email security.
		1. To understand basics of embedded system and its components.
		2. To learn selection process of memory and processor for real time
		applications
2	410252	3. To learn devices, communication buses and various communication
3	410252	protocols of embedded system.
		4. To learn real time operating system and various approaches of real
	Elective III	time scheduling.
	Embedded and	5. To understand inter process communication and resource and
	Real Time	resource access control in RTOS
	Operating System	
		6. To learn real time communication and software development process
		for embedded system.
		1. To understand the need of cloud based solution
4		2. To understand Storage and Security mechanisms in various cloud
		systems
	410253	3. To explore effective techniques to program cloud systems
	Elective IV	4. To explore amazon web service in detail
	Cloud Computing	5. To understand trends, current challenges and trade-off in cloud
		computing
		6. To understand the emerging future trends in cloud computing
		1. The Students must be able achieve practical hands on skills.
5	410254	2. Enhancement of employability of learner.
5	410254	3. Enhancement of technical competency of learner
	Laboratory Practice III	4. Understanding and analyzing problem statement clearly
		5. Learning practical machine learning algorithms
		6. Applying practical machine learning algorithms
		1. To study and explore various platforms for cloud computing.
		2. Setup cloud environment in laboratory
6	410255	3. Develop the mini-project for parallel processing and execution
	Laboratory Practice IV	4. Develop the basic parallel programs using open MP
		5. Develop the parallel programs using CUDA.
		6. Develop the mini-project for parallel processing and execution
		1. Show evidence of independent investigation
7	410256	2. Critically analyze the results and their interpretation
	Project Work	3. Report and present the original results in an orderly way and placing
	Stage II	the open questions in the right perspective.

	1	
		4. Link techniques and results from literature as well as actual research
		and future research lines with the research
		5. Appreciate practical implications and constraints of the specialist
		subject
	Electronic	es and Telecommunication Department
		A.Y. 2020-21, Sem-I
Sr.No.	Course code	Course outcome
	Course name	
	SE Elect	tronics and Telecommunication-Sem-I (2019 COURSE)
		1. To Solve higher order linear differential equation using appropriate
		techniques for modelling, analyzing of electrical circuits and control
		systems.
		2. to Apply concept of Fourier transform & Z-transform and its
	207005	applications to continuous & discrete systems, signal & image
		processing and communication systems.
		3. To Obtain Interpolating polynomials, numerically differentiate and
1	ain a Mathamatian	integrate functions, numerical solutions of differential equations using
1	gineering Mathematics	single step and multi-step iterative methods used in modern scientific
		computing.
		4. To Perform vector differentiation & integration, analyze the vector
		fields and apply to electro- magnetic fields & wave theory.
		5. To Analyze Complex functions, Conformal mappings, Contour
		integration applicable to electrostatics, digital filters, signal and image
		processing.
		1. Understand and apply semiconductor principles to the device to
		observe its performance.
		2. Design and analyze the concept of feedback to improve stability o
	204181	circuits.
	Electronic Circuits	3. Simulate amplifier, switch and oscillator circuits using computer
2		simulation software to obtain desired results.
		4. Implement amplifier, switch and oscillator hardwired circuits to tes
		performance and application.
		5. Explain behavior of FET at low and high frequency.
		6. Design an adjustable voltage regulator circuits.
	204182	1. Identify and prevent various hazards and timing problems in a digital design
3		
	Digital Circuits	2. Use the basic logic gates and various reduction techniques of digital logic
	-	circuit.
		3. Analyze, design and implement combinational logic circuits.
		 4. Analyze, design and implement sequential circuits. 5. Differentiate between Mealy and Mears machines
		5. Differentiate between Mealy and Moore machines.
		6. Analyze digital system design using PLD.
	204183	1. Analyze the simple DC and AC circuit with circuit simplification
	l	techniques.

	Electrical Circuits	2. Formulate and analyze driven and source free RL and RC circuits.
		3. Formulate & determine network parameters for given network and
		analyze the given network
		using Laplace Transform to find the network transfer function
		4. Explain construction, working and applications of DC Machines /
4		Single Phase & Three
		Phase AC Motors
		5. Explain construction, working and applications of special purpose
		motors & understand
		motors used in electrical vehicles
		6.Analyze and select a suitable motor for different applications.
		1. Define and illustrate computational efficiency of the algorithms such
		as sorting & searching.
		2. Identify and implement different data structures such as
	204184	Array, Structure, linked list, stack, queue, tree, graph by using C as the
5		programming language.
	ta structures & Algorit	3. Implement stacks & queues for various applications.
		4. Explain various terminologies and traversals of trees.
		5. Explain various terminologies and traversals of graph.
		6. Design and implement C programs for various data structure.
		1. Implement the combinational circuit according to the specification
	204185	2. Identify and build Synchronous and Asynchronous Sequential
	201100	circuits.
	Digital Electronics	3. To design the ASM & FSM Machine according to the specification .
6	6	
		4. Explain the basics of Digital Electronics with different logic families.
		5. To design the state mealy and moore machine according to the
		specifications.
	TE Elec	6. To explain the basics of microcontroller and their instruction set .
		tronics and Telecommunication-Sem-I (2015 COURSE)
	304181	 Select the blocks in a design of digital communication system. Analyze the performance of various line codes .
	304181	3. Perform the time and frequency domain analysis of the signals in a
1	TAL COMMUNICAT	digital communication system.
		4. Define various random processes. Calculate mean autocorrelation and
		variance.
		5. Comparison of all modulation techniques.
		6. Analyze the performance and applications of a baseband and pass
		band digital modulation systems in terms of error rate and spectral
		efficiency.
		1. Perform different operations on signals.
		2. Computer Linear & Circular convolution, DFT, IDFT, DCT, I DCT
	304182	of discrete time sequence and properties of DFT.
2	AL SIGNAL PROCES	3. Evaluate Z transform of sequence, identify its region of Convergence
		1,

I	1	and compute inverse Z transform and properties of Z transform
		4. Design & analyze IIR filters
		5. Design & analyze FIR filters. Solve the problems on multistage
		sampling rate converter .
		6. Study different applications of DSP .
		1.Study & derive electrostatic laws & theorem (Coulombs Law, Gauss's
		Law, Divergence Theorem).
		2. Analyze the electric fields and apply boundary conditions in different
	304183	media.
		3.Study & derive Magnetostaticlaws & theorem (Biot- Savart Law,
3	Electomagnetics	Ampere Circuital law, Stokes theorem).
		4.Write & analyse Maxwell's equation for static and time varying field in
		point and integral form.
		5. Study transmission line and analyze its parameters (VSWR, Return
		loss, Reflection Coefficient). Solve numerical using Smith Chart.
		6.To understand thephsasor form of Maxwell equation and solve it for
		Uniform planewave.
		1.Description of MCS 8051 in detail with its architecture and its
		features like memory organization, timer and its instruction set overview.
		leatures like memory organization, timer and its instruction set overview.
		2.Designing and interface the Microcontroller 8051 with real world
		input output devices like LCD, Keypad, and ADC. With its codes in
	304184	assembly language. Explanation of different hardware and software
		developing tools.
		3. Designing the system like Digital Acquisition system and Frequency
4	IICROCONTROLLER	counter with microcontroller 8051.
		4. Description of PIC18F in detail with its architecture and its features
		like memory organization, oscillator option and its instruction set
		overview.
		5.Designing and interface the PIC Microcontroller with real world input
		output devices like LCD, Keypad etc and timers with interrupt. With its
		codes in Embedded C. 6. Classified different Serial Communication Protocol like RS232, RS
		485, I2C, SPI.
		1. Describe the key elements of Mechatronics system with daily life
		examples and explain design approach of Mechatronics system.
	304185	2. Explain working principles of different sensors with its advantages,
F	Mart	disadvantages and applications.
5	Mechatronics	3. Draw and explain typical Hydraulic system.
		4. Differentiate between Hydraulic and Pneumatic system and also
		explain physical components of Pneumatic system.
l		5. Explain different electrical actuators and electromechanical actuator.

		6. Explain various case studies with its construction, working,
		applications and suitable sketch.
		1. Shall be able to understand the specifications
		2. Shall be able to select appropriate design topologies.
		3. Shall be able to interpret datasheets & select components & devices
6	304193	as per requirement
6	Electronics System	4. Shall be able to use simulation tools like MULTISIM etc for
	Design	validating the results
	C	6. Demonstrate and Interpret various OS functions used in Linux/
		Ubuntu.
	BE Elect	tronics and Telecommunication-Sem-I (2015 COURSE)
		1. Design digital circuits with HDL
	404181	2. Analyze different CMOS circuit issues.
		3. Model digital circuits with HDL and implement prototype on
1	VLSI DESIGN & TEO	
		4. Design CMOS circuits for specific applications.
		5. Analyze various ASIC design issues
		6. Explain need of design for testability with different fault models and
		different testing techniques.
		1. Describe fundamental principles of computer networking
		2. Compare and recognize errors in existing protocols.
		3. Identify requirements for a given organizational structure and select
2	404182	suitable networking architecture.
	COMPUTER	4. Apply the knowledge of cryptography and network security.
	NETWORK &	
	SECURITY	
		5. Analyze the hardware, software, components of a network
		6. Design a Routing table for finding shortest path for data
		communication
		1. Define and differentiate various performance parameters of radiating
		elements.
	404183	2. Analyze various radiating elements and arrays.
		3. Apply the knowledge of waveguide fundamentals in design of
3	on and Microwave Tec	
		4. Design and set up a system consisting of various passive microwave
		components.
		5. Analyze tube based and solid state active devices along with their
		application.
		6. Measure various performance parameters of microwave components.
		Understand radiations effects and hazards.
		1. Define the image mathematically and Perform basic operations on the
		given image.
		2. Perform basic image enhancement and restoration operations on the
	404104	given image.
	404184	3. Perform different compression techniques on given image

		4. Perform basic image segmentation and morphological operations on
4	tal Image Video Proces	the given image Analyze the result.
		5. Apply the concept to represent and describe image.
		6. Define basic concept of video processing
		1. Explain and apply the various stages of hardware design in product
		design and development.
		2. Analyze different design considerations for analog, digital and mixed
	404185	circuits design process.
	ELECTRONICS	3. Describe and apply the various stages of software design in product
	PRODUCT	design and development.
5	DESIGN	
		4. Describe the various techniques for PCB design.
		5. Apply and describe the steps of debugging and techniques for
		troubleshooting
		6. Explain and apply the methods of documentation
		A.Y. 2020-21, Sem-I
Sr.No.	Course code	Course outcome
	Course name	
		ME First Year E&TC(VLSI & ES)-Sem-I
		1. Understand different MOSFET models and their characteristics.
1	Digital CMOS Design	2. Understand different performance parameters
		3. Design CMOS logic circuits
		4. Design and Develop different FSM systems
		5. Understand advance trends in CMOS technology
		1. Define the basic concepts of Embedded Systems and Architecture of
		Embedded System
		2. Identify Design Methodology, and understand design challenges and
I		Design Metrics and problem solving.
		3. Use Life-Cycle Models. Understand design process and System
		specifications versus system requirements
	50.4102	4. Understand ARM Processor based Embedded System design and
	504103	exhibit the knowledge of ARM.
2	mbedded System Desig	5. Understand Embedded Linux. And Linux kernel construction.
		6. Understand and apply the concept of android operating system
	50.4202	1. Describe Reconfigurable Device Characteristics, Configurable,
2	504203	Programmable, and Fixed Function Devices
3		2. Designing reconfigurable circuits using PLD.
		3. Explain Metrics, Partitioning and Placement, Routing, ALU and CLB.
K	econfigurable Computin	
		4. Describe architectures of PDSPs, RALU, VLIW, Vector Processors,
		Memories, CPLDs, FPGA
	504104	1. Define research problem & its scope, objectives, and errors.
	504104 Besseret	2. State basic instrumentation schemes & data collection methods.
4	Research	3. Perform analysis with various statistical techniques.

	1	4. Perform modeling and predict the performance of experimental system
		4. Tertorin modeling and predict the performance of experimental system
		5. Develop the research proposals.
		1. Gain knowledge of Architecture of WSN network.
		2. Understand Physical, Data link and Network layer aspects with their
	504205	protocols.
5	Vireless Sensor Networ	3. Learn different techniques of power management and security.
		4. Exhibit the knowledge of operating systems in WSN systems.
		ME Second Year E&TC(VLSI & ES)-Sem-I
1	604201	1. The student will learn functional modeling.
		2. The student will use theory of logical fault models for testing single
	Fault Tolerant Systems	stuck fault.
		3. The student will show skills for fault simulation for statistical fault
		analysis.
		4. The student will exhibit the knowledge of self-checking for design of
		self-checking combinational circuits.
		5. The student will exhibit the self-testing for memory, processor and
		PLA according to the specifications .
2	604202	1. Explain design steps of ASIC design.
	ASIC Design	2. Explain steps of Analog and Digital (Mixed signal) ASIC design
		3. Describe different steps in ASIC construction
		4. Understand different ASIC testing methods
		1. Define disasters. Define Various terms involved in it. Explain
3	604103	Vulnerability profile of India.
		2. Enlist the types of disasters. Compare the disasters on the basis of
1	A- Disaster managemen	major and minor. Study various disasters in details.
		3. To explain the impact of disasters on environment, social,
		economical, ecological etc.
		4. Define disaster risk and disaster risk reduction methods.
		5. Enlist various government and non government organizations for
	(0.4102	disaster management. Draw and explain disaster management cycle.
4	604103	1. Explain the fuzzy logic and its properties. Compare fuzzy with crisp.
		2. Explain the fuzzy inference models Mamdani, Sugeno and Tsukamoto.
	B-Fuzzy mathematics	A.Y. 2020-21, Sem-II
Sr.No.	Course code	Course outcome
51.110.	Course name	
		ronics and Telecommunication-Sem-II (2019 COURSE)
		1. Identify, classify basic signals and perform operations on signals.
		2. Identify, Classify the systems based on their properties in terms of
	204191	input output relation and in terms of impulse response and will be able
		to determine the convolution between to signals.
		3. Analyze and resolve the signals in frequency domain using Fourier
1	Singals and Systems	series and Fourier Transform.
	1	

	l	
		4. Resolve the signals in complex frequency domain using Laplace
		Transform, and will be able to apply and analyze the LTI systems using
		Laplace Transforms.
		5. Define and Describe the probability, random variables and random
		signals. Compute the probability of a given event, model, compute the
		CDF and PDF.
		6. Compute the mean, mean square, variance and standard deviation for
		given random variables using PDF.
		1. Determine and use models of physical systems in forms suitable for
		use in the analysis and design of control systems.
	204192	2. Determine the (absolute) stability of a closed-loop controlsystem.
2	Control Stratemen	3. Perform time domain analysis of control systems required for stability
Z	Control Systems	analysis.
		4. Perform frequency domain analysis of control systems required for
		stability analysis.
		5. Apply root-locus, Frequency Plots technique to analyze
		controlsystems.
		6. Express and solve system equations in state variable form.
		7. Differentiate between various digital controllers and understand the
		role of the controllers in Industrial automation.
		1. Understand fundamental concepts of different analog communication
		schemes with mathematical analysis.
3		2. Describe Analog receivers with their performance characteristics.
-	204189	3. Compare different Analog modulation systems
I		4. Understand different types of noise with performance parameters .
	8	5. Compare the behavior of Analog communication systems in presence
		of noise
		6. Describe various pulse and digital modulation techniques.
	204190	1. Describe the principles of object oriented programming.
Oh		 Apply the concepts of data encapsulation, inheritance in C++.
		3. Understand Operator overloading and friend functions in C++.
		5. Apply the concepts of classes, methods inheritance and polymorphism
4		to write programs C^{++} .
		CO5: Apply Templates, Namespaces and Exception Handling concepts
		to write programs in C++.
		6. Describe and use of File handling in C++.
5	20/101	1. Define personal and career goals using introspective skills and SWOC
5	204191	assessment. Outline and evaluate short-term and long-term goals.
		2. Develop effective communication skills (listening, reading, writing,
Emp	loyability Skill Develop	and speaking), self- management attributes, problem solving abilities and
		team working & building capabilities in order to fetch employment
		opportunities and further succeed in the workplace.
		opportunities and further succeed in the workplace.

I	1	
		3. Be a part of a multi-cultural professional environment and work
		effectively by enhancing inter-personal relationships, conflict
		management and leadership skills.
		4. Comprehend the importance of professional ethics, etiquettes &
		morals and demonstrate sensitivity towards it throughout certified
		career.
		5 Develop an etically deployable skill set involving enticed thisking
		5. Develop practically deployable skill set involving critical thinking,
		effective presentations and leadership qualities to hone the opportunities
		of employability and excel in the professional environment.
	TE Elect	ronics and Telecommunication-Sem-II (2015 COURSE)
		1. List different power electronics devices. Sketch and Explain the
		construction and characteristic of SCR, MOSFET & IGBT. Compare
		these devices. State and explain device specifications. Design a UJT
		triggering circuit for SCR. Explain gate drive circuit for
		MOSFET/IGBT.
		2. Differentiate between Ordinary rectifiers and Controlled Rectifiers.
		Explain 1. phase controlled rectifier with R and RL load. Compare
	304186	HWCR and FWCR. Explain 3. phase controlled rectifier with R load.
		Determine output V/I and other performance parameters of 1. phase/3.
		phase circuits. Identify applications of 1. /3. phase CR.
		3. Explain 1. phase Inverter with R and RL load. Explain 3. phase
		Inverter with 120 and 180 degree conduction mode. Determine output
1	Power Electronics	V and other performance parameters of 1. phase circuit. Identify
1	Tower Electronics	applications of Inverter. Explain Harmonic reduction techniques of
		Inverter.
		4. Explain step up and step down DC chopper. Derive an expression
		for output V and Determine output V, other parameters. TRC and Duty
		cycle voltage control techniques. Classify choppers. Identify
		applications of 1. /3. phase CR. Explain 1. phase AVC.
		5. Explain the need of Resonant converters. Explain the operation of
		ZVS/ZCS. Explain different causes of EMI and techniques to reduce it.
		Z V S/ZCS. Explain different causes of Elvir and techniques to reduce it.
		6. Over voltage and current protection circuits for SCR. Identify and
		Explain applications of power electronics.
<u> </u>		1. Identify the need of source coding Define, Calculate Entropy, Mutual
		information for various types of sources and channels.
		2.Apply the various source coding algorithms to Generate codeword,
	304187	Calculate average code word length, efficiency and redundancy.
		3. Formulate generator matrix for linear block code and compute all
	on Theory and Coding	code words. Determine the error detection and correction capacity for
		linear block code.
2		4. Determine the generator polynomials for cyclic codes and calculate
		systematic cyclic codes
I	I	

1	1	
		5. Design BCH codes for varying error correction capacity and compare
		the performance with RS codes.
		6. Sketch tree diagram trellis diagram and state diagram and compute
		free distance for convolution codes
		7. Apply the concept of Viterbi Decoding, calculate branch metric, path
		metric and sketch decoding path through trellis.
		1. Define domains of Industrial Management
	304188	2. Be familiar with Quality Management, Financial Management and
3	504100	Project Management
	INESS MANAGEMI	3. Identify importance of Human Resource Management
		4. Apply the knowledge of entrepreneurship.
		1. Compare features of different ARM Series processor
	304189	2. Describe the architecture of ARM 7 microprocessor
	Advanced Processors	3. Interface the peripherals to ARM based microcontroller
4		4. Interface advanced peripherals with ARM based microcontroller and
		develop Embedded system
		5. Explain features of DSP processor over ARM processor.
		6. Explain Detail architecture of DSP processor.
		1. Explain the concepts of system programming and develop skills to
		design Assembler and Macro Processor.
		2. Explain the basics of Compiler, Linker and Loader and use it in
	304190	demonstration.
	System Programming	3. Define OS and list different types of OS and also implement various
5	and	process scheduling techniques.
-	Operating System	process seneduming teeninques.
		4. Explain inter process communication and implement deadlock
		avoidance schemes in OS.
		5. Implement memory management concepts and replacement algorithm.
		······································
		6. Explain I/O management and file management with example.
	BE Elect	ronics and Telecommunication-Sem-II (2015 COURSE)
		1. Explain and apply the concepts telecommunication switching for
		voice and data.
	404189	2. Analyze the telecommunication traffic.
1		3. Analyze radio channel and cellular capacity.
-		4. Explore the architecture of GSM.
		5. Knowledge of GSM channels and services.
		6. Differentiate thoroughly the generations of mobile technologies.
		1. To explain the function of each block in the optical communication
		system. Compare various types of optical fibers. Define and compare
		different optical sources.
		2. To draw point to point optical link and power loss model. To solve
		numerical based on optical power budget and rise time budget. To
		evaluate bandwidth length product.
	1	

		3. Understand and draw WDM optical link. Enlist WDM components.
2	404190	Explain need of Optical amplifiers.
	Broadband	4. Describe orbital parameters of satellite, launching of satellite. Explain
	Communication	satellite launch vehicles.
	System	
		5. Describe function of various satellite subsystems and draw the block
		diagram of the same. Describe the need of satellite subsystems.
		6. Solve and evaluate simple satellite link design problem considering
		Uplink and downlink.
	404191	1. Define the basic concepts of machine Learning.
	Machine Learning	2. Perform basic regression and classification task.
3		3. Perform and analyze clustering technique
5		4. Mathematically analyze various machine learning approaches.
		5. Apply the concept to classification problem.
		6. Define basic concept of deep learning and CNN
		1. Keep himself updated on latest wireless technologies and trends in the
4	404192	communication field
7		2. Understand the transmission of voice and data through various
	Vireless Sensor Networ	networks.
		A.Y. 2020-21
Sr.No.	Course code	Course outcome
	Course name	
		ME First Year E&TC(VLSI & ES)-Sem-II
1	504207	1. Understand and design basic COMS sub-circuits.
1	504207 Analog CMOS Design	1. Understand and design basic COMS sub-circuits.
1		 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp
1		 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs.
	Analog CMOS Design	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers .
1	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling.
	Analog CMOS Design	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing.
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping,
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design.
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC.
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design.
	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing.
2	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing.
	Analog CMOS Design 504208 System On Chip	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and
2	Analog CMOS Design 504208	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and problem solving on Structures and Equations
2	Analog CMOS Design 504208 System On Chip 504209	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and problem solving on Structures and Equations Use properties of DFT, Algorithm and problem solving on DFT and
2	Analog CMOS Design 504208 System On Chip	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and problem solving on Structures and Equations Use properties of DFT, Algorithm and problem solving on DFT and FFT
2	Analog CMOS Design 504208 System On Chip 504209	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and problem solving on Structures and Equations Use properties of DFT, Algorithm and problem solving on DFT and FFT Design the IIR filter
2	Analog CMOS Design 504208 System On Chip 504209	 Understand and design basic COMS sub-circuits. Udestand and Design CMOS Op-amp Understand low and high bandwidth CMOS designs. Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded Signal Processing. Realize the FIR filter. Use the concept of Digital Systems, Moving-Average Filters, and problem solving on Structures and Equations Use properties of DFT, Algorithm and problem solving on DFT and FFT

		7. Understand the Practical DSP Applications like Audio Coding and
		Audio Effects
		1. Define Software and hardware defined radio. State properties of
		SDR. Draw and explain the structure of SCA.
		2. Explain the function of RF front end blocks. Enlist types of RF front
	504210	end topologies. Draw their block diagram.
		3. Enlist various DDS systems. Compare them. Draw PN sequence
4	Software Defined Rad	generator and derive the output.
		4. Enlist various smart antenna configurations. Define various adaptive
		antenna array algorithms. Draw the block diagram for various beam
		forming antenna arrays. Compare DSPs, ASIC and FPGA.
		5. Understand JTRS, CORBA and MAE in SDR

Department of Information Technology

A.Y. 2020-21, Sem-I			
Sr.No.	Course code	Course outcome	
	Course name		
	SE (Information Technology) 2019 pattern Sem-I		
	214441	1. Calculate probability of a particular event in a given situation.	
		2. Translate English statements in mathematical propositions and	
		quantifiers.	
		3. Classify different relations and functions types and relate problems to	
1	Discrete Structure	particular type.	
	Discrete Structure	4. Translate real life problems into graphs and solve using graph theory	
		concepts.	
		5. To use different types of trees for various applications	
		6. Solve examples of groups and rings	
	214442	1.Explain processor structure, functions of different units in it and solve	
	214442	problems based on computer arithmetic and computer performance.	
		2.Explaindetails of CPU and MIPs, RISC and CISC architectures.	
2	Computer	3.Explaintypes of control unit with details.	
2	Organization and	4.Explain concepts related to memory and I/O organization.	
	Architecture	5.Acquire knowledge about instruction level parallelism.	
	Architecture	6.Acquire knowledge about parallel organization of multi-processors	
		and multi core systems.	
	214443	1. Understand the Number system, codes and logic family.	
		2. Use logic function representation for simplification with K-Maps and	
		analyze as well as design Combinational logic circuits using SSI & MSI	
		chips.	
		3. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation	
3	Digital Electronics	table), their conversion & design the applications like counters, etc.	
	& Logic design	4. Design and implement different sequential logic designs.	
		5. To understand concept of programmable logic devices and ASM	
		chart and get acquainted with design of synchronous state machines.	

	1	6. Use VHDL programming technique with different modeling styles for
		any digital circuits.
		1. Develop 'C' programs using appropriate constructs and coding
	214444	standards.
		2. Use pointers to define and access arrays, structures, files.
4		3. Evaluate the efficiency of algorithms.
4	Fundamentals of	4. Choose the appropriate searching / sorting algorithm for a given
	Data Structure	application.
		5. Represent linear data structures using sequential organization.
		6. Show the representation of linear data structures using
		linkedorganization.
	214445	1. Breakdown problem into smaller components, propose and evaluate
	211113	different solutions for solving problems.
		2. Design an algorithmic solution to a problem using problem
		decomposition and step-wise refinement.
5	Problem Solving	3. Explain features of object oriented programming.
5	and Object	4. Program using C++ features such as composition of objects, operator
	Oriented	overloads, dynamic memory allocation, inheritance and polymorphism,
	Programming	etc
		5. Explain advanced Features of C++ like virtual function, templates.
		6. Understand exception handling and File I/O in C++
	214446	1. Simplify Logic function using K-map and design Combinational logic
		circuits using SSI & MSI chips.
	Digital Laboratory	2. Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation
		table) & design the applications like Asynchronous and Synchronous
		Counters.
6		3. Design and implement Sequential Logic circuits like synchronous
		/asynchronous counters, MOD counters and Sequence generator using
		registers/Counters.
		4. Understand the design Steps and implement the main programming
		technique with different modeling styles for any digital circuits with
		VHDL Programming.
		1.Apply proper constructs of C language and coding standards for
	214447	program development.
		2.Develop programs using dynamic memory allocation.
		3.Develop programs using linear data structures.
7	Programming	4.Use searching and sorting algorithms.
	Laboratory	5.Employ primitive operations on sequential file.
	Laboratory	6.Create and manipulate single, double, circular and generalized linked
		list.
		1. Breakdown problem into smaller components, propose and evaluate
	214448	
		different solutions for solving problems.
		2. Develop and implement algorithms for solving simple problems using modular programming concept
	I	modular programming concept.

8	Object Oriented Programming Lab.	 3. Abstract data and entities from the problem domain, build object models and design software solutions using object-oriented principles and strategies. 4. Desclar provide the provide the provide the principle of the principl
		4. Develop programs that appropriately utilize key object-oriented concepts
	214449	1. Provides an ability to understand, analyze and interpret the essentiality of grammar and its proper usage.
9	Communication Skills	 2. Build the students' vocabulary by means of communication via web, direct Communication and indirect communication. 3. Understanding the various rules and means of written communication. 4. Effective communication with active listening, facing problems while
		communication and how to overcome it.
	TE	(Information Technology) 2015 pattern Sem-I
	314441	1.Explain finite state machines to solve problems on it.
		2.Construct Regular Expression by solving related problems.
		3.Explain Regular Grammar and language also different types of grammar and normal forms by solving related problems.
1	Theory of	4.Explain concept of Push Down Automata and Post Machine by
	Computation	solving related problems.
		5.Explain Turing Machine by simplifying related problems.
		6.Explain decidability and computational complexity.
	314442	1. Explain basic concepts of DBMS & RDBMS. Analyze different
		database models.2. Demonstrate an understanding of normalization theory and apply
		such knowledge to the normalization of a database.
		3. Query a database using different SQL commands as well as Design
	.	and implement a database schema for a given problem domain.
2	Database	4. Explain basic issues of transaction processing and concurrency
	Management	control.
	Systems	5. Describe and compare various database architectures with its
		applications.
		6. Describe emerging database technologies.
		7. Explain basics of data warehousing and data mining.
	314443	1. Identify unique features of various software application domains and
		classify software applications.
		2. Choose and apply appropriate lifecycle model of software
		development. 3. Describe principles of agile development, discuss the SCRUM
	Software	process and distinguish agile process model from other process models
3	Engineering &	4. Analyze software requirements by applying various modeling
	Project	techniques.
	Management	5. Llist and classify CASE tools and discuss recent trends and research
	Č	in software engineering.

		6. Understand IT project management through life cycle of the project
		and future trends in IT Project Management
	314444	1. Explain working of operating system and shell
		2. Understand process, thread and scheduling
		3. Apply the concept of process synchronization, mutual exclusion and
4	Our sections Company	the deadlock
	Operating System	4. Understand main and virtual memory management
		5. Realize the concept of I/O management and File system.
		6. Understand Linux operating system with its function
	214445	1. Explain importance of HCI study and principles of user-centred
	314445	design (UCD) approach.
		2. Develop understanding of human factors in HCI design.
		3. Develop understanding of models, paradigms and context of
5	Ulumon Commuter	interactions.
	Human-Computer Interaction	4. Design effective user-interfaces following a structured and organized
	Interaction	UCD process.
		5. Evaluate usability of a user-interface design.
		6. Apply cognitive models for predicting human-computer-interactions.
	314446	1. Install and configure database systems.
		2. Analyze database models & entity relationship models.
		3. Design and implement a database schema for a given problem-domain
6	Software	
	Laboratory-I	4. Understand the relational and document type database systems.
		5. Populate and query a database using SQL DML/DDL commands.
		6. Populate and query a database using MongoDB commands.
	314447	1. Understand the basics of Linux commands and program the shell of
	514447	Linux.
		2. Develop various system programs for the functioning of operating
		system.
		3. Implement basic building blocks like processes, threads under the
7		Linux.
/	Software	4. Develop various system programs for the functioning of OS concepts
	Laboratory-II	in user space like concurrency control and file handling in Linux
		5. Design and implement Linux Kernel Source Code.
		6. Develop the system program for the functioning of OS concepts in
		kernel space like embedding the system calls in any calls
	314448	1.Describe a HTML5 program using frame, and to create table,
	511110	registration form add images, links.
		2. Create a page using CSS properties Border, margins, Padding,
		Navigation, dropdown list.
		3. Create form in HTML with all form elements apply form validations
		(e.g. Email, mobile, Pin code, Password).
8	Software	4. Validate URL, Email, Required using functions empty, preg_match,
	I aboratory_III	filter_var in PHP.

	Lautaity -111	5. Describe servlet life cycle, create login page and apply proper
		validations with appropriate messages using doGet()/ doPost() methods.
		6. Design a website using Content management tool (Word Press).
		7. Describe phpMyAdmin and its features.
	BE	(Information Technology) 2015 pattern Sem-I
	414453	1. Understand basics of security services
		2. Use basic cryptographic techniques in application development
		3. Apply methods for authentication, access control, intrusion detection
1	Information and	and prevention.
	Cyber Security	4. Understand risks and vulnerability terms
		5. Classify different cybercrimes
		6. Develop computer forensics awareness.
	414454	1. Build the learning model.
		2. Developed an appreciation for what is involved in learning from data.
2	Machine Learning	3. Find out solution to real world problems
2	and Application	4. Implement some basic machine learning algorithms
	and reprication	5. Using different method evaluate the performance of learning models
		6. Apply machine learning algorithms to solve problems of moderate
		complexity
	414455	1. Understand the fundamental aspects of different object oriented
	414433	methodologies
		2. Explore and analyze use case modeling, domain/ class modeling.
3		3. Understand Interaction and behaviour modeling
5	Software Design & Modeling	4. Analyse design process in software development
		5. Understand software design principles and patterns.
		6. Learn the architectural design guidelines in various type of
		application development.
	414456	1. Justify the need to study human-computer-interaction or human-
		factors while designing software.
		2. Discuss the process of designing user-friendly software based on
		usability engineering guidelines.
		3. Apply interaction design and UI design process in enhancing user-
4	Elective - I	experience of an application.
	(Usability	4. Conduct usability evaluation of user-interfaces or software
	Engineering)	applications.
		5. Discuss industry standards for designing and evaluating user-
		interfaces.
		6. Discuss current trends in usability engineering
	414457	1. Understand importance of testing and tester's role in a software
	41443/	development organization.
	ELECTIVE II:	2. Understand Testing Approaches.
5	Software Testing	 3. Explore Software Test Automation, Quality Management Metrics. 4. Understand Software quality assurance.

	απα Quanty	5. Choose appropriate quality assurance models and develop quality.
	Assurance	6. Understand Software Process, Internal Auditing and Assessments.
	414458	1. Implement basic security meachanisms
6	Computer	2. Understand the machine learning principles and analytics of learning algorithms.
	Laboratory VII	3. Apply Machine Learning Principles for various applications
	414459	1. Understand Unified Modeling Language (UML 2.0)
		2. Identify different software artifacts at analysis and design phase.
7	Computer	3. Explore and analyze use case modeling.
	Laboratory VIII	4. Understand Interaction and Behavior Modeling.
		5. Explore and analyze domain/ class modeling.
	414460	1. Implement their ideas/real time industrial problem/
		currentapplications from their engineering domain.
	Project Phase-I	2. Develop plans with help of team members to achieve the project's
		goals.
8		3. Break work down into tasks and determine appropriate procedures.
		4. Allocate roles with clear lines of responsibility and accountability and
		learn team work ethics.
		5. Estimate and cost the human and physical resources required, and
		make plans to obtain the necessary resources.

	A.Y. 2020-21, Sem-II		
Sr.No.	Course code	Course outcome	
	Course name		
	SE	Information Technology) 2019 pattern Sem-II	
	207003	1. To Solve Linear differential equations, essential in modelling and	
	207003	design of computer-based systems.	
		2. to Apply concept of Fourier transform and Z-transform and its	
		applications to continuous and discrete systems and image processing.	
		3. To Apply Statistical methods like correlation and regression analysis	
1		and probability theory for data analysis and predictions in machine	
1	Engineering	learning.	
	Mathematics - III	4. To Solve Algebraic and Transcendental equations and System of	
		linear equations using numerical techniques.	
		5. To Obtain Interpolating polynomials, numerical differentiation and	
		integration, numerical solutions of ordinary differential equations used in	
		modern scientific computing.	
		1.Explain terms related to computer graphics and apply mathematics	
	214450	and logic to develop computer programs for elementary graphic	
		operations.	
		2.Solve problems for performing graphical transformations.	
		3. Apply mathematics and graphical techniques to achieve realism using	
2		3D transformations and projections.	

		4.Explain segment, windowing and clipping concepts and apply
	Computer Graphics	algorithms to solve problems related to them.
		5.Explain techniques to create realistic views using shading and
		animation sequences and learn gaming platforms.
	214451	6.Explain methods to draw curves and random surfaces.
	214451	1. Explain ALP tools and architecture details of 80386 microprocessor
		2. Explain the memory management of 80386 microprocessor
		3. Explain Paging, multitasking, Real and Protected mode Interrupt
		structure?
3	Processor	4. Differentiate between microprocessor and microcontroller.
5	Architecture &	Understand architecture and memory organization of
	Interfacing	8051microcontroller.
		5. Explain ports, interrupts and timers/ counters of 8051.
		6. Explain the Features, Architecture, Operating modes 8255.
		Understand the interfacing and application of 8051.
	014450	1. Explain linear data structures i.e. stack and queue with their
	214452	applications
		2. Explain the basic terminologies and types of trees.
		3. Illustrate the use of various graphs algorithms.
4	Data Structures and Files	4. Explain symbol table applications and use the different hashing
		methods.
	and Thes	5. Describe the use of advanced tree data structures.
	214453	6. Explain different file organizations with their primitive operations.
	214433	1.Understand data/signal transmission over communication media
	Error 1. dia mande	2. Recognize usage of various modulation techniques in communication
~	Foundations of	3. Analyze various spread spectrum and multiplexing techniques
5	Communication	4. Use concepts of data communication to solve various related
	and Computer	problems
	Network	5. Understand error correction and detection techniques.
		6. Acquaint with transmission media and their standards
	214454	1. Explain concepts related to assembly language programming
		2. Write and execute assembly language program to perform array
	Processor	addition, code conversion, block transfer and string operations
6	Interfacing	3. Write program of 8051 microcontroller and implement the same
	Laboratory	using 8051 development board.
	Laboratory	4. Explain interfacing of real world input and output devices to 8051
		microcontroller
	014455	1. Apply proper constructs of C++ and coding standards for program
7	214455	development.
	Data Structures and Files	2. Implement stack and queue.
		3.Implement non-linear data structures such as trees, graphs etc.
		4. Implement primitive operations on sequential file.
	Laboratory	5. Use various hashing techniques for implementing direct access file.
		1. Apply and implement line drawing and circle drawing algorithms to
	214456	draw specific shape given in the problem
		Teraw speeme shape given in the problem

I		2. Apply and implement polygon filling algorithm for a given polygon.
8		
		3. Apply and implement 2-D and 3-D transformation algorithms for
	Commenter Complian	given input shape
	Computer Graphics	4. Apply and implement polygon clipping algorithm for given input
	Laboratory	polygon
		5. Apply and implement fractal generation algorithm for a given input.
		6. Apply and implement animation concepts for generating simple
		animation without using any animation tool
	TE (Information Technology 2015 pattern) Sem-II
	314450	1. Know Responsibilities, services offered and protocol used at each
	511150	layer of network.
		2. Understand different addressing techniques used in network.
1		3. Know the difference between different types of network.
1	Computer Network	4. Know the different wireless technologies and IEEE standards
	Technology	5. Use and apply the standards and protocols learned, for application
		development.
		6. Understand and explore recent trends in network domain.
	214451	1. Explain independently modern software development tools and
	314451	creates novel solutions for language processing applications.
		2. esign and implement assemblers and macro processors.
2		3. Use tool LEX for generation of Lexical Analyzer.
	System	4. Use YACC tool for generation of syntax analyzer.
	Programming	5. Generate output for all the phases of compiler.
		6. Apply code optimization in the compilation process.
	214452	1. practice principle of Optimality to solve problems using Dynamic
	314452	Programming
		2. Apply Divide & Conquer as well as Greedy approach to design
		algorithms.
3	Design and	3. Classify different problems into appropriate design solutions.
	Analysis of	4. Illustrate different problems using Backtracking.
	Algorithms	5. Compare different methods of Branch and Bound strategy.
		6. Identify the nature of nondeterministic algorithms and classify
		deterministic algorithms into P classes.
	314453	1. Understand the need of Cloud based solutions.
		2. Understand Security Mechanisms and issues in various Cloud
		Applications
4		3. Explore effective techniques to program Cloud Systems.
	Cloud Computing	4. Understand security issues in cloud computing.
		5. Understand current challenges and trade-offs in Cloud Computing.
		6. Understand emerging trends in cloud computing.
	314454	1. Understand Big Data primitives.
	-	2. Learn and apply different mathematical models for Big Data.
		3. Demonstrate their Big Data learning skills by developing industry or
		research applications.
I	I	**

-		4. Analyze each learning model come from a different algorithmic
5	Data Sciece and	approach and it will perform
	Big Data Analytics	differently under different datasets.
		5. Understand needs, challenges and techniques for big data
		visualization.
		6. Learn different programming platforms for big data analytics.
		1. Implement small size network and its use of various networking
	314455	commands.
		2. Understand and use various networking and simulations tools.
C		3. Configure various client/server environments to use application layer
6	Software	protocols
	Laboratory-IV	4. Understand the protocol design at various layers.
		5. Explore use of protocols in various wired and wireless applications.
		6. Develop applications on emerging trends.
	214450	1. To design and implement two pass assembler for hypothetical
	314456	machine instructions.
		2. To design and implement different phases of compiler (Lexical
7		Analyzer, Parser, Intermediate code generation)
/	Software	3. To use the compile generation tools such as "Lex" and "YACC".
	Laboratory-V	4. To apply algorithmic strategies for solving various problems.
		5. To compare various algorithmic strategies.
		6. To analyze the solution using recurrence relation.
	314457	1. Understand Big data primitives and fundamentals.
		2. Understand the different Big data processing techniques.
		3. Understand the application and impact of Big Data
8	Software	4. Understand and apply the Analytical concept of Big data using
	Laboratory-VI	R/Python
		5. Understand emerging trends in Big data analytics
		6. Understand different data visualization techniques for Big Data.
	314458	1. Gather, organize, summarize and interpret technical literature with
	51450	the purpose of formulating a project proposal
		2. Write a technical report summarizing state-of-the-art on an identified
		topic.
9		3. Present the study using graphics and multimedia presentations.
-	Project Based	4. Define intended future work based on the technical review.
	Seminar	5. Explore and enhance the use of various presentation tools and
		techniques.
		6. Understand scientific approach for literature survey and paper writing.
		Information Technology) 2015 pattern Sem-II
	414462	1.Understand the fundamentals of distributed systems.
		2.Describe various ways of communication and coordination in a
		distributed system.
1	Distributed	3.Discuss the importance of replication and fault tolerance.
	Computing Systems	4.Describe the various file systems used in distributed systems.

	Computing systems	5.Understand the distributed Web based system.
		6.Discuss the various security issues and security management in a
		distributed system.
		1. Demonstrate and explain the knowledge of design of UbiComp and
	414463	its applications.
		2. Explain smart devices and services used UbiComp.
		3. Explain the significance of actuators and controllers in real time
		application design.
2	T.T	4. Use the concept of HCI to understand the design of automation
	Ubiquitous	applications.
	Computing	5. Classify UbiComp privacy and explain the challenges associated with
		UbiComp privacy.
		6. Get the knowledge of ubiquitous and service oriented networks along with
		Ubicomp management
	414464	1. Describe the concept of the Internet of Things, IoT definitions and
		2. Explain architecture of IoT.
3	Ele-III: Internet of	3. Describe the objects connected in IoT.
3		4. Understand addressing techniques for IoT.
	Things	5. Understand the platforms in IoT.
		6. Understand cloud interface to IoT.
	414465	1. Understand the basics of Social Media Analytics.
		2. Explain the significance of Data mining in Social media.
	Elective IV: Social	3. Demonstrate the algorithms used for text mining.
4		4. Apply network measures for social media data.
	Media Analytics	5. Explain Behavior Analytics techniques used for social media data.
		6. Apply social media analytics for Face book and Twitter kind of
		applications.
	414466	1.Demonstrate knowledge of the core concepts and techniques in
	+1++00	distributed systems.
5	Computer	2.Learn how to apply principles of state-of-the-Art Distributed systems
	Laboratory - IX	in practical application.
	Luboratory IX	3.Design, build and test application programs on distributed systems.
	414467	1. Describe Android development environment. Installing and setting up
	+1++07	the environment. Hello world application.
		2.Design a User Interface(Android) using pre-built UI components such
6		as structured layout objects, UI controls and special interfaces such as
		dialogs, notifications, and menus.
	COMPUTER	3. Explain Android-database Connectivity and create a SQLite Database
		for an Android Application and perform CRUD (Create, Read, Update
		and Delete) database operations.
		4. Design a Smart Application that senses environment temperature
	LABORATORY-X	5. Describe a Smart Light System (Light that automatically switched on
		in evening and gets off in morning) using open source Hardware
	1	

		6. Explain Android Security and design a system which connect
		hardware to Android Smart Phone with unique identifier Security i.e
		Authentication token.
		7.Explain the Evolution of cellular networks all the way up to 7G.
	414468	1. Extend further the investigative study
	Project Work	2. Product development cycle using industrial experience, use of state of
		art technologies.
		3. Participate in National/International paper presentation activities and
7		funding agency for sponsored projects.
/		4. Use learning and knowledge access techniques using Conferences,
		Journal papers and anticipation in research activities.
		5. Evaluate the various validation and verification methods.
		6. Analyze professional issues, including ethical, legal and security
		issues, related to computing projects.

Engineering Sciences And Allied Engineering Sem-I

Engineeri Subject : 107 Subject 1 : Engin Mathan Subject 2 : Engin Chem	A.Y. 2021-22, Sem-I		
Engineeri Subject : 107 Subject 1 : Engin Mathan Subject 2 : Engin Chem	urse code	Course outcome	
Subject : 107 subject 1 : Engin Mathem Subject 2 : Engin Cherr Subject	irse name		
1 : 107 subject 1 : Engin Mathem 2 : Engin Chem	eering Scie	ences And Allied Engineering Sem-I (2019 COURSE)	
Subject 2 : Engin Chem	ject code 107001 ect name	 leading to Taylors and Maclaurin's series useful in the analysis of engineering problems. analysis for design and analysis of periodic continuous and discrete systems. 3. To deal with derivative of functions of several variables 	
2 : Engin Chem	: Engineering	 that are essential in various branches of Engineering. 4.to apply the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation 5. To the essential tool of matrices and linear algebra in a 6. To the essential tool of matrices and linear algebra in a 	
2 : Engin Chem		comprehensive manner for analysis of Eigen values and Eigen vectors applicable to engineering problems.	
Subject	ject code 07009 ject name gineering nemistry	 Apply different water softening methods and techniques as commodity. Select suitable electro-analytic technique and system for material investigation. Reveal the information of advanced engineering materials for various engineering applications. 	
	Chemistry	 4. Analysis of fuel and recommend alternative fuels. 5. Determination of organic compound based on their structure. 6. Identify causes of corrosion and preventive measures to minimize corrosion. 	
subject 2 : Engin	ject code 07002 ject name gineering Physics	 Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. Learn basics of lasers and optical fibers and their use in some applications. Understand concepts and principles in quantum mechanics. Relate them to some applications. Understand theory of semiconductors and their 	

		 5. Summarize basics of magnetism and superconductivity. Explore few of their technological applications. 6. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their application. 1. Apply various skills in problem solving and also explain basic features and future of python programming to solve
	Subject code :110005 subject name	the problem. 2.Discuss various types of data types with it's methods and to solve problem by using decision control and loop statement.
3	Programming and Problem Solving	3.Define functions and discuss various standard library modules, packages.
		4.Enlist built in strings methods, strings formatting operator and perform the operations on strings
		5.To solve problem by object oriented programming using python & apply various features, methods to solve problem.
		6.To perform various operations, methods on files & dictionaries
	Subject code 101011	 Determine the resultant of various force system. Determine Centroid, moment of Inertia and solve problems related to friction
4	subject name : Engineering Mechanics	3. Determine reactions of beam, and apply principle of equilibrium to forces in space.
		4. Able to solve for internal forces acting on any member of a pined jointed truss structure ,frame and cables
		5. Calculate position, velocity and acceleration of particle using principle of kinematics.
		6. Calculate position, velocity and acceleration of particle using principle of kinetics and Work Power, Energy.6.
		1.Explain the working of P-N junction diode and its circuits.
	Subject code :104010	2.Understand and describe specifications, features of electronic ideal diode and ideal diode circuits.
5	subject name : Basic Electronic Engineering OR	3.Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET.

L		
		4.Build and test analog circuits using OPAMP and digital
		circuits using universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to
		measure various electrical parameters.
		6.Select sensors for specific applications.
		1.Compare electrical & magnetic circuit stating similarities
		& dissimilarities
		2.Calculate series, parallel and composite capacitor as well
	Subject code	as characteristics parameters of alternating quantity and
	:103004	phasor arithmetic Derive expression for RMS value &
	103004	average value in terms of peak value to find form factor and
		peak factor for sinusoidal current & voltage.
		3.Estimate efficiency & regulation of single phase
	Basic	transformer by performing direct load test on it. Derive
5	Electrical	expression for impedance, current, power in series and
	Engineering	parallel RLC circuit with AC supply along with phasor
	5 5	diagram
		4. Verify the relationship between phase voltage, line voltage
		line current, phase current in a three phase star and delta
		connected load analytically & by drawing relevant phasor
		diagram
		5.Differentiate electrical networks & apply various network
		theorems to solve the circuit. Apply and analyze the
		resistive circuits using star-delta conversion KVL, KCL.
		6.Solve numericals based on work, power & energy by
		studying basic concepts of electrical engineering such as
		emf, pd, current and resistance.
		1.Describe and compare the conversion of energy from
		renewable and non-renewable energy sources
	Subject code	2.Explain basic laws of thermodynamics, heat transfer and
	:102003	their applications
	subject name	
	: Systems in	3.List down the types of road vehicles and their
6	Mechanical	specifications
	Engineering	
	Lingineering	4.Illustrate various basic parts and transmission system of a
		road vehicle
		5.Discuss several manufacturing processes and identify the
		suitable process
		6.Explain various types of mechanism and its application
		1.Familiar with safety norms to prevent any mishap in
I	l	workshop

1 1	Subject code	2 Able to handle appropriate hand tool sutting tool and
7	5	2. Able to handle appropriate hand tool, cutting tool and
	: 111006	machine tools to manufacture a job
	subject name	3.Able to understand the construction, working and
	: Workshop	functions of machine tools and their parts
		4. Able to know simple operations (Turning and Facing) on
		a centre lathe
		1. Demonstrate an integrative approach to environmental
		issues with a focus on sustainability
0	Subject code	2. Explain and identify the role of the organism in energy
8	: 101007	transfers in different ecosystems.
	subject name	
	:	3.Distinguish between andprovide examples of renewable
	Environmenta	and nonrenewable resources ans analyze personal
	Studies I	consumption of resources.
	(Audit course)	
		4. Identify key threats to biodiversity and develop
		appropriate policy options for conserving biodiversity in
		different settings.
		Engineering Sciences And Allied Engineering Som II

Г

Engineering Sciences And Allied Engineering Sem-II

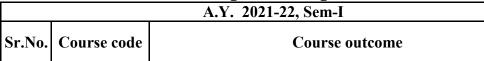
	A.Y. 2021-22, Sem-II		
Sr.No.	Course code	Course outcome	
	Course name		
Er	igineering Scie	nces And Allied Engineering Sem-II (2019 COURSE)	
1	Subject code : 107008 subject name : Engineering Mathematics	 To know the effective mathematical tools for solutions of first order differential equations. To model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc. Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions To trace the curve for a given equation and measure arc length of various curves. To konw the concepts of solid geometry using equations To evaluation of multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia. 	
		1. Apply different water softening methods and techniques	
		as commodity.	
2	Subject code 107009	2. Select suitable electro-analytic technique and system for material investigation	
	10/009	material investigation.	

subject name : Engineering Chemistry3. Reveal the information of advanced engineering materials for various engineering applications.23. Reveal the information of advanced engineering materials for various engineering applications.4. Analysis of fuel and recommend alternative fuels. 5. Determination of organic compound based on their structure. 6. Identify causes of corrosion and preventive measures to minimize corrosion.2Subject code 107002 subject name : Engineering Physics1. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 2. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications. 4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
Chemistry4. Analysis of fuel and recommend alternative fuels. 5. Determination of organic compound based on their structure.6. Identify causes of corrosion and preventive measures to minimize corrosion.1. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.2Subject code 107002 subject name : Engineering Physics3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
25. Determination of organic compound based on their structure.6. Identify causes of corrosion and preventive measures to minimize corrosion.1. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.2Subject code 107002 subject name : Engineering Physics3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
2structure.2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 2. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
26. Identify causes of corrosion and preventive measures to minimize corrosion.2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.2Subject code 1070022. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.2Subject code 1070022. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices.5. Summarize basics of magnetism and superconductivity.
2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 2. Learn basics of lasers and optical fibers and their use in some applications.2Subject code 1070021. Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 2. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
2Subject code 107002polarization; connect it to few engineering applications. 2. Learn basics of lasers and optical fibers and their use in some applications.2Subject code 1070022. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
2Subject code 107002 subject name : Engineering Physics2. Learn basics of lasers and optical fibers and their use in some applications.3. Understand concepts and principles in quantum mechanics. Relate them to some applications.4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
 2 107002 subject name : Engineering Physics 3. Understand concepts and principles in quantum mechanics. Relate them to some applications. 4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
107002some applications.subject name3. Understand concepts and principles in quantum mechanics. Relate them to some applications.Physics4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
 Engineering Physics 3. Understand concepts and principles in quantum mechanics. Relate them to some applications. 4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
 Engineering Physics mechanics. Relate them to some applications. 4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
 4. Understand theory of semiconductors and their applications in some semiconductor devices. 5. Summarize basics of magnetism and superconductivity.
applications in some semiconductor devices.5. Summarize basics of magnetism and superconductivity.
5. Summarize basics of magnetism and superconductivity.
0 1 <i>1</i>
$\mathbf{E}_{1} = \mathbf{E}_{1} + \mathbf{E}_{2} + $
Explore few of their technological applications.
6. Comprehend use of concepts of physics for Non
Destructive Testing. Learn some properties of nanomaterials
and their application.
1. Apply various skills in problem solving and also explain
basic features and future of python programming to solve
the problem.
Subject code 2.Discuss various types of data types with it's methods and
3 subject code to solve problem by using decision control and loop
statement.
subject name
: . 3.Define functions and discuss various standard library
Programming modules nackages
and Problem
Solving
4.Enlist built in strings methods, strings formatting operator
and perform the operations on strings
5. To solve problem by object oriented programming using
python & apply various features, methods to solve problem.
6.To perform various operations, methods on files &
dictionaries
1. Determine the resultant of various force system.
4 Subject code 2. Determine Centroid, moment of Inertia and solve
101011 problems related to friction

	subject name : Engineering Mechanics	3. Determine reactions of beam, and apply principle of equilibrium to forces in space.
		4. Able to solve for internal forces acting on any member of a pined jointed truss structure ,frame and cables
		5. Calculate position, velocity and acceleration of particle using principle of kinematics.
		6. Calculate position, velocity and acceleration of particle using principle of kinetics and Work Power, Energy.6.
		1.Explain the working of P-N junction diode and its circuits.
5	Subject code :104010	2.Understand and describe specifications, features of electronic ideal diode and ideal diode circuits.
	subject name : Basic Electronic	3.Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET.
		4.Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to measure various electrical parameters.
		6.Select sensors for specific applications.
		1.Compare electrical & magnetic circuit stating similarities& dissimilarities
6	Subject code :103004	2.Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage.
	Basic Electrical Engineering	3.Estimate efficiency & regulation of single phase transformer by performing direct load test on it. Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram
		4. Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to solve the circuit. Apply and analyze the resistive circuits using star-delta conversion KVL, KCL.

1	I	
		6.Solve numericals based on work, power & energy by
		studying basic concepts of electrical engineering such as
		emf, pd, current and resistance.
		1.To acquire basic knowledge about engineering drawing
		language, line types, dimension methods, and simple
		geometrical construction.
-	Subject code	2.To draw conic sections by various methods, involutes,
7	: 102012	cycloid and spiral.
	subject name	3. To acquire basic knowledge about physical realization of
	: Engineering	engineering objects and shall be able to draw its different
	Graphics	views.
	1	4.To visualize three dimensional engineering objects and
		shall be able to draw their isometric views.
		5.To imagine visualization of lateral development of solids.
		6. To acquire basic knowledge about the various CAD
		drafting software's and its basic commands required to
		construct the simple engineering objects.
		1. Project based learning will increase their capacity and
		learning through shared cognition
	Subject code	2. Students able to draw on lessons from several disciplines
8	: 110013	and apply them in practical way.
	subject name	3. Learning by doing approach in PBL will promote long-
	: Project	term retention of material and
	Based	replicable skill, as well as improve teachers' and students'
	Learning	attitudes towards learning.
	Louining	1. Have an understanding of environmental pollution and
		the science behind those problems and potential solutions.
	Subject code	2. Have knowledge of various acts and laws and will be able
9	: 101014	to identify the industries that are violating these rules.
	subject name	to identify the industries that are violating these fulles.
	subject name	2 A goog their part of over increasing human perputation on
	Environmente	3. Asess theimpact of ever increasing human population on the biosphere: social,economic issues and role of humans in
	1 Studies -II (conservation of natural resources.
	Audit course)	
	Audit course)	4. Learn skills required to research and enalyze
		4. Learn skills required to research and analyze
		environmental issues scientifically and learn how to use
		those skills in applied situations such as careers that may
		involve environmenatl problems/ and or issues.

Computer Department A.Y. 2021-22, Sem-I



	Course name		
	SE Computer Sem-I (2019 COURSE)		
1	210241 Discrete Mathematics	 1.Design and analyze real world engineering problems by applying set theory prapositional logic and construct proofs using mathematical Induction 2.Specify Manipulate and apply equivalence relations,Construct and use functions and apply these concepts to solve new problem 3.Calculate number of possible outcomes using permutation and combination,to model and analyse computational processes using combinotrics 4.Apply appropriate mathematical concepts and skills to solve problems in both familier and unfamilier situations including those in real life context 5.Model and solve computing problem using tree and graph 	
		and solve problems using appropriate algorithms6.Analyze the propertie of binary operations, apply abstract algebra in coding theory and evaluate the algebraic structure	
	210242	 Define the terms such as data structure, time complexity and to calculate time complexity of given program segment. Solve problem of sparse matrix using array data structure. 	
2	Fundamentals of Data Structures	 3. Sort the given data using any type of sorting technique and state time complexity of that sorting technique. 4. Apply dynamic memory management using linked list in problem. Also state its advantages and disadvantages. 5. Translate the expression from one form to another form using stack. 6. Explain deferent types of queues with their application 	
	210243	 6. Explain deferent types of queues with their application. 1. Define & explain basic concepts of object oriented programming & apply features of object oriented programming language. 2. Explain concept of virtual & friend function with example & types of pointers 	
3	Object Oriented Programming	 3. Describe templates & types of templates, to analyze and design a computer program using template 4. Explain & analyze the strengths of exception handling mechanism in program with keyword. 	

1	I	
		5. Describe different file handling classes & stream
		manipulators.
		6. To design & apply Standard Template Library for
		effective programming, describe components of STL &
		types of containers.
		1. Identify the basic terminologies of Computer Graphics
		and interpret the mathematical foundation of the concepts of
		computer graphics.
	210244	2. Apply mathematics to develop Computer programs for
	210244	elementary graphic operations.
	Computer	3. Illustrate the concepts of windowing and clipping and
	Graphics	apply various algorithms to fill and clip polygons.
	-	4. Understand and apply the core concepts of computer
4		graphics, including transformation in two and three
		dimensions, viewing and projection
		5. Understand the concepts of color models, lighting,
		shading models and hidden surface elimination.
		6. Create effective programs using concepts of curves,
		fractals, animation and gaming.
		Course Contents
		1. Realize & simplify boolean algebric assignments for
		designing digital circuits using k-map.
	210245	2. Design & implement combinational circuits.
	Digital	3.Design & implement sequential digital circuits as per
5	Electronics &	specification.
	Logic Design	
		4.Draw a ASM chart and Develop programmable logic
		devices for real world applications.
		5. Choose appropriate logic families according to their
		specifications.
		6. Explain architecture and units of computer system.
		1. Analyze problem and select suitable data structure for
		given problem
		2. Implement data structure in different programming
	210246	environment.
	Data	
6	structures	3. Identify the data structure and compare all of them.
Ŭ	Laboratory	is the same structure and compare an or morn.
	Lucolutory	1.Design and implement complex number program using
		fundamental concept of oop
		2.Devlop application by using inheritance and polymorphism
I	I	

	210247	3.Design and implement exception handling and template by using C++
	OOP & Computer Graphics Laboratory	4. Analyze and apply computer graphics algorithms for line- circle drawing scan conversion and filling with the help of object oriented programming concepts.
7		5. Understand the concept of windowing and clipping and apply various algorithm to fill and clip polygon.6. Apply Logic to implement, curves, fractals, animations and
		gaming programs. 1.Identify the various digital ICs and understand their operation.
	210248	 Apply Boolean laws , k-map to simplify the digital circuits.
	Digital Electronics Labpratory	3. Capable to design simple logic diagram as per specification
8		4. Apply knowledge to appropriate IC as per design specification.
		5. Design and implement combinational circuits such as Mux, Demux, Adder etc ans sequential circuits such as FF, Counter etc as per specifiction
		6. Learn about shift register1. Express effectively through communication skills and improve listing and reading skills.
	210249	2. Write well formatted reports and technical documents.
9	Business Communicati on Skills	3. Prepare for public speaking, group discussion, interviews and presentations.
		4. Explore target setting, self-motivation and practicing creative thinking.
		5. Prepare for writing telephone and e-mail etiquettes
		6. Write SWOT analysis and shot team and long term goals
		1. Aware of the various issues concerning humans and society.
	210250	2. Aware about their responsibilities towards society.
	Humanity and Social	3. Sensitized about broader issues regarding the social,
	Science	cultural, economic and human aspects, involved in social changes.
	Serence	4. Able to understand the nature of the individual and the
10		relationship between self and the community.
		5. Able to understand major ideas, values, beliefs, and
		experiences that have shaped human history and cultures.

		6. Able to understand need of society and provide solution	
		to them.	
TE Computer Sem-I (2019 COURSE)			
		1. Design E-R Model for given requirements and convert the same into database tables.	
		 Develop solutions with database techniques such as SQL & PL/SQL. 	
1	310241	3. Apply database design approaches for covering conceptual design, logical design and normalize database	
	Database Management Systems (DBMS)	4. Explain transaction Management in relational database System.	
		5. Describe different database architecture and analyses the use of appropriate architecture in real time environment.	
		6. Develop solution with modern database techniques such as NOSQL	
		1. Analyse inputs and design system which gives absolute output	
		2. Able to subdivide problem space based on input subdivision using constraints	
2	310242	3. Able to design deterministic Turing machine for all inputs and all outputs	
	Theory of Computation	4. Able to subdivide problem space based on input subdivision using constraints	
		5. Identify suitable grammer to apply relative system	
		6. Able to apply linguistic theory	
		1. Analyze and synthesize basic system software and its functionality	
		2. Identify suitable data structures and design and	
	210242	implement various system software	
3	310243	3. Compare and analyze different loading schemes	
	System Programming & operating system	4. Implement and analyze the performance of process scheduling algorithms	
	<i>y</i> =	5. Identify the mechanism to deal with the deadlock and concurrency issues	
		6. Demonstrate memory organization and memory management policies	
		1. Understand network reference models and technologies.	
4	310244	2. Differentiate design issues, flow control, error control and multiple access protocol using different protocol	

	Computer	3. Distinguish network protocols and demonstrate different
	Networks & security	routing algorithms.
		4. Understand transport layer protocol and implement client
		server communication using socket programming.
		5. Select any application layer protocols to implement web
		or desktop application.Select any application layer protocols
		to implement web or desktop application.
		6. Comprehend the basic of network security.
		1. Understand the fundamentals and need of Embedded
		Systems for the Internet of Things
		2. Apply IoT enabling technologies for developing IoT
		systems
5	310245	3. Apply design methodology for designing and
		implementing IoT in real time applications
	Elective-1	4. Analyze IoT protocols for making IoT devices
		communication
	(Internet of	
	Things &	5. Learn and understand Design cloud based IoT systems
	embedded	
	systems)	
		6. Design and Develop secured IoT applications
		1. Explain importance of good user interface design.
		2. Define and apply the design guidelies for designing the
		user interface.
5	310245	3. Differentiate between graphical and web user interface.
	Elective-1	4. Explain the user interface design process
	Human	
	Computer	5. justify the pattern recognition in HCI.
	Interface	
		6. Design GUI in python
		1. Design E-R Model for given requirements and convert
		the same into database tables
	310246	2. Design schema in appropriate normal form considering
		actual requirements
-	Database	
6	Management	3. Implement SQL queries for given requirements, using
	Systems Lab	different SQL concepts
		4. Implement PL/SQL Code block for given requirements
		5. Implement NoSQL queries using MongoDB
		6. Design and develop application considering actual
		requirements and using database concepts
		1. Setup of LAN of four computer using layer-2 switch in
		wired network.

	310247	2. Demonstrate LAN and WAN protocol behavior using Modern Tools.
7	Computer Networks & security Lab	3. Understand error detection and correction concept and implement program based on it.
	5	4. Develop Client-Server architectures and prototypes by the means of correct standards and technology.
		5. Analyze data flow between peer to peer in an IP network using Application, Transport and Network Layer Protocols.
		6. Design and configure a RIP, OSPF and BGP using packet tracer.
		1. Implement language trnslators
	310248	2. Implement internals and functionalities of operating system
8	Lab Practice-I	3. Implement and analyze the performance of memory management policies
		4. Sketch the User Interface designs.
		5. Design the user interfaces by appying user interface
		design guidelines.
		6. Design GUI by using python.
		4. To understand the Python pakages used in IOT for sensor
		programming
		5. To undaerstand and implement the hardware with its
		connections.
		6. Design and Develop IoT applications
	210240	1. Analyze a latest topic of professional interest
	310249	2. Enhance technical writing skill
	Seminar &	
9	technical	3. Identify an engineering problem, analyze it and propose a
		work plan to solve it
	n	
		4. communicate with professional technocal presentation
		skill
	r	BE Computer Sem-I (2015 COURSE)
		1. Understand opportunities of HPC systems, describe
		different parallel architectures.
		2. Understand the fundamental concepts, principles of
		parallel algorithm design
1	410241	3. List basic communication operations
	High Performance Computing	4. To analyze & measure performance of modern parallel computing system
	8	<u> </u>

5. To develop an efficient parallel alg problem.	gorithm to solve a given
1	0 1 1 1 0
6. Make use of CUDA programming	g & explain working of
CUDA.	
1. Identify and apply suitable Intellig	gent agents for various
AI applications	
2. Develop applications using different	ent informed search /
uninformed search or heuristic appro	baches
3. Identify knowledge associated and	l represent it by
2 410242 ontological engineering to plan a stra	ategy to solve given
problem.	
Artificial 4. Compare different learning technic	ques such as
Intelligence supervised, semi supervised and unst	upervised learning
and Robotics techniques.	
5. Apply the suitable algorithms to se	olve AI problems
6. Describe the working mechanism	of robots and explain
various robotic applications	-
1.The student will be able to underst	and the Data Analytics
life cycle.	
2. The student will be able to underst	and and implement
differenrt Data Analytics Methods	
3 410243 3. The student will be able to underst	tand and implement
differenrt Data Analytics Algorithm.	
Data 4. The student will be able to underst	tand and implement
Analytics differenrt Data Analytics classification	on Algorithm.
5. The student will be able to underst	tand and implement
differenrt Data visualization Algorith	hm.
6. The student should be able to impl	lement Advanced
Analytics-Technology and tools.	
1. Apply various data pre processing	techniques on input
dataset.	
4 2. Understanding input problem state	ement.
410244 3. Apply basic, intermediate and adv	anced techniques to
mine the data	
Elective I 4. Analyze the output generated by the	he process of data
mining	
Data Mining	
and 5. Explore the hidden patterns in the	data
Warehousing	
6. Optimize the mining process by cl	hoosing best data
mining technique	
1. Describe fundamental concepts in	e
as manual testing, automation testing	g and software quality
assurance.	

1	1	2 Design and develop project test plan design test appear
		2. Design and develop project test plan, design test cases,
		test data, and conduct test operations
5	410245	3. Apply recent automation tool for various software testing
		for testing software
	Elective II	4. Apply Selenium Automation Tool for testing web based
	Licetive ii	applications.
	Software	
	testing and	5. Apply different approaches of quality management,
	quality	assurance, and quality standard to software system
	assurance	
		6. Apply and analyze effectiveness Software Quality Tools
		1. To understand the Use Case, provided input and expected
		output.
		2. To find inference from input dataset by applying
		exploratory data analysis techniques
6	410246	3. To apply various algorithms for given use case.
0	Laboratory	4. To observe appropriate output performance measurement
	Practice I	
	Practice I	parameter.
		5. To take decision about most optimised algorithm for
		given usecase.
		6. To enhance practical technical competency of students.
		4. Develop the basic parallel programs using open MP.
		5. Develop the basic parallel programs using CUDA.
		6. Investigate the performance of parallel code.
		1. To develop and analyze ETL model and Visualize the
		effectiveness of K-means Algorithm
		2. Create association rules which can be used for product
		recommendations depending on the confidences of the rules
		recommendations depending on the confidences of the fales
		3. To see a word list containing all the different words in
7	410247	your document and their occurrence count next to it in the
		"Total Occurrences" column.
	Laboratory	4. Explain Distributed System concept Web Challenges and
	Practice II	Architecture models.
		5. Explain Interprocesses communication methods in DS.
		6. Describe the working of clocks used in synchronous
		working of DS.
		1. Solve real life problems by applying knowledge.
_		2. Write precise reports and technical documents in a
8	410248	nutshell.
	Project Work	3. Analyze alternative approaches, apply and use most
	Stage I	appropriate one for feasible solution
I	Stage 1	

4. Participate effectively in teams exhibiting team work,
Inter-personal relationships, conflict management and
leadership quality.

		Computer Department	
	A.Y. 2021-22, Sem-II		
Sr.No.	Course code	Course outcome	
	Course name		
	\$	E Computer Sem-II (2019 COURSE)	
1	207003 Engineering Mathematics- III	 To Solve Linear differential equations, essential in modelling and design of computer-based systems. To Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. To Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning. To Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques. To Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific 	
2	210252 Data Structures & Algorithms	 computing. 1. Describe the benefits of good hashing and identify hashing scheme for solving real world problem. 2. Define terms such as weighted graphs, subgraph, complete graph etc. and apply algorithm for finding minimum distance. 3. Describe hashing functions and to apply proper hashing technique for given problem. 4. Apply technique of optimal binary search tree to reduce searching time. 5. Explain indexing techniques and to prepare B tree or B+ tree for given data. 6. Explain different types of file organization and its operations. 	
3	210253 Software Engineering	 Compare software process models used for software development. Identify and analyze the software requirements required for software development. Explain the software project estimation techniques. 	

1		
		4. Formulate the design solution using software engineering.
		5. Explain and justify the importance of Software Configuration Management.
		6. Describe and compare the various testing techniques.
		1. Describe the general architecture of a microprocessor, write an assembly language program by using instruction set.
	210254	2. Differentiate read and write bus cycles, Explain debug, control, test and system registers.
4	Microprocess or	3. Calculate the physical address using segmentation and paging, Explain GDT,IDT,LDT etc.
		4. Illustrate the privilege levels and page & segment protection
		5. Compare different processor modes, describe TSS, Task gate descriptor, TR etc
		6. Classify the microprocessor and microcontroller. Explain handling of interrupts and exceptions.
		1. Make use of Basic principals of Programming Languages
	210255	2. Develop a program with data representation and computition
5	Principals of Programming Languages	3. Develop a program using Object Oriented Programming Language : Java
		4. Develop application using Encapsulation Inheritance and Polymorphism
		5. Explain the concept of Multithreading in Java
		6. Develop a simple program using functional and logical programming paradigm
		1. Use tree data structure for solving real life applications and perform conversions of tree.
	210256	2. Apply various algorithms to find out minimum distance for traversing in real life application.
6	Data Structures and algorithms laboratory	3. Apply proper hashing technique to improve search results.
		4. Solve problem with use of proper multi way trees.5. Use different file organization for maintenance of data.
		6. Apply appropriate data structure for given problem.

1	1	
		1. Apply knowledge and demonstrate programming
		proficiency using the various addressing modes and
		instructions of microprocessor.
	210257	2. Write a programs using co processor instruction set.
	Microprocess	
7	or Laboratory	3. Execute & debug a programs using 64 bit assembler.
		4. Create an interrupt & use it in a program.
		5. Apply the programming knowledge and create a simple
		arithmetic, logical, string and real time applications.
		6. Demonstrate the use of procedures, macros with suitable
		example programs.
		1. Identify the real-life problem from societal need point of
		view.
	210258	2. Identify the tools and techniques to solve the problem.
	Ducient Devel	
8	Project Based	3.Select feasible approach for solving the problem.
	Learning II	
		4. Design the reliable and scalable solution for the selected
		problem.
		5. Specify the Hardware software requirements of the
		project.
		6. Prepare the brief report of their project
		1. To promote ethics, honesty and professionalism.
		2. To set standards that are expected to follow and to be
	210259	aware that if one acts unethically what are the consequences.
		3. To provide basic knowledge about engineering Ethics,
9	Code of	Veriety of moral issues and Moral dilemmas, Professional
	Conduct	ideals and virtues.
		4. To provide basic familarity about Engineers as
		responsible Experimenters, Research Ethics, Codes of Etics,
		Industrial standards.
		5. To provide awareness about Risks and Exposure to safety
		and Risk, Risk Benifit Analysis.
		6. To have an idea about the collegiality and Loyalty.
		TE Computer Sem-II (2019 COURSE)
		1. Understand and Analyze needs and challenges for Data
		Science Big Data Analytics
		2. Compare the intuitions behind various algorithm.
1	310251	3. Apply statistics for Big Data Analytics
	Data Science	4. Understand the pattern in given Big Data Analytics Use
	& Big data	Case dataset.
	analytics	
l	analytics	

I		
		5. Apply the lifecycle of Big Data analytics to real world
		problems
		6. Implement data visualization using visualization tools in
		Python programming
		1. Analyze given assignment to select sustainable web
		development design methodology.
		2. Develop Client Side Web Application using Java Script
2	310252	3. Develop and differentiate between Servlet and JSP Server
2	510252	Side Technologies
	Web	4. Development of application with help of PHP
	technologies	technology
		5. Explain different client and server framework
		6. Develop solution to complex problems using appropriate
		method, technologies, frameworks, web services and content
		management
		1. Identify and apply suitable intelligent agents for various
		AI applications
		2. solve problems using different informed search and
		uninformed search & heuristic approaches
	010050	3. Identify knowledge associated and represent it to solve a
3	310253	given problem
	Artificial	
	Intelligence	4. Apply suitable algorithms to solve AI problems
		5. Implement ideas underlying modern logical inference
		system
		6. Represent complex problems with expressive yet
		carefully constrained language representation
		1. Apply basic concept of UML for designing use case
		diagram of object oriented based application.
А	210254	2. Design a model using static modeling using appropriate
4	310254	modern tool.
		3. Design a model using dynamic modeling using
	Elective-II	appropriate modern tool.
	Software	
	Modelling &	4. Understand and design different architecture of system.
	Architecture	
		5. Apply appropriate design modern tool for designing and
		modeling.
		6. Apply design patterns to understand reusability in object
		oriented design
		1. To demonstrate professional competence through
		industry internship
		2. To apply knowledge gained through internships to
		complete academic activities in a professional manner
	I	

5	310255	3. To choose appropriate technology and tools to solve
		given problem
	Internship	4. To demonstrate abilities of a responsible professional and
		use ethical practices in day to day life
		5. creating network and social circle and developing
		relationships with industry people
		6. To analyze various career opportunities and career goals
	310256	1. Understand the pattern in given Big Data Analytics Use
		Case dataset.
6	Data Science	2. Implement data visualization using visualization tools in
6	& Big data	Python programming
	analytics Lab	2 Analyza informa from given much low statement
		3. Analyze inference from given problem statement.
		1. Understand the importance of website planning and website design issues
		2. Develop web based application using suitable client and
7	310257	Server side scripting such as JSP and servlet
	Web	
	Technology	3. Develop web based application using suitable client and
	Lab	Server side scripting such as PHP
		4. Analyze the web technology languages, frameworks and
		services
		5. Create three tier web based applications
		1. Design a system using informed and uninformed search
		approaches
		2. Apply basic principles of AI in solutions that require
		problem solving, inference, perception, knowledge
		representation & learning
8	310258	3. Design and develop interactive AI applications
	Lab Practice-	4. use tools & techniques in the area software modelling &
	II	architecture
		5. use the knowledge of software modelling & architecture
		for problem solving
		6. Design & develop applications using UML as
		fundamental tool
		BE Computer Sem-II (2015 COURSE)
		1. Distinguish different learning based applications
		2. Apply different preprocessing methods to prepare training
		data set for machine learning
1	410250	3. Design and implement supervised and unsupervised
		machine learning algorithm.
	Machine	4. Implement different learning models
	Learning	

		5. Learn Meta classifiers and deep learning concepts
		5. Learn Meta classifiers and deep learning concepts
		6. Learn clusterinfg and different deep learning techniquues.
		1. Define the different attacks on Information. Find
		problems with existing ciphers.
		2. Apply appropriate cryptographic principle, algorithm and
		techniques to write analysis report
2	410251	3. Apply public cryptography on information for security.
	Information	
	and Cyber	4. Apply authentication methods on user end.
	Security	
		5. Apply intrusion detection system to existing system
		6. Apply Security services. Analyze email security.
		1.Design and implement a lexical analyzer using LEX tools
		2. Design and implement a syntax analyzer using YACC
		tools
3	410252	3.Implement syntax-directed translation and and apply on
5	+10232	run-time environment
	Elective III	4 Design and implement intermediate codes for high-level
	Licetive in	statements.
	Compilers	5.Design and implement code optimization algorithm to
	compilers	produce computer code.
		6.Analyze and transform programs to improve their time
		and memory efficiency
		1. To understand the need of cloud based solution
4		2. To understand Storage and Security mechanisms in
		various cloud systems
	410253	3. To explore effective techniques to program cloud systems
	Elective IV	4. To explore amazon web service in detail
	Cloud	5. To understand trends, current challenges and trade-off in
	Computing	cloud computing
		6. To understand the emerging future trends in cloud
		computing
		1. Implement different learning models to find solution for
		given usecase
		2. Implement and analyze clustering techniquues.
5	410254	3. Design and implement supervised and unsupervised
		machine learning algorithm.
	Laboratory	4. Apply authentication methods on user end for better
	Practice III	access control
		5. Design intrusion detection system for given Problem
		statement
		6. Apply Security services. Analyze email security.

		1.To understand the fundamental concepts of Lexical	
		Analyzer	
		2.To understand concept of Parser	
6	410255	3. Apply basic principles of elective subjects to problem	
0	410233	solving and modeling.	
	Laboratory	4. Use tools and techniques in the area of software	
	Practice IV	development to build mini projects	
		5. Design and develop applications on subjects of their	
		choice.	
		6. Generate and manage deployment, administration &	
		security.	
		1. Show evidence of independent investigation	
7	410256	2. Critically analyze the results and their interpretation	
/	410230	2. Critically analyze the results and their interpretation	
	Project Work	3. Report and present the original results in an orderly way	
	Stage II	and placing the open questions in the right perspective.	
		4. Link techniques and results from literature as well as	
		actual research and future research lines with the research	
		5. Appreciate practical implications and constraints of the	
		specialist subject	
El	Electronics and Telecommunication Department		
		A.Y. 2021-22, Sem-I	
Sr.No.	Course code	Course outcome	
51.110.	Course code	Course outcome	
51.110.	Course name		
	Course name	nics and Telecommunication-Sem-I (2019 COURSE)	
	Course name		
	Course name	nics and Telecommunication-Sem-I (2019 COURSE)	
	Course name	nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using	
	Course name	nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical	
	Course name	nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems.	
	Course name SE Electror	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & 	
	Course name SE Electron 207005	nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems.	
	Course name SE Electron 207005 Engineering	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically 	
1	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of 	
	Course name SE Electron 207005 Engineering	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory. 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory. 5. To Analyze Complex functions, Conformal mappings, 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory. 5. To Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory. 5. To Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital filters, signal and image processing. 	
	Course name SE Electron 207005 Engineering Mathematics	 nics and Telecommunication-Sem-I (2019 COURSE) 1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems. 2. to Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems. 3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electro- magnetic fields & wave theory. 5. To Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital 	

2 Electronic Circuits 3. Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies. 4. Explain internal schematic of Op-Amp and define its performance parameters. 5. Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications. 6. Understand and compare the principles of various data conversion techniques and PLL with their applications. 3 Digital Circuits 3 Digital Circuits 204182 1. Identify and prevent various hazards and timing problems in a digital design. 2 Use the basic logic gates and various reduction techniques of digital logic circuit. 3 Analyze, design and implement combinational logic circuits. 4 Analyze, design and implement sequential circuits. 5. Differentiate between Mealy and Moore machines. 6. Analyze digital system design using PLD. 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 6. Analyze a		204181	2. Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications.
4 204183 4 204183 Elecrical Circuits 5. Formulate and analyze the simple DC and AC circuit with circuit simplification techniques. 4 204183	2		3. Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated
4 204182 and conditioning circuits towards various real time applications. 6. Understand and compare the principles of various data conversion techniques and PLL with their applications. 1. Identify and prevent various hazards and timing problems in a digital design. 3 Digital Circuits 2. Use the basic logic gates and various reduction techniques of digital logic circuit. 3 Analyze, design and implement combinational logic circuits. 4 Analyze, design and implement sequential circuits. 5. Differentiate between Mealy and Moore machines. 6. Analyze digital system design using PLD. 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.			
4 204183 Image: Provide the state of the s			
3 Digital Circuits digital design. 3 Digital Circuits 2. Use the basic logic gates and various reduction techniques of digital logic circuit. 3 Analyze, design and implement combinational logic circuits. 4 Analyze, design and implement sequential circuits. 5 Differentiate between Mealy and Moore machines. 6 Analyze digital system design using PLD. 1 Analyze the simple DC and AC circuit with circuit simplification techniques. 2 Formulate and analyze driven and source free RL and RC circuits. 3 Felecrical Circuits 6 Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4 Elecrical Circuits 5 Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5 Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.			
3 Digital Circuits digital logic circuit. 3. Analyze, design and implement combinational logic circuits. 4. Analyze, design and implement sequential circuits. 5. Differentiate between Mealy and Moore machines. 6. Analyze digital system design using PLD. 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.		204182	
4 Analyze, design and implement sequential circuits. 5. Differentiate between Mealy and Moore machines. 6. Analyze digital system design using PLD. 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.	3	Digital Circuits	
 5. Differentiate between Mealy and Moore machines. 6. Analyze digital system design using PLD. 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			3. Analyze, design and implement combinational logic circuits.
4 204183 Elecrical Circuits 1. Analyze the simple DC and AC circuit with circuit simplification techniques. 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.			4. Analyze, design and implement sequential circuits.
 4 204183 Elecrical Circuits Elecrical Circuits Analyze the simple DC and AC circuit with circuit simplification techniques. Formulate and analyze driven and source free RL and RC circuits. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			· · · · · · · · · · · · · · · · · · ·
 4 204183 Elecrical Circuits 3. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			
 4 204183 Elecrical Circuits 2. Formulate and analyze driven and source free RL and RC circuits. 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			
 204183 Elecrical Circuits 3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			
Elecrical Circuits and analyze the given network using Laplace Transform to find the network transfer function. 4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.	4	204183	circuits.
 Machines / Single Phase & Three Phase AC Motors. 5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles. 			and analyze the given network using Laplace Transform to find
purpose motors & understand motors used in electrical vehicles.			
6. Analyze and select a suitable motor for different applications.			· · · · ·
			6. Analyze and select a suitable motor for different applications.
1. Solve mathematical problems using C programming language.			1. Solve mathematical problems using C programming language.
204184 2. Implement sorting and searching algorithms and calculate their complexity.		204184	
5 Data Structures 3. Develop applications of stack and queue using array.	5	Data Structures	3. Develop applications of stack and queue using array.
4. Demonstrate applicability of Linked List.			
5. Demonstrate applicability of nonlinear data structures -			
Binary Tree with respect to its time complexity.			
6. Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.			
TE Electronics and Telecommunication-Sem-I (2019 COURSE)		TE Electror	

		1
		1. Apply the statistical theory for describing various signals
		in a communication system.
		2. Understand and explain various digital modulation
	304181	techniques used in digital communication systems and
		analyze their performance in presence of AWGN noise.
	Digital	
1	Communicatio	3. Describe and analyze the digital communication system
	n	with spread spectrum modulation.
		4. Analyze a communication system using information
		theoretic approach.
		5. Use error control coding techniques to improve
		performance of a digital communication system
		1. Apply the basic electromagnetic principles and determine
		the fields (E & H) due to the given source.
		2. Apply boundary conditions to the boundaries between
	304182	various media to interpret behavior of the fields on either
	304182	-
		sides.
		3. State, Identify and Apply Maxwell's equations (integral
_	Electromagneti	and differential forms) in both the forms (Stat ic, time-
2	c Field Theory	varying or Time-narmonic field) for various sources,
		Calculate the time average power density using Poynting
		Theorem, Retarded magnetic vector potential.
		4. Formulate, Interpret and solve simple uniform plane wave
		(Helmholtz Equations) equations, and analyze the
		incident/reflected/transmitted waves at normal incidence.
		5.Interpret and Apply the transmission line equation to
		transmission line problems with load impedance to
		determine input and output voltage/current at any point on
		the Transmission line, Find input/load impedance,
		input/load admittance, reflection coefficient, SWR,
		Vmax/Vmin, length of transmission 1 ine using Smith Chart.
		6. Carry out a detailed study, interpret the relevance and
		applications of Electromagnetics.
		1.Ability to implement the underlying concepts of a database
		system.
	304183	2.Design and implement a database schema for a given problem-
	304183	
	Databasa	domain using data mode
3	Database Managamant	3.Formulate, using SQL/DML/DDL commands, solutions to a
	Management	wide range of query and update problems.
		4. Implement transactions, concurrency control, and be able to
		do Database recovery.
		5. Able to understand various Parallel Database Architectures
		and its applications
		6.Able to understand various Distributed Databases and its
		applications.

-		
		1. Understand architecture and features of 8051 and PIC18FXX
		Microcontroller.
	304184	2. Learn interfacing of real-world peripheral devices with
	507107	microcontroller.
4	Microcontrolle	3. Explore different features of PIC 18F Microcontroller with
-	rs	Architecture.
		4.Use concepts of timers and interrupts of PIC 18 in
		programming.
		5. Design and develop microcontroller based embedded
		application.
		6. Demonstrate real life applications using PIC 18.
		1. Interpret and process discrete/ digital signals and
		represent DSP system.
	204105	2.Analyze the digital systems using the Z-transform
	304185	techniques.
_		3.Implement efficient transform and its application to
5	Elective - I	analyze DT signals.
	Digital	4.Design and implement IIR filters.
	Signal	0rrr
	Processing	
	110000000000	5.Design and implement FIR filters.
		6.Apply DSP techniques for speech/ biomedical/ image
		signal processing.
	BE Electro	nics and Telecommunication-Sem-I (2015 COURSE)
		1. Design digital circuits with HDL
	404181	2. Analyze different CMOS circuit issues.
	VLSI	3. Model digital circuits with HDL and implement prototype
	VLSI DESIGN &	on different PLDs
	TECHNOLOG	
1	Y	
*	-	4. Design CMOS circuits for specific applications.
		5. Analyze various ASIC design issues
		6. Explain need of design for testability with different fault
		models and different testing techniques.
		0 1
		1. Describe fundamental principles of computer networking
		2. Compare and recognize errors in existing protocols.
~	404182	3. Identify requirements for a given organizational structure
2		and select suitable networking architecture.
		4. Apply the knowledge of cryptography and network
		security.
	COMPUTER	
	NETWORK &	
	SECURITY	

		5. Analyze the hardware, software, components of a network
		6. Design a Routing table for finding shortest path for data
		communication
		1. Define and differentiate various performance parameters
		of radiating elements.
	404183	2. Analyze various radiating elements and arrays.
	Radiation and	3. Apply the knowledge of waveguide fundamentals in
	Microwave	design of transmission lines.
3	Techniques	
		4. Design and set up a system consisting of various passive
		microwave components.
		5. Analyze tube based and solid state active devices along
		with their application.
		6. Measure various performance parameters of microwave
		components. Understand radiations effects and hazards.
		1. Define the image mathematically and Perform basic
		operations on the given image.
		2. Perform basic image enhancement and restoration
		operations on the given image.
		3. Perform different compression techniques on given image
	404184	
	Digital Image	4. Perform basic image segmentation and morphological
	Video	operations on the given image Analyze the result.
4	Processing	
		5. Apply the concept to represent and describe image.
	404185	
	ELECTRONIC	
	S PRODUCT	
5	DESIGN	
		4. Describe the various techniques for PCB design.
		5. Apply and describe the steps of debugging and
I	•	A.Y. 2021-22, Sem-I
Sr.No.	Course code	Course outcome
Sr.No.	Course code Course name	Course outcome
Sr.No.	Course name	Course outcome ME First Year E&TC(VLSI & ES)-Sem-I
	Processing 404185 ELECTRONIC S PRODUCT	 5. Apply the concept to represent and describe image. 6. Define basic concept of video processing Explain and apply the various stages of hardware design in product design and development. Analyze different design considerations for analog, digital and mixed circuits design process. Describe and apply the various stages of software design in product design and development. 4. Describe the various techniques for PCB design. 5. Apply and describe the steps of debugging and techniques for troubleshooting 6. Explain and apply the methods of documentation

1	504201	characteristics.
		2. Understand different performance parameters
	Digital CMOS	1 1
	Design	
		3. Design CMOS logic circuits
		4. Design and Develop different FSM systems
		5. Understand advance trends in CMOS technology
		1. Define the basic concepts of Embedded Systems and
		Architecture of Embedded System
-		2. Identify Design Methodology, and understand design
		challenges and Design Metrics and problem solving.
		3. Use Life-Cycle Models. Understand design process and
		System specifications versus system requirements
		4. Understand ARM Processor based Embedded System
	504103	design and exhibit the knowledge of ARM.
		5. Understand Embedded Linux. And Linux kernel
	Embedded	construction.
3	System Design	
		6. Understand and apply the concept of android operating
		system
		1. Describe Reconfigurable Device Characteristics,
	504203	Configurable, Programmable, and Fixed Function Devices
3		2. Designing reconfigurable circuits using PLD.
		3. Explain Metrics, Partitioning and Placement, Routing,
	Computing	ALU and CLB.
		4. Describe architectures of PDSPs, RALU, VLIW, Vector
		Processors, Memories, CPLDs, FPGA
		1. Define research problem & its scope, objectives, and
		errors.
	504104	2. State basic instrumentation schemes & data collection
		methods.
	Research	3. Perform analysis with various statistical techniques.
	Methodology	
4		
4		A Deuferme medaling og dage ligt til en f
		4. Perform modeling and predict the performance of
		experimental system
		5. Develop the research proposals.
		1. Gain knowledge of Architecture of WSN network.
	504205	2. Understand Physical, Data link and Network layer aspects with their protocols
	504205 Wireless	with their protocols.
	Wireless Sensor	3. Learn different techniques of power management and
5	Network	security.

	1	
		4. Exhibit the knowledge of operating systems in WSN
		systems.
		ME Second Year E&TC(VLSI & ES)-Sem-I
1	604201	1. The student will learn functional modeling.
		2. The student will use theory of logical fault models for
	Fault Tolerant Systems	testing single stuck fault.
	Systems	3. The student will show skills for fault simulation for
		statistical fault analysis.
		4. The student will exhibit the knowledge of self-checking
		for design of self-checking combinational circuits.
		5. The student will exhibit the self-testing for memory,
		processor and PLA according to the specifications.
2	604202	1. Explain design steps of ASIC design.
	001202	2. Explain steps of Analog and Digital (Mixed signal) ASIC
	ASIC Design	design
	ribre Design	3. Describe different steps in ASIC construction
		4. Understand different ASIC testing methods
		1. Define disasters. Define Various terms involved in it.
3	604103	Explain Vulnerability profile of India.
Ũ	001100	2. Enlist the types of disasters. Compare the disasters on
	A- Disaster	the basis of major and minor. Study various disasters in
	management	details.
	6	3. To explain the impact of disasters on environment,
		social, economical, ecological etc.
		4. Define disaster risk and disaster risk reduction methods.
		5. Enlist various government and non government
		organizations for disaster management. Draw and explain
		1. Explain the fuzzy logic and its properties. Compare fuzzy
4	604103	with crisp.
	B-Fuzzy	2. Explain the fuzzy inference models Mamdani, Sugeno and
	mathematics	Tsukamoto.
		A.Y. 2021-22, Sem-II
Sr.No.	Course code	Course outcome
	Course name	
	SE Electron	nics and Telecommunication-Sem-II (2019 COURSE)
		1: Identify, classify basic signals and perform operations on signals.
	204101	2: Identify, Classify the systems based on their properties in
	204191	terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.
1	Singals and	3: Analyze and resolve the signals in frequency domain using
1	Systems	Fourier series and Fourier Transform.
-	-	

		 4: Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms. 5: Define and Describe the probability, random variables and random signals. Compute the probability of a given event, model, compute the CDF and PDF. 6: Compute the mean, mean square, variance and standard
		 deviation for given random variables using PDF. 1: Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.
	204192 Control Systems	2: Determine the (absolute) stability of a closed-loop controlsystem.3: Perform time domain analysis of control systems required for
2		stability analysis. 4: Perform frequency domain analysis of control systems required for stability analysis.
		5: Apply root-locus, Frequency Plots technique to analyze controlsystems.
		6: Express and solve system equations in state variable form.
		7: Differentiate between various digital controllers and understand the role of the controllers in Industrial automation.
		1: To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study.
	204193 Principals of Communicatio n Systems	2: Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems.
3		3: Explain generation and detection of FM systems and compare with AM systems.
		4: Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM).
		5: Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).
		6: Illustrate waveform coding, multiplexing and synchronization techniques and articulate their importance in baseband digital transmission.
		1: Describe the principles of object oriented programming.
	204194	2: Apply the concepts of data encapsulation, inheritance in C++.

4	Object Oriented Programming	3: Understand Operator overloading and friend functions in C++.
	1 iogramming	4: Apply the concepts of classes, methods inheritance and
		polymorphism to write programs C++.
		5: Apply Templates, Namespaces and Exception Handling
		concepts to write programs in C++.
		6: Describe and use of File handling in C++.
	204199	1: Define personal and career goals using introspective skills and SWOC assessment. Outline and evaluate short-term and long-
		term goals.
	Employability Skill Development	2: Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.
5		3: Be a part of a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.
		4: Comprehend the importance of professional ethics, etiquettes & morals and demonstrate sensitivity towards it throughout certified career.
		5: Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.
	TE Electron	ics and Telecommunication-Sem-II (2019 COURSE)
		1. Understand fundamentals of wireless communications.
	304192	2. Discuss and study OFDM and MIMO concepts.
1	Cellular Networks	3. Elaborate fundamentals mobile communication.
		4. Describes aspects of wireless system planning
		5. Understand of modern and futuristic wireless networks
		architecture.
		6. Summarize different issues in performance analysis.
		1. Learn the fundamental knowledge of project management and
		apply effectively handling the projects. 2. Select the appropriate project based on feasibility study and
		undertake its effective planning.
	304193	3. Understand organizational structure of project to handle
	507175	project management related issues.
	Project	4. Identify and apply the project scheduling techniques for a
2	Management	Project Schedule Plan to meet the resources to meet the
	8	project deadline.
		5. Assimilate the project risks and manage finances in line
		with Project Financial Management Process.
•	I	, , , , , , , , , , , , , , , , , , ,

		6. Develop new skillsets to products assessing their
		commercial viability for becoming successful entrepreneurs.
3	304194 Power	 To introduce different power devices viz. SCR, GTO, MOSFET and IGBT with construction, characteristics, repetitive and non repetitive ratings and typical triggering/driver circuits. To understand working, design and performance analysis and applications of various power converter circuits such as ac to dc converters, inverter and chopper.
	Devices & Circuits	3. To know various protection circuit requirements of power electronic devices.
		1. To become familiar with digital image fundamentals
	304195	2. To get exposed to simple image enhancement techniques in Spatial and Frequency domain.
4	Elective-II	3. To study the image segmentation and representation techniques.
4	Digital Image Processing	4. To become familiar with image compression methods.
		5. To learn concepts of degradation function and restoration techniques
		6. To understand the Object Recognition.
		1. Concept of Sensors/Transducers and their Static and
	20410-	Dynamic Characteristics.
	304195	2. Sensors used in Industry for Temperature and Humidity Measurement.
	Elective-II	3. Sensors used for Sensors used for Force, Pressure, Stress
5		and Flow measurements.
	Sensors in	
	Automation	4. Sensors used for Displacement and Level Measurement
		5. Applications of Image and Biosensors
	DE Electure	6. Role of Sensors/Transducers in IoT applications.
	DE LIECTION	ics and Telecommunication-Sem-II (2015 COURSE)1. Explain and apply the concepts telecommunication
1		switching for voice and data.
	404189	2. Analyze the telecommunication traffic.
	Mobile	
	Communicatio n	3. Analyze radio channel and cellular capacity.
		4. Explore the architecture of GSM.
		5. Knowledge of GSM channels and services.
		6. Differentiate thoroughly the generations of mobile
		technologies.

1	504207	1. Understand and design basic COMS sub-circuits.
	•	ME First Year E&TC(VLSI & ES)-Sem-II
	Course name	
Sr.No.	Course code	Course outcome
	1	A.Y. 2021-22
		link management in WSN
		6. Describe importance and use of radio communication and
		5. Understand techniques of data aggregation and importance of security in WSN
		WSN. 5. Understand techniques of data approaction and
		4. Examine the issues involved in design and deployment of
4	Networks	techniques used in WSN
	Wireless Sensor	3. Recognise importance of localization and routing
		associated with WSN.
		2.Explain various wireless standards and protocols
	404212	1. Explain various concepts and terminologies used in WSN.
		6. Define basic concept of deep learning and CNN
		5. Apply the concept to classification problem.
		approaches.
3		4. Mathematically analyze various machine learning
	Learning	3. Perform and analyze clustering technique
	Machine	2. Perform basic regression and classification task.
	404191	1. Define the basic concepts of machine Learning.
		considering Uplink and downlink.
		6. Solve and evaluate simple satellite link design problem
		satellite subsystems.
		draw the block diagram of the same. Describe the need of
	System	5. Describe function of various satellite subsystems and
	n System	satellite. Explain satellite launch vehicles.
	Communicatio	4. Describe orbital parameters of satellite, launching of
4	Broadband	
2	404190	components. Explain need of Optical amplifiers.
		3. Understand and draw WDM optical link. Enlist WDM
		time budget. To evaluate bandwidth length product.
		To solve numerical based on optical power budget and rise
		2. To draw point to point optical link and power loss model.
		fibers. Define and compare different optical sources.
		communication system. Compare various types of optical
		1. To explain the function of each block in the optical communication system. Compare various types of optical

	Analog CMOS	2 Udestend and Design CMOS On some
	Design	2. Udestand and Design CMOS Op-amp
		3. Understand low and high bandwidth CMOS designs.
		4. Understand and design Low Noise Amplifiers .
2	504208	1. Learn Design flow graphs and flow modeling.
	System On Chip	2. Understand SoC modeling and interfacing.
		3. Gain knowledge of SoC memory system design,
		embedded software and energy, management techniques for
		SoC design, SoC prototyping, verification, testing and
		physical design.
		4. Design, implement and test SoC.
		1. Define the basic concepts of Real-Time Embedded Signal
		Processing.
	504209	2. Realize the FIR filter.
	Embedded	2. Use the concert of Digital Systems Maring Avances
3	Signal	3. Use the concept of Digital Systems, Moving-Average
	Processors	Filters, and problem solving on Structures and Equations
		4. Use properties of DFT, Algorithm and problem solving
		on DFT and FFT
		5. Design the IIR filter
		6. Understand digital signal processing and key
		components of DSP and code optimization
		7. Understand the Practical DSP Applications like Audio
		Coding and Audio Effects
		1. Define Software and hardware defined radio. State
		properties of SDR. Draw and explain the structure of SCA.
		properties of SDR. Draw and explain the structure of SCR.
		2. Explain the function of RF front end blocks. Enlist types
		of RF front end topologies. Draw their block diagram.
	504210	
_		3. Enlist various DDS systems. Compare them. Draw PN
4	Software	sequence generator and derive the output.
	Defined Radio	
		4. Enlist various smart antenna configurations. Define
		various adaptive antenna array algorithms. Draw the block
		diagram for various beam forming antenna arrays. Compare
		DSPs, ASIC and FPGA.
		5. Understand JTRS, CORBA and MAE in SDR

Department of Information Technology
A.Y. 2021-22, Semester-I
Course code Course Outcome

Sr.]		
No.	Course name			
SE (Information Technology) 2019 pattern Sem-I				
	Ĺ	1. Formulate and apply formal proof techniques and solve		
	214441	the problems with logical reasoning.		
		2. Analyze and evaluate the combinatorial problems by		
		using probability theory.		
		3. Apply the concepts of graph theory to devise		
		mathematical models.		
		4. Analyze types of relations and functions to provide		
		solution to computational problems.		
	Discrete	5. Identify techniques of number theory and its application.		
1	Mathematics	6. Identify fundamental algebraic structures.		
		1. Perform basic binary arithmetic & simplify logic		
	214442	expressions.		
		2. Grasp the operations of logic ICs and Implement		
		combinational logic functions using ICs.		
		3. Understand the operations of basic memory cell types and		
		Implement sequential logic functions using ICs.		
		4. Explain the functions & organization of various blocks of		
		CPU.		
		5. Understand CPU instruction characteristics, enhancement		
	Logic Design	features of CPU.		
	and	6. Describe an assortment of memory types (with their		
	Computer	characteristics) used in computer systems and basic		
2	Organization	principle of interfacing input, output devices.		
		1. Perform basic analysis of algorithms with respect to time		
	214443	and space complexity		
		2. Select appropriate searching and/or sorting techniques in		
		the application development.		
		3. Implement abstract data type (ADT) and data structures		
		for given application.		
		4. Design algorithms based on techniques like brute -force,		
		divide and conquer, greedy, etc.		
	_	5. Apply implement learned algorithm design techniques		
	Data	and data structures to solve problems.		
2	Structure &	6. Design different hashing functions and use files		
3	Algorithms	organizations.		
	214444	1. Differentiate various programming paradigms.		
		2. Identify classes, objects, methods, and handle object		
		3. Identify relationship among objects using inheritance and		
		4. Handle different types of exceptions and perform generic		
		programming.		
l				

1		5 Use of files for nonsistent data standay for nonlyworld
	Ohisst	5. Use of files for persistent data storage for real world
	Object-	application.
4	Oriented	6. Apply appropriate design patterns to provide object-
4	Programming	oriented solutions.
		1. Understand and explain the concepts of communication
	214445	theory and compare functions of OSI and TCP/IP model
		2. Analyze data link layer services ,error detection and
		correction, linear block codes.
		3. Compare different access techniques, chanelization and
		Ethernet Standards.
		4. Apply the skills of subnetting, supernetting and routing
	Basics of	mechanisms.
	Computer	5. Differentiate IPv4 and IPv6
5	Network	6. Illustrate services and protocols used at transport layer
		1. Simplify Logic function using K-map and design
	214446	Combinational logic circuits using SSI & MSI chips.
		2. Analyze Sequential circuits like Flip-Flops (Truth Table,
	Lacia Dasian	Excitation table)
	Logic Design and	3. Design the applications like Asynchronous and
		Synchronous Counters.
	Computer	4. Design Sequential Logic circuits like MOD counters
	Organization	using synchronous counters.
	Lab	5. Understand the basics of simulator tool
6		6. To simulate basic blocks such as ALU & memory.
		1. Analyze algorithms and to determine algorithm
	214447	correctness and time efficiency class.
		2. Implement abstract data type (ADT) and data structures
		for given application.
		3.Design algorithms based on techniques like brute -force,
		divide and conquer, greedy, etc.).
	Data	4.Solve problems using algorithmic design techniques and
	Structure &	data structures.
	Algorithms	5. Analyze of algorithms with respect to time and space
7	Lab	complexity.
		1. Differentiate various programming paradigms.
	214448	
		2. Identify classes, objects, methods, and handle object
		creation, initialization, and destruction to model real-world
		problems.
		3. Identify relationship among objects using inheritance and
		polymorphism.
		4. Handle different types of exceptions and perform generic
	Object	programming.
	Oriented	5. Use file handling for real world application.
1 1	Onenieu	or obe me hundring for rear world approaction.

	Programming	6. Apply appropriate design patterns to provide object-
8	Lab	oriented solutions.
0	Lao	1. Provides an ability to understand, analyze and interpret
	214449	the essentiality of grammar and its proper usage.
	214449	2. Build the students' vocabulary by means of
		communication via web, direct
		Communication and indirect communication.
		3. Understanding the various rules and means of written communication.
		4 Effective communication with active listening facing
9	Soft Skill Lab	mablema while communication and have to avenue it
		Iformation Technology) 2019 pattern Sem-I
	314441	1. Explain finite state machines to solve problems on it.
		2. Construct Regular Expression by solving related
		problems.
		3. Explain Regular Grammar and language also different
	Theory of	types of grammar and normal forms by solving related
	Computation	problems.
	computation	4. Explain concept of Push Down Automata and Post
		Machine by solving related problems.
		5. Explain Turing Machine by simplifying related problems.
1		6. Explain decidability and computational complexity.
	314442	1. Understanding the role of Modern Operating Systems
		2. Apply the concepts of process and thread scheduling
		3. Apply the concept of process synchronization, mutual
		exclusion and the deadlock
		4. Understand and apply the concepts of various memory
		management techniques
		5. Make use of concept of I/O management and File system
	Operating	
2	System	6. Understand Important of System software
		1.Explain basic concepts of machine learning and different
	314443	types of learning.
		2.Compare different types of classification models and
		studies their performance evaluation metrics.
		3.Differentiate various regression techniques and evaluate
		their performance.
		4.Illustrate the tree-based and probabilistic machine learning
		algorithms.
	Machine	5.Identify different types of unsupervised algorithm .
3	Learning	6.Apply fundamental concepts of ANN.
		1.Explain importance of HCI study and principles of user-
	314444	centered design (UCD) approach.
		2.Develop understanding of human factors in HCI design,
		paradigms and context of interactions.

1		3.Develop understanding of models, Apply cognitive
		models for predicting human-computer-interactions.
		4.Design effective user-interfaces and usability of a user-
		interface design
	Human	U
		5.Evaluate different methods for human-computer-
4	Computer Interaction	interactions.
4	314445	6.Apply HCI to real life applications.
	514445	1. Understand relational and object-oriented databases
		2. Learn and understand of parallel & distributed database
		architectures
	T-1 / T	3. Learn the concepts of NoSQL Databases.
	Elective-I	4. : Understand data warehouse and OLAP technologies.
	(Advanced	5. Apply data mining algorithms and to learn various
	Database	software tools.
-	Management	6. Learn emerging and enhanced data models for advanced
5	System)	applications.
	314446	1. Apply the basics of Linux commands
		2. Build shell scripts for various applications
		3. Implement basic building blocks like processes, threads
		under the Linux
		4. Develop various system programs for the functioning of
		OS concepts in user space like concurrency control, CPU
		Scheduling, Memory Management and Disk Scheduling in
	Operating	Linux
(System	5. Develop system programs for Inter Process Communication in Linux.
6	Laboratory 314447	
	514447	1. Differentiate between good design and bad design.
		2. Analyze creative design in the surrounding.
	TT	3. Assess design based on feedback and constraint.
	Human	4. Design paper-based prototypes and use wire frame.
	Computer	5. Implement user-interface design using web technology.
_	Interaction	6. Evaluate user-interface design using HCI evaluation
7	Laboratory-II	techniques
	214440 (*)	1.Implement different supervised and unsupervised learning
	314448 (A)	algorithms.
	Laboratory	2.Evaluate performance of machine learning algorithms for
	Practice - I	real-world applications.
	(Machine	
	Learning)	
	314448 (B)	1. Understand Advanced Database Programming Languages.
8		2. Master the basic concepts of NoSQL Databases.
		3. Install and configure database systems.
	Laboratory	4. Populate and query a database using MongoDB
	Practice - I (commands.
I	1 1actice - 1 (communus.

	Advanced Database	5. Design data warehouse schema of any one real-time: CASE STUDY.
	Management System)	6. Develop small application with NoSQL Database for back-end.
	314449	1. Understand, interpret and summarize technical literature.
		2. Demonstrate the techniques used in the paper.
		3. Distinguish the various techniques required to accomplish the task.
		4. Identify intended future work based on the technical review.
		5. Prepare and present the content through various
		presentation tools and techniques in effective manner.
		6. Keep audience engaged through improved interpersonal
9	Seminar	skills.
	BE (Ir	nformation Technology) 2015 pattern Sem-I
	414453	1. Understand basics of security services
		2. Use basic cryptographic techniques in application
		development
		3. Apply methods for authentication, access control,
		intrusion detection and prevention.
	Information	4. Understand risks and vulnerability terms
	and Cyber	5. Classify different cybercrimes
1	Security	6. Develop computer forensics awareness.
	414454	1. Build the learning model.
		2. Developed an appreciation for what is involved in
		learning from data.
		3. Find out solution to real world problems
		4. Implement some basic machine learning algorithms
		5. Using different method evaluate the performance of
	Machine	learning models
	Learning and	6. Apply machine learning algorithms to solve problems of
2	Application	moderate complexity
		1. Understand the fundamental aspects of different object
	414455	oriented methodologies
		2. Explore and analyze use case modeling, domain/ class modeling.
		3. Understand Interaction and behaviour modeling
		4. Analyse design process in software development
	Software	5. Understand software design principles and patterns.
	Design &	6. Learn the architectural design guidelines in various type
3	Modeling	of application development.

	41 4 4 7 6	1. Justify the need to study human-computer-interaction or
	414456	human-factors while designing software.
		2. Discuss the process of designing user-friendly software
		based on usability engineering guidelines.
		3. Apply interaction design and UI design process in
		enhancing user-experience of an application.
		4. Conduct usability evaluation of user-interfaces or
		software applications.
	Elective - I	5. Discuss industry standards for designing and evaluating
	(Usability	user-interfaces.
4	Engineering)	6. Discuss current trends in usability engineering
		1. Understand importance of testing and tester's role in a
	414457	software development organization.
		2. Understand Testing Approaches.
		3. Explore Software Test Automation, Quality Management
		Metrics.
	ELECTIVE	4. Understand Software quality assurance.
	II: Software	5. Choose appropriate quality assurance models and develop
	Testing and	quality.
	Quality	6. Understand Software Process, Internal Auditing and
5	Assurance	Assessments.
	414458	1. Implement basic security meachanisms
		2. Understand the machine learning principles and analytics
	Computer	of learning algorithms.
	Laboratory	3. Apply Machine Learning Principles for various
6	VII	applications
	414459	1. Understand Unified Modeling Language (UML 2.0)
		2. Identify different software artifacts at analysis and design
		phase.
	Computer	3. Explore and analyze use case modeling.
	Laboratory	4. Understand Interaction and Behavior Modeling.
7	VIII	5. Explore and analyze domain/ class modeling.
		1. Implement their ideas/real time industrial problem/
	414460	currentapplications from their engineering domain.
		2. Develop plans with help of team members to achieve the
		project's goals.
		3. Break work down into tasks and determine appropriate
		procedures.
		4. Allocate roles with clear lines of responsibility and
		accountability and learn team work ethics.
		5. Estimate and cost the human and physical resources
	Project Phase-	required, and make plans to obtain the necessary resources.
8	Ι	
-	_	
1		

	A.Y. 2021-22, Semester-II			
		Course outcome		
	~			
Sr.No.	Course name			
	SE (In	formation Technology) 2019 pattern Sem-II		
	207003	1. To Solve Linear differential equations, essential in		
		modelling and design of computer-based systems.		
		2. to Apply concept of Fourier transform and Z-transform		
		and its applications to continuous and discrete systems and		
		image processing.		
		3. To Apply Statistical methods like correlation and		
	Engineering	regression analysis and probability theory for data analysis		
	Mathematics -	and predictions in machine learning.		
	III	4. To Solve Algebraic and Transcendental equations and		
		System of linear equations using numerical techniques.		
		5. To Obtain Interpolating polynomials, numerical		
		differentiation and integration, numerical solutions of		
		ordinary differential equations used in modern scientific		
1		computing.		
	214451	1. Understand architecture and memory organization of PIC		
	214431	18 microcontroller.		
		2. Implement embedded C programming for PIC 18.		
	Processor	3. Use concepts of timers and interrupts of PIC 18.		
	Architecture	4. Understand interfacing with PIC 18.		
	Architecture	5. Demonstrate real life applications using PIC 18.		
2		6. Analyze architectural details of ARM processor.		
	214452	1. Explain basic concepts of DBMS and RDBMS.		
		2. Design ER-models for any database application.		
		3. Formulate SQL queries on data for relational databases		
	Database	4. Improve the database design by normalization & to		
3		incorporate query processing		
	Management	5. Explain basic issues of transaction processing and		
	System	concurrency control		
		6. Analyze various database architectures and technologies.		
		1.Explain terms related to computer graphics and apply		
	214453	mathematics and logic to develop computer programs for		
		elementary graphic operations.		
1		2.Solve problems for performing graphical transformations.		
4	Commenter	realism using 3D transformations and projections. 4.Explain segment, color models concepts and apply		
	Computer			
	Graphics	shading algorithms to solve problems related to them.		

	I	5 Explain concepts of animation autors and fractals with a
		5.Explain concepts of animation, curves and fractals using
		computer graphics tools.
	014454	6.Explain the concepts of virtual reality.
	214454	1. Classify various software application domains.
		2. Analyze software requirements by using various
		modeling techniques.
		3. Translate the requirement models into design models.
	Software	4. Apply planning and estimation to any project.
	Engineering	5. Use quality attributes and testing principles in software
		development life cycle.
		6. Discuss recent trends in Software engineering by using
5		CASE and agile tools.
	214455	1. Apply concepts related to embedded C programming.
		2. Develop and Execute embedded C program to perform
		array addition
		3. Develop and Execute embedded C program to perform
	Programming	block transfer
	Skill	4. Develop and Execute embedded C program to perform
	Development	sorting operations
	Lab	5. Perform interfacing of real-world input and output
		devices to PIC18FXXX
		6. Use source prototype platform like Raspberry-Pi/Beagle
6		board/Arduino.
	214456	1. Install and configure database systems.
		2. Analyze database models & entity relationship models.
		3. Design and implement a database schema for a given
	D 1	problem-domain
	Database	4. Implement relational database systems.
	Management	5. Populate and query a database using SQL DDL / DML /
	System Lab	DCL commands.
		6. Design a backend database of any one organization:
7		CASE STUDY
	214457	1. Apply and implement line drawing and circle drawing
	214457	algorithms to draw specific shape given in the problem
		2. Apply and implement polygon filling algorithm for a
		given polygon.
		3. Apply and implement 2-D and 3-D transformation
		algorithms for given input shape
		4. Apply and implement polygon clipping algorithm for
	Computer	given input polygon
	Graphics Lab	5. Apply and implement fractal generation algorithm for a
		given input.
	I	

		6. Apply and implement animation concepts for generating
8		simple animation without using any animation tool
0	214458	1. Design solution to real life problems
	214438	
		2. Analyze real life problem solution concerns through
		shared cognition.
		3. Apply learning by doing approach in PBL to promote
		lifelong learning.
	-	4. Tackle technical challenges for solving real world
	Learning	problems with team efforts.
		5. Collaborate and engage in multi-disciplinary learning
		environments.
		6. To design solution of engineering problems within the
9		social, environmental and economic context.
	TE (In	formation Technology 2019 pattern) Sem-II
	214451	1. Know Responsibilities, services offered and protocol
	314451	used at application layer of network
		2. Understand wireless network and different wireless
		standards
		3. Recognize the Adhoc Network's MAC layer, routing
		protocol and Sensor networkarchitecture
		4. Define the principal concepts of network security and
	Computer	Understand network security threats, security services, and
	-	countermeasures
	Security	5. Apply basic cryptographic techniques in application
	5	development.
		6. Gain a good comprehension of the landscape of cyber
		security
		Vulnerabilities & describe typical threats to modern digital
1		systems
-	314452	1.Understand Big Data primitives.
	511152	2.Learn and apply different mathematical models for Big
		Data.
		3.Explain differnet Big Data ecosystem and technologies
		4.Analyze each learning model comes from a different
	Data Sciece	algorithmic approach and it will perform differently under
	and Big Data	different datasets.
	Analytics	5.Understand, apply and analyze needs, challenges and
		techniques for big data visualization
2		6. Learn different programming platforms for big data
2	214452	analytics.
	314453	1.Explain technologies like HTML, CSS, Bootstrap.
		2.Demonstrate the use of web scripting languages.

	Web	3.Understand web application with Front End Technologies.
	Application and	4.Understand web application with Back End Technologies.
	Developemen t	5.Understand Mobile web development using JQuery Mobile.
3		6.Understand web application on cloud using AWS.
	314454(A)	1. Apply the fundamental concepts of Artificial Intelligence
	Elective-	2.Choose appropriate search strategies for any AI problem 3. Illustrate knowledge reasoning and knowledge representation methods (for solving real world problems)
	II(Artificial	4. Analyze the suitable techniques of NLP to develop AI applications
	Intelligence)	5. Correlate the appropriate methods of Game Theory to design AI applications
		6.Understand the concept of deep learning and AI
4		applications
		1.Develop professional competence through industry
	314455	internship
		2. Apply academic knowledge in a personal and
		professional environment
		3. Build the professional network and expose students to
		future employees.
	Internship	4. Apply professional and societal ethics in their day-to-day life.
		5. Become a responsible professional having social,
		economic and administrative considerations
5		6. Make own career goals and personal aspirations.
	314456	1. Design and configure small size network and associated networking commands
		2. Understand various client/server environments to use application layer protocols
	Computer	3. Use basic cryptographic techniques in software and
	Network	system design.
	Security Lab	4. Apply methods for authentication, access control,
6		intrusion detection
		1.Apply Big data primitives and fundamentals for
	314457	application development.
		2.Explore different Big data processing techniques with use
	DS & BDA	cases.
		3. Apply the Analytical concept of Big data using Python.
		4.Visualize the Big Data using Tableau.
	Lab	5.Design algorithms and techniques for Big data analytics.
-	-	

	l	6.Design and develop Big data analytic application for
7		emerging trends.
	314458	1.Develop realworld problem solving ability
	Lab Practice -	2.Enable the student to apply AI techniquesin applications
	II (Artifical	which involve perception, reasoning and planning
	Intelligence)	3. Work in team to build industry compliant AI applications
	314458	1.Develop Static and Dynamic responsive website using
	Laboratory	2.Create Version Control Environment.
	Practice-II	3.Develop an application using front end and backend
	Flactice-II	technologies.
	(Web	4.Develop mobile website using JQuery Mobile.
8	Application	
0		5.Deploy web application on cloud using AWS.
	414462	formation Technology) 2015 pattern Sem-II 1.Understand the fundamentals of distributed systems.
	414402	•
		2.Describe various ways of communication and
		coordination in a distributed system.
		3.Discuss the importance of replication and fault tolerance.
		4.Describe the various file systems used in distributed
	Distribute 1	systems.
	Distributed	5.Understand the distributed Web based system.
1	Computing	6.Discuss the various security issues and security
1	Systems	management in a distributed system.
	414462	1. Demonstrate and explain the knowledge of design of
	414463	UbiComp and its applications.
		 2. Explain smart devices and services used UbiComp. 3. Explain the significance of actuators and controllers in
		real time application design.
		4. Use the concept of HCI to understand the design of
		automation applications.
		5. Classify UbiComp privacy and explain the challenges
		associated with UbiComp privacy.
	Ubiquitous	6. Get the knowledge of ubiquitous and service oriented networks
2	Computing	along with Ubicomp management
	414464	1. Describe the concept of the Internet of Things, IoT
	+1++0+	2. Explain architecture of IoT.
		3. Describe the objects connected in IoT.
	Ele-III:	4. Understand addressing techniques for IoT.
	Internet of	5. Understand the platforms in IoT.
3	Things	6. Understand cloud interface to IoT.
5	414465	1. Understand the basics of Social Media Analytics.
		2. Explain the significance of Data mining in Social media.
		3. Demonstrate the algorithms used for text mining.
		4. Apply network measures for social media data.
I	I	T. Apply network measures for social metula tata.

1		5 E-1 in D-1 An electric to the inner and for a sint
		5. Explain Behavior Analytics techniques used for social
	Elective IV:	media data.
	Social Media	6. Apply social media analytics for Face book and Twitter
4	Analytics	kind of applications.
		1.Demonstrate knowledge of the core concepts and
	414466	techniques in distributed systems.
		2.Learn how to apply principles of state-of-the-Art
	Computer	Distributed systems in practical application.
	Laboratory -	3.Design, build and test application programs on distributed
5	IX	systems.
		1. Set up the Android environment and explain the
	414467	Evolution of cellular networks.
		2. Develop the User Interfaces using pre-built Android UI
		components.
		3. Create applications for performing CURD SQLite
		database operations using Android.
		4. Create the smart android applications using the data
		captured through sensors.
		5. Implement the authentication protocols between two
		mobile devices for providing Security.
		6. Analyze the data collected through android sensors using
	COMPUTER	a machine learning algorithm.
(LABORATO	7. Explain the Evolution of cellular networks all the way up
6	RY-X	to 7G.
	414468	1. Extend further the investigative study
		2. Product development cycle using industrial experience,
		use of state of art technologies.
		3. Participate in National/International paper presentation
		activities and funding agency for sponsored projects.
		4. Use learning and knowledge access techniques using
		Conferences, Journal papers and anticipation in research
		activities.
		5. Evaluate the various validation and verification methods.
		6. Analyze professional issues, including ethical, legal and
7	Project Work	security issues, related to computing projects.

Dugineering berenets and anneu Dugineering

Sem-I				
	A.Y. 2022-23, Sem-I			
Sr.No.	Course code	Course outcome		
	Course name			
Engi	neering Science	s And Allied Engineering Sem-I (2019 COURSE)		
1	Subject code . subject filalite . Engineering	generalizations leading to Taylors and Maclaurin's series useful in the analysis of engineering problems. harmonic analysis for design and analysis of 3. To deal with derivative of functions of several		
	N Anthennetics T	 variables that are essential in various branches of 4.to apply the concept of Jacobian to find partial derivative of implicit function and functional 5. To the essential tool of matrices and linear 6. To the essential tool of matrices and linear algebra in a comprehensive manner for analysis of Figen values and Figen vectors applicable to 		
		Eigen values and Eigen vectors applicable to engineering problems.		
2	Subject code 107009 subject name : Engineering Chemistry	 Apply different water softening methods and techniques as commodity. Select suitable electro-analytic technique and system for material investigation. Reveal the information of advanced engineering materials for various engineering applications. Analysis of fuel and recommend alternative fuels. Determination of organic compound based on their structure. Identify causes of corrosion and preventive measures to minimize corrosion. 		
2	Subject code 107002 subject name : Engineering Physics	 Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. Learn basics of lasers and optical fibers and their use in some applications. Understand concepts and principles in quantum mechanics. Relate them to some applications. Understand theory of semiconductors and their applications in some semiconductor devices. Summarize basics of magnetism and superconductivity. Explore few of their technological applications. 		

			6. Comprehend use of concepts of physics for Non
			Destructive Testing. Learn some properties of
			nanomaterials and their application.
			1.Apply various skills in problem solving and also
			explain basic features and future of python
			programming to solve the problem.
			2.Discuss various types of data types with it's
		Subject code	
		:110005	methods and to solve problem by using decision
			control and loop statement.
		subject name :	
	•	Programming	3.Define functions and discuss various standard
	3	and Problem	library modules, packages.
		Solving	
		0	
			4.Enlist built in strings methods, strings formatting
			operator and perform the operations on strings
			5. To solve problem by object oriented programming
			using python & apply various features, methods to
			solve problem.
			6.To perform various operations, methods on files
			& dictionaries
			1. Determine the resultant of various force system.
		Subject code:	2. Determine Centroid, moment of Inertia and solve
		101011	problems related to friction
		subject name :	3. Determine reactions of beam, and apply principle
	4	Engineering	of equilibrium to forces in space.
		Mechanics	or equilibrium to forces in space.
			4. Able to solve for internal forces acting on any
			member of a pined jointed truss structure ,frame and
			cables
			5. Calculate position, velocity and acceleration of
			particle using principle of kinematics.
			6. Calculate position, velocity and acceleration of
			particle using principle of kinetics and Work Power,
			Energy.6.
			1.Explain the working of P-N junction diode and its
			circuits.
		Subject code:	2.Understand and describe specifications, features
		104010	of electronic ideal diode and ideal diode circuits.
		subject name :	
		Basic	3.Identify types of diodes and plot their
	5	Electronic	characteristics and also can compare BJT with
	C	Engineering	MOSFET.
		OR	
I			

		4.Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to measure various electrical parameters.
		6.Select sensors for specific applications.
		1.Compare electrical & magnetic circuit stating
		similarities & dissimilarities
		2.Calculate series, parallel and composite capacitor
		as well as characteristics parameters of alternating
	Subject code:	quantity and phasor arithmetic Derive expression for
	103004	RMS value & average value in terms of peak value
		to find form factor and peak factor for sinusoidal
		current & voltage.
		3.Estimate efficiency & regulation of single phase
	Basic	transformer by performing direct load test on it.
5	Electrical	Derive expression for impedance, current, power in
	Engineering	series and parallel RLC circuit with AC supply
		along with phasor diagram
		4. Verify the relationship between phase voltage, line
		voltage line current, phase current in a three phase
		star and delta connected load analytically & by
		drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various
		network theorems to solve the circuit. Apply and
		analyze the resistive circuits using star-delta
		conversion KVL, KCL .
		6.Solve numericals based on work, power & energy
		by studying basic concepts of electrical engineering
		such as emf, pd, current and resistance.
		1.Describe and compare the conversion of energy
		from renewable and non-renewable energy sources
	Subject code:	2.Explain basic laws of thermodynamics, heat
	102003	transfer and their applications
	subject name:	
6	Systems in	3.List down the types of road vehicles and their
	Mechanical	specifications
	Engineering	
		4.Illustrate various basic parts and transmission
		system of a road vehicle
		5.Discuss several manufacturing processes and identify the suitable processes
		identify the suitable process
		6.Explain various types of mechanism and its
l		application

r		T
		1.Familiar with safety norms to prevent any mishap
		in workshop
7	Subject code:	2.Able to handle appropriate hand tool, cutting tool
/	111006	and machine tools to manufacture a job
	subject name:	3.Able to understand the construction, working and
	Workshop	functions of machine tools and their parts
		4. Able to know simple operations (Turning and
		Facing) on a centre lathe
		1. Demonstrate an integrative approach to
	Subject code: 101007	environmental issues with a focus on sustainability
0		2. Explain and identify the role of the organism in
8		energy transfers in different ecosystems.
	subject name:	2 Distinguish hotseen on denovide grounder of
	Environmenta	3.Distinguish between andprovide examples of
	Studies I	renewable and nonrenewable resources ans analyze
	(Audit course)	personal consumption of resources.
		4. Identity key unears to biodiversity and develop
		appropriate policy options for conserving
		lie diversity in different settings

Engineering Sciences And Allied Engineering A.Y. 2022-23, Sem-II

Γ

A.1.2022-23, Sem-11					
Sr.No.	Course code	Course outcome			
	Course name				
Engineering Sciences And Allied Engineering Sem-II (2019 COURSE)					
1	Subject code : 107008 Subject name . Engineering	1. To know the effective mathematical tools for			
		solutions of first order differential equations.			
		law of cooling, electrical circuit, rectilinear motion,			
		mass spring systems, heat transfer etc.			
		Reduction formulae, Beta functions, Gamma			
		functions, Differentiation under integral sign and			
		4. To trace the curve for a given equation and			
		measure arc length of various curves.			
		5. To konw the concepts of solid geometry using			
		6. To evaluation of multiple integrals and its			
		application to find area bounded by curves, volume			
		bounded by surfaces, Centre of gravity and Moment			
		of inertia.			
2		1. Apply different water softening methods and			
	Subject code 107009 subject name : Engineering Chemistry	techniques as commodity.			
		2. Select suitable electro-analytic technique and			
		system for material investigation.			
		2 Poyoal the information of advanced angineering			
		3. Reveal the information of advanced engineering materials for various engineering applications.			
		materials for various engineering applications.			
		4. Analysis of fuel and recommend alternative fuels.			

i i	1	
		5. Determination of organic compound based on
		their structure.
		6. Identify causes of corrosion and preventive
		measures to minimize corrosion.
	Subject code 107002 subject name : Engineering Physics	1. Develop understanding of interference, diffraction
		and polarization; connect it to few engineering
		applications.
2		2. Learn basics of lasers and optical fibers and their
		use in some applications.
		3. Understand concepts and principles in quantum
		mechanics. Relate them to some applications.
		4. Understand theory of semiconductors and their
		applications in some semiconductor devices.
		5. Summarize basics of magnetism and
		superconductivity. Explore few of their
		technological applications.
		6. Comprehend use of concepts of physics for Non
		Destructive Testing. Learn some properties of
		nanomaterials and their application.
		1.Apply various skills in problem solving and also
		explain basic features and future of python
		programming to solve the problem.
		2.Discuss various types of data types with it's
3	Subject code	methods and to solve problem by using decision
5	:110005	control and loop statement.
	subject name :	
	Programming	3.Define functions and discuss various standard
	and Problem	library modules, packages.
	Solving	
		A Enlist huilt in stair as mother day stairs of survey the
		4.Enlist built in strings methods, strings formatting
		operator and perform the operations on strings
		5. To solve problem by object oriented programming
		using python & apply various features, methods to
		solve problem.
		6.To perform various operations, methods on files
		& dictionaries
4		1. Determine the resultant of various force system.
	Subject code 101011	2. Determine Centroid, moment of Inertia and solve
		problems related to friction
	subject name :	
	Engineering	3. Determine reactions of beam, and apply principle
	Mechanics	of equilibrium to forces in space.
1	1	<u> </u>

		4. Able to solve for internal forces acting on any member of a pined jointed truss structure, frame and
		cables 5. Calculate position, velocity and acceleration of particle using principle of kinematics.
		6. Calculate position, velocity and acceleration of particle using principle of kinetics and Work Power, Energy.6.
		1.Explain the working of P-N junction diode and its circuits.
5	Subject code :104010	2.Understand and describe specifications, features of electronic ideal diode and ideal diode circuits.
	subject name : Basic Electronic Engineering OR	3.Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET.
		4.Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops.
		5.Use different electronics measuring instruments to measure various electrical parameters.
		6.Select sensors for specific applications.
6		1.Compare electrical & magnetic circuit stating similarities & dissimilarities
	Subject code :103004	2.Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic Derive expression for RMS value & average value in terms of peak value to find form factor and peak factor for sinusoidal current & voltage.
	Basic Electrical Engineering	3.Estimate efficiency & regulation of single phase transformer by performing direct load test on it. Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram
		4.Verify the relationship between phase voltage, line voltage line current, phase current in a three phase star and delta connected load analytically & by drawing relevant phasor diagram
		5.Differentiate electrical networks & apply various network theorems to solve the circuit. Apply and analyze the resistive circuits using star-delta conversion KVL, KCL .

8 Subject code : 102012 1. To acquire basic knowledge about engine drawing language, line types, dimension m and simple geometrical construction. 7 Subject code : 102012 2. To draw conic sections by various methor involutes, cycloid and spiral. 8 Engineering Graphics 3. To acquire basic knowledge about physic realization of engineering objects and shall to draw its different views. 8 Subject code : 110013 6. To acquire basic knowledge about the va CAD drafting software's and its basic com required to construct the simple engineering and learning through shared cognition 8 Subject code : 110013 1. Project based learning will increase their and learning through shared cognition 9 Subject code : 101014 1. Have an understanding of environmenta pollution and the science behind those prol potential solutions. 9 Subject code : 101014 1. Have knowledge of various acts and law be able to identify the industries that are vi these rules.	Ĩ		
7Subject code : 102012 subject name : Engineering Graphics1.To acquire basic knowledge about engine drawing language, line types, dimension m and simple geometrical construction. 2.To draw conic sections by various methor involutes, cycloid and spiral. 3.To acquire basic knowledge about physic realization of engineering objects and shall to draw its different views.7Subject name : Engineering Graphics3.To acquire basic knowledge about physic realization of engineering objects and shall to draw its different views.8Subject code : 1100134.To visualize three dimensional engineerin and shall be able to draw their isometric vi 5.To imagine visualization of lateral devel solids.8Subject code : 1100131. Project based learning will increase their and learning through shared cognition 2. Students able to draw on lessons from se disciplines and apply them in practical way 3. Learning by doing approach in PBL will long-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning.9Subject code : 1010141. Have an understanding of environmenta polution and the science behind those prol potential solutions.9Subject name : 1010143. Asess theimpact of ever incresing humat population on the biosphere: social, econor			6.Solve numericals based on work, power & energy by studying basic concepts of electrical engineering such as emf, pd, current and resistance.
9 Subject code : 101013 involutes, cycloid and spiral. 9 Subject code : 101014 3.To acquire basic knowledge about physic realization of engineering objects and shall to draw its different views. 4.To visualize three dimensional engineeri and shall be able to draw their isometric vi 5.To imagine visualization of lateral develo- solids. 6.To acquire basic knowledge about the va CAD drafting software's and its basic com required to construct the simple engineerin and learning through shared cognition 8 Subject code : 110013 9 Subject code : 101014 9 Subject code : 101014 9 Subject code : 101014			1.To acquire basic knowledge about engineering drawing language, line types, dimension methods,
8Subject name : Engineering Graphics3. To acquire basic knowledge about physic realization of engineering objects and shall to draw its different views.4. To visualize three dimensional engineeri and shall be able to draw their isometric vi 5. To imagine visualization of lateral develo- solids.6. To acquire basic knowledge about the va CAD drafting software's and its basic com required to construct the simple engineerin and learning through shared cognition 2. Students able to draw on lessons from se disciplines and apply them in practical way 3. Learning by doing approach in PBL will long-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning.9Subject code : 1010149Subject code : 1010149Subject code : 1010149Subject name : Project Based Learning9Subject code : 1010149Subject code : 1010149Subject code : 1010149Subject code : 1010149Subject code : 101014	7 5	0	2.To draw conic sections by various methods,
8Subject code : 1100131. Project based learning will increase their and learning through shared cognition 2. Students able to draw on lessons from se disciplines and apply them in practical way 3. Learning by doing approach in PBL will long-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning.9Subject code : 1010141. Have an understanding of environmental pollution and the science behind those prol potential solutions.9Subject name : 1010141. Have students' attitudes towards learning.9Subject code : 1010141. Have students' attitudes towards learning.9Subject name : 1010141. Have students' attitudes towards learning.9Subject name : 1010141. Have students' attitudes towards learning.9Subject name : 1010141. Have students' attitudes towards learning.		Engineering	3.To acquire basic knowledge about physical realization of engineering objects and shall be able
9 Subject code : 110013 solids. 9 Subject code : 101014 1. Project based learning will increase their and learning through shared cognition 9 Subject code : 110013 1. Project based learning will increase their and learning through shared cognition 9 Subject name : Project Based Learning 2. Students able to draw on lessons from set disciplines and apply them in practical way 3. Learning by doing approach in PBL will long-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning. 9 Subject code : 101014 1. Have an understanding of environmenta pollution and the science behind those prol potential solutions. 9 Subject name : 101014 3. Asess theimpact of ever incresing human population on the biosphere: social,econom			4.To visualize three dimensional engineering objects and shall be able to draw their isometric views.
8CAD drafting software's and its basic com required to construct the simple engineerin8Subject code : 1100131. Project based learning will increase their and learning through shared cognition8Subject code : 1100132. Students able to draw on lessons from set disciplines and apply them in practical way 3. Learning by doing approach in PBL will long-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning.9Subject code : 1010141. Have an understanding of environmenta pollution and the science behind those prol potential solutions.9Subject code : 1010142. Have knowledge of various acts and law be able to identify the industries that are vi these rules.9Subject name : 3. Asess theimpact of ever incresing human population on the biosphere: social,econom			5.To imagine visualization of lateral development of solids.
8Subject code : 110013and learning through shared cognition8Subject code : 1100132. Students able to draw on lessons from set disciplines and apply them in practical way 			6.To acquire basic knowledge about the various CAD drafting software's and its basic commands required to construct the simple engineering objects.
8 110013 subject name : Project Based Learning 9 Subject code : 9 Subject code : 101014 1. Have an understanding of environmenta pollution and the science behind those prolopotential solutions. 2. Have knowledge of various acts and law be able to identify the industries that are virthese rules. 3. Learning			1. Project based learning will increase their capacity and learning through shared cognition
9Subject name : Project Based Learninglong-term retention of material and replicable skill, as well as improve teacher students' attitudes towards learning.9Subject code : 1010141. Have an understanding of environmenta pollution and the science behind those prol potential solutions.9Subject code : 1010142. Have knowledge of various acts and law be able to identify the industries that are vi 	8 5	0	2. Students able to draw on lessons from several disciplines and apply them in practical way.
9 Subject code : 101014 1. Have an understanding of environmenta pollution and the science behind those prol potential solutions. 9 Subject code : 101014 2. Have knowledge of various acts and law be able to identify the industries that are vi these rules. 9 Subject name : Environmental 3. Asess theimpact of ever increasing human population on the biosphere: social,econom		Project Based	replicable skill, as well as improve teachers' and
 9 Subject code : 101014 be able to identify the industries that are vit these rules. subject name : Environmental population on the biosphere: social,economic 			1. Have an understanding of environmental pollution and the science behind those problems and potential solutions.
Environmental population on the biosphere: social, econom	9 8	0	2. Have knowledge of various acts and laws and will be able to identify the industries that are violating these rules.
Audit course) resources.	F	Environmental Studies -II (and role of humans in conservation of natural
environmental issues scientifically and lear use those skills in applied situations such a			4. Learn skills required to research and analyze environmental issues scientifically and learn how to use those skills in applied situations such as careers that may involve environmenatl problems/ and or issues

Computer Department				
	A.Y. 2022-23, Semester-I			
Sr.No.	Course code	Course outcome		
	Course name			
	SE	Computer Sem-I (2019 COURSE)		
1	210241 Discrete Mathematics	 Design and analyze real world engineering problems by applying set theory, propositional logic and to construct proofs using mathematical induction. Apply equivalence relations; construct and use functions and apply these concepts to solve new problems. Calculate numbers of possible outcomes using permutations and combinations. and use in real life applications Solve computing problems using appropriate algorithms related with graph Solve real life problems using appropriate algorithms related with Tree Analyze the properties of binary operations, apply abstract algebra in coding theory and evaluate the algebraic structures. 		
2	210242 Fundamentals of Data Structures	 Define the terms such as data structure, algorithmic strategies, time complexity to calculate time complexity of given program segment. Demonstrate and understand sequential data structure and its use in sparse matrix. Apply appropriate sorting algorithm to sort the given data and state time complexity of that sorting technique. Understand dynamic memory management concepts and process data using linked list. Also state its advantages and disadvantages. Analyze Stack as an ADT and Describe the translation of the expression from one form to another form using stack. Explain different types of queues with their application. 		
3	210243 Object Oriented Programming	 Apply OOP Principles for effective programming Define Inheritance and develop programs with reusability Learn the concept of polymorphism, virtual and friend function with example 		

			4. Describe different file handling classes & stream manipulators5. Explain & analyze the strengths of exception
			handling mechanism in program
			6. Define STL,components of STL & types of
			containers for effective programming.
-			1. Identify the basic terminologies of Computer
			Graphics and interpret the mathematical foundation
			of the concepts of computer graphics.
		210244	2. Apply mathematics to develop Computer
		210277	programs for elementary graphic operations.
		Computer	3. Illustrate the concepts of windowing and clipping
		Graphics	and apply various algorithms to fill and clip
		Gruphiles	polygons.
			4. Understand and apply the core concepts of
	4		computer graphics, including transformation in two
			and three dimensions, viewing and projection
			5. Understand the concepts of color models,
			lighting, shading models and hidden surface
			elimination.
			6. Create effective programs using concepts of
			curves, fractals, animation and gaming.
-			Course Contents
			1. Realize & simplify boolean algebric assignments
		210245	for designing digital circuits using k-map.2. Design & implement combinational circuits.
		210243	3.Design & implement combinational circuits as
	5	Digital	per specification.
		Electronics &	4.Draw a ASM chart and Develop programmable
		Logic Design	logic devices for real world applications.
			5. Choose appropriate logic families according to
			their specifications.
			•
_			6. Explain architecture and units of computer system.
			1. Aware of the various issues concerning humans
			and society.
		210246	2. Aware about their responsibilities towards society.
		Humanity and	3. Sensitized about broader issues regarding the
		Social Science	social, cultural, economic and human aspects,
			involved in social changes.
	6		4. Able to understand the nature of the individual
	0		and the relationship between self and the community.
	I		

		5. Able to understand major ideas, values, beliefs,
		and experiences that have shaped human history and cultures.
		6. Able to understand need of society and provide
		solution to them.
		1. To learn how to implement data structure concepts in object oriented programming
		2. To understand memory requirement for various
		data structures
7	210247	3. To solve real life problem using appropriate data
	Data	structure.
	Data	4. To study dynamic memory management.
	structures	5. To understand basic techniques and strategies of
	Laboratory	algorithm analysis.
		1. Understand and apply the concepts like
		inheritance, polymorphism, exception handling and
		generic structures for implementing reusable
		programming codes
		2. Analyze the concept of file and apply it while
		storing and retrieving the data from secondary
		storages
8	210248	3. Understand the concept of Template and Apply in sorting of different data types
	OOP &	4. Analyze and apply computer graphics algorithms
	Computer	for line-circle drawing, scan conversion and filling
	Graphics	with the help of object oriented programming
	Laboratory	concepts.
	2	5. Understand the concept of windowing and
		clipping and apply various algorithms to fill and clip
		polygons.
		6. Apply logic to implement, curves, fractals,
		animation and gaming programs
		1.Identify the various digital ICs and understand
		their operation.
9	210249	2. Apply Boolean laws , k-map to simplify the
	210249	digital circuits.
	Digital	3. Capable to design simple logic diagram as per
	Electronics	specification
	Labpratory	
		4. Apply knowledge to appropriate IC as per design
		specification.
		5. Design and implement combinational circuits
		such as Mux, Demux, Adder etc ans sequential
		circuits such as FF, Counter etc as per specifiction
		6. Learn about shift register

10	210250 Business Communicatio n Skills	 Express effectively through verbal/oral communication and improve listening skills Write precisely reports and technical documents Prepare for group discussion / meetings / interviews and presentations Explore goal/target setting, self-motivation and practicing creative thinking. Operate effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership qualities study effective communication through E-mail
		and telephonic conversation
		TE Computer Sem-I (2019 COURSE)
		 Analyze and design Database Management System using ER model Implement database queries using database languages
1	310241	3. Normalize the database design using normal forms
	Database Management Systems (DBMS)	4. Apply Transaction Management concepts in real- time situations
		5. Use NoSQL databases for processing
		unstructured data 6. Differentiate between Complex Data Types and analyze the use of appropriate data types
		 Understand formal language, translation logic, essentials of translation, alphabets, language representation and apply it to design Finite Automata differentiate its variants Construct regular expression to present regular language, state the applications of RE and apply pumping lemma for RE
2	310242	3. Design Context Free Grammars and learn to simplify the grammar
	Theory of Computation	4. Define and Construct Pushdown Automaton model for the Context Free Language
		5. Design Turing Machine for the different requirements outlined by theoretical computer science and comapre TM with PDA.

completeness. 1. Explain system software concepts and Analyze and synthesize basic system software and its functionality 3. Explain system softwares such as Macroprocessor, Compiler 3. Explain the concept of loader and linker and compare different loading schemes System Programming & operating system 5. Explain the concept of loader and linker and compare different loading schemes 5. Explain deadlock and concurrency concepts and Implement and analyze the performance of process scheduling algorithms 5. Explain deadlock and concurrency concepts also Identify the mechanism to deal with the deadlock and concurrency issues 6. Analyze and Demonstrate memory organization and memory management policies 1. Understand network reference models and technologies. 2. Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Sufferentiate between graphical and web user interface. 4. Explain the user interface design process 5. justify the pattern			6. Understand different classes of problems classify and analyze them and study concepts of NP
and synthesize basic system software and its functionality 3 and synthesize basic system software and its functionality 3 10243 3 310243 3 310243 System 2. Explain the concept of loader and linker and compare different loading schemes System 3. Explain operating system concepts and Implement and analyze the performance of process scheduling algorithms 5 5. Explain deadlock and concurrency concepts also Identify the mechanism to deal with the deadlock and concurrency issues 6. Analyze and Demonstrate memory organization and memory management policies 1. Understand network reference models and technologies. 4 310244 2. Illustrate the working and functions of data link layer 3 0. Distinguish network protocols and demonstrate different routing algorithms. 4 310244 4 0. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5 Security 4 10244 5 Security 5 Security 6 Computer noting algorithms. 7 1. Understand transport layer protocols and demonstrate different routing algorithms. 6 Computer noting system			completeness.
3 310243 3 310243 System 3. Explain the concept of loader and linker and compare different loading schemes System 4. Explain operating system concepts and Implement and analyze the performance of process scheduling algorithms 5. Explain deadlock and concurrency concepts also Identify the mechanism to deal with the deadlock and concurrency issues 6. Analyze and Demonstrate memory organization and memory management policies 1. Understand network reference models and technologies. 2. Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. 5. Subjict the user interface design process 4. Explain the user interface design process			and synthesize basic system software and its functionality
3 310243 compare different loading schemes System 4. Explain operating system concepts and Implement and analyze the performance of process scheduling algorithms 5.Explain deadlock and concurrency concepts also Identify the mechanism to deal with the deadlock and concurrency issues 6.Analyze and Demonstrate memory organization and memory management policies 1. Understand network reference models and technologies. 2. Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 5 310245 Flective-1 Human 4. Explain the user interface design process 4. Explain the user interface design process			implement various system softwares such as
 4. Explain operating system concepts and Implement and analyze the performance of process scheduling algorithms 5. Explain deadlock and concurrency concepts also Identify the mechanism to deal with the deadlock and concurrency issues 6. Analyze and Demonstrate memory organization and memory management policies 1. Understand network reference models and technologies. 2. Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 5 310245 5 10245 5 Light the user interface design process 4. Explain the user interface design process 	3	310243	
4 310244 Identify the mechanism to deal with the deadlock and concurrency issues 4 310244 1. Understand network reference models and technologies. 2 Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. 5 310245 Elective-1 4. Explain the user interface design process Human 5. justify the pattern recognition in HCI.		Programming & operating	Implement and analyze the performance of process
and memory management policies 4 310244 Computer Networks & security 1. Understand network reference models and technologies. 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. Elective-1 Human Computer Interface 4. Explain the user interface design process 5. justify the pattern recognition in HCI.			Identify the mechanism to deal with the deadlock
4 310244 technologies. 2. Illustrate the working and functions of data link layer 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. 5 310245 Elective-1 4. Explain the user interface design process Human Computer Interface 5. justify the pattern recognition in HCI.			
4 310244 layer Computer Networks & security 3. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. 5 310245 Elective-1 4. Explain the user interface design process Human Computer Interface 5. justify the pattern recognition in HCI.			technologies.
Networks & security 5. Distinguish network protocols and demonstrate different routing algorithms. 4. Understand transport layer protocol and to demonstrate client server communication using socket programming. 5. Select any application layer protocols to implement web or desktop application. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. 4. Explain the user interface design process 4. Explain the user interface design process	4	310244	
demonstrate client server communication using socket programming.5. Select any application layer protocols to implement web or desktop application.6. Comprehend the basics of Network Security.1. Explain importance of good user interface design.2. Define and apply the design guidelies for designing the user interface.3. Differentiate between graphical and web user interface.Elective-1 Human Computer Interface5. justify the pattern recognition in HCI.		Networks &	•
socket programming.5. Select any application layer protocols to implement web or desktop application.6. Comprehend the basics of Network Security.1. Explain importance of good user interface design.2. Define and apply the design guidelies for designing the user interface.3. Differentiate between graphical and web user interface.Elective-1 Human Computer Interface5. justify the pattern recognition in HCI.			4. Understand transport layer protocol and to
5. Select any application layer protocols to implement web or desktop application.6. Comprehend the basics of Network Security.1. Explain importance of good user interface design.2. Define and apply the design guidelies for designing the user interface.3. Differentiate between graphical and web user interface.Elective-1Human Computer Interface5. justify the pattern recognition in HCI.			demonstrate client server communication using
implement web or desktop application.6. Comprehend the basics of Network Security.1. Explain importance of good user interface design.2. Define and apply the design guidelies for designing the user interface.3. Differentiate between graphical and web user interface.Elective-1 Human Computer Interface5. justify the pattern recognition in HCI.			
6. Comprehend the basics of Network Security. 6. Comprehend the basics of Network Security. 1. Explain importance of good user interface design. 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. Elective-1 Human Computer Interface 5. justify the pattern recognition in HCI.			
531024553102456Elective-11Explain the user interface design guidelies for designing the user interface.3Differentiate between graphical and web user interface.4Explain the user interface design process4Explain the user interface design process5justify the pattern recognition in HCI.			· · · ·
 2. Define and apply the design guidelies for designing the user interface. 3. Differentiate between graphical and web user interface. Elective-1 Human Computer Interface 5. justify the pattern recognition in HCI. 			6. Comprehend the basics of Network Security.
53102453310245Elective-14. Explain the user interface design processHuman5. justify the pattern recognition in HCI.			
53102453. Differentiate between graphical and web user interface.53102454. Explain the user interface design process6Elective-14. Explain the user interface design process7Human Computer Interface5. justify the pattern recognition in HCI.			
5 510245 interface. Elective-1 Human Computer Interface 5. justify the pattern recognition in HCI.			
Human Computer 5. justify the pattern recognition in HCI. Interface	5		
Computer 5. justify the pattern recognition in HCI. Interface			4. Explain the user interface design process
6. Design GUI in python		Computer	5. justify the pattern recognition in HCI.
			6. Design GUI in python

		1. Design E-R Model for given requirements and convert the same into database tables
	310246	2. Design schema in appropriate normal form considering actual requirements
6	Database Management Systems Lab	3. Implement SQL queries for given requirements, using different SQL concepts
	2,200,000 200	4. Implement PL/SQL Code block for given requirements
		5. Implement NoSQL queries using MongoDB
		6. Design and develop application considering
		actual requirements and using database concepts
		1. Setup of LAN of four computer using layer-2 switch in wired network.
	310247	2. Demonstrate LAN and WAN protocol behavior using Modern Tools.
7	Computer Networks & security Lab	3. Understand error detection and correction concept and implement program based on it.
		4. Develop Client-Server architectures and
		prototypes by the means of correct standards and
		technology.
		5. Analyze data flow between peer to peer in an IP
		network using Application, Transport and Network
		Layer Protocols.
		6. Design and configure a RIP, OSPF and BGP
		using packet tracer.
		1. Design & implement language translator such as
		Assembler, Macro processor
		2. Implement CPU scheduling algorithms
8	Lab Practice-I	3. Implement different page replacement algorithms
		4. Sketch the User Interface designs.
		5. Design the user interfaces by applying user
		interface design guidelines.
		6. Design GUI by using python.
	210240	1. Analyze a latest topic of professional interest
		2. Enhance technical writing skill
	Seminar &	2 Identify on an air coming weaklow and here it and
9	technical	3. Identify an engineering problem, analyze it and
	communicatio	propose a work plan to solve it
	n	1 communicate with professional technocal
		4. communicate with professional technocal presentation skill
BE Computer Sem-I (2019 COURSE)		

		1. Discuss role of algorithm design of algorithm with related issue and confirming correlation of algorithm
	410241	2. Explain and compare with different models and derive proof rules, decide and write algorithmic strategies to solve given problem
1		3. Discuss and apply algorithmic strategies like divide and conquer, greedy approach, dynamic programming and compare algorithmic strategies.
	Design and Analysis of	4. Explain and analyzing asymptotic growth, deterministic and non-deterministic growth and compare NP problem algorithm.
	Algorithm	5. Discuss amortized analysis with its methods and write approximate embedded, randomized algorithms.
		6. To analyze and evaluate problems using multithreaded and distributed algorithms.
		1. To understand the need for Machine learning
	410242	2. To explore various data pre-processing methods.
2	Machine Learning	3. To study and understand classification methods
	C	4. To understand the need for multi-class classifiers
		5. To learn the working of clustering algorithms
		6. To learn fundamental neural network algorithms.
		1. Interpret the fundamentals and basic concepts in Blockchain
	410243	2. Compare the working of different blockchain platforms
3	Blockchain Technology	3. Use Crypto wallet for cryptocurrency based transactions
	reemology	4. Analyze the importance of blockchain in finding
		the solution to the real-world problems.
		5. Ilustrate the Ethereum public block chain platform
		6. Identify relative application where block chain technology can be effectively used and implemented.
		1. Define the different attacks on Information. Find problems with existing ciphers.
4	410244	2. Identify the problems with private cryptography method.

	Ele-III(Cyber Security & Digital forensic)	3. Apply public cryptography on information for security.
		4. Analyze, validate and process crime scenes.
		5. Analyze evidence about computer crimes and apply tools to get them.
		6. Apply tools for network forensic to get digital evidence.
		1. Describe fundamental concepts in software testing and software quality
	410245	2. Design and develop project test plan, design test cases, test data, and conduct test operations
5		3. Apply different test case design techniques.
		4. Apply different approaches of quality
	Ele-IV	management, assurance, and quality standard to
	(Software	software system
	Testing &	5. Apply recent automation tool for various software
	Quality Assurance)	testing for testing software
	/ issurance)	6. Apply and analyze effectiveness Software Quality
		Tools
		1. Learn effect of data preprocessing on the
		performance of machine learning algorithms
	410246	2. Develop in depth understanding for
	I ab Practica	implementation of the regression models.
6	Lab Practice- III	3. Implement and evaluate supervised and unsupervised machine learning algorithms.
	111	4. Analyze performance of an algorithm.
		5. Learn how to implement algorithms that follow
		algorithm design strategies namely divide and
		conquer, greedy, dynamic programming,
		backtracking, branch and bound.
		6. Understand and explore the working of
		Blockchain technology and its applications.
		1. Demonstrate basic principles of elective subjects
		to problem solving and modeling.
	410247	2. Use tools and techniques to solve problem
7	Lab Practice-	3. Design and develop applications on subjects of
7	IV	their choice as a mini project.
		4. Differentiate between different tools and
		techniques Select appropriate tool to solve problem
		1. Solve real life problems by applying knowledge.
8	410248	2. Analyze alternative approaches, apply and use
-		most appropriate one for feasible solution.

	Project Work Stage I	 Write precise reports and technical documents in a nutshell. Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work
		5. Inter-personal relationships, conflict management and leadership quality.
	1	A.Y. 2022-23, Semester-II
Sr.No.	Course code Course name	Course outcome
		Computer Sem-II (2019 COURSE)
		1. To Solve Linear differential equations, essential in modelling and design of computer-based systems.
	207003	 To Apply concept of Fourier transform and Z- transform and its applications to continuous and discrete systems and image processing. To Apply Statistical methods like correlation and
1	Engineering	regression analysis and probability theory for data analysis and predictions in machine learning.
	Mathematics- III	 4. To Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques. 5. To Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.
		1. Describe the benefits of good hashing and identify hashing scheme for solving real world problem.
	210252	2. Apply non-linear data structure like tree for solving problems of various domain.
2	Data	3. Apply non-linear data structure like graph for solving problems of various domain.
	Structures & Algorithms	4. Analyze the algorithmic solutions for resource requirements and optimization
		5. Use efficient indexing methods and multiway search techniques to store and maintain data.
		6. Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.
		1. Compare software process models used for software development.
		2. Identify and analyze the software requirements required for software development.

3	210253	3. Explain the software project estimation techniques.
		4. Formulate the design solution using software engineering.
	Software Engineering	5. Explain and justify the importance of Software Configuration Management.
		6. Describe and compare the various testing techniques.
		1. Classify processor architecture and illustrate the instruction set of 80386 processor.
	210254	2. Compare 80386 processor modes and explain advanced featues of 80386
4	Microprocesso r	3. Explain the memory management of 80386.
		4. Describe the protection mechanism with various previlege levels.
		5. State and Explain the multitasking with relevent descriptors and registers
		6. Identify interrupts/exceptions and differentiate between microprocessor and microcontroller
		1. Make use of Basic principals of Programming Languages
	210255	2. Develop a program with data representation and computition
5	Principals of	3. Develop a program using Object Oriented Programming Language : Java
	Programming Languages	4. Develop application using Encapsulation Inheritance and Polymorphism
	00	5. Explain the concept of Multithreading in Java
		6. Develop a simple program using functional and logical programming paradigm
		Understand the ADT/libraries, hash tables and dictionary to design algorithms for a specific problem
	210256	Choose most appropriate data structures and apply algorithms for graphical solutions of the problems
6	Data Structures and algorithms laboratory	Apply and analyze non linear data structures to solve real world complex problems.
		Apply and analyze algorithm design techniques for indexing, sorting, multi-way searching, file organization and compression.
		Analyze the efficiency of most appropriate data structure for creating efficient solutions for engineering design situations

		1.Apply knowledge and demonstrate programming proficiency using the various addressing modes and instructions of microprocessor.
	210257	2. Write a programs using co processor instruction set.
7	Microprocesso r Laboratory	3. Execute & debug a programs using 64 bit assembler.
		4. Create an interrupt & use it in a program.
		5. Apply the programming knowledge and create a
		simple arithmetic, logical, string and real time applications.
		6. Demonstrate the use of procedures, macros with suitable example programs.
		1. Identify the real life problem from societal need point of view
	210258	2. Understand basics of IT Project management.
8	Project Based Learning II	3. Analyze alternative approaches, apply and use most appropriate one for feasible solution.
		4. Design and present the reliable solution to meet challenges
		5. Apply the technical knowledge to solve the identified problem
		6. Prepare the brief report of their project.
		1. Understand the basics of Deep Learning and apply the tools to implement deep learning applications
		2. Evaluate the performance of deep learning models
		(e.g., with respect to the bias-variance trade-off,
	210259	overfitting and underfitting, estimation of test error).
		3. To apply the technique of Convolution (CNN) and
0	.	Recurrent Neural Network (RNN) for implementing
9	Deep Learning	
		 To implement and apply deep generative models. Construct and apply on-policy reinforcement learning
		algorithms
		6. To Understand Reinforcement Learning Process
		TE Computer Sem-II (2019 COURSE)
		1. To understand the need of Data Science and Big Data
		2. To understand computational statistics in Data Science
1	310251	3. To study and understand the different technologies used for Big Data processing

	Data Science & Big data analytics	4. To understand and apply data modeling strategies
		5. To learn Data Analytics using Python programming
		6. To be conversant with advances in analytics
		1. Implement and analyze behavior of web pages using HTML and CSS
		2. Apply the client side technologies for web development
2	310252	3. Analyze the concepts of Servlet and JSP
	Web technologies	4. Analyze the Web services and frameworks
		5. Apply the server side technologies for web development
		6. Create the effective web applications for business
		functionalities using latest web development platforms
-		
		1. Identify and apply suitable intelligent agents for
		various AI applications
		2. solve problems using different informed search and uninformed search & heuristic approaches
		3. Identify knowledge associated and represent it to solve
3	310253	a given problem
	Artificial Intelligence	4. Apply suitable algorithms to solve AI problems
		5. Implement ideas underlying modern logical inference system
		6. Represent complex problems with expressive yet carefully constrained language representation
		1. Analyze the problem statement (SRS) and choose
		proper design technique for designing web-based/
		desktop application.
		2. Design and analyze an application using Static UML
4	310254 (D)	modeling as fundamental tool.
	Elective-II	3. Design and analyze an application using Dynamic
	Elective-II Software	UML modeling as fundamental tool.
	Modelling &	4. Evaluate software architectures.
	Architecture	+. Evaluate software architectures.
	2 ironneoture	5. Use appropriate architectural styles and software
		design patterns.
		6. Apply appropriate modern tool for designing and
		modeling.
		1. Understand the different Cloud Computing
	l	environment

4	310254(C)	2. Understand appropriate data storage technique on Cloud, based on Cloud application
	Elective-II	3. Analyze virtualization technology and install virtualization software
	Cloud Computing	4. Develop and deploy applications on Cloud
	1 0	5. Apply security in cloud applications
		6. Use advance techniques in Cloud Computing
		1. To demonstrate professional competence through industry internship
		2. To apply knowledge gained through internships to complete academic activities in a professional manner
5	310255	3. To choose appropriate technology and tools to solve given problem
	Internship	4. To demonstrate abilities of a responsible professional and use ethical practices in day to day life
		5. Creating network and social circle and developing relationships with industry people
		6. To analyze various career opportunities and career goals
	310256	1. To understand principles of Data Science for the analysis of real time problems
6	Data Science & Big data analytics Lab	2. To develop in depth understanding and implementation of the key technologies in Data Science and Big Data Analytics
		3. To analyze and demonstrate knowledge of statistical data analysis techniques for decision-making
		4. To gain practical, hands-on experience with statistics programming languages and Big Data tools
		1. Understand the importance of website planning and website design issues
7	310257	2. Apply the client side and server side technologies for web application development
	Web Technology Lab	3. Analyze the web technology languages, frameworks and services
		4. Create three tier web based applications
		2.Apply basic principles of AI in solutions that require
		problem solving inference. Percention knowledge
8	310258	3.Design and develop an expert system
	Lab Practice-II	4. Use tools and techniques in the area of Cloud Computing.
I		companing.

		5. Use the knowledge of Cloud Computing for problem solving.
		6. Apply the concepts Cloud Computing to design and develop applications.
		7. Use UML tools and techniques in the area Software Modeling and Architectures
		 8. Use the knowledge of Software Modeling and Architectures for problem solving 9. Apply the concepts Software Modeling and
		BE Computer Sem-II (2019COURSE)
		1. Understand various Parallel Paradigm
	410250	 Design and Develop an efficient parallel algorithm to solve given problem
1	High Performance Computing	3. Illustrate data communication operations on various parallel architecture
		4. Analyze and measure performance of modern parallel computing systems
		5. Apply CUDA architecture for parallel programming
		6. Analyze the performance of HPC applications
		1. Understand the basics of Deep Learning and apply the tools to implement deep learning applications
	410251	2. Evaluate the performance of deep learning models (e.g., with respect to the bias-variance trade-off, overfitting and underfitting, estimation of test error).
2	Deep Learning	3. To apply the technique of Convolution (CNN) and Recurrent Neural Network (RNN) for implementing Deep Learning models
		4. To implement and apply deep generative models.
		5. Construct and apply on-policy reinforcement learning algorithms
		6. To Understand Reinforcement Learning Process
		1. Apply Relevant Mathematics Required for Digital Image Processing.
	410252 (B)	2. Apply Special and Frequency Domain Method for Image Enhancement.
3	Ele-V (Image Processing)	3. Apply algorithmic approaches for Image segmentation.
		4. Summarize the Concept of Image Compression and Object Recognition.
		5. Explore the Image Restoration Techniques.
		6. Explore the Medical and Satellite Image Processing Applications.

		1. Describe the fundamental concepts of NLP, challenges and issues in NLP
4	410252 (A)	2. Analyze Natural languages morphologically, syntactical and semantically
	Ele-V (Natural Language Processing)	3. Describe various language modeling techniques
		4. Apply NLP techniques for the information retrieval task
		5. Demonstrate the use of NLP tools and techniques for text-based processing of natural languages
		6. Develop real world NLP applications
		 Differentiate the concepts of Decision Support System & Business Intelligence
	410253 (C)	2. Apply Data Warehouse & Business Architecture to design a BI system
5	Business Intelligence	3. Create and Build graphical reports
		4. Apply different data preprocessing techniques on dataset
		5. Apply machine learning algorithms as per business needs
		6. Apply BI in marketing, logistics, and finance and telecommunication sector
		1. Analyze and measure performance of sequential and parallel algorithms.
	410254	2. Design and Implement solutions for multicore/Distributed/parallel environment.
6	Lab Practice- V	3. Identify and apply the suitable algorithms to solve AI/ML problems.
		4. Apply the technique of Deep Neural network for implementing Linear regression and classification.
		5. Apply the technique of Convolution (CNN) for implementing Deep Learning models.
		6. Design and develop Recurrent Neural Network (RNN) for prediction.
		1. Demonstrate basic principles of elective subjects to problem solving and modeling.
	410255	2. Use tools and techniques in the area of software development to build mini projects
6	Lab Practice- VI	3. Design and develop applications on subjects of their choice.
		4. Design,Generate and manage deployment, administration & security.
		1. Show evidence of independent investigation

7	410256	2. Critically analyze the results and their interpretation.
	Project Work Stage II	3. Report and present the original results in an orderly way and placing the open questions in the right perspective.
		4. Link techniques and results from literature as well as actual research and future research lines with the research.
		5. Appreciate practical implications and constraints of the specialist subject

Electronics and Telecommunication			
A.Y. 2022-23, Semester -I			
Sr.No.	Course code	Course outcome	
	Course name	and Telecommunication-Sem-I (2019 COURSE)	
	SE Electronics 2		
		1. To Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems.	
	207005	2. to Apply concept of Fourier transform & Z- transform and its applications to continuous & discrete systems, signal & image processing and communication systems.	
	Engineering	3. To Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern	
1	Mathematics III	 scientific computing. 4. To Perform vector differentiation & integration, analyze the vector fields and apply to electromagnetic fields & wave theory. 5. To Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital filters, signal and image processing. 	
		1.Assimilate the physics, characteristics and parameters of MOSFET towards its application as amplifier.	
	204181	 Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications. 	
2	Electronic Circuits	3. Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.	

		4. Explain internal schematic of Op-Amp and define its performance parameters.
		5. Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.
		6. Understand and compare the principles of various data conversion techniques and PLL with their applications.
	204182	1. Identify and prevent various hazards and timing problems in a digital design.
3	Digital Circuits	2. Use the basic logic gates and various reduction techniques of digital logic circuit.
		3. Analyze, design and implement combinational logic circuits.
		4. Analyze, design and implement sequential circuits.
		5. Differentiate between Mealy and Moore machines.
		6. Analyze digital system design using PLD.
		1. Analyze the simple DC and AC circuit with circuit simplification techniques.
4	204183	2. Formulate and analyze driven and source free RL and RC circuits.
	Elecrical Circuits	3. Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.
		4. Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors.
		5. Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.
		6. Analyze and select a suitable motor for different applications.
		1. Solve mathematical problems using C programming language.
	204184	2. Implement sorting and searching algorithms and calculate their complexity.
5	Data Structures	3. Develop applications of stack and queue using array.
		4. Demonstrate applicability of Linked List.
		5. Demonstrate applicability of nonlinear data structures - Binary Tree with respect to its time complexity.
		6. Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.

TE Electronics and Telecommunication-Sem-I (2019 COURSE)		
		1. Apply the statistical theory for describing various signals in a communication system.
	304181	2. Understand and explain various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise.
1	Digital Communication	3. Describe and analyze the digital communication system with spread spectrum modulation.
		4. Analyze a communication system using information theoretic approach.
		5. Use error control coding techniques to improve performance of a digital communication system
		1. Apply the basic electromagnetic principles and determine the fields (E & H) due to the given source.
	304182	2. Apply boundary conditions to the boundaries between various media to interpret behavior of the fields on either sides.
2	Electromagnetic Field Theory	3. State, Identify and Apply Maxwell's equations (integral and differential forms) in both the forms (Stat ic, time-varying or Time-harmonic field) for various sources, Calculate the time average power density using Poynting Theorem, Retarded magnetic vector potential.
		4. Formulate, Interpret and solve simple uniform plane wave (Helmholtz Equations) equations, and analyze the incident/reflected/transmitted waves at normal incidence.
		5.Interpret and Apply the transmission line equation to transmission line problems with load impedance to determine input and output voltage/current at any point on the Transmission line, Find input/load impedance, input/load admittance, reflection coefficient, SWR, Vmax/Vmin, length of transmission l ine using Smith Chart.
		6. Carry out a detailed study, interpret the relevance and applications of Electromagnetics.
		1. To understand fundamental concepts of database from its design to its implementation.
	304183	2. To analyze database requirements and determine the entities involved in the system and with one another.
3	Database Management	3. Manipulate database using SQL Query to create, update and manage Database.

1 I	1	Г
		4. Be familiar with the basic issues of transaction
		processing and concurrency control.
		5. To learn and understand Parallel Databases and its
		Architectures.
		6. To learn and understand Distributed Databases and its
		applications.
		1. Understand architecture and features of 8051 and
		PIC18FXX Microcontroller.
	304184	2. Learn interfacing of real-world peripheral devices with
		microcontroller.
4		3. Explore different features of PIC 18F Microcontroller
4	S	with Architecture.
		4.Use concepts of timers and interrupts of PIC 18 in
		programming.
		5. Design and develop microcontroller based embedded application.
		6. Demonstrate real life applications using PIC 18.
		1. Interpret and process discrete/ digital signals and
		represent DSP system.
		2.Analyze the digital systems using the Z-transform
	304185	techniques.
		3.Implement efficient transform and its application to
5	Elective - I	analyze DT signals.
	Digital Signal	
	Processing	4.Design and implement IIR filters.
	e	5.Design and implement FIR filters.
		6.Apply DSP techniques for speech/ biomedical/ image
		signal processing.
	BE Electronics	and Telecommunication-Sem-I (2019 COURSE)
		1. A maly the fundamentals of electromegnetic to derive
		1. Apply the fundamentals of electromagnetic to derive free space propagation equation and
		distinguish various performance parameters of antenna.
		2. Identify various modes in the waveguide. Compare:
		coaxial line, rectangular waveguides &
	404181	striplines and identify applications of the same.
	Radiation &	3.Identify various modes in the waveguide. Compare:
1	Microwave	coaxial line, rectangular waveguides &
1	Theory	striplines and identify applications of the same.
		4. Explore construction and working of principles active
		microwave devices/components.
		5. Analyze the structure, characteristics, operation,
		equivalent circuits and applications of various microwave solid state active devices.
I	I	microwave song state active devices.

1	1	
		6. Know the various microwave systems, device set ups of microwave measurement devices and Identify the effect of radiations on environmental sustainability.
		1. Develop effective HDL codes for digital design.
		2. Apply knowledge of real time issues in digital design.
2	404182	3. Model digital circuit with HDL, simulate, synthesis and prototype in PLDs
	VLSI Design and Technology	4. Design CMOS circuits for specified applications.
		5. Analyze various issues and constraints in design of an ASIC.
		6. Apply knowledge of testability in design and Build In Self Test (BIST) circuit.
		1. Apply knowledge of testability in design and Build In Self Test (BIST) circuit.
	404183	2. Describe the underlying principles of different Cloud Service Models.
3	Cloud Computing	3.Classify the types of Virtualization.
		4. Examine the Cloud Architecture and understand the importance of Cloud Security.
		5. Develop applications on Cloud Platforms.
		6. Evaluate distributed computing and the Internet of Things.
		1. Comprehend and analyze concepts of sensors, actuators, IoT and IoE.
		2. Interpret IoT Architecture Design Aspects.
	404184	3. Comprehend the operation of IoT protocols.
		4. Describe various IoT boards, interfacing, and
4	Elective - 3	programming for IoT.
		5. Illustrate the technologies, Catalysts, and precursors of
	Modernized IoT	IIoT using suitable use cases.
		6. Provide suitable solution for domain specific
		applications of IoT. 1. Classify machine learning algorithms and its types.
		2. Discuss the concepts of deep learning and its
	404185	Frameworks.
		3. Identify the deep learning architectures with respect to
5	Elective - 4	the applications.
		4. Demonstrate different architectures of Convolutional
	Deep Learning	neural networks.
		5. Discuss natural language processing architectures.
		6. Make use of various case studies and deep learning
	I	applications.

A.Y. 2022-23, Sem-I					
Sr.No.	Course code	Course outcome			
	Course name				
	ME First Year E&TC(VLSI & ES)-Sem-I				
1	504201	1. Understand different MOSFET models and their characteristics.			
	Digital CMOS Design	2. Understand different performance parameters			
		3. Design CMOS logic circuits			
		4. Design and Develop different FSM systems			
		5. Understand advance trends in CMOS technology			
		1. Define the basic concepts of Embedded Systems and Architecture of Embedded System			
		2. Identify Design Methodology, and understand design challenges and Design Metrics and problem solving.			
		3. Use Life-Cycle Models. Understand design process and System specifications versus system requirements			
		4. Understand ARM Processor based Embedded System			
	504103	design and exhibit the knowledge of ARM.			
3	Embedded System Design	5. Understand Embedded Linux. And Linux kernel construction.			
		6. Understand and apply the concept of android operating system			
	504203	1. Describe Reconfigurable Device Characteristics, Configurable, Programmable, and Fixed Function Devices			
3		2. Designing reconfigurable circuits using PLD.			
	Reconfigurable Computing	3. Explain Metrics, Partitioning and Placement, Routing, ALU and CLB.			
		4. Describe architectures of PDSPs, RALU, VLIW, Vector Processors, Memories, CPLDs, FPGA			
		1. Define research problem & its scope, objectives, and errors.			
	504104	2. State basic instrumentation schemes & data collection methods.			
4	Research Methodology	3. Perform analysis with various statistical techniques.			
		4. Perform modeling and predict the performance of experimental system			
		5. Develop the research proposals.			
		1. Gain knowledge of Architecture of WSN network.			
	504205	2. Understand Physical, Data link and Network layer aspects with their protocols.			

-				
5	Wireless Sensor Network	3. Learn different techniques of power management and security.		
		4. Exhibit the knowledge of operating systems in WSN systems.		
		ME Second Year E&TC(VLSI & ES)-Sem-I		
1	604201	1. The student will learn functional modeling.		
	Fault Tolerant Systems	2. The student will use theory of logical fault models for testing single stuck fault.		
		3. The student will show skills for fault simulation for statistical fault analysis.		
		4. The student will exhibit the knowledge of self- checking for design of self-checking combinational circuits.		
		5. The student will exhibit the self-testing for memory, processor and PLA according to the specifications .		
2	604202	1. Explain design steps of ASIC design.		
	ASIC Design	2. Explain steps of Analog and Digital (Mixed signal) ASIC design		
		3. Describe different steps in ASIC construction		
		4. Understand different ASIC testing methods		
3	604103	1. Define disasters. Define Various terms involved in it. Explain Vulnerability profile of India.		
	A- Disaster management	2. Enlist the types of disasters. Compare the disasters on the basis of major and minor. Study various disasters in details.		
		3. To explain the impact of disasters on environment, social, economical, ecological etc.		
		4. Define disaster risk and disaster risk reduction methods.		
		5. Enlist various government and non government organizations for disaster management. Draw and explain disaster management cycle.		
4	604103	1. Explain the fuzzy logic and its properties. Compare fuzzy with crisp.		
	B-Fuzzy mathematics	2. Explain the fuzzy inference models Mamdani,Sugeno and Tsukamoto.		
	A.Y. 2022-23, Semester-II			
Sr.No.	Course code	Course outcome		
L	Course name			
	SE Electronics a	nd Telecommunication-Sem-II (2019 COURSE)		
		1. Identify, classify basic signals and perform operations on signals.		

	204191	2. Identify, Classify the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.
1	Singals and Systems	 Analyze and resolve the signals in frequency domain using Fourier series and Fourier Transform.
		4. Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms.
		5. Define and Describe the probability, random variables and random signals. Compute the probability of a given event, model, compute the CDF and PDF.
		6. Compute the mean, mean square, variance and standard deviation for given random variables using PDF.
		1. Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.
	204192	2. Determine the (absolute) stability of a closed-loop controlsystem.
2	Control Systems	3. Perform time domain analysis of control systems required for stability analysis.
	5	4. Perform frequency domain analysis of control systems required for stability analysis.
		5. Apply root-locus, Frequency Plots technique to analyze controlsystems.
		6. Express and solve system equations in state variable form.
		7. Differentiate between various digital controllers and understand the role of the controllers in Industrial automation.
		1. To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study.
	204193	2.Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems.
3	Principals of Communicatio n Systems	3. Explain generation and detection of FM systems and compare with AM systems.
		4. Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM).

		5. Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).6. Illustrate waveform coding, multiplexing and
		synchronization techniques and articulate their importance in baseband digital transmission.
		1. Describe the principles of object oriented programming.
	204194	2. Apply the concepts of data encapsulation, inheritance in C++.
4	Object Oriented Programming	3. Understand Operator overloading and friend functions in C++.
		4. Apply the concepts of classes, methods inheritance and polymorphism to write programs C++.
		5. Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.
		6. Describe and use of File handling in C++.1. Define personal and career goals using introspective
	204199	skills and SWOC assessment. Outline and evaluate short- term and long-term goals.
	Employability Skill Development	2. Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.
5		3. Be a part of a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.
		4. Comprehend the importance of professional ethics, etiquettes & morals and demonstrate sensitivity towards it throughout certified career.
		5. Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.
	TE Electronics a	and Telecommunication-Sem-II (2019 COURSE)
		1. Understand fundamentals of wireless communications.
	304192	2. Discuss and study OFDM and MIMO concepts.
1	Cellular Networks	3. Elaborate fundamentals mobile communication.
		4. Describes aspects of wireless system planning

	1	
		5. Understand of modern and futuristic wireless networks architecture.
		6. Summarize different issues in performance analysis.
		1. Learn the fundamental knowledge of project management and apply effectively handling the projects.
		2. Select the appropriate project based on feasibility study and undertake its effective planning.
	304193	3. Understand organizational structure of project to handle project management related issues.
2	Project Management	4. Identify and apply the project scheduling techniques for a Project Schedule Plan to meet the resources to meet the project deadline.
		5. Assimilate the project risks and manage finances in line with Project Financial Management Process.
		6. Develop new skillsets to products assessing their commercial viability for becoming successful entrepreneurs.
		1. To introduce different power devices viz. SCR, GTO, MOSFET and IGBT with construction, characteristics, repetitive and non repetitive ratings and typical triggering/driver circuits.
3	304194	2. To understand working, design and performance analysis and applications of various power converter circuits such as ac to dc converters, inverter and chopper.
	Power Devices & Circuits	3. To know various protection circuit requirements of power electronic devices.
		1. To become familiar with digital image fundamentals
	304195A	2. To get exposed to simple image enhancement techniques in Spatial and Frequency domain.
4	Elective-II	3. To study the image segmentation and representation techniques.
	Digital Image Processing	4. To become familiar with image compression methods.
		5. To learn concepts of degradation function and restoration techniques
		6. To understand the Object Recognition.
		1. Concept of Sensors/Transducers and their Static and Dynamic Characteristics.
	304195B	2. Sensors used in Industry for Temperature and Humidity Measurement.
5	Elective-II	3. Sensors used for Sensors used for Force, Pressure, Stress and Flow measurements.

1	Sensors in	
	Automation	4. Sensors used for Displacement and Level Measurement
		5. Applications of Image and Biosensors
		6. Role of Sensors/Transducers in IoT applications.
-	BE Electronics a	nd Telecommunication-Sem-II (2019 COURSE)
		1. Explain the working of components and measurement equipments in optical fiber networks.
	404190	2. Calculate the important parameters associated with optical components used in fiber optic telecommunication systems.
1	Fiber Optic Communicatio n	3. Compare and contrast the performance of major components in optical links.
	11	4. Evaluate the performance viability of optical links using the power and rise time budget analysis.
		5. Design digital optical link by proper selection of components and check its viability using simulation tools.
		6. Compile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge.
		1. Describe the origin of various biomedical signals and Interpret the meaning of various
		parameters associated with biomedical signals 2. Analyze ECG Signals with extraction of meaningful information
2	404191	3. Explain Processing of EEG signals for Diseases of Central Nervous System
2	Elective - 5	4. Analyze EMG signals for understanding Neuromuscular Diseases
	Biomedical Signal Processing	5. Analyze various Biomedical Signals
		6. Process the biomedical signals to remove adaptive interference and noise
	404192	1. Design websites using free tools like Wordpress and explore it for digital marketing.
	Elective - 6	2. Apply various keywords for a website & to perform SEO.
	Digital	3.Understand the various SEM Tools and implement the
3	Marketing	Digital Marketing Tools.
		4. Illustrate the use of Facebook, Instagram and Youtube
		for Digital Marketing in real life.
	l	5. Use Linked in platform for various campaigning.

	1	
		6. Understand the importance of recent trends in digital marketing.
		1. Understand Innovation, Entrepreneurship and
		characteristics of an entrepreneur.
		2. Develop a strong understanding of the Design Process
	404193	and its application in variety of
		business settings.
	Innovation	
	and	
4	Entrepreneurs	3. Generate sustainable ideas.
	hip	
	1	4. Explore various processes required to be an
		entrepreneur.
		5. Understand patents and its process of filing.
		6. Choose and use appropriate social media for marketing.
	404194	1. Identify drivers of digital business.
	Digital	2. Illustrate various approaches and techniques for E-
5	Business	business and management.
	Management	
		3. Prepare E-business plan.
		A.Y. 2022-23, Sem-II
Sr.No.	Course code	Course outcome
	Course name	
<u> </u>		ME First Year E&TC(VLSI & ES)-Sem-II
1	504207	1. Understand and design basic COMS sub-circuits.
	Analog	
	CMOS Design	2. Udestand and Design CMOS Op-amp
	0	
		3. Understand low and high bandwidth CMOS designs.
2	504209	4. Understand and design Low Noise Amplifiers .
2	504208	
2	504208 System On Chip	4. Understand and design Low Noise Amplifiers .
2	System On	4. Understand and design Low Noise Amplifiers .1. Learn Design flow graphs and flow modeling.
2	System On	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy, management techniques
2	System On	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing
2	System On	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy, management techniques
2	System On	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. 4. Design , implement and test SoC.
2	System On	 Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded
2	System On Chip	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. 4. Design , implement and test SoC. 1. Define the basic concepts of Real-Time Embedded Signal Processing.
2	System On Chip 504209	 Understand and design Low Noise Amplifiers . Learn Design flow graphs and flow modeling. Understand SoC modeling and interfacing. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. Design , implement and test SoC. Define the basic concepts of Real-Time Embedded
	System On Chip 504209 Embedded	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. 4. Design , implement and test SoC. 1. Define the basic concepts of Real-Time Embedded Signal Processing. 2. Realize the FIR filter.
2	System On Chip 504209	 4. Understand and design Low Noise Amplifiers . 1. Learn Design flow graphs and flow modeling. 2. Understand SoC modeling and interfacing. 3. Gain knowledge of SoC memory system design, embedded software and energy,management techniques for SoC design, SoC prototyping, verification, testing and physical design. 4. Design , implement and test SoC. 1. Define the basic concepts of Real-Time Embedded Signal Processing.

	1	
		4. Use properties of DFT, Algorithm and problem
		solving on DFT and FFT
		5. Design the IIR filter
		6. Understand digital signal processing and key
		components of DSP and code optimization
		7. Understand the Practical DSP Applications like Audio
		Coding and Audio Effects
		1. Define Software and hardware defined radio. State
		properties of SDR. Draw and explain the structure of
		SCA.
		2. Explain the function of RF front end blocks. Enlist
	504210	types of RF front end topologies. Draw their block
		diagram.
4	Software	3. Enlist various DDS systems. Compare them. Draw PN
4	Defined Radio	sequence generator and derive the output.
		4. Enlist various smart antenna configurations. Define
		various adaptive antenna array algorithms. Draw the
		block diagram for various beam forming antenna arrays.
		Compare DSPs, ASIC and FPGA.
		5. Understand JTRS, CORBA and MAE in SDR
	Denartme	nt of Information Technology
		A.Y. 2022-23, Semester-I
Sr.	Course code	
		('AURSE (DUTCAME
No.	Course name	Course Outcome
No.		
No.	SE (Inform	nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and
No.		mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and
No.	SE (Inform	nation Technology) 2019 pattern Sem-I1. Formulate and apply formal proof techniques and solve the problems with logical reasoning.
No.	SE (Inform	nation Technology) 2019 pattern Sem-I1. Formulate and apply formal proof techniques and solve the problems with logical reasoning.2. Analyze and evaluate the combinatorial problems
No.	SE (Inform	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory.
	SE (Infor 214441	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise
No.	SE (Inform 214441 Discrete	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models.
	SE (Infor 214441	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to
	SE (Inform 214441 Discrete	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems.
	SE (Inform 214441 Discrete	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its
	SE (Inform 214441 Discrete	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application.
	SE (Inform 214441 Discrete	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures.
	SE (Inform 214441 Discrete	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic
	SE (Inform 214441 Discrete Mathematics	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions.
	SE (Inform 214441 Discrete Mathematics	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement
	SE (Inform 214441 Discrete Mathematics	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs.
	SE (Inform 214441 Discrete Mathematics	 nation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs. 3. Understand the operations of basic memory cell
	SE (Inform 214441 Discrete Mathematics	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs. 3. Understand the operations of basic memory cell types and Implement sequential logic functions
	SE (Inform 214441 Discrete Mathematics 214442	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs.
1	SE (Inform 214441 Discrete Mathematics 214442 Logic Design	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs. 4. Explain the functions & organization of various
1	SE (Inform 214441 Discrete Mathematics 214442	 mation Technology) 2019 pattern Sem-I 1. Formulate and apply formal proof techniques and solve the problems with logical reasoning. 2. Analyze and evaluate the combinatorial problems by using probability theory. 3. Apply the concepts of graph theory to devise mathematical models. 4. Analyze types of relations and functions to provide solution to computational problems. 5. Identify techniques of number theory and its application. 6. Identify fundamental algebraic structures. 1. Perform basic binary arithmetic & simplify logic expressions. 2. Grasp the operations of logic ICs and Implement combinational logic functions using ICs.

	Organization	5. Understand CPU instruction characteristics, enhancement features of CPU.
		6. Describe an assortment of memory types (with their characteristics) used in computer systems and
	214443	basic principle of interfacing input, output devices.1. Perform basic analysis of algorithms with respect to time and space complexity
		2. Select appropriate searching and/or sorting techniques in the application development.
3	Data	3. Implement abstract data type (ADT) and data structures for given application.
	Structure & Algorithms	4. Design algorithms based on techniques like brute - force, divide and conquer, greedy, etc.
		5. Apply implement learned algorithm design techniques and data structures to solve problems.
		6. Design different hashing functions and use files organizations.
	214444	1. Differentiate various programming paradigms.
	Object- Oriented Programming	2. Identify classes, objects, methods, and handle object creation, initialization, and Destruction to model real-world problems.
4		 Identify relationship among objects using inheritance and polymorphism principles. Handle different types of exceptions and perform
		5. Use of files for persistent data storage for real
		world application.6. Apply appropriate design patterns to provide object-oriented solutions.
	214445	1. Understand and explain the conceps of communication theory and compare functions of OSI and TCP/IP model
		2. Analyze data link layer services ,error detection and correction,linear block codes.
5	Basics of Computer Network	3. Compare different access techniques, chanelization and Ethernet Standards.
		4. Apply the skills of subnetting, supernetting and routing mechanisms.
		5. Differentiate IPv4 and IPv66. Illustrate services and protocols used at transport layer
	214446	1. Simplify Logic function using K-map and design Combinational logic circuits using SSI & MSI chips.

6	Logio Dogion	2 Design Sequential Legis singuita like MOD
0	Logic Design	2. Design Sequential Logic circuits like MOD
	and Computer	
	Organization	3. Understand the basics of simulator tool and
	Lab	simulate basic blocks such as ALU & memory.
	214447	1. Analyze algorithms and to determine algorithm
		correctness and time efficiency class.
		2. Implement abstract data type (ADT) and data
	_	structures for given application.
7	Data	3.Design algorithms based on techniques like brute -
	Structure &	force, divide and conquer, greedy, etc.).
	Algorithms	4.Solve problems using algorithmic design
	Lab	techniques and data structures.
		5. Analyze of algorithms with respect to time and
		space complexity.
	214448	1. Differentiate various programming paradigms.
		2. Identify classes, objects, methods, and handle
		object creation, initialization, and destruction to
		model real-world problems.
	Object	3. Identify relationship among objects using
8	Oriented	inheritance and polymorphism.
	Programming	4. Handle different types of exceptions and perform
	Lab	generic programming.
		5. Use file handling for real world application.
		6. Apply appropriate design patterns to provide
		object-oriented solutions.
		1. Provides an ability to understand, analyze and
	214449	interpret the essentiality of grammar and its proper
		usage.
		2. Build the students' vocabulary by means of
		communication via web, direct
9		Communication and indirect communication.
	Soft Skill Lab	3. Understanding the various rules and means of
		written communication.
		4. Effective communication with active listening,
		facing problems while communication and how to
		overcome it.
	TE (Infor	mation Technology) 2019 pattern Sem-I
	314441	1.Explain finite state machines to solve problems on
		2. Write regular expressions for the regular
		languages and finite automata.
		3. Identify types of grammar, design and simplify
1	T1	Context Free Grammar.
	Theory of	4. Construct Pushdown Automata machine for the
	Computation	Context Free Language

	formal
languages.	
6. Understand decidable and undecidable pr	roblems,
analyze complexity classes.	
1. Understanding the role of Modern Opera	ting
314442 Systems	-
2. Apply the concepts of process and thread	l
scheduling	
3. Apply the concept of process synchronize	ation.
2 mutual exclusion and the deadlock	,
Depending Instant exclusion and the deductor System 4. Understand and apply the concepts of variable.	rious
System memory management techniques	
5. Make use of concept of I/O management	and File
system	
6. Understand Important of System software	e
1 Explain basic concepts of machine learning	
different types of learning.	ig unu
2.Compare different types of classification	models
and studies their performance evaluation me	
3 Differentiate various regression technique	
3 Machine evaluate their performance.	25 and
Learning 4.Illustrate the tree-based and probabilistic	machina
learning algorithms.	machine
5.Identify different types of unsupervised al	laarithm
6.Apply fundamental concepts of ANN.	igorium .
1.Explain importance of HCI study and prir	noinlas of
314444 aser-centered design (UCD) approach.	icipies of
2.Develop understanding of human factors	in HCI
design, paradigms and context of interaction	
3.Develop understanding of models, Apply	
4 Human cognitive models for predicting human-com	iputer-
Computer interactions.	1:4
Interaction 4.Design effective user-interfaces and usability	litty of a
user-interface design.	
5.Understand Evaluation techniques for hur	nan-
computer-interactions.	
6.Apply HCI to real life applications.	1
314445 1. Understand relational and object-oriented	1
databases	1 4 1
2. Learn and understand of parallel & distri	outed
database architectures	
Elective-I 3. Learn the concepts of NoSQL Databases.	•
5 (Advanced 4. Understand data warehouse and OLAP	
Database technologies.	

	Management System)	5. Apply data mining algorithms and to learn various software tools.
		6. Learn emerging and enhanced data models for advanced applications.
	314446	1. Apply the basics of Linux commands
		 Build shell scripts for various applications Implement basic building blocks like processes, threads under the Linux
6	Operating System Laboratory	 4. Develop various system programs for the functioning of OS concepts in user space like concurrency control, CPU Scheduling, Memory Management and Disk Scheduling in Linux 5. Develop system programs for Inter Process
	314447	Communication in Linux. 1. Differentiate between good design and bad design.
		2. Analyze creative design in the surrounding.
		3. Assess design based on feedback and constraint.
7	Human Computer	4. Design paper-based prototypes and use wire frame.
	Interaction Laboratory-II	5. Implement user-interface design using web technology.
		6. Evaluate user-interface design using HCI evaluation techniques
	314448 (A)	1.Implement different supervised and unsupervised learning algorithms.
	Laboratory Practice - I (Machine Learning)	2.Evaluate performance of machine learning algorithms for real-world applications.
	314448 (B)	1. Understand Advanced Database Programming Languages.
8	Laboratory	2. Master the basic concepts of NoSQL Databases.
	Practice - I (Advanced	3. Install and configure database systems.4. Populate and query a database using MongoDB commands.
	Database Management System)	5. Design data warehouse schema of any one real- time: CASE STUDY.6. Develop small application with NoSQL Database
		for back-end.
		1 Understand interpret and summarize technical
	314449	1. Understand, interpret and summarize technical literature.
		2. Demonstrate the techniques used in the paper.

		3. Distinguish the various techniques required to
		accomplish the task.
9		4. Identify intended future work based on the
-	Seminar	technical review.
	~	5. Prepare and present the content through various
		presentation tools and techniques in effective
		manner.
		6. Keep audience engaged through improved
		interpersonal skills.
	BE (Inform	mation Technology) 2019 pattern Sem-I
	414441	1.Understand the concept of Information retrieval
		and to apply clustering in information retrieval.
		2.Use an indexing approach for retrieval of text and
		multimedia data.
		3.Evaluate performance of information retrieval
1	Information	systems.
-	and Storage	4. Apply the concepts of multimedia and distributed
	Retrieval	information retrieval
		5.Use appropriate tools in analyzing the web
		information
		6.Simulate the working of a search engine and
		recommender system
	414442	1. Apply the practices and methods for successful
	414442	Software Project Management
		2.Create Design and Evaluate Project
		3.Analyze Project Schedule and calculate Risk
		Management with help of tools.
2	Software	4.Demonstrate different tools used for Project
	Project	Tracking, Monitoring & Control
	Management	5.Identify Staff Selection Process and the issues
		related to Staff Management.
		6.Discuss and use modern tools for Software Project
		Management.
	414443	1. Understand the theoretical foundations,
	414445	algorithms, and methodologies of Deep Learning.
		2. Apply the concepts of Convolution Neural
		Networks and use of popular CNN architectures.
		3. Compare Feed Forward Neural Network and
		Recurrent Neural Network and learn modeling the
		time dimension using RNN and LSTM.
3		4. Elaborate unsupervised deep learning algorithms
	Deep Learning	like Autoencoders.
		5. Explore Representation Learning and Transfer
		Learning techniques using variants of CNN
		architecture.
1	I	

			6. Evaluate the performance of deep learning algorithms and to provide solution for various real-world applications.
		414444	1.Understand the basic concepts of Mobile Computing, MAC and different multiplexing techniques.
			2.Understand Protocols, Connection Establishment, Frequency Allocation, Routing of mobile telecommunication system like GSM, GPRS, UMTS.
	4	Elective - III	3.Understand the Generations of Mobile
		(Mobile Computing)	Communication Technologies. 4.Understand Mobile IP, Adhoc – Network, Reactive Routing protocols, Multicast Routing.
		1 87	5.Explain transport layer protocol TCP, File System, and different application layer protocols.
			6.Explain different mobile platforms, operating Systems, Software Development Kit, Security Issues.
		414445	1. Understand the fundamental concepts of DevOps
		ELECTIVE IV: (Introduction to Devops)	2. Link the background of DevOps with other technologies
	5		3. Comprehend the concept of continuous integration and continuous delivery
			4. Compare various stages of continuous deployment and test strategies
			5. Justify the importance of monitoring system and reliability engineering
			6. Use the latest tools in DevOps
		414446	1.Understand the concept of Information retrieval and to apply clustering in information retrieval
	6	Lab Practice III	2.Use appropriate indexing approach for retrieval of text and multimedia data. Evaluate performance of information retrieval systems.
			3.Apply appropriate tools in analyzing the web information.
			4.Map the concepts of the subject on recent
┢		414447	developments in the Information retrieval field.
		71777/	1. Learn and Use various Deep Learning tools and
			packages.
1	7	Lab Practice	2. Build and train a deep Neural Network models for use in various applications.
1	'		ase in furious approundits.

ĺ	IV	3. Apply Deep Learning techniques like CNN, RNN
		Auto encoders to solve real word Problems.
		4. Evaluate the performance of the model build
		using Deep Learning.
	414460	1. Apply knowledge of mathematics, science, and
		engineering to formulate the Problem statement.
		2.Design and conduct experiments, as well as to
		analyze and interpret data.
		3.Understand the professional and ethical
		responsibility.
		4.To communicate effectively.
		5.Get broad education which is necessary to
		understand the impact of engineering solutions in a
		global, economic, environmental, and societal
8		context.
	Project Stage-I	6. Recognition of the need for, and an ability to
	5 0	engage in life-long learning.
		7. Use the techniques, skills, and modern
		engineering tools necessary for engineering
		practices.
		*
		8.Design a system, component, or process to meet
		desired needs within realistic constraints such
		as economic, environmental, social, political,
		ethical, health and safety, manufacturability, and
		sustainability
		A.Y. 2022-23, Semester-II
Sr.No.	Course code	Course outcome
	Course name	
	SE (Inforn	nation Technology) 2019 pattern Sem-II
	207002	1. To Solve Linear differential equations, essential
	207003	in modelling and design of computer-based systems.
	ļ	
		2. To Apply concept of Fourier transform and Z-
		transform and its applications to continuous and
		discrete systems and image processing.
		3. To Apply Statistical methods like correlation and
1		regression analysis and probability theory for data
	Engineering	analysis and predictions in machine learning.
	Mathematics -	
	III	4. To Solve Algebraic and Transcendental equations and
		System of linear equations using numerical techniques.
		5. To Obtain Interpolating polynomials, numerical
1		
		differentiation and integration, numerical solutions
		differentiation and integration, numerical solutions of ordinary differential equations used in modern
		-

	214451	1. Understand architecture and memory organization of PIC 18 microcontroller.
		2. Implement embedded C programming for PIC 18.
2	Processor	3. Use concepts of timers and interrupts of PIC 18.
	Architecture	4. Understand interfacing with PIC 18.
		5. Demonstrate real life applications using PIC 18.
		6. Analyze architectural details of ARM processor.
	214452	1. Explain basic concepts of DBMS and RDBMS.
		2. Design ER-models for any database application.
		3. Formulate SQL queries on data for relational
		databases
3	Database	4. Improve the database design by normalization &
3	Management	to incorporate query processing
	System	5. Explain basic issues of transaction processing and
		concurrency control
		6. Analyze various database architectures and
		technologies.
		1.Explain terms related to computer graphics and
	214453	apply mathematics and logic to develop computer
		programs for elementary graphic operations.
		2.Solve problems for performing graphical
		transformations.
		3. Apply mathematics and graphical techniques to
4	Computer Graphics	achieve realism using 3D transformations and
4		projections.
		4.Explain segment, color models concepts and apply
		shading algorithms to solve problems related to
		them.
		5.Explain concepts of animation, curves and fractals
		using computer graphics tools.
		6.Explain the concepts of virtual reality.
	214454	1. Classify various software application domains.
		2. Analyze software requirements by using various
		modeling techniques.
		3. Translate the requirement models into design
~	Software Engineering	models.
5		4. Apply planning and estimation to any project.
		5. Use quality attributes and testing principles in
		software development life cycle.
		6. Discuss recent trends in Software engineering by
		using CASE and agile tools.
	~	1. Apply concepts related to embedded C
	214455	programming.
1	L	

6		2. Develop and Execute embedded C program to perform array addition, block transfer, sorting
	Programming	operations.
	Skill	3. Perform interfacing of real-world input and
	Development	output devices to PIC18FXXX microcontroller.
	Lab	4. Use source prototype platform like Raspberry-
		Pi/Beagle board/Arduino.
	214456	1. Install and configure database systems.
		2. Analyze database models & entity relationship
		models.
		3. Design and implement a database schema for a
7	Database	given problem-domain
/	Management	4. Implement relational database systems.
	System Lab	5. Populate and query a database using SQL DDL /
		DML / DCL commands.
		6. Design a backend database of any one
		organization: CASE STUDY
		1. Apply and implement line drawing and circle
	214457	drawing algorithms to draw specific shape given in
		the problem
		2. Apply and implement polygon filling algorithm
	Computer	for a given polygon.
		3. Apply and implement 2-D and 3-D
8		transformation algorithms for given input shape
		4. Apply and implement polygon clipping algorithm
	Graphics Lab	for given input polygon
		5. Apply and implement fractal generation algorithm
		for a given input.
		6. Apply and implement animation concepts for
		generating simple animation without using any
		animation tool
	214458	1. Design solution to real life problems and analyze
		its concerns through shared cognition.
		2. Apply learning by doing approach in PBL to
9	Project Based	promote lifelong learning.
	Learning	3. Tackle technical challenges for solving real world problems with team efforts.
	Leanning	4. Collaborate and engage in multi-disciplinary
		learning environments.
	TE (Inform	nation Technology 2019 pattern) Sem-II
<u> </u>		1. Know Responsibilities, services offered and
	314451	protocol used at application layer of network
		2. Understand wireless network and different
		wireless standards
I	I	

		3. Recognize the Adhoc Network's MAC layer, routing protocol and Sensor networkarchitecture
		4. Define the principal concepts of network security
1	Computer	and Understand network security threats, security
	Network and	services, and countermeasures
	Security	5. Apply basic cryptographic techniques in
		application development.
		6. Gain a good comprehension of the landscape of
		cyber security
		Vulnerabilities & describe typical threats to modern
		digital systems
	314452	1.Understand Big Data primitives.
		2.Learn and apply different mathematical models for
		Big Data.
		3.Explain differnet Big Data ecosystem and
	Data Sciece	technologies
2		4. Analyze each learning model comes from a
	and Big Data Analytics	different algorithmic approach and it will perform
	Analytics	differently under different datasets. 5.Understand, apply and analyze needs, challenges
		and techniques for big data visualization
		6. Learn different programming platforms for big
		data analytics.
	214452	1.Understand technologies like HTML, CSS,
	314453	Bootstrap, W3C.
		2.Demonstrate the use of web scripting languages.
		3.Understand and develop web application with
	Web	Front End Technologies.
3	Application	4.Understand and develop web application with
	and	Back End Technologies.
	Developement	5.Understand and develop Mobile web development
	_ · · · · · · · · · · · · · · · · · · ·	using JQuery Mobile.
		6.Understand web application deployment on cloud
		using AWS.
	314454(A)	1.Apply the fundamental concepts of Artificial
		Intelligence 2.Choose appropriate search strategies for any AI
	Elective-	problem
4		3. Illustrate knowledge reasoning and knowledge
		representation methods (for solving real world
		problems)
	II(Artificial	4. Analyze the suitable techniques of NLP to
	Intelligence)	develop AI applications
		5. Correlate the appropriate methods of Game
		Theory to design AI applications

		6.Understand the concept of deep learning and AI
		applications
	314455	1.Develop professional competence through
		industry internship
		2. Apply academic knowledge in a personal and
		professional environment
		3. Build the professional network and expose
5	Internship	students to future employees.
0		4. Apply professional and societal ethics in their day-
		to-day life.
		5. Become a responsible professional having social,
		economic and administrative considerations
		6. Make own career goals and personal aspirations.
	314456	1. Design and configure small size network and
	51450	associated networking commands
		2. Understand various client/server environments to
6	Computer	use application layer protocols
Ū	Computer Network	3. Use basic cryptographic techniques in software
	Security Lab	and system design.
	Security Eas	4. Apply methods for authentication, access control,
		intrusion detection
	314457	1. Apply Big data primitives and fundamentals for
	511157	application development.
		2.Explore different Big data processing techniques
		with use cases.
		3. Apply the Analytical concept of Big data using
7	DS & BDA	Python.
	Lab	4. Visualize the Big Data using Tableau.
		5.Design algorithms and techniques for Big data
		analytics.
		6.Design and develop Big data analytic application
	214450	for emerging trends.
	314458	1.Develop realworld problem solving ability
	Lah Dur die	2.Enable the student to apply AI techniquesin
8	Lab Practice -	applications which involve perception, reasoning
	II (Artifical	and planning
	Intelligence)	3. Work in team to build industry compliant AI
		applications
	314458	1. Develop Static and Dynamic responsive website
		using technologies HTML, CSS, Bootstrapand AJAX.
	Laboratory	AJAX. 2.Create Version Control Environment.
	Laboratory Practice-II	
	(Web	3.Develop an application using front end and backend technologies.
I		vackellu technologies.

	Application	4.Develop mobile website using JQuery Mobile.
	Development)	5.Deploy web application on cloud using AWS.
	BE (Inform	nation Technology) 2019 pattern Sem-II
1	414450	1. Demonstrate the core concepts of distributed systems.
	Distributed Systems	2. Understand the concept of middleware of distributed systems.
		3. Understand Inter-process communication methods and analyze different coordination algorithms.
		4. Comprehend the importance of replication to achieve fault tolerance in distributed systems.
		5. Analyze the design and functioning of existing distributed file systems, distributed multimedia, and distributed web-based systems.
		6. Understand various Recent Trends in distributed systems.
	414451	1.Understand basics of Social Media Analytics
	Election M	2.Correlate Network Measures for Social Media Data
2	Elective V: (Social Computing)	3. Visualize mining in social media data
		4.Discuss the Social Similarities
		5.Interpret social media behavior
		6. Apply Social Media Computations for Google+
	414452	1. Understand the concept of cryptography and decentralization.
	Elective-VI: (Blockchain Technology)	2. Acquire fundamental knowledge of blockchain with issues associated with it.
3		3. Acquire knowledge of Ethereum blockchain platform.
		4. Understand hyper ledger fabric platform.
		5. Acquire the knowledge regarding working of tokenization.
		6. Describe the applications and risk involved
	414453	1. Able to understand key concepts and framework of innovation and start-up ecosystem
4	Startup and Entrepreneurs hip	 2. gain knowledge of how to develop start up ecosystem, its key components and how to influence and manage dynamics between them and increase the productivity of ecosystem
		3. Understand the role of different stakeholders in ecosystem in building and supporting growth of start-ups
		4. Have insight into global trend in start-up ecosystem and product development

		5. Mapping different start-up ecosystems and
		developing performance indicators
5	414454	1. Demonstrate knowledge of the core concepts and techniques in distributed systems.
	Lab Practice V	3. Design, build and test application programs on
	414455	distributed systems.
6	414455 Lab Practice	1.Implement small blockchain experimentations.
6	VI	2.Identify Consensus mechanism for Blockchain Application.
7	414456	1. Apply engineering and mathematical knowledge to investigate / select proper technology / Algorithm suitable to solve the problem in hand.
	Project Stage II	2. Apply knowledge of statistics for analysis of results and express conclusion and justification for the same.
		3.Design and conduct experiments, as well as to analyze and interpret data or develop prototype model of the application.
		4. Communicate effectively.
		5.Get broad education which is necessary to
		understand the impact of engineering solutions in a
		global,
		economic, environmental, ethically and societal
		context.
		6.Recognition of the need for, and an ability to
		engage in life-long learning.