



SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of Information Technology



2018 Batch

Course Outcomes

Course	Course	Course Outcomes(CO)	Course Outcomes
Code		Code	
	<u> </u>	1 Seme	
	-	1 Seme	
		C101.1	th List n order derivatives of different functions. (L1)
		C101.2	Demonstrate the use of partial derivatives. (L2)
		C101.3	Explain the concept of vector differentiation. (L2)
	Engineering Mathematics	C101.4	Classify the 1 st order differential equation. (L2)
4BMA101	-I	C101.5	Apply the knowledge of matrices techniques. (L3)
			Illustrate the concept of electrochemical cell by writing balanced redox
		C102.1	reactions. (L2)
			Explain the mechanism of corrosion in metals by framing
		C102.2	stoichiometric chemical reaction. (L2)
			Explain the polymer composites for photocatalytic and photovoltaic applications by examining the photogenerated
			charged carrier
		C102.3	dynamics. (L2)
			Classify different types of carbon forms and its applications by
		C102.4	interpreting their structural properties. (L2)
4BCH102/	ENGINEERING		Understand the synthesis of nanomaterials by determining appropriate
20	CHEMISTRY	C102.5	solution method. (L2)
	COMPUTER AIDED		Draw orthographic projections (TV, FV and SV) of points, straight lines, surfaces using instruments and CAD software
	ENGINEERING	C103.1	(L1)
	DRAWING AND RAPID	C103.2	technique. (L3)
	PROTOTYPIN	C103.3	surfaces of solid geometry (L3)
	G	C103.4	Using isometric projections of combination of solids build model (L3)
4BME103/ 203		C103.5	Create models using rapid prototyping and laser cutting (L6)
		C104.1	Associate basic engineering principles with operations of electronic components, equipment and circuits at an elementary level. (L2)





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			Identify and analyze basic electronic components and concepts using
		C104.2	working models and experiments. (L1, L4)
		1	Apply concepts learnt to design basic circuits to achieve desired
		C104.3	specific outputs. (L3)
			Develop in teams, simple interactive projects using Arduino that use the knowledge of circuit design and electronic
			components gained in
	MARING WITH	C104.4	the course. (L4)
	MAKING WITH		
	ELECTRONIC	C104.5	Develop a Project with knowledge of module from Electronics. (L4)
4BEC104/	S	C104.3	Develop a rioject with anotherage of module from Electronics. (2.1)
204			
			Outline the expected consequences of continuous environment
		C105.1	degradation in the society by relevant data analysis. (L2)
			Demonstrate a rationale for climate change adaptation and mitigation
		C105.2	by proposing appropriate actions in key sectors. (L2)
			Explain the key issues under negotiation by summarizing the
	ENVIRONMEN	C105.3	international climate change legal and policy framework. (L2)
4BHS105/	T AND		
205	SUSTAINABILI TY		Demonstrate knowledge of environment sustainability by analyzing relevant data about industrial impact on
203	JOSTANABILI I I	C105.4	environment. (L2)
		C105.4	` '
			Identify and predict accurately use of grammar, punctuation and
		C106.1	vocabulary in different types of communication. (L2)
			Apply basic skills of paraphrasing and rewriting by taking and making
		C106.2	effective notes. (L3)
			Compose engaging creative writing pieces through techniques of
	PROFESSIONA L	C106.3	speculation and prediction. (L6)
	COMMUNICA		Write compelling emails using appropriate writing etiquette and rules
	TION – I	C106.4	of grammar. (L3)
4BHS106		C106.5	Write compelling formal and informal letters. (L3)
			The groups which are formed should function as mentor – Mentee
		C107.1	network.
			A student should feel free to approach his faculty mentor or the student guide, when facing any kind of problem,
			whether academic or
		6107.2	
		C107.2	financial or psychological etc.
			For every 10 undergraduate first year students, there would be a senior student as a student guide, and for every 20
			students, there would be a
		C107.3	faculty mentor.
			Such a group should remain for the entire $4-5$ year duration of the stay of the student. Therefore, it would be
			good to have groups with the students as well as teachers from the same department/
	INDUCTION PROGRAM	1	discipline.
4BHS001		C107.4	
		nd	
	1	2 Sen	nster
		1	Understand discrete and continuous probability distributions to resolve
		C201.1	various engineering problems. [L2]
			Apply the method of least squares to estimate the parameters of a
		C201.2	regression model. [L3]
			Implement Test of Hypothesis for a population parameter for small
		C201.3	sample and large sample cases. [L3]
			Recognizing Complex Number System, Elementary complex functions
		C201.4	and analytic functions. [L1]
	ENGINEERING	C201.4	
	MATHEMATI	l	Interpret Cauchy integral formula and Cauchy Residue theorem to
4BMA201	CS – II	C201.5	solve the complex integration. [L2]
			Explain matter waves, Schrodinger's time independent wave equation
		C202.1	and various features of wave function. [L1]
			Describe applications of Schrodinger time independent wave equation using elementary problems such as infinite
		1	potential well, finite
		C202.2	potential and potential barrier. [L2]
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			Explain drift and diffusion of charge carriers in semiconductor physics.
		C202.2	
		C202.3	[L2]
		C202.4	Describe I-V characteristics of PN junction diode and BJT. [L1]
		C202.5	Explain the features of superconductivity and its applications. [L2]
			Describe the role of various measuring tools for performing
		C202.6	experiments. [L1]
			Explain the experimental setup, observed measurements and corresponding results using appropriate physical quantities
			and
	ENGINEERING	C202.7	theoretical formulae. [L1]
4BPH122/	PHYSICS FOR	C202.7	meoreucai formulae. [E1]
222	CSE and IT		
		C203.1	Analyze electrical circuits by relevant Laws in DC circuits. (L2)
			Demonstrate the knowledge of single phase and three-phase power
		C203.2	generation by using the phasor diagrams. (L2)
			Select suitable transformer for a given application by considering its
		C203.3	design parameters. (L1)
			Describe the working principle of DC Machine, generators and motors
	BASIC	C203.4	(L2)





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4BEE103/	ELECTRICAL		
203	ENGINEERING	C203.5	Illustrate the concept of rotating magnetic field and applications (L1)
			Select appropriate hand and power tools, machines, equipment and materials and demonstrate their correct use for
			simple making tasks
		C204.1	(L3)
		C204.2	Creating new models with the help of scrap materials. (L6)
	ENGINEERING		Demonstrate sheet metal model using development techniques,
4BME104/	WORKSHOP	C204.3	adhesives and fasteners. (L3)
204	PRACTICE	C204.4	Demonstrate welding technology for model making. (L3)
		C205.1	Explain the basic constructs of C language. (L2)
		C205.2	Execute, compile and debug programs in C language. (L5)
			Implement programs involving user-defined data types, decision structures, loops, functions, pointers, structures and
			union ,
		C205.3	enumeration, file handling and pre-processor directives in C. (L3)
		C203.3	
	PROGRAMMI NG FOR		Given a computational problem, identify and abstract the programming
	PROBLEM	C205.4	task involved. (L3)
4BCS105/	SOLVING		Develop an application using C programming to solve real-life
205		C205.5	problem. (L6)
			Enhance reading comprehension, writing, listening and speaking skills
		C206.1	needed to effective communication (L3)
		C206.2	Present effectively through various modes of presentation (L3)
			Apply skills of socializing and networking in day to day professional
		C206.3	communication. (L3)
	PROFESSIONA L	C206.4	Express ideas opinions and to participate in group discussion. (L2)
	COMMUNICA	6200.1	Understand the cultural sensitivity in communication and use it
	TION – II	C206.5	effectively. (L2)
4BHS206		C200.3	cheavely. (L2)
			Formulate original thought, opinions and insights on engineering by critically analyzing the relationship between
			Engineering and Society, Environment, Philosophy, Economics and Polity by considering
			their positive and negative impact on each other (L5)
		C207.1	
			Compare engineering innovations/ innovators from different periods of history by explaining their historical
		C207.2	significance. (L2)
	MODERN HISTORY		Explain the value and importance of professional and ethical responsibility in the engineering profession by analyzing
	MODERN HISTORY		impact of
4BHS107/	OF	C207.2	engineering on the world. (L2)
207	ENGINEERING	C207.3	
			3 Semester
			Apply the propositional and predicate logic in symbolic representations
		C301.1	and validity tests. (L3)
			Interpret the relations and functions in constructing the applications of
		C301.2	Information Science. (L2)
			Demonstrate the knowledge of recurrence relation by solving relevant
		C301.3	mathematical problems. (L2)
	DIGG: Town		Demonstrate the properties of integers by using Mathematical
	DISCRETE	C301.4	induction. (L2)
	MATHEMATI CAL		Analyze the message coding, message transmission error detection and
	STRUCTURES	C201 5	Analyze the message country, message transmission error detection and correction using group theory. (L3)
4BCS301		C301.5	concentral using group meary. (123)
		C302.1	Demonstrate the working principles of BJT and FET. (L2)
		C302.2	Construct and realize Logic gates using transistors. (L3)
			Demonstrate the knowledge of Karnaugh maps by simplifying the
		C302.3	algebraic equations and design the combinational circuits. (L2)
			Design sequential Logic circuits and verify them by implementing them
	ANALOG AND DIGITAL	C302.4	in hardware. (L2).
	ANALOG AND DIGITAL		
	ELECTRONIC		Demonstrate the knowledge on VHDL by realizing combinational and sequential circuits and also develop Finite state
	S	C202.5	machine. (L2)
4BCS302	1	C302.5	





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		C303.1	Explain different concepts C programming. (L2)
		C303.2	Apply the programming concepts in C for problem solving. (L3)
		C303.3	Explain the concepts of various data structures. (L2)
	DATA STRUCTURES	C303.4	Illustrate the applications of data structures. (L2)
	USING C		
4BCS303		C303.5	Develop a solutions to problem using appropriate data structure. (L3)
1203303		C304.1	Illustrate the various functional units of digital computers (L2)
		C304.1	Illustrate different concepts of CPU (L2)
			Outline instruction execution using pipeline (L2)
	COMPUTER	C304.3	
	ORGANIZATI ON AND		Apply various hardware software concepts on instructions to exploit
	ARCHITECTU	C304.4	ILP (L3)
	RE		Explain Cache optimization techniques to improve system performance
4BCS304		C304.5	(L2)
		C305.1	Build web pages using HTML, CSS and Tables. (L3)
			Explain the various concepts of XML and build web pages using XML.
		C305.2	(L2)
		C305.3	Validate Web pages using JavaScript concepts. (L3)
			Evaluate simple open source programs by appropriately editing and debugging the code to build web pages using XML
			or CSS or Django.
		C305.4	(L5)
			Choose a best possible way to build a website by any programming language and web design concepts with listening to
	WED DESIGNATION		various opinions of
	WEB DESIGNING	C305.5	diverse team and interviewing experts. (L3)
4BCS305		C303.3	
			Present effectively with an understanding of various aspects of
		C306.1	presentation. (L3)
			Develop persuasive proposals by incorporating fundamental writing
		C306.2	techniques at an intermediate level. (L3)
			Develop effective reports by incorporating fundamental writing
		C306.3	techniques at an intermediate level. (L3)
	PROFESSIONA L		Construct references by using a referencing style that is appropriate to
	COMMUNICA	C306.4	the type of academic writing. (L6)
	TION – III		Construct graphical representation of information by accurately
4BHS306		C306.5	interpreting and visualizing the given data. (L4)
13113300			Apply number theory and speed calculation methods for the quick
		C307.1	computation and manipulation of numbers. (L3)
		C307.1	
			Apply the theory of linear and quadratic equations using methods (indeterminate systems, equation comparisons etc) of
			equation formation to solve problems in several domains (e.g age problems).
			(L3)
		C307.2	
			Analyze distributive and arrangements puzzles to conclude logical
		C307.3	solutions that adhere to the given parameters. (L4)
			Demonstrate use of integral elements of public communication during a
		C307.4	professional presentation. (L3)
			Apply Basic English grammar rules (parts of speech, components and types of sentences) to identify errors in texts and
	PREPARE PROGRAM – I		construct correct
4BHS307		C307.5	sentences. (L3)
			Analysis user needs using structured techniques to discover unique
		C308.1	product opportunity areas (L4)
		C300.1	
			Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C308.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
I	1	C308.3	effectively in teams and visualize their ideas (L3)





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	Control Cont				Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
	C40.1.1 Explain the basic concept agraph theory. [12] C40.2 Solve performance of agraph theory. [12] Solve linear recurrence relations by recognizing homogeneity, linearity and contact confidence. [12] ENGEREING MATHEMATI C5 for C5 and T7 C0.0.5 Solve linear recurrence relations by recognizing homogeneity interactive operation. [12] Solve linear and solve interactive single different all equations. [13] C40.1.1 Solve linear and solve interactive problems using differential equations. [14] C40.1.2 Solve linear and solve interactive problems using differential equations. [15] C40.2.1 Solve linear and solve interactive problems using differential equations. [16] C40.2.2 Solve linear and solve interactive problems using differential equations. [17] C40.2.3 Solve linear and solve interactive problems and extraogless, [1.1] C40.2.2 Solve linear and solve interactive problems and extraogless, [1.1] C40.2.3 Solve linear and solve interactive problems and extraogless, [1.1] C40.2.4 Analysis and first line best algorithm for real time problems along [4.0] C40.3 Solve linear and solve linear problems along [4.0] C40.3 Solve linear and solve linear problems along [4.0] C40.3 Solve common Solve and first linear problems along [4.0] C40.3 Solve common Solve and England in real time problems along [4.0] C40.3 Solve common Solve and England in real time problems along [4.0] Proper solve common Solve and England in the real interactive [4.1] Proper solve common Solve and England in the real interactive [4.1] Proper solve common Solve and England in the real interactive problems and solve and p		DESIGN THINKING - I		and effectively
C481	C481.1 Explain the bosic concept of graph theory (L2) C481.2 Solve preferent sequence and page of contemps (L1) Solve linear treatment contribution by tempting bedge coloring (L1) Solve linear treatment contribution by tempting bedge coloring (L1) EVERTHERATE C58.0 S for C and IT C580.5 Inchesport and whole regressoring problems strong differential equation. C580.1 Inchesport and whole regressoring problems strong differential equation. C580.1 Inchesport and whole regressoring problems strong differential equation. C580.1 Solve linear and non-linear system of equations through manerical tempting. C580.2 Represent vision assignation performance of algorithm (L2) C680.2 Represent vision assignation performance of algorithm (L2) C680.3 Illustrate the companional complexity of different algorithms (L5) DESCN AND ANALYSIS OF C680.3 Comment-of-adjection for real time problems onlying (L6) C680.3 Explain comments Software Lifecycle processors including water full (linear), increasental approaches (L2) Proper behinded documentations and make precuminous on various aspects of a nothware development protection of the companion of the companion of a nothware development protection and companion of the companion of the companion of the companion of a nothware development protection and companion of the com	4BHS308		C308.4	using platforms for digital collaboration (L2)
CHI Solve processor and solve colorating (LS) Solve processor and solve colorating (LS) Solve from recursor cellations by recepting bore groundy, incerting and solven artificiants. (LT) Interpret and solve congrecting problems using officeratin opacies. (LT) CHI (LT) Solve finer and me-timer system of equations decapted mentions (LT) CHI (LT) Solve finer and me-timer system of equations decapted mention (LT) CHI (LT) CHI (LT) (L	CHI12 Sub- problems involving varies and edge colorating [15]				th 4 semester
C401 Soft problems mushung current and angle endouring [13] Soft-inter recurrence relations by procquising bootsquarity, linearity	C4812 Subsequentions are advised yet retar and edge colorating [13]			C401.1	Explain the basic concepts of graph theory. [L2]
Selvic linear recording to processing benegoting benegoting broadpanels (1)	Solve linear recurrence relations by sprograting biomognosity, linearity ENGINERING Call Cal			C401.2	
PROFESSIONAL COMES Compact and solver any increase profession using differential equation. Compact and solver any increasing profession using differential equation. Compact and solver any increasing profession using differential equation. Compact and Compact	ENGINEERING MATERIANT C801.4 Live C801.5 Solve linear and another coefficients, (1.3) Live C801.5 Solve linear and another pystem of equations through numerical techniques, (1.3) C802.1 Membry various algorithms design exchanges and strategies, (1.1) C802.2 Represent various aportion design exchanges and strategies, (1.1) C802.3 Represent various aportion design exchanges and strategies, (1.1) C802.3 Represent various aportion design exchanges and strategies, (1.1) C802.3 Represent various aportion design exchanges and strategies, (1.2) C802.4 Analyse and find the best algorithm for earl time gradiens solving, (1.4) C802.5 Comment best algorithm for earl time gradiens solving, (1.4) C802.5 Comment best algorithm for earl time gradiens solving, (1.5) C802.4 Allowith the various appears of Software Product Engineering (1.1) Explain consenses Software Infrayele processes including waterfull (linear), incremental approaches, (such as Unified process), and agile, approaches, (2.2) Prepare technical decementations and make precentation on various argents of a software development per including the technical reports (sudatoriaes, choice, quality sourance) as well as the managenia appears (pluming, solvedaling, and derivery), (1.3) Frequence technical reports (sudatoriaes, choice, quality sourance) as well as the managenia appears (pluming, solvedaling, and derivery), (1.3) C803.5 Explain the hasion of willhood programming concepts for problem solving, (1.3) C804.5 Explain the levinous of subminer code columnia models (1.2) C804.5 Explain the foreign periodic programming concepts for problem solving, (1.3) C804.5 Explain the foreign periodic programming concepts for problem solving, (1.3) C804.5 Explain the foreign periodic programming concepts for problem solving, (1.3) C804.5 Explain the foreign periodic programming concepts for problem solving, (1.3) C804.5 Explain the foreign periodic programming concepts for problem, becomes, a				
BOSINEERING MATHEMATI C601.5 Solve Internet and solve registering problems using differential equation. 11.21 Solve Internet direct posterior of equations through numerical Solve Internet direct posterior of equations (1.1) Solve Internet direct posterior of equations of experiments (1.1) Solve Internet direct posterior of equations and experiments (1.1) Solve Internet direct posterior of equations and experiments (1.1) Solve Internet direct posterior of equations (1.1) Solve Internet direct posterior of equations (1.1) Solve Internet direct posterior of equations (1.1) Solve Internet direct posterior of experiments (1.1) Solve Internet direct posterior of experiments (1.1) Solve Internet direct posterior of experiments (1.1) Solve Internet direct posterior of equations and make presentation in various aspects of a software development projute internet posterior (1.1) Solve Internet direct posterior (1.1) Solve Internet p	ENGINERING MATHEMATI C401.4 12.1 Solve from an solve or engineering problems using differential equation. C401.5 Solve linear and non-linear system of equations through numerical stechniques. (L.) C401.5 Solve linear and non-linear system of equations through numerical stechniques. (L.) C402.1 Manifery various algorithm design techniques and strategies. (L.) C402.2 Representativation asymptotic performance of algorithms. (L.5) C402.3 Bluerates the computational complexity of different algorithms. (L.5) C402.4 Analyse and find the best algorithm for real time problem solving. (L.5) C402.5 Comment best algorithm for real time problem solving. (L.5) C402.5 Comment best algorithm for real time problem solving. (L.5) C402.5 Comment best algorithm for real time problem solving. (L.5) C402.5 Comment best algorithm for real time problem solving. (L.5) C402.5 Eaphin common software Lifecycle process including waiteful (linear), incremental approaches (such an Unified process), and again approaches. (L.5) C402.5 Eaphin disconnectations and make presentations on various aspects of a software development project including the technical approach (eithericent, design, equilibrium) assumed as the managerial approach (gluming, solvidoling, and dislovery) (L.3) C403.5 Eaphin for the programming proading concepts on various aspects of a software development project including the technical approach (eithericent, design, comments as well as the managerial approach (linear), asternation and dislovery) (L.3) Eaphin for Chipse Observation and dislovery) (L.3) C403.5 Eaphin for Chipse Observation and advisory) (L.3) C403.5 Eaphin for Chipse Observation programming managerial process, (L.2) C403.5 Eaphin for Chipse observation proaching concepts for solving different securities and advisory process symbolication and development and process. (C.6) C403.5 Eaphin for Chipse observation and advisory protection and asserting and concepts of solving different sec			C401.3	and constant coefficients. [L3]
MATHEMATI CS for CS and CS for CS f	MATHEMATI CS for CS and Solve linear and non-disease system of equations through numerical techniques [L2] C601.2 Mentify version algorithms design techniques and strengies. (L1) C602.1 Mentify version algorithms design techniques and strengies. (L1) C602.2 Represent various asymptotic performance of algorithms. (L2) C602.3 Illustrate the computational complexity of different algorithms. (L5) DBSIGN AND ANALYSIS OF C602.4 Analyses and find due best algorithms for real time problem solving. (L4) C603.1 Shortly the various aspects of Software Problem solving. (L4) C603.1 Shortly the various aspects of Software Problem solving. (L4) C603.2 approaches. (L2) Peque technical documentations and make presentations on various aspects of a software development projection of the common solvents. (Lifeyet processes including waterful (floors), incremental approaches (such as Unified process), and gails approaches. (L2) Peque technical documentations and make presentations on various aspects of a software development projection of the common solvents (common solvents). (L2) C603.1 Esplain the basics of software fortificities, design, quality assumence as well as the managerial aspects (planning, wholeding, and delivery). (L2) GOBIECT OBJENTED PROCRAMMING LINEA C603.4 Esplain the Societ of software tections (L2) C604.1 Esplain the Control Programming concepts, (L2) C604.2 Apply object oriented programming concepts for problems orbing. (L3) C604.3 Pequine the various prolagos, closures, interfaces in Java, (L3) C605.3 Pequine different concepts for SC (L2) Apply different security in the various prolagos, concepts for proling and pupir Chapter management occopes (L2) Apply different security in sources in CS (L2) Percepts and occurrence produces. (L6) Procepts and occurrence prolations in law virtue, commonication in a virtue, C605.1 Canagere different appears tochnical vortue commonication in a virtue, C606.1 Canagere different appears tochnical vortue commonication in a virtue, C606.1 Canagere diff		ENGINEERING		Interpret and solve engineering problems using differential equation.
ACS-201 171 C601.5 Solve linear and non-linear system of equations through numerical exception numerical exception numerical exceptions (1.2) C402.2 Represent various asymptotic performance of algorithm (1.2)	Solitions and door linear system of equations through numerical trobulgations. [2,3] C402.1 Mentify version algorithm design techniques and stategies. (1.1) C402.2 Represent various asymptotic performance of algorithm. (1.2) C402.3 Illustrate the computational complexity of different algorithms. (1.5) DESIGN AND C402.4 Analyse and find the best algorithms for real time problem solving. (1.4) C403.5 Constituted but algorithms for real time problem solving. (1.4) C403.1 Identify the various superts of Software Product Engineering (1.1) Explain common Software Lifecycle processes including waterful (linear), incremental approaches (such as Unified process), and agale approaches. (2.2) Prepare technical discusserations and make presentations on various superts of a software development projection for real time problems development as well as the managerial superts (planning, scheduling, and delivery), (1.3) C403.1 Explain the basics of onflower besting (1.2) C403.1 Explain the Desice Oriented Programming proaches (such as Unified process), and agale approaches. (2.2) C403.1 Explain the Desice Oriented Programming proaches (such as the managerial superts (planning, scheduling, and delivery), (1.3) C403.1 Explain the Desice Oriented Programming proaches (L2) C404.1 Explain the Desice Oriented Programming proaches (L2) C404.2 Apply deliget seizered programming concepts for problems solving [1.3] C405.2 Explain the remove proaches, classes, interfaces in Java, [1.2] C404.3 Explain the remove proaches, classes, interfaces in Java, [1.2] C405.5 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.1 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.2 C405.3 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.3 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.4 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.5 Papilin the remove proaches, classes, interfaces in Java, [1.2] C405.5 Papilin the remove proaches,			C401.4	[L2]
ACS-001 C00.5 Scheriques I.3	C402.1 Schrifty various algorithm design techniques, (L.1)				Solve linear and non-linear system of equations through numerical
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PROFESSIONA L COMMUNICA C406.4 Compose documents related to professional correspondence. (L6) Demonstrate different effective contents in particular properties in particular properties in the properties of the properties of the properties in the properties of the p	C406.3 Compose different types of business Correspondence. (L6) PROFESSIONA L COMMUNICA TION – IV C406.5 Compose documents related to professional correspondence. (L6) Demonstrate different effective strategies of presentation keeping in				Apply the different aspects technical written communication in writing.
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COMMUNICA Demonstrate different officials strategies of rescontistion learning in	TION – IV Demonstrate different effective strategies of presentation keeping in mind the importance of effective Lieuring (L.3).		PROFESSIONA L		
Demonstrate different effective strategies of presentation learning in	TION – IV Demonstrate different effective strategies of presentation keeping in			C406.4	Compose documents related to professional correspondence. (L6)
	CA06.5 mind the importance of effective Listening (L2)				Demonstrate different effective strategies of presentation keeping in
4BHS406 C406.5 mind the importance of effective Listening. (L3)		4BHS406		C406.5	mind the importance of effective Listening. (L3)





	1	_	
			Apply the concepts of ratio, proportions, percentages and averages to calculate class/set relationships (compound
			interest, weighted average etc) and complete component analysis (mixtures, distribution of profits
			in partnership etc). (L3)
		C407.1	
			Integrate concepts of logical connectives to breakdown linguistic
		C407.2	components and solve puzzles that use logical connectors. (L4)
			Analyse data through the methods of selection and comparisons to prepare logical solutions to puzzles based on given
		C407.3	parameters. (L3)
			Recognize the meaning of words using the root-prefix-suffix structure and apply their extensive vocabulary in verbal
			and written contexts.
		C407.4	(L1, L3)
		C407.4	(23, 23)
			Utilize techniques of public debate within a team by taking on different roles and articulating complex ideas in a
	PREPARE PROGRAM –		persuasive manner. (L4)
4BHS407	П	C407.5	persuasive mainer. (L4)
			Analysis user needs using structured techniques to discover unique
		C408.1	product opportunity areas (L4)
			Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C408.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
		C408.3	effectively in teams and visualize their ideas(L3)
			Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
			and effectively
	DESIGN THINKING – II	C408.4	using platforms for digital collaboration (L2)
4BHS408			
		C409.1	Explain the basic principles of programming in C. (L2)
		C409.2	Apply C programming concepts for problem solving. (L3)
		C409.3	Develop and implement programs using looping concepts in C. (L3)
	PROGRAMMIN G WITH	C409.4	Analyze the concepts of User defined data types in C. (L4)
4BCS481	С	C409.5	Explain the concepts of file management technique in C. (L2)
		C410.1	Explain the fundamental programming concepts. (L2)
		C410.2	Identify the various programming constructs to solve problems. (L3)
		C410.3	Explain the concepts of data visualization. (L2)
	COMPUTER SYSTEMS	C410.4	Explain System Development process. (L2)
	FOR		Explain the various applications of systems and information technology
4DCC 493		C410.5	in different domains. (L2)
4BCS482	ENGINEERS		
			The state of the s
		C411.1	Identify the various aspects of Software Product Engineering (L1)
			Understand common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
			process), and agile
		C411.2	approaches (L2)
			Prepare technical documentations and make presentations on various aspects of a software development project,
			including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (planning, scheduling, and delivery) (L3)
		C411.3	
	SOFTWARE	C411.4	Understand the basics of software testing (L2)
4BCS483	ENGINEERING	C411.5	Explain the various software cost estimation models (L2)
.0-0-03		<u> </u>	th 5 Semester
			Demonstrate the concepts related to entrepreneurship issues in business
		C501.1	Demonstrate the concepts related to entrepreneurship issues in business ideas. (L3)
		C501.1	
		G501.2	Independently analyse the factors influencing the practice of
	I	C501.2	management in different contexts. (L3)





			Develop suitable economic strategy regarding common business
		C501.3	problems. (L3)
	BUSINESS		Analyse the marketing strategy for common engineering business
		C501.4	problems. (L4)
	MANAGEMEN T FOR	650111	Illustrate the leadership qualities in the operation of a new venture.
4BHS5A1/	ENGINEERS	C501.5	(L4)
6A1			
		C502.1	Elucidate the basic concepts of Artificial Intelligence. (L2)
			Analyse Artificial Intelligence techniques, such as search algorithms,
		C502.2	for problem solving. (L4)
		C502.3	Apply techniques of Knowledge Representation and Planning. (L3)
	ARTIFICIAL		Apply knowledge of reasoning in the presence of incomplete or
	INTELLIGENC	C502.4	uncertain information. (L3)
4BCS502	E	C502.5	Explain different forms of Learning. (L2)
1203302	2		Explain the fundamental concepts of a database management system.
		C502.1	
		C503.1	(L2)
			Develop the logical design of the database using data modelling
		C503.2	concepts. (L3)
			Explain SQL programming constructs and relational model concepts.
		C503.3	(L2)
			Explain the concepts of transaction processing, concurrency control
	DATABASE	C503.4	and recovery. (L2)
	MANAGEMEN		
4BCS503	T SYSTEMS	C503.5	Make use of SQL to solve wide range of Database problems. (L3)
			Outline basic concepts in data communications, OSI and TCP/IP
		C504.1	Protocol Stack. (L2)
		C304.1	Understand the transfer of data from source to the destination using
		0504.0	
		C504.2	different protocols and addressing. (L2)
			Summarize the functions of Application layer protocols and how to
		C504.3	meet the QoS requirements in networking. (L2)
			Identify the limits and importance of compression, encoding, sampling,
		C504.4	quantization methods. (L3)
	COMPUTER		Demonstrate how the communication is achieved securely without
4BCS504	NETWORKS	C504.5	using any kind of connection. (L2)
			Explain the concepts in automata theory and formal languages and also apply finite state machines for modeling and
			solving computing
		C505.1	problems. (L3)
		5505.1	
		C505.2	Explain and implement the concepts of regular languages and context-
		C505.2	free languages for solving problems. (L3)
			Construct context free grammars, Push down Automata and explain the
	FORMAL	C505.3	mechanism in it. (L3)
	LANGUAGE AND		Describe the Properties of Context-Free Languages and explain the
	AUTOMATA	C505.4	concepts in Turing Machine. (L2)
	THEORY		
4BCS505		C505.5	Explain decidability and intractability of computational problems. (L2)
			Compose Abstract and Literature Review as parts of academic writing
		C506.1	(L5)
		C506.2	Prepare agenda, Minutes and Memos in specific business set up (L5)
			Apply skills of argumentation using various techniques of arguments
		C506.3	and deliberation. (L3)
		5500.5	(<i>Let</i>)
	PROFESSIONA L	C506.4	Exhibit basics of interview attenuate in a niver are ferminal act var (12)
	COMMUNICA	C506.4	Exhibit basics of interview etiquette in a given professional set up (L3).
	TION – V		
4BHS506		C506.5	Plan and prepare presentation using media and advertisements (L5)





			Students will use the concepts of work-time-efficiency and distance- time-speed to solve problems related to the
			measurement of effort or
		C507.1	performance. (L3)
			Students will analyze geometric shapes and use mensuration formulas
		C507.2	to mathematically measure 2D and 3D solids. (L4)
			Students will illustrate their conceptual knowledge of blood relationships and direction sense through the
			creation of schematic
		C507.3	diagrams and solving related problems. (L3)
			Students will apply the concepts of input-output, series, as well as coding and decoding to discern specific patterns
			(finding the odd term,
		C507.4	types of codes etc) from given data to solve problems.(L3)
		C307.4	Students will utilize verbal reasoning logic to solve tasks based on
		C507.5	verbal data (para-completion, para- jumbles etc). (L4)
		C307.3	Students will demonstrate their reading and comprehension abilities by understanding a variety of writing styles and
	PREPARE PROGRAM		differentiating between
	-	C507.6	close interpretations of text. (L3)
4BME507	III	C307.0	viole interpretations of texts (22)
	1		Conduct a survey of several available literature in the preferred field of
		C508.1	study. (L5)
			Demonstrate practical knowledge within the chosen area of technology
	1	C508.2	for project development. (L2)
	1		Analyze the problem requirements and arrive at workable design
		C508.3	solutions. (L4)
			Compare and contrast the several existing solutions for the attempted
		C508.4	problem. (L5)
	MINI PROJECT – I		Summarize the report and present the findings of the study conducted
4BCS508		C508.5	in the preferred domain. (L2)
		C509.1	Explain the concepts of Data mining and its issues. (L1)
		C509.2	Analyze and apply association rule mining techniques. (L3)
		C509.3	Analyze various classification algorithms. (L2)
		C509.4	Elaborate the clustering algorithms. (L3)
4BCS511	DATA MINING	C509.5	Explain various density based methods. (L1)
			Explain main concepts, key technologies, strengths and limitations of
		C510.1	cloud computing. (L2)
			Explain the cloud enabling technologies that help in the development
		C510.2	of cloud. (L2)
			Develop the ability to use the architecture of compute and storage
		C510.3	cloud, service and delivery models. (L3)
			Explain core issues of cloud computing such as resource management
	1	C510.4	and security. (L2)
	CLOUD COMPUTING		Choose the appropriate technologies, algorithms and approaches for
4DCC512	CLOOD COMPUTING	C510.5	implementation and use of cloud. (L3)
4BCS512		+	
		C511.1 C511.2	Explain the basic concepts of Data Visualization. (L2) Analyze the basic visualization tools to understand the data. (L4)
		C311.2	Analyze are oasic visualization toots to understand the data. (L4)
		C511.3	Apply specialized visualization tools to make effective decisions. (L3)
	DATA VISUALIZATI	C511.3	Apply specialized visualization tools to make effective decisions. (L3) Illustrate the advanced visualization tools. (L2)
	ON	C511.4	Illustrate the advanced visualization tools. (L2) Analyze geospatial data using visualization tools. (L4)
4BCS513		1 00.10	Analyze geospaia data using visualization tools. (L4) 6 Semester
	OF GLOBALIZATI		Demonstrate understanding of globalization process with emphasis on
	ON AND	C601.1	inter-dependence of communities and societies. (L1)
	SUSTAINABLE DEVELOPMEN T		Analyse the critical issues in social development in the given context.
	DE VECOTIVIEN I	C601.2	(L2)
4BHS6A1/			Develop technological interventions for social and community
5A1	1	C601.3	development. (L3)
			Identify fundamental notions of system security, threats, vulnerabilities,
1	I	C602.1	attacks and countermeasures. (L3)





ı	1		
		C602.2	Explain the various concepts of information network security. (L2)
			Illustrate key distribution, key management issues and different
		C602.3	cryptographic standards and certificates. (L2)
	DIFORMATION AND		Explain the concepts of authentication, cyber law, web security and
	INFORMATIO N AND	C602.4	cyber ethics. (L2)
	NETWORK	0002.1	
	SECURITY		Develop various network algorithms and simulate wired/wireless
4BCS602		C602.5	networks to evaluate different network parameters. (L3)
			Explain the fundamental concepts of mobile application development.
		C603.1	[L2]
			Design responsive user interfaces that work across a wide range of
		C603.2	devices. [L6]
			Demonstrate the knowledge of data persistence in mobile applications.
		C603.3	[L2]
		C003.3	
			Outline networking and web services concepts in mobile applications.
		C603.4	[L2]
	MOBILE COMPUTING	1	Apply the steps involved in publishing mobile application to share with
4BCS603		C603.5	the world. [L3]
			Explain the concepts in different phases of compilation with compile
		C604.1	time error handling. (L2)
		C004.1	une eres manuning. (122)
			Compare and explain top down and bottom up parsers, and develop appropriate parser to produce parse
		C604.2	treerepresentation of the input. (L3)
			Illustrate syntax-directed translation schemes for a given context free grammar and explain the various concepts in run-
			time environments.
		C604.3	(L2)
			Explain the various concepts in intermediate code generation and
		C604.4	interpret for statements in high level language. (L2)
			Apply optimization techniques to intermediate code and construct
	COMPILER DESIGN	C604.5	machine code for high level language program. (L3)
4BCS604		C004.5	machine code for high lever language program. (23)
		C605.1	Identify the various aspects of Software Product Engineering. (L1)
			Explain common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
			process), and agile
		C605.2	approaches. (L2)
			H ()
		1	Prepare technical documentations and make presentations on various aspects of a software development project,
			including the technical aspects (architecture, design, quality assurance) as well as the
		1	managerial aspects (planning, scheduling, and delivery). (L3)
		C605.3	
	SOFTWARE	C605.4	Explain the basics of software testing. (L2)
4BCS605	ENGINEERING	C605.5	Explain the various software cost estimation models. (L2)
TDC5003		0606.1	Demonstrate the advanced skills of reconstration (L2)
		C606.1	Demonstrate the advanced skills of presentation. (L3)
		C606.2	Compose Technical Documents following proper format and style (L6)
		1	Evaluate cases pertaining to a specific domain and recommend
	PROFESSIONA L	C606.3	innovative suggestion/s to the case. (L4)
	COMMUNICA		Apply the registers of technical English in oral and written mode of
	TION – VI	C606.4	communication.(L3)
4BHS606		C606.5	Collaborate and express themselves in an Interview round. (L6)
00001101		†	
			Students will infer the concepts of permutation, combination, and probability from a given set to solve problems of
			various arrangements
		C607.1	(circular, linear etc) and criteria (expected value, biased dice etc). (L4)





			Students will apply concepts from statistics (mean, median etc) and progressions (AP, GP, HP) to analyze groups of
			numbers on the
		C607.2	mentioned parameters. (L3)
			Students will use indices and surds to solve problems related to representation of numbers (large integers,
		C607.3	irrational roots etc). (L3)
			Students will examine four types of logical statements to solve puzzles
		C607.4	based on syllogisms. (L4)
			Students will apply the concepts of venn diagrams and cubes to solve
		C607.5	puzzles using set theory, breaking-building rules etc. (L3)
	PREPARE PROGRAM		Students will be able to combine logic with their knowledge of advanced English vocabulary and grammar to solve
	-		verbal data
4BME607	IV	C607.6	tasks(e.g. para-completion etc) and articulate their ideas. (L4)
			Demonstrate practical knowledge within the chosen area of technology
		C608.1	for project development. (L2)
			Identify, analyze, formulate and handle computer/IT projects with a comprehensive and systematic approach to give
			workable design
		C608.2	solutions (L4)
			Conduct a survey of several available literature in the preferred field of study and Compare the several existing
			solutions for the attempted
		C608.3	problem. (L5)
			Propose innovative solution for the development of components,
		C608.4	processes or technologies in CS/IT field. (L6)
			To report and present the findings of the study conducted in the preferred domain as well develop effective
	MINI PROJECT – II		communication skills for
4BCS608	WINT ROSECT - II	C608.5	presentation of project related activities. (L3)
450000		C609.1	Elaborate the fundamental concepts of No-SQL databases. (L2)
		C609.2	Analyze the features and use cases of key-value databases. (L3)
			Explain the features and challenges pertaining to document databases.
		C609.3	(L2)
			Illustrate the characteristics of column oriented No-SQL databases.
	No-SQL DATABASES	C609.4	(L4)
4BCS621	502 5.111.151.525	C609.5	Describe the design and use cases of graph databases. (L3)
4505021		C610.1	Explain basic concepts for Storage systems (L2)
		C610.2	Apply the concepts of storage networking technologies. (L3)
		C610.3	Explain the concepts in Backup, Archive and Replication. (L2)
	CTORACE AREA	C610.4	Analyse the concepts of cloud computing and virtualization. (L4)
	STORAGE AREA		Explain various concepts in managing and securing storage
4DCC(22	NETWORKS	C610.5	infrastructure (L2)
4BCS622			
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C611.1	system through convolution. (L2)
		00112	Demonstrate the frequency transforms for the signal using DFT, FFT
		C611.2	and DCT. (L2) Design IIR and FIR filters. (L3)
		C611.3	` /
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
	DIGITAL SIGNAL	C611.4	representation of speech. (L2)
	PROCESSING	C611.5	Explain the DSP processors and getting the concept of Image
4BCS623		C611.5	processing. (L2)
			7 th Semester
		C701.1	Explain basic concepts of Machine Learning. (L2)
		C701.1	Explain oasic concepts of Machine Learning. (L.2) Analyse Data to perform Exploratory Data Analysis. (L4)
		C/01.2	Analyse Data to perform Exploratory Data Analysis. (L4) Implement Supervised Machine Learning algorithms to solve
		C701.3	problems. (L6)
		C/01.3	Implement Un-Supervised Machine Learning algorithm to analyse data.
		C701.4	implement on-supervised Machine Learning algorithm to analyse data. (L6)
	MACHINE	C701.4	(20)





4BCS701	LEARNING	C701.5	Evaluate models to perform Model Selection. (L5)
			Explain the syntax and semantics of Python Programming language.
		C702.1	(L2)
		C702.2	Demonstrate proficiency in handling Strings and File systems. (L2)
		C702.3	Apply python packages in solving real-time problems. (L3)
	PYTHON		Build Web Services and introduction to Network and Database
	PROGRAMMI	C702.4	Programming in Python. (L3)
4BCS702	NG	C702.5	Interpret Data Visualization concepts in Python. (L2)
1205702		C703.1	Demonstrate the skills in professional career goals. (L2)
		2,,,,,,	Administer the insight into a possible career path of interest with
		C703.2	organizational structure, roles and responsibilities. (L3)
			Develop professional connections with leadership strategy and skill
		C703.3	development. (L4)
		C703.3	Identify the professions to suit the interest as a result of this experience.
		C703.4	(L3)
		C703.4	Conquer additional skills that will need to be developed to ensure career readiness such as new technology,
			developing a broader
		C702.5	network, additional coursework. (L4)
4BCS703	INTERNSHIP	C703.5	nework, additional coursework. (L4)
			Students will be able to apply number theory concepts and formulas to solve problems of base system, remainder
		C704.1	theorem etc. (L3)
			Students will be able to categorize contradictions within the area of binary logic to solve problems using concepts
			of contradictions truth
		C704.2	tellers, liars and alternators.
			Students will be able to solve types of pattern recognition problems (fillers, calendar etc) by utilizing different function
			that fit the given
		C704.3	criteria. (L3)
			Students will be able to analyze the sufficiency of data and interpret its specific components by solving problems usin
			data reasoning and
		C704.4	interpretation of its numerical and graphic representations. (L4)
			Students will be able to make use of advanced arithmetic, algebra and mensuration techniques to solve a variety of
			problems using a range of
		C704.5	concepts from partnership to permutation & combination. (L3)
		C704.5	Students will be able to apply written and verbal communication techniques by articulating themselves in the format of
			discussion,
	PREPARE PROGRAM –	67047	debate, interview, essay, letter etc. (L3)
4BHS704	V	C704.6	debac, interview, essay, tetter etc. (L3)
			Demonstrate engineering knowledge and its framework for its implementation in the project design as well
			work in groups taking
		C705.1	leadership role and communicate effectively (L2)
			Survey relevant literature in the chosen field of study that allows
		C705.2	interrelation of design and research (L4)
			Model a prototype/ concept design that exhibits the feasibility of the solution from cost, engineering and
		C705.3	environmental aspects. (L3)
			Justify the project design with a structured report that covers all the work carried out between framing the problem
			statement to the project
		C705.4	design. (L5)
	CAPSTONE PROJECT –	5,65.1	Design conceptual ideas that address the issues with respect to real
	DESIGN	C705.5	world problems. (L6)
4BCS705	+	+	norm proteins. (EU)
		C706.1	Describe the basics of the ethical hacking. (L2)
		C706.2	Describe the foot printing and scanning. (L2)
			Demonstrate the techniques and countermeasures for system hacking.
		C706.3	(L3)





	i		
		C706.4	Characterize the malware and their attacks. (L2)
	ETHICAL		Analyze and prevent the security attacks in different environments.
4BCS731	HACKING	C706.5	(L4)
		C707.1	Characterize real-time systems and describe their functions. (L2)
		C707.2	Analyze various Clock-Driven Scheduling approaches. (L3)
		0707.2	Apply formal methods to analyze and design a priority-driven
		C707.3	scheduling of periodic tasks. (L4)
			Compare the methods for scheduling aperiodic and sporadic jobs in
		C707.4	priority-driven systems. (L3)
	REAL TIME		Analyze various resources and resource access control approaches.
4BCS732	SYSTEMS	C707.5	(L3)
4BCB752		C700.1	Decided for the format of the state of the s
		C708.1	Describe the framework of quantum computation
			Explain the differences between classical computation and quantum
		C708.2	computation
			Explain the concept of quantum entanglement and quantum
		C708.3	teleportation
		C708.4	Implement single cubic gates
			Explain how quantum computation may be applied in future
	QUANTUM	C709 5	
4BCS733	COMPUTING	C708.5	technologies
		C709.1	Remember the basic concepts of optimization. (L1)
		C709.2	Recognize methods of optimization techniques. (L2)
		C709.3	Formulate and solve linear programming problems. (L2)
			Obtain solutions to constrained and unconstrained Non-linear
		C709.4	programming problems. (L2)
	OPTIMIZATIO N	C10).4	programming prooreins. (£2)
	TECHNIQUES		
4BCS741		C709.5	Determine the integer solutions to Linear Programming Problems. (L2)
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C710.1	system through convolution. (L2)
		C710.1	
			Demonstrate the frequency transforms for the signal using DFT, FFT
		C710.2	and DCT. (L2)
		C710.3	Design IIR and FIR filters. (L3)
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
		C710.4	representation of speech. (L2)
	DIGITAL SIGNAL		Explain the DSP processors and getting the concept of Image
	PROCESSING	C710.5	
4BCS742		C/10.5	processing. (L2)
		1	Classify an Embedded systems based on its attributes and illustrate
		C711.1	various steps in design process.
			Distinguish various I/O ports, communication protocols and Timers
		C711.2	used in an Embedded system.
		C/11.2	
		1	
		C711.3	Classify and explain various peripherals of an Embedded Systems.
		1	Demonstrate characteristics and attributes of an embedded system, hardware /software co- design and firmware design
		C711.4	approaches. (L2)
	EMDEDDED		Explain the need of real time operating system for embedded system
	EMBEDDED	C711.5	applications. (L2)
4BCS743	SYSTEMS	1 5,1115	17
			8 th Semester
	<u> </u>	C801.1	Describe the Moral Values and Ethics. (L1)
		C801.2	Explain the Engineering Ethics. (L1)
	phorrossov .		
	PROFESSIONA L	C801.3	Discuss the Responsibility as Engineers. (L2)
	PROFESSIONA L ETHICS FOR	C801.3 C801.4	Discuss the Responsibility as Engineers. (L2) Examine the Safety and Risk. (L2)
4BHS801		C801.3	Discuss the Responsibility as Engineers. (L2)





	1	1	
			Identify various software testing problems, and solve the problems.
	1	C802.2	(L2)
			Design and conduct various levels of software testing for a software
		C802.3	project. (L4)
			Apply various communication methods and ethical skills in practice-
		C802.4	oriented software testing projects. (L3)
	SOFTWARE		Analyze the needs of software test automation and develop a test tool
4BCS802	TESTING	C802.5	to support test automation. (L2)
		C803.1	Apply concepts of RNN and LSTM. (L3)
			Demonstrate concepts of Self-organizing maps in real-world
		C803.2	applications. (L3)
			Illustrate Problems through pre trained model such as auto-encoders.
		C803.3	(L3)
	DEEP LEARNING	C803.4	Interpret about Boltzmann machines and its applications. (L3)
4D CCC002	DEEF LEARNING	C803.5	Apply the concept of GANs and know its applications. (L4)
4BCS803			
		C804.1	Explain the concept of IoT. (L2)
		C804.2	Analyze various protocols for IoT. (L2)
		C804.3	Design a PoC of an IoT system using Rasperry Pi/Arduino. (L4)
	INTERNET OF THINGS	C804.4	Apply data analytics and use cloud offerings related to IoT. (L3)
4BCS804	1	C804.5	Analyze applications of IoT in real time scenario. (L2)
			Compare the project built with other possible existing solutions to
		C805.1	come to a conclusion about its feasibility and reliability. (L4)
			Utilize proper project management techniques and planning methods to
		C805.2	produce cost effective projects (L3)
			Recommend the need to implement the project with supporting justification and possible areas to improve it and
			Compile a clear report containing the step by step process of building the project that includes
			all calculations, analysis and fabrication methods involved. (L5)
		C805.3	
			Build the real world implementation of the design that will realize the
		C805.4	objectives of the prototype/ design. (L6)
	CAPSTONE PROJECT –		Demonstrate working in groups taking leadership role and
	BUILD	C805.5	communicating effectively. (L2)
4BCS805		00000	
			Identify fundamental image processing techniques required for
		C806.1	computer vision. (L1)
			Represent chain codes and other region descriptors, Hough Transform for line, circle, and ellipse detections, 3D vision
		C806.2	techniques. (L2)
		C806.3	Illustrate boundary tracking techniques. (L5)
	COMPUTER VISION	C806.4	Analyze and Implement motion related techniques. (L4)
4BCS851		C806.5	Construct applications using computer vision techniques. (L3)
		C807.1	Analyze the natural language text. (L4)
		C807.2	Create the natural language. (L6)
	NATURAL	C807.3	Analyze Text mining. (L4)
	LANGUAGE	C807.4	Evaluation of Self Explanation (L2)
4BCS852	PROCESSING	C807.5	Apply information retrieval techniques. (L3)
1000002	The obbline	C808.1	Explain the concepts of Data mining and its issues. (L1)
		C808.1	Explain the concepts of Data mining and its issues. (L1) Analyze and apply association rule mining techniques. (L3)
		C808.2	
			Analyze various classification algorithms. (L2)
		C808.4	Elaborate the clustering algorithms. (L3) Explain various density based methods (L1)
4BCS853	DATA MINING	C808.5	Explain various density based methods. (L1)
		C809.1	Explain the fundamentals of Digital forensics. (L2)
			Illustrate computer forensic techniques to identify the digital forensics
		C809.2	associated with criminal activities. (L2)
			Apply forensic analysis tools to recover important evidence for
		C809.3	identifying computer crime. (L3)
			Explain Computer Crime and Criminals and Liturgical Procedures.
	DIGITAL	C809.4	(L2)
•			•





4BCS854	FORENSICS	C809.5	Analyze laws and ethics involved in cybercrime. (L4)
		C810.1	Explain the models of distributed computing. (L2)
		C810.2	Analyze distributed shared memory models. (L4)
		C810.3	Design and Implement distributed file systems. (L6)
		C810.4	Build the distributed algorithms for handling deadlocks. (L3)
	DISTRIBUTED		Importance of the inherent difficulties that arise due to distributedness
4BCS8555	COMPUTING	C810.5	of computing resources. (L5)







SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of Information Technology



2019 Batch

Course Outcomes

Course Outcomes				
Course	Course Outcomes(CO)	Course Outcomes		
	Code			
	1 st Semes	ster		
	C101.1	th List n order derivatives of different functions. (L1)		
	C101.2	Demonstrate the use of partial derivatives. (L2)		
	C101.3	Explain the concept of vector differentiation. (L2)		
Engineering Mathematics	C101.4	Classify the 1 order differential equation. (L2)		
-I	C101.5	Apply the knowledge of matrices techniques. (L3)		
		Illustrate the concept of electrochemical cell by writing balanced redox		
	C102.1	reactions. (L2)		
		Explain the mechanism of corrosion in metals by framing		
	C102.2	stoichiometric chemical reaction. (L2)		
		Explain the polymer composites for photocatalytic and photovoltaic applications by examining the photogenerated		
		charged carrier		
	C102.3	dynamics. (L2)		
		Classify different types of carbon forms and its applications by		
	C102.4	interpreting their structural properties. (L2)		
ENGINEERING		Understand the synthesis of nanomaterials by determining appropriate		
CHEMISTRY	C102.5	solution method. (L2)		
COMPLITED AIDED		Draw orthographic projections (TV, FV and SV) of points, straight lines, surfaces using instruments and CAD software		
	C103.1	(L1)		
	C103.2	technique. (L3)		
	C103.3	surfaces of solid geometry (L3)		
G	C103.4	Using isometric projections of combination of solids build model (L3)		
	C103.5	Create models using rapid prototyping and laser cutting (L6)		
	Engineering Mathematics —I ENGINEERING CHEMISTRY COMPUTER AIDED ENGINEERING DRAWING AND RAPID PROTOTYPIN	Code 1		





	1	1	
			Associate basic engineering principles with operations of electronic components, equipment and circuits at an
		C104.1	elementary level. (L2)
			Identify and analyze basic electronic components and concepts using
		C104.2	working models and experiments. (L1, L4)
			Apply concepts learnt to design basic circuits to achieve desired
		C104.3	specific outputs. (L3)
		C104.5	
			Develop in teams, simple interactive projects using Arduino that use the knowledge of circuit design and electronic
	MAKING WITH		components gained in
	ELECTRONIC	C104.4	the course. (L4)
4BEC104/	S		
204		C104.5	Develop a Project with knowledge of module from Electronics. (L4)
			Outline the expected consequences of continuous environment
		C105.1	degradation in the society by relevant data analysis. (L2)
		C103.1	
			Demonstrate a rationale for climate change adaptation and mitigation
		C105.2	by proposing appropriate actions in key sectors. (L2)
			Explain the key issues under negotiation by summarizing the
	ENVIRONMEN	C105.3	international climate change legal and policy framework. (L2)
4BHS105/	T AND		
205	SUSTAINABILI TY		Demonstrate knowledge of environment sustainability by analyzing relevant data about industrial impact on
		C105.4	environment. (L2)
		5105.4	Identify and predict accurately use of grammar, punctuation and
		C106.1	vocabulary in different types of communication. (L2)
			Apply basic skills of paraphrasing and rewriting by taking and making
		C106.2	effective notes. (L3)
			Compose engaging creative writing pieces through techniques of
	PROFESSIONA L	C106.3	speculation and prediction. (L6)
	COMMUNICA		Write compelling emails using appropriate writing etiquette and rules
	TION – I	C106.4	of grammar. (L3)
4BHS106		C106.5	Write compelling formal and informal letters. (L3)
40113100			The second of th
			The groups which are formed should function as mentor – Mentee
		C107.1	network.
			A student should feel free to approach his faculty mentor or the student guide, when facing any kind of problem,
			whether academic or
		C107.2	financial or psychological etc.
			For every 10 undergraduate first year students, there would be a senior student as a student guide, and for every 20
			students, there would be a
		C107.3	faculty mentor.
			Such a group should remain for the entire 4 – 5 year duration of the stay of the student. Therefore, it would be
			good to have groups with the students as well as teachers from the same department/
	INDUCTION PROGRAM		discipline.
4BHS001		C107.4	
		nd	Semster
		1	
			Understand discrete and continuous probability distributions to resolve
		C201.1	various engineering problems. [L2]
			Apply the method of least squares to estimate the parameters of a
		C201.2	regression model. [L3]
			Implement Test of Hypothesis for a population parameter for small
		C201.3	sample and large sample cases. [L3]
			Recognizing Complex Number System, Elementary complex functions
		C201.4	and analytic functions. [L1]
	ENGINEERING	5201.4	
	MATHEMATI		Interpret Cauchy integral formula and Cauchy Residue theorem to
4BMA201	CS – II	C201.5	solve the complex integration. [L2]
			Explain matter waves, Schrodinger's time independent wave equation
		C202.1	and various features of wave function. [L1]





	1		
			Describe applications of Schrodinger time independent wave equation using elementary problems such as infinite
			potential well, finite
		C202.2	potential and potential barrier. [L2]
			Explain drift and diffusion of charge carriers in semiconductor physics.
		C202.3	[L2]
		C202.4	Describe I-V characteristics of PN junction diode and BJT. [L1]
		0202.1	Described Vendadown and St. [21]
		C202.5	Evaluin the features of superconductivity and its applications [[2]
		C202.5	Explain the features of superconductivity and its applications. [L2]
			Describe the role of various measuring tools for performing
		C202.6	experiments. [L1]
			Explain the experimental setup, observed measurements and corresponding results using appropriate physical quantities
	ENGINEERING		and
4BPH122/	PHYSICS FOR	C202.7	theoretical formulae. [L1]
222	CSE and IT		
222	CSE and 11	C202.1	A Landard Control of the Control of
		C203.1	Analyze electrical circuits by relevant Laws in DC circuits. (L2)
			Demonstrate the knowledge of single phase and three-phase power
		C203.2	generation by using the phasor diagrams. (L2)
			Select suitable transformer for a given application by considering its
		C203.3	design parameters. (L1)
			Describe the working principle of DC Machine, generators and motors
	BASIC	C203.4	(L2)
4BEE103/	ELECTRICAL		
203	ENGINEERING	C203.5	Illustrate the concept of rotating magnetic field and applications (L1)
			Select appropriate hand and power tools, machines, equipment and materials and demonstrate their correct use for
			simple making tasks
		C204.1	(L3)
		C204.2	Creating new models with the help of scrap materials. (L6)
	ENGINEERING		Demonstrate sheet metal model using development techniques,
4BME104/	WORKSHOP	C204.3	adhesives and fasteners. (L3)
204	PRACTICE	C204.4	Demonstrate welding technology for model making. (L3)
204	THEOTICE	C205.1	Explain the basic constructs of C language. (L2)
		C205.2	
		C203.2	Execute, compile and debug programs in C language. (L5)
			Implement programs involving user-defined data types, decision structures, loops, functions, pointers, structures and
			union,
		C205.3	enumeration, file handling and pre-processor directives in C. (L3)
	PROGRAMMI NG FOR		Given a computational problem, identify and abstract the programming
	PROBLEM	C205.4	task involved. (L3)
4BCS105/	SOLVING		Develop an application using C programming to solve real-life
205		C205.5	problem. (L6)
203			
			Enhance reading comprehension, writing, listening and speaking skills
		C206.1	needed to effective communication (L3)
		C206.2	Present effectively through various modes of presentation (L3)
			Apply skills of socializing and networking in day to day professional
		C206.3	communication. (L3)
	PROFESSIONA L		
	COMMUNICA	C206.4	Express ideas opinions and to participate in group discussion. (L2)
	TION – II		Understand the cultural sensitivity in communication and use it
4BHS206	1	C206.5	effectively. (L2)
-D110200			Provide visited devote visites and the second secon
			Formulate original thought, opinions and insights on engineering by critically analyzing the relationship between
			Engineering and Society, Environment, Philosophy, Economics and Polity by considering
			their positive and negative impact on each other (L5)
		C207.1	
			Compare engineering innovations/ innovators from different periods of history by explaining their historical
		C207.2	significance. (L2)
	MODERNA		Explain the value and importance of professional and ethical responsibility in the engineering profession by analyzing
	MODERN HISTORY		
4BHS107/	OF	0207.2	impact of
207	ENGINEERING	C207.3	engineering on the world. (L2)





			3 rd Semester
			Apply the propositional and predicate logic in symbolic representations
		C301.1	and validity tests. (L3)
			Interpret the relations and functions in constructing the applications of
		C301.2	Information Science. (L2)
		030112	Demonstrate the knowledge of recurrence relation by solving relevant
		62012	
		C301.3	mathematical problems. (L2)
	DISCRETE		Demonstrate the properties of integers by using Mathematical
	MATHEMATI CAL	C301.4	induction. (L2)
	STRUCTURES		Analyze the message coding, message transmission error detection and
BCS301		C301.5	correction using group theory. (L3)
BCB301		C302.1	Demonstrate the working principles of BJT and FET. (L2)
		C302.2	Construct and realize Logic gates using transistors. (L3)
			Demonstrate the knowledge of Karnaugh maps by simplifying the
		C302.3	algebraic equations and design the combinational circuits. (L2)
			Design sequential Logic circuits and verify them by implementing them
	ANALOG AND DIGITAL	C302.4	in hardware. (L2).
	ELECTRONIC		
			Demonstrate the knowledge on VHDL by realizing combinational and sequential circuits and also develop Finite states
	S	C302.5	machine. (L2)
BCS302		C302.3	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		C303.1	Explain different concepts C programming. (L2)
		C303.2	Apply the programming concepts in C for problem solving. (L3)
		C303.3	Explain the concepts of various data structures. (L2)
	DATA STRUCTURES	C303.4	Illustrate the applications of data structures. (L2)
	USING C	C303.5	Develop a solutions to problem using appropriate data structure. (L3)
BCS303			
		C304.1	Illustrate the various functional units of digital computers (L2)
		C304.2	Illustrate different concepts of CPU (L2)
	COMPUTER	C304.3	Outline instruction execution using pipeline (L2)
	ORGANIZATI ON AND		Apply various hardware software concepts on instructions to exploit
	ARCHITECTU	C304.4	ILP (L3)
	RE		Explain Cache optimization techniques to improve system performance
	KE.	C304.5	(L2)
BCS304			
		C305.1	Build web pages using HTML, CSS and Tables. (L3)
			Explain the various concepts of XML and build web pages using XML.
		C305.2	(L2)
		C305.3	Validate Web pages using JavaScript concepts. (L3)
			Evaluate simple open source programs by appropriately editing and debugging the code to build web pages using XI
			or CSS or Django.
		C205.4	(L5)
		C305.4	
			Choose a best possible way to build a website by any programming language and web design concepts with listening
	WEB DESIGNING		various opinions of
BCS305	<u> </u>	C305.5	diverse team and interviewing experts. (L3)
			Present effectively with an understanding of various aspects of
		C306.1	presentation. (L3)
		C300.1	
			Develop persuasive proposals by incorporating fundamental writing
		C306.2	techniques at an intermediate level. (L3)
			Develop effective reports by incorporating fundamental writing
		C306.3	techniques at an intermediate level. (L3)
	PROFESSIONA L		Construct references by using a referencing style that is appropriate to
		C306.4	the type of academic writing. (L6)
	COMMUNICA		Construct graphical representation of information by accurately
	TION – III	C206 5	
BHS306		C306.5	interpreting and visualizing the given data. (L4)
			Apply number theory and speed calculation methods for the quick
		C307.1	computation and manipulation of numbers. (L3)





			Apply the theory of linear and quadratic equations using methods (indeterminate systems, equation comparisons etc) of
			equation formation to solve problems in several domains (e.g age problems).
			(L3)
		C307.2	
			Analyze distributive and arrangements puzzles to conclude logical
		C307.3	solutions that adhere to the given parameters. (L4)
			Demonstrate use of integral elements of public communication during a
		C307.4	professional presentation. (L3)
			Apply Basic English grammar rules (parts of speech, components and types of sentences) to identify errors in texts and
			construct correct
	PREPARE PROGRAM – I	C307.5	sentences. (L3)
4BHS307			
			Analysis user needs using structured techniques to discover unique
		C308.1	product opportunity areas (L4)
			Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C308.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
	ļ	C308.3	effectively in teams and visualize their ideas (L3)
			Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
	DESIGN THINKING - I		and effectively
4BHS308		C308.4	using platforms for digital collaboration (L2)
			th 4 semester
		C401.1	Explain the basic concepts of graph theory. [L2]
		C401.2	Solve problems involving vertex and edge colouring [L3]
			Solve linear recurrence relations by recognizing homogeneity, linearity
		C401.3	and constant coefficients. [L3]
	ENGRIEERRIG		Interpret and solve engineering problems using differential equation.
	ENGINEERING MATHEMATI	C401.4	[L2]
	CS for CS and		Solve linear and non-linear system of equations through numerical
4BCS401	IT	C401.5	techniques. [L3]
4BC3401		C402.1	Identify various algorithm design techniques and strategies. (L1)
		C402.2	Represent various asymptotic performance of algorithm. (L2)
		C402.3	Illustrate the computational complexity of different algorithms. (L5)
	DESIGN AND		
	ANALYSIS OF	C402.4	Analyse and find the best algorithm for real time problem solving. (L4)
4BCS402	ALGORITHM	C402.5	Construct best algorithm for real time problem solving. (L3)
4BC3402	AEGORITIM		
		C403.1	Identify the various aspects of Software Product Engineering (L1)
		C403.1	Explain common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
			process), and agile
		C403.2	approaches. (L2)
		C403.2	approximation (and)
			Prepare technical documentations and make presentations on various aspects of a software development project
			including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (planning, scheduling, and delivery). (L3)
		C403.3	manager an aspected (pranting), senectaining, and verticity f. (E3)
		C403.4	Explain the basics of software testing (L2)
	SOFTWARE	C403.5	Explain the basics of software testing (L2) Explain the various software cost estimation models (L2)
4BCS403	ENGINEERING	O403.3	Explain the various software cost estimation models (L2)
		C404.1	Explain the Object Oriented Programming paradigm concepts. [L2]
	OBJECT ORIENTED		
	PROGRAMMI NG	C404.2	Apply object oriented programming concepts for problem solving. [L3]
	USING	C404.3	Explain the programming constructs in Java. [L2]
	JAVA	C404.4	Explain the various packages, classes, interfaces in Java. [L2]
4BCS404	1	C404.5	Develop applications in Java. [L3]





	T	T	
		C405.1	Explain different concepts for OS.(L2)
			Demonstrate the concepts of process synchronization and
		C405.2	deadlocks.(L2)
			Illustrate memory management, secondary storage and Input /Output
		C405.3	management concepts (L2)
			Apply different operating system concepts for solving different
	OPERATING	C405.4	scenarios. (L3)
4BCS405	SYSTEMS	C405.5	Explain various protection and security issues in OS. (L2)
			Plan, prepare and create business profile, portfolios, brochures,
		C406.1	newsletters, banners and Posters. (L6)
			Apply the different aspects technical written communication in writing.
		C406.2	(L3)
		C406.3	Compose different types of business Correspondence. (L6)
	PROFESSIONA L	CANC A	Committee to the transfer of the second of Co
	COMMUNICA	C406.4	Compose documents related to professional correspondence. (L6)
	TION – IV	C406.5	Demonstrate different effective strategies of presentation keeping in mind the importance of effective Listening. (L3)
4BHS406		C400.3	mind the importance of effective Eistening. (E3)
			Apply the concepts of ratio, proportions, percentages and averages to calculate class/set relationships (compound
			interest, weighted average etc) and complete component analysis (mixtures, distribution of profits
			in partnership etc). (L3)
		C407.1	
			Integrate concepts of logical connectives to breakdown linguistic
		C407.2	components and solve puzzles that use logical connectors. (L4)
			Analyse data through the methods of selection and comparisons to prepare logical solutions to puzzles based on given
		C407.3	parameters. (L3)
		C407.3	Recognize the meaning of words using the root-prefix-suffix structure and apply their extensive vocabulary in verbal
			and written contexts.
		C407.4	(L1, L3)
	PREPARE PROGRAM –		Utilize techniques of public debate within a team by taking on different roles and articulating complex ideas in a
4BHS407	II	C407.5	persuasive manner. (L4)
4BHS40/			Analysis user needs using structured techniques to discover unique
		C408.1	product opportunity areas (L4)
		0.100.1	Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C408.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
		C408.3	effectively in teams and visualize their ideas(L3)
			Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
	DESIGN THINKING – II		and effectively
4BHS408		C408.4	using platforms for digital collaboration (L2)
		C409.1	Explain the basic principles of programming in C. (L2)
		C409.2	Apply C programming concepts for problem solving. (L3)
		C409.3	Develop and implement programs using looping concepts in C. (L3)
	PROGRAMMIN G WITH	C409.4	Analyze the concepts of User defined data types in C. (L4)
4BCS481	С	C409.5	Explain the concepts of file management technique in C. (L2)
		C410.1	Explain the fundamental programming concepts. (L2)
		C410.2	Identify the various programming constructs to solve problems. (L3)
		C410.3	Explain the concepts of data visualization. (L2)
	COMPUTER SYSTEMS	C410.4	Explain System Development process. (L2)
	FOR		Explain the various applications of systems and information technology
4BCS482	ENGINEERS	C410.5	in different domains. (L2)
4BCS482		C410.5	in different domains. (L2)





	1		
		1	Understand common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
		1	process), and agile
		C411.2	approaches (L2)
			Prepare technical documentations and make presentations on various aspects of a software development project
			including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (planning, scheduling, and delivery) (L3)
		C411.3	
		C411.4	Understand the basics of software testing (L2)
	SOFTWARE	C411.5	Explain the various software cost estimation models (L2)
4BCS483	ENGINEERING		
4003483	<u> </u>	<u> </u>	th 5 Semester
			Demonstrate the concepts related to entrepreneurship issues in business
		C501.1	ideas. (L3)
		C301.1	Independently analyse the factors influencing the practice of
		C501.2	management in different contexts. (L3)
		C301.2	
		G501.2	Develop suitable economic strategy regarding common business
		C501.3	problems. (L3)
	BUSINESS		Analyse the marketing strategy for common engineering business
	MANAGEMEN T FOR	C501.4	problems. (L4)
4BHS5A1/	ENGINEERS		Illustrate the leadership qualities in the operation of a new venture.
6A1		C501.5	(L4)
		C502.1	Elucidate the basic concepts of Artificial Intelligence. (L2)
			Analyse Artificial Intelligence techniques, such as search algorithms,
		C502.2	for problem solving. (L4)
		C502.3	Apply techniques of Knowledge Representation and Planning. (L3)
	ARTIFICIAL		Apply knowledge of reasoning in the presence of incomplete or
	INTELLIGENC	C502.4	uncertain information. (L3)
4BCS502	E	C502.5	Explain different forms of Learning. (L2)
			Explain the fundamental concepts of a database management system.
		C503.1	(L2)
			Develop the logical design of the database using data modelling
		C503.2	concepts. (L3)
			Explain SQL programming constructs and relational model concepts.
		C503.3	(L2)
			Explain the concepts of transaction processing, concurrency control
		C503.4	and recovery. (L2)
	DATABASE	5505.1	
	MANAGEMEN	C503.5	Make use of SQL to solve wide range of Database problems. (L3)
4BCS503	T SYSTEMS	2303.3	
			Outline basic concepts in data communications, OSI and TCP/IP
		C504.1	Protocol Stack. (L2)
			Understand the transfer of data from source to the destination using
		C504.2	different protocols and addressing. (L2)
		1	Summarize the functions of Application layer protocols and how to
		C504.3	meet the QoS requirements in networking. (L2)
		1	Identify the limits and importance of compression, encoding, sampling,
		C504.4	quantization methods. (L3)
	COMPUTER	1	Demonstrate how the communication is achieved securely without
4BCS504	NETWORKS	C504.5	using any kind of connection. (L2)
.200,04			Explain the concepts in automata theory and formal languages and also apply finite state machines for modeling and
		1	
		C505.1	solving computing
		C505.1	problems. (L3)
		1	Explain and implement the concepts of regular languages and context-
	1	C505.2	free languages for solving problems. (L3)
			Construct context free communes Duck deven Automate and evaluin the
			Construct context free grammars, Push down Automata and explain the
	FORMAL	C505.3	construct conext nee grammars, rusii down Adiomata and exprain the mechanism in it. (L3)
	FORMAL LANGUAGE AND	C505.3	





		T	
	AUTOMATA		
	THEORY	C505.5	Explain decidability and intractability of computational problems. (L2)
4BCS505			
			Compose Abstract and Literature Review as parts of academic writing
		C506.1	(L5)
		C506.2	Prepare agenda, Minutes and Memos in specific business set up (L5)
		0300.2	Apply skills of argumentation using various techniques of arguments
		0504.2	
		C506.3	and deliberation. (L3)
	PROFESSIONA L		
	COMMUNICA	C506.4	Exhibit basics of interview etiquette in a given professional set up (L3).
	TION – V		
4BHS506		C506.5	Plan and prepare presentation using media and advertisements (L5)
			Students will you the concents of work time of cinery and distance time aread to call a making related to the
			Students will use the concepts of work-time-efficiency and distance- time-speed to solve problems related to the
			measurement of effort or
		C507.1	performance. (L3)
			Students will analyze geometric shapes and use mensuration formulas
		C507.2	to mathematically measure 2D and 3D solids. (L4)
			Students will illustrate their conceptual knowledge of blood relationships and direction sense through the
			creation of schematic
		C507.3	diagrams and solving related problems. (L3)
			Students will apply the concepts of input-output, series, as well as coding and decoding to discern specific patterns
			(finding the odd term,
		C507.4	types of codes etc) from given data to solve problems.(L3)
			Students will utilize verbal reasoning logic to solve tasks based on
		C507.5	verbal data (para-completion, para- jumbles etc). (L4)
	PREPARE PROGRAM		Students will demonstrate their reading and comprehension abilities by understanding a variety of writing styles and
	PREPARE PROGRAM		differentiating between
	_	C507.6	close interpretations of text. (L3)
4BME507	III	+	
			Conduct a survey of several available literature in the preferred field of
		C508.1	study. (L5)
			Demonstrate practical knowledge within the chosen area of technology
		C508.2	for project development. (L2)
			Analyze the problem requirements and arrive at workable design
		C508.3	solutions. (L4)
			Compare and contrast the several existing solutions for the attempted
		C508.4	problem. (L5)
		C308.4	
	MINI PROJECT – I		Summarize the report and present the findings of the study conducted
4BCS508		C508.5	in the preferred domain. (L2)
		C509.1	Explain the concepts of Data mining and its issues. (L1)
		C509.2	Analyze and apply association rule mining techniques. (L3)
		C509.3	Analyze various classification algorithms. (L2)
		C509.4	Elaborate the clustering algorithms. (L3)
mace	D. T. C. C. C.	C509.5	Explain various density based methods. (L1)
4BCS511	DATA MINING	2307.3	
			Explain main concepts, key technologies, strengths and limitations of
		C510.1	cloud computing. (L2)
			Explain the cloud enabling technologies that help in the development
		C510.2	of cloud. (L2)
			Develop the ability to use the architecture of compute and storage
		C510.3	cloud, service and delivery models. (L3)
			Explain core issues of cloud computing such as resource management
		C510.4	and security. (L2)
		C510.4	• • • • • • • • • • • • • • • • • • • •
	CLOUD COMPUTING		Choose the appropriate technologies, algorithms and approaches for
4BCS512		C510.5	implementation and use of cloud. (L3)
		C511.1	Explain the basic concepts of Data Visualization. (L2)
		C511.2	Analyze the basic visualization tools to understand the data. (L4)
		C511.3	Apply specialized visualization tools to make effective decisions. (L3)
	1	C311.3	1 - TF-7 -F





	DATA MOHATIZATI	C511.4	Blustests the advanced visualization to 1- (6.2)
	DATA VISUALIZATI ON	C511.4 C511.5	Illustrate the advanced visualization tools. (L2)
ADCG512	ON	C311.5	Analyze geospatial data using visualization tools. (L4)
4BCS513	1	1	th 6 Semester
	OF GLOBALIZATI		Demonstrate understanding of globalization process with emphasis on
	ON AND	C601.1	inter-dependence of communities and societies. (L1)
	SUSTAINABLE		Analyse the critical issues in social development in the given context.
	DEVELOPMEN T	C601.2	(L2)
4BHS6A1/			Develop technological interventions for social and community
5A1		C601.3	development. (L3)
			Identify fundamental notions of system security, threats, vulnerabilities,
		C602.1	attacks and countermeasures. (L3)
		C602.2	Explain the various concepts of information network security. (L2)
			Illustrate key distribution, key management issues and different
		C602.3	cryptographic standards and certificates. (L2)
	INFORMATIO N AND		Explain the concepts of authentication, cyber law, web security and
	NETWORK	C602.4	cyber ethics. (L2)
	SECURITY		Develop various network algorithms and simulate wired/wireless
4BCS602		C602.5	networks to evaluate different network parameters. (L3)
			Explain the fundamental concepts of mobile application development.
		C603.1	[L2]
			Design responsive user interfaces that work across a wide range of
		C603.2	devices. [L6]
			Demonstrate the knowledge of data persistence in mobile applications.
		C603.3	[L2]
			Outline networking and web services concepts in mobile applications.
		C603.4	[L2]
	MOBILE COMPUTING		Apply the steps involved in publishing mobile application to share with
4BCS603		C603.5	the world. [L3]
			Explain the foundations and concepts of service based computing (L2)
		C641.1	
			Illustrate the basic operational model of web services (L2)
		C642.2	
			Analyse key technologies in the service oriented computing arena. (L4)
		6642.2	
		C643.3	Duild the right coming from weath with page at to COA (7.2)
		C644.4	Build the web service framework with respect to SOA. (L3)
		20111	Develop web services using SOA (L3)
4DITE CO	Microservice	C645.5	2. Stop not see the same sort (LD)
4BIT641		+	
			The section of the se
		C605.1	Identify the various aspects of Software Product Engineering. (L1)
			Explain common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
		C605.2	process), and agile approaches. (L2)
		C003.2	approximates
			Prepare technical documentations and make presentations on various aspects of a software development project,
			Prepare technical documentations and make presentations on various aspects of a software development project, including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (grantecture, design, quanty assurance) as well as the managerial aspects (planning, scheduling, and delivery). (L3)
		C605.3	ga wpeer (punning, serieuung, me series j). (Es)
	SOFTWARE	C605.4	Explain the basics of software testing. (L2)
4DCGC05	SOFTWARE ENGINEERING	C605.5	Explain the various software cost estimation models. (L2)
4BCS605	Z. (O. I.Z.I.C.)		
		C606.1	Demonstrate the advanced skills of presentation. (L3)
		C606.2	Compose Technical Documents following proper format and style (L6)
	1	1 C000.2	compose recimical Documents fonowing proper format and style (E0)





			Evaluate cases pertaining to a specific domain and recommend
		C606.3	innovative suggestion/s to the case. (L4)
	PROFESSIONA L		Apply the registers of technical English in oral and written mode of
	COMMUNICA	C606.4	communication.(L3)
	TION – VI	C606.5	Collaborate and express themselves in an Interview round. (L6)
4BHS606			
			Students will infer the concepts of permutation, combination, and probability from a given set to solve problems of
			various arrangements
		C607.1	(circular, linear etc) and criteria (expected value, biased dice etc). (L4)
	i	C007.1	
			Students will apply concepts from statistics (mean, median etc) and progressions (AP, GP, HP) to analyze groups of
			numbers on the
		C607.2	mentioned parameters. (L3)
			Students will use indices and surds to solve problems related to representation of numbers (large integers,
		C607.3	irrational roots etc). (L3)
			Students will examine four types of logical statements to solve puzzles
		C607.4	based on syllogisms. (L4)
			Students will apply the concepts of venn diagrams and cubes to solve
		C607.5	puzzles using set theory, breaking-building rules etc. (L3)
		2007.5	Students will be able to combine logic with their knowledge of advanced English vocabulary and grammar to solve
	PREPARE PROGRAM		
	-		verbal data
4BME607	IV	C607.6	tasks(e.g. para-completion etc) and articulate their ideas. (L4)
			Demonstrate practical knowledge within the chosen area of technology
		C608.1	for project development. (L2)
			Identify, analyze, formulate and handle computer/IT projects with a comprehensive and systematic approach to give
			workable design
		C608.2	solutions (L4)
			Conduct a survey of several available literature in the preferred field of study and Compare the several existing
			solutions for the attempted
		C608.3	problem. (L5)
			Propose innovative solution for the development of components,
		C608.4	processes or technologies in CS/IT field. (L6)
			To report and present the findings of the study conducted in the preferred domain as well develop effective
	MINI PROJECT – II		communication skills for
4BCS608		C608.5	presentation of project related activities. (L3)
		C609.1	Elaborate the fundamental concepts of No-SQL databases. (L2)
		C609.2	Analyze the features and use cases of key-value databases. (L3)
			Explain the features and challenges pertaining to document databases.
		C600.2	
		C609.3	(L2)
			Illustrate the characteristics of column oriented No-SQL databases.
	No-SQL DATABASES	C609.4	(L4)
4BCS621		C609.5	Describe the design and use cases of graph databases. (L3)
		C610.1	Explain basic concepts for Storage systems (L2)
		C610.2	Apply the concepts of storage networking technologies. (L3)
		C610.3	Explain the concepts in Backup, Archive and Replication. (L2)
	STORAGE AREA	C610.4	Analyse the concepts of cloud computing and virtualization. (L4)
	NETWORKS		Explain various concepts in managing and securing storage
4BCS622		C610.5	infrastructure (L2)
₹DC3022			
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C611.1	system through convolution. (L2)
			Demonstrate the frequency transforms for the signal using DFT, FFT
		C611.2	and DCT. (L2)
		C611.3	Design IIR and FIR filters. (L3)
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
		C611.4	representation of speech. (L2)





	DIGITAL SIGNAL		Explain the DSP processors and getting the concept of Image
	PROCESSING	C611.5	processing. (L2)
4BCS623			
			7 th Semester
		C701.1	Explain basic concepts of Machine Learning. (L2)
		C701.2	Analyse Data to perform Exploratory Data Analysis. (L4)
			Implement Supervised Machine Learning algorithms to solve
		C701.3	problems. (L6)
			Implement Un-Supervised Machine Learning algorithm to analyses data. (L6)
	MACHINE	C701.4	
4BCS701	LEARNING	C701.5	Evaluate models to perform Model Selection. (L5)
			Explain the syntax and semantics of Python Programming language.
		C702.1	(L2)
		C702.2	Demonstrate proficiency in handling Strings and File systems. (L2)
		C702.3	Apply python packages in solving real-time problems. (L3)
	PYTHON		Build Web Services and introduction to Network and Database
	PROGRAMMI	C702.4	Programming in Python. (L3)
4BCS702	NG	C702.5	Interpret Data Visualization concepts in Python. (L2)
		C703.1	Demonstrate the skills in professional career goals. (L2)
			Administer the insight into a possible career path of interest with
		C703.2	organizational structure, roles and responsibilities. (L3)
		C702.2	Develop professional connections with leadership strategy and skill development. (L4)
		C703.3	Identify the professions to suit the interest as a result of this experience.
		C703.4	(L3)
			Conquer additional skills that will need to be developed to ensure career readiness such as new technology,
			developing a broader
4D-00703	DITTEDNICHED	C703.5	network, additional coursework. (L4)
4BCS703	INTERNSHIP		
			Students will be able to apply number theory concepts and formulas to solve problems of base system, remainder
		C704.1	theorem etc. (L3)
			Students will be able to categorize contradictions within the area of binary logic to solve problems using concepts
			of contradictions truth
		C704.2	tellers, liars and alternators.
			Students will be able to solve types of pattern recognition problems (fillers, calendar etc) by utilizing different function
			that fit the given
		C704.3	criteria. (L3)
			Students will be able to analyze the sufficiency of data and interpret its specific components by solving problems using
			data reasoning and
		C704.4	interpretation of its numerical and graphic representations. (L4)
			Students will be able to make use of advanced arithmetic, algebra and mensuration techniques to solve a variety of
			problems using a range of
		C704.5	concepts from partnership to permutation & combination. (L3)
			Students will be able to apply written and verbal communication techniques by articulating themselves in the format of
	PREPARE PROGRAM –		discussion,
4BHS704	V	C704.6	debate, interview, essay, letter etc. (L3)
			Demonstrate engineering knowledge and its framework for its implementation in the project design as well
			work in groups taking
		C705.1	leadership role and communicate effectively (L2)
			Survey relevant literature in the chosen field of study that allows
		C705.2	interrelation of design and research (L4)
			Model a prototype/ concept design that exhibits the feasibility of the solution from cost, engineering and
		C705.3	environmental aspects. (L3)





	1	1	
			Justify the project design with a structured report that covers all the work carried out between framing the problem
			statement to the project
		C705.4	design. (L5)
	CAPSTONE PROJECT –		Design conceptual ideas that address the issues with respect to real
	DESIGN	C705.5	world problems. (L6)
4BCS705			
		C706.1	Describe the basics of the ethical hacking. (L2)
		C706.2	Describe the foot printing and scanning. (L2)
			Demonstrate the techniques and countermeasures for system hacking.
		C706.3	(L3)
	ĺ	C706.4	Characterize the malware and their attacks. (L2)
	ETHICAL		Analyze and prevent the security attacks in different environments.
4BCS731	HACKING	C706.5	(L4)
4BC3/31			
		C707.1	Characterize real-time systems and describe their functions. (L2)
		C707.2	Analyze various Clock-Driven Scheduling approaches. (L3)
			Apply formal methods to analyze and design a priority-driven
		C707.3	scheduling of periodic tasks. (L4)
		1	Compare the methods for scheduling aperiodic and sporadic jobs in
		C707.4	priority-driven systems. (L3)
	REAL TIME		Analyze various resources and resource access control approaches.
4BCS732	SYSTEMS	C707.5	(L3)
		C708.1	Describe the framework of quantum computation
			Explain the differences between classical computation and quantum
		C708.2	computation
			Explain the concept of quantum entanglement and quantum
		C708.3	teleportation
		C708.4	Implement single cubic gates
	QUANTUM		Explain how quantum computation may be applied in future
4BCS733	COMPUTING	C708.5	technologies
4BC3/33		C700.1	Demokratic holes are set of references of 1)
		C709.1 C709.2	Remember the basic concepts of optimization. (L1)
			Recognize methods of optimization techniques. (L2)
		C709.3	Formulate and solve linear programming problems. (L2)
		C700.4	Obtain solutions to constrained and unconstrained Non-linear
	OPTIMIZATIO N	C709.4	programming problems. (L2)
	TECHNIQUES		
4BCS741		C709.5	Determine the integer solutions to Linear Programming Problems. (L2)
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C710.1	system through convolution. (L2)
			Demonstrate the frequency transforms for the signal using DFT, FFT
		C710.2	and DCT. (L2)
		C710.3	Design IIR and FIR filters. (L3)
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
	*********	C710.4	representation of speech. (L2)
	DIGITAL SIGNAL	5,10.1	Explain the DSP processors and getting the concept of Image
	PROCESSING	C710.5	explain the DSF processors and getting the concept of image processing. (L2)
4BCS742		C/10.5	
			Classify an Embedded systems based on its attributes and illustrate
		C711.1	various steps in design process.
			Distinguish various I/O ports, communication protocols and Timers
		C711.2	used in an Embedded system.
		C711.3	Classify and explain various peripherals of an Embedded Systems.
			Demonstrate characteristics and attributes of an embedded system, hardware /software co- design and firmware design
		C711.4	approaches. (L2)
	EMBEDDED		Explain the need of real time operating system for embedded system
m =====	SYSTEMS	C711.5	applications. (L2)
4BCS743	STSTEMS	1	





			th 8 Semester
			0 Octional
		C801.1	Describe the Moral Values and Ethics. (L1)
		C801.2	Explain the Engineering Ethics. (L1)
	PROFESSIONA L	C801.3	Discuss the Responsibility as Engineers. (L2)
	ETHICS FOR	C801.4	Examine the Safety and Risk. (L2)
4BHS801	ENGINEERS	C801.5	Predict the working Ethics for Engineers. (L2)
		C802.1	Apply software testing knowledge and engineering methods. (L3)
			Identify various software testing problems, and solve the problems.
		C802.2	(L2)
			Design and conduct various levels of software testing for a software
		C802.3	project. (L4)
			Apply various communication methods and ethical skills in practice-
		C802.4	oriented software testing projects. (L3)
	COETWARE	C002.4	Analyze the needs of software test automation and develop a test tool
	SOFTWARE TESTING	C802.5	to support test automation. (L2)
4BCS802	TESTING		
		C803.1	Apply concepts of RNN and LSTM. (L3)
			Demonstrate concepts of Self-organizing maps in real-world
		C803.2	applications. (L3)
			Illustrate Problems through pre trained model such as auto-encoders.
		C803.3	(L3)
	DEEP LEARNING	C803.4	Interpret about Boltzmann machines and its applications. (L3)
4BCS803		C803.5	Apply the concept of GANs and know its applications. (L4)
		C804.1	Explain the concept of IoT. (L2)
		C804.2	Analyze various protocols for IoT. (L2)
		C804.3	Design a PoC of an IoT system using Rasperry Pi/Arduino. (L4)
	INTERNET OF THINGS	C804.4	Apply data analytics and use cloud offerings related to IoT. (L3)
BCS804		C804.5	Analyze applications of IoT in real time scenario. (L2)
ирсэооч			Compare the project built with other possible existing solutions to
		C805.1	come to a conclusion about its feasibility and reliability. (L4)
		C803.1	
		6005.2	Utilize proper project management techniques and planning methods to
		C805.2	produce cost effective projects (L3)
			Recommend the need to implement the project with supporting justification and possible areas to improve it and
			Compile a clear report containing the step by step process of building the project that includes
			all calculations, analysis and fabrication methods involved. (L5)
		C805.3	
			Build the real world implementation of the design that will realize the
	CAPSTONE PROJECT –	C805.4	objectives of the prototype/ design. (L6)
	BUILD		Demonstrate working in groups taking leadership role and
4BCS805		C805.5	communicating effectively. (L2)
			Identify fundamental image processing techniques required for
		C806.1	computer vision. (L1)
		2000.1	1
			Represent chain codes and other region descriptors, Hough Transform for line, circle, and ellipse detections, 3D visio
		C806.2	techniques. (L2)
		C806.2	
		C806.3	Illustrate boundary tracking techniques. (L5)
	COMPUTER VISION	C806.4	Analyze and Implement motion related techniques. (L4)
BCS851	1	C806.5	Construct applications using computer vision techniques. (L3)
		C807.1	Analyze the natural language text. (L4)
		C807.2	Create the natural language. (L6)
	NATURAL	C807.3	Analyze Text mining. (L4)
	LANGUAGE	C807.4	Evaluation of Self Explanation (L2)
BCS852	PROCESSING	C807.5	Apply information retrieval techniques. (L3)
		C808.1	Explain the concepts of Data mining and its issues. (L1)
		C808.2	Analyze and apply association rule mining techniques. (L3)
		C808.3	Analyze various classification algorithms. (L2)
	1	C808.4	Elaborate the clustering algorithms. (L3)





4BCS853	DATA MINING		
		C809.1	Explain the fundamentals of Digital forensics. (L2)
			Illustrate computer forensic techniques to identify the digital forensics
		C809.2	associated with criminal activities. (L2)
			Apply forensic analysis tools to recover important evidence for
		C809.3	identifying computer crime. (L3)
			Explain Computer Crime and Criminals and Liturgical Procedures.
	DIGITAL	C809.4	(L2)
4BCS854	FORENSICS	C809.5	Analyze laws and ethics involved in cybercrime. (L4)
		C810.1	Explain the models of distributed computing. (L2)
		C810.2	Analyze distributed shared memory models. (L4)
		C810.3	Design and Implement distributed file systems. (L6)
		C810.4	Build the distributed algorithms for handling deadlocks. (L3)
	DISTRIBUTED		Importance of the inherent difficulties that arise due to distributedness
4BCS8555	COMPUTING	C810.5	of computing resources. (L5)







SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of Information Technology



2020 Batch

Course Outcomes

Course	Course	Course Outcomes(CO)	Course Outcomes
Code		Code	
		1 Seme	ster
		C101.1	th List n order derivatives of different functions. (L1)
		C101.2	Demonstrate the use of partial derivatives. (L2)
		C101.3	Explain the concept of vector differentiation. (L2)
	Engineering Mathematics	C101.4	Classify the 1 order differential equation. (L2)
4BMA101	-I	C101.5	Apply the knowledge of matrices techniques. (L3)
			Illustrate the concept of electrochemical cell by writing balanced redox
		C102.1	reactions. (L2)
			Explain the mechanism of corrosion in metals by framing
		C102.2	stoichiometric chemical reaction. (L2)
			Explain the polymer composites for photocatalytic and photovoltaic applications by examining the photogenerated
			charged carrier
		C102.3	dynamics. (L2)
			Classify different types of carbon forms and its applications by
		C102.4	interpreting their structural properties. (L2)
4BCH102/	ENGINEERING		Understand the synthesis of nanomaterials by determining appropriate
20	CHEMISTRY	C102.5	solution method. (L2)
	COMPUTER AIDED		Draw orthographic projections (TV, FV and SV) of points, straight lines, surfaces using instruments and CAD software
	ENGINEERING	C103.1	(L1)
	DRAWING AND RAPID	C103.2	technique. (L3)
	PROTOTYPIN	C103.3	surfaces of solid geometry (L3)
	G	C103.4	Using isometric projections of combination of solids build model (L3)
4BME103/			
203		C103.5	Create models using rapid prototyping and laser cutting (L6)
			Associate basic engineering principles with operations of electronic components, equipment and circuits at an
		C104.1	elementary level. (L2)





	1		
			Identify and analyze basic electronic components and concepts using
		C104.2	working models and experiments. (L1, L4)
			Apply concepts learnt to design basic circuits to achieve desired
		C104.3	specific outputs. (L3)
			Develop in teams, simple interactive projects using Arduino that use the knowledge of circuit design and electronic
			components gained in
		C104.4	the course. (L4)
	MAKING WITH	C104.4	the course. (1-7)
	ELECTRONIC		
4BEC104/	S	C104.5	Develop a Project with knowledge of module from Electronics. (L4)
204			
			Outline the expected consequences of continuous environment
		C105.1	degradation in the society by relevant data analysis. (L2)
			Demonstrate a rationale for climate change adaptation and mitigation
		C105.2	by proposing appropriate actions in key sectors. (L2)
			Explain the key issues under negotiation by summarizing the
		C105.3	international climate change legal and policy framework. (L2)
	ENVIRONMEN	0103.3	
4BHS105/	T AND		
205	SUSTAINABILI TY		Demonstrate knowledge of environment sustainability by analyzing relevant data about industrial impact on
		C105.4	environment. (L2)
			Identify and predict accurately use of grammar, punctuation and
		C106.1	vocabulary in different types of communication. (L2)
			Apply basic skills of paraphrasing and rewriting by taking and making
		C106.2	effective notes. (L3)
			Compose engaging creative writing pieces through techniques of
	PROFESSIONALI	C106.3	speculation and prediction. (L6)
	PROFESSIONA L		Write compelling emails using appropriate writing etiquette and rules
	COMMUNICA	C106.4	of grammar. (L3)
	TION – I	C106.5	Write compelling formal and informal letters. (L3)
4BHS106		0.100.5	
			The groups which are formed should function as mentor – Mentee
		C107.1	network.
			A student should feel free to approach his faculty mentor or the student guide, when facing any kind of problem,
			whether academic or
		C107.2	financial or psychological etc.
			For every 10 undergraduate first year students, there would be a senior student as a student guide, and for every 20
			students, there would be a
		C107.3	faculty mentor.
			Such a group should remain for the entire 4 – 5 year duration of the stay of the student. Therefore, it would be
			good to have groups with the students as well as teachers from the same department/
	INDUCTION PROGRAM		discipline.
4BHS001		C107.4	
		2 nd S	emster
		2 8	
			Understand discrete and continuous probability distributions to resolve
		C201.1	various engineering problems. [L2]
			Apply the method of least squares to estimate the parameters of a
		C201.2	regression model. [L3]
			Implement Test of Hypothesis for a population parameter for small
		C201.3	sample and large sample cases. [L3]
			Recognizing Complex Number System, Elementary complex functions
	ENGINEERING	C201.4	and analytic functions. [L1]
	MATHEMATI		Interpret Cauchy integral formula and Cauchy Residue theorem to
4DM 4 201		C201.5	solve the complex integration. [L2]
4BMA201	CS – II	+	
			Explain matter waves, Schrodinger's time independent wave equation
		C202.1	and various features of wave function. [L1]
			Describe applications of Schrodinger time independent wave equation using elementary problems such as infinite
			potential well, finite
		C202.2	potential and potential barrier. [L2]





	1	1	<u> </u>
		C202.3	Explain drift and diffusion of charge carriers in semiconductor physics. [L2]
		C202.4	Describe I-V characteristics of PN junction diode and BJT. [L1]
		C202.5	Explain the features of superconductivity and its applications. [L2]
		C202.6	Describe the role of various measuring tools for performing
		C202.6	experiments. [L1] Explain the experimental setup, observed measurements and corresponding results using appropriate physical quantiti
			and
4DDV1122/	ENGINEERING	C202.7	theoretical formulae. [L1]
4BPH122/ 222	PHYSICS FOR CSE and IT		
222	CSE and 11	C203.1	Analyze electrical circuits by relevant Laws in DC circuits. (L2)
		0203.1	Demonstrate the knowledge of single phase and three-phase power
		C203.2	generation by using the phasor diagrams. (L2)
			Select suitable transformer for a given application by considering its
		C203.3	design parameters. (L1)
			Describe the working principle of DC Machine, generators and motors
	BASIC	C203.4	(L2)
BEE103/	ELECTRICAL		
203	ENGINEERING	C203.5	Illustrate the concept of rotating magnetic field and applications (L1)
	_		Select appropriate hand and power tools, machines, equipment and materials and demonstrate their correct use for
			simple making tasks
		C204.1	(L3)
		C204.2	Creating new models with the help of scrap materials. (L6)
	ENGINEERING		Demonstrate sheet metal model using development techniques,
4BME104/	WORKSHOP	C204.3	adhesives and fasteners. (L3)
204	PRACTICE	C204.4	Demonstrate welding technology for model making. (L3)
		C205.1	Explain the basic constructs of C language. (L2)
		C205.2	Execute, compile and debug programs in C language. (L5)
			Implement programs involving user-defined data types, decision structures, loops, functions, pointers, structures and
		C205.3	union, enumeration, file handling and pre-processor directives in C. (L3)
		C203.3	Given a computational problem, identify and abstract the programming
	PROGRAMMI NG FOR PROBLEM	C205.4	task involved. (L3)
4BCS105/	SOLVING		Develop an application using C programming to solve real-life
4BCS105/	SOLVING	C205.5	problem. (L6)
203			Enhance reading comprehension, writing, listening and speaking skills
		C206.1	needed to effective communication (L3)
		C206.2	Present effectively through various modes of presentation (L3)
			Apply skills of socializing and networking in day to day professional
		C206.3	communication. (L3)
	PROFESSIONA L		
	COMMUNICA	C206.4	Express ideas opinions and to participate in group discussion. (L2)
	TION – II		Understand the cultural sensitivity in communication and use it
BHS206		C206.5	effectively. (L2)
			Formulate original thought, opinions and insights on engineering by critically analyzing the relationship between
			Engineering and Society, Environment, Philosophy, Economics and Polity by considering
			their positive and negative impact on each other (L5)
		C207.1	
			Compare angineering innovations/ innovators from different mainly of history by available of history
		C207.2	Compare engineering innovations/ innovators from different periods of history by explaining their historical significance. (L2)
		C207.2	Explain the value and importance of professional and ethical responsibility in the engineering profession by analyzin
4DIIG107/	MODERN HISTORY		Explain the value and importance of professional and ethical responsibility in the engineering profession by analyzin impact of
4BHS107/ 207	OF ENGINEERING	C207.3	engineering on the world. (L2)
207	ENGINEERING		and Semester
			Apply the propositional and predicate logic in symbolic representations
		C301.1	and validity tests. (L3)
	L	1 0301.1	and running control (cor)





	T	1	
			Interpret the relations and functions in constructing the applications of
		C301.2	Information Science. (L2)
			Demonstrate the knowledge of recurrence relation by solving relevant
		C301.3	mathematical problems. (L2)
			Demonstrate the properties of integers by using Mathematical
		C301.4	induction. (L2)
	DISCRETE	C301.4	
	MATHEMATI CAL		Analyze the message coding, message transmission error detection and
	STRUCTURES	C301.5	correction using group theory. (L3)
4BCS301			
		C302.1	Demonstrate the working principles of BJT and FET. (L2)
		C302.2	Construct and realize Logic gates using transistors. (L3)
			Demonstrate the knowledge of Kamaugh maps by simplifying the
		C302.3	algebraic equations and design the combinational circuits. (L2)
			Design sequential Logic circuits and verify them by implementing them
		6202.4	
	ANALOG AND DIGITAL	C302.4	in hardware. (L2).
	ELECTRONIC		
	S		Demonstrate the knowledge on VHDL by realizing combinational and sequential circuits and also develop Finite state
4BCS302	<u> </u>	C302.5	machine. (L2)
		C303.1	Explain different concepts C programming. (L2)
		C303.2	Apply the programming concepts in C for problem solving. (L3)
		C303.3	Explain the concepts of various data structures. (L2)
	DATA STRUCTURES	C303.4	Illustrate the applications of data structures. (L2)
	USING C		
4BCS303		C303.5	Develop a solutions to problem using appropriate data structure. (L3)
		C304.1	Illustrate the various functional units of digital computers (L2)
		C304.2	Illustrate different concepts of CPU (L2)
		C304.3	Outline instruction execution using pipeline (L2)
	COMPUTER		Apply various hardware software concepts on instructions to exploit
	ORGANIZATI ON AND	6204.4	
	ARCHITECTU	C304.4	ILP (L3)
	RE		Explain Cache optimization techniques to improve system performance
4BCS304		C304.5	(L2)
		C305.1	Build web pages using HTML, CSS and Tables. (L3)
			Explain the various concepts of XML and build web pages using XML.
		C305.2	(L2)
		C305.3	Validate Web pages using JavaScript concepts. (L3)
			Evaluate simple open source programs by appropriately editing and debugging the code to build web pages using XML
			or CSS or Django.
		C305.4	(L5)
			Choose a best possible way to build a website by any programming language and web design concepts with listening to
	WEB DESIGNING		various opinions of
4BCS305		C305.5	diverse team and interviewing experts. (L3)
			Present effectively with an understanding of various aspects of
		C306 1	
		C306.1	presentation. (L3)
			Develop persuasive proposals by incorporating fundamental writing
		C306.2	techniques at an intermediate level. (L3)
			Develop effective reports by incorporating fundamental writing
		C306.3	techniques at an intermediate level. (L3)
	PROFESSIONA L		Construct references by using a referencing style that is appropriate to
	COMMUNICA	C306.4	the type of academic writing. (L6)
			Construct graphical representation of information by accurately
	TION – III	C306.5	interpreting and visualizing the given data. (L4)
4BHS306			
			Apply number theory and speed calculation methods for the quick
		C307.1	computation and manipulation of numbers. (L3)
			Apply the theory of linear and quadratic equations using methods (indeterminate systems, equation comparisons etc) of
			equation formation to solve problems in several domains (e.g age problems).
			(L3)
		C307.2	
	1	L307.2	1





	1	1	
			Analyze distributive and arrangements puzzles to conclude logical
		C307.3	solutions that adhere to the given parameters. (L4)
			Demonstrate use of integral elements of public communication during a
		C307.4	professional presentation. (L3)
			Apply Basic English grammar rules (parts of speech, components and types of sentences) to identify errors in texts and
			construct correct
	PREPARE PROGRAM – I	C307.5	sentences. (L3)
	FREFARE FROOKAM – I		
4BHS307			
			Analysis user needs using structured techniques to discover unique
		C308.1	product opportunity areas (L4)
			Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C308.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
		C308.3	effectively in teams and visualize their ideas (L3)
			Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
4BHS308	DESIGN THINKING – I		and effectively
13113300		C308.4	using platforms for digital collaboration (L2)
		C308.4	th 4 semester
		1	4 semester
		C401.1	Explain the basic concepts of graph theory. [L2]
		C401.2	Solve problems involving vertex and edge colouring [L3]
			Solve linear recurrence relations by recognizing homogeneity, linearity
		C401.3	and constant coefficients. [L3]
	ENGINEERING		Interpret and solve engineering problems using differential equation.
	MATHEMATI	C401.4	[L2]
			Solve linear and non-linear system of equations through numerical
	CS for CS and	C401.5	techniques. [L3]
4BCS401	IT		
		C402.1	Identify various algorithm design techniques and strategies. (L1)
		C402.2	Represent various asymptotic performance of algorithm. (L2)
		C402.3	Illustrate the computational complexity of different algorithms. (L5)
	DESIGN AND		
	ANALYSIS OF	C402.4	Analyse and find the best algorithm for real time problem solving. (L4)
4BCS402	ALGORITHM	C402.5	Construct best algorithm for real time problem solving. (L3)
		C403.1	Identify the various aspects of Software Product Engineering (L1)
		C403.1	
			Explain common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
			process), and agile
		C403.2	approaches. (L2)
			Prepare technical documentations and make presentations on various aspects of a software development project,
			including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (planning, scheduling, and delivery). (L3)
		C403.3	
	SOFTWARE	C403.4	Explain the basics of software testing (L2)
4BCS403	ENGINEERING	C403.5	Explain the various software cost estimation models (L2)
TDC3403			
			Fortist of Otion Oriental December 2015
		C404.1	Explain the Object Oriented Programming paradigm concepts. [L2]
	OBJECT ORIENTED		
	PROGRAMMI NG	C404.2	Apply object oriented programming concepts for problem solving. [L3]
	USING	C404.3	Explain the programming constructs in Java. [L2]
	JAVA	C404.4	Explain the various packages, classes, interfaces in Java. [L2]
4BCS404		C404.5	Develop applications in Java. [L3]
		C405.1	Explain different concepts for OS.(L2)
			Demonstrate the concepts of process synchronization and
		C405.2	deadlocks.(L2)
		. 0.00.2	





	1	1	
			Illustrate memory management, secondary storage and Input /Output
		C405.3	management concepts (L2)
			Apply different operating system concepts for solving different
		C405.4	scenarios. (L3)
	OPERATING	C405.5	Explain various protection and security issues in OS. (L2)
4BCS405	SYSTEMS		
			Plan, prepare and create business profile, portfolios, brochures,
		C406.1	newsletters, banners and Posters. (L6)
		C400.1	Apply the different aspects technical written communication in writing.
		C406.2	
		C406.2	(L3)
		C406.3	Compose different types of business Correspondence. (L6)
	PROFESSIONA L		
	COMMUNICA	C406.4	Compose documents related to professional correspondence. (L6)
	TION – IV		Demonstrate different effective strategies of presentation keeping in
4BHS406		C406.5	mind the importance of effective Listening. (L3)
			Apply the concepts of ratio, proportions, percentages and averages to calculate class/set relationships (compound
			interest, weighted average etc) and complete component analysis (mixtures, distribution of profits
			in partnership etc). (L3)
		C407.1	
		5.07.12	Integrate concepts of logical connectives to breakdown linguistic
		C407.2	
		C407.2	components and solve puzzles that use logical connectors. (L4)
			Analyse data through the methods of selection and comparisons to prepare logical solutions to puzzles based on given
		C407.3	parameters. (L3)
			Recognize the meaning of words using the root-prefix-suffix structure and apply their extensive vocabulary in verbal
			and written contexts.
		C407.4	(L1, L3)
	PREPARE PROGRAM –		Utilize techniques of public debate within a team by taking on different roles and articulating complex ideas in a
4BHS407	П	C407.5	persuasive manner. (L4)
IBIID IV			Analysis user needs using structured techniques to discover unique
		C408.1	product opportunity areas (L4)
		C400.1	Design solutions that tackle a given challenge by using iterative ideation techniques to generate alternative ideas,
			refine concepts and
		C408.2	select the appropriate solution (L6)
			Apply techniques of effective communication and collaboration to deliver convincing presentations, share and receive
			feedback, work
		C408.3	effectively in teams and visualize their ideas(L3)
			Demonstrate professionalism by adhering to deadlines, focusing on quality of work, maintaining detailed documentation
	DESIGN THINKING - II		and effectively
4BHS408	<u> </u>	C408.4	using platforms for digital collaboration (L2)
		C409.1	Explain the basic principles of programming in C. (L2)
		C409.2	Apply C programming concepts for problem solving. (L3)
		C409.3	Develop and implement programs using looping concepts in C. (L3)
	PROGRAMMIN G WITH	C409.4	Analyze the concepts of User defined data types in C. (L4)
4D CC 4C 1	C PROGRAMMIN G WITH	C409.5	Explain the concepts of file management technique in C. (L2)
4BCS481	+		
		C410.1	Explain the fundamental programming concepts. (L2)
		C410.2	Identify the various programming constructs to solve problems. (L3)
		C410.3	Explain the concepts of data visualization. (L2)
	COMPUTER SYSTEMS	C410.4	Explain System Development process. (L2)
	FOR		Explain the various applications of systems and information technology
4BCS482	ENGINEERS	C410.5	in different domains. (L2)
		C411.1	Identify the various aspects of Software Product Engineering (L1)
	•		





	1		
		1	Understand common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
		1	process), and agile
		C411.2	approaches (L2)
			Prepare technical documentations and make presentations on various aspects of a software development project
			including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (planning, scheduling, and delivery) (L3)
		C411.3	
		C411.4	Understand the basics of software testing (L2)
	SOFTWARE	C411.5	Explain the various software cost estimation models (L2)
4BCS483	ENGINEERING		
4003483	<u> </u>	<u> </u>	th 5 Semester
			Demonstrate the concepts related to entrepreneurship issues in business
		C501.1	ideas. (L3)
		C301.1	Independently analyse the factors influencing the practice of
		C501.2	management in different contexts. (L3)
		C301.2	
		G501.2	Develop suitable economic strategy regarding common business
		C501.3	problems. (L3)
	BUSINESS		Analyse the marketing strategy for common engineering business
	MANAGEMEN T FOR	C501.4	problems. (L4)
4BHS5A1/	ENGINEERS		Illustrate the leadership qualities in the operation of a new venture.
6A1		C501.5	(L4)
		C502.1	Elucidate the basic concepts of Artificial Intelligence. (L2)
			Analyse Artificial Intelligence techniques, such as search algorithms,
		C502.2	for problem solving. (L4)
		C502.3	Apply techniques of Knowledge Representation and Planning. (L3)
	ARTIFICIAL		Apply knowledge of reasoning in the presence of incomplete or
	INTELLIGENC	C502.4	uncertain information. (L3)
4BCS502	E	C502.5	Explain different forms of Learning. (L2)
			Explain the fundamental concepts of a database management system.
		C503.1	(L2)
			Develop the logical design of the database using data modelling
		C503.2	concepts. (L3)
			Explain SQL programming constructs and relational model concepts.
		C503.3	(L2)
			Explain the concepts of transaction processing, concurrency control
		C503.4	and recovery. (L2)
	DATABASE	5505.1	
	MANAGEMEN	C503.5	Make use of SQL to solve wide range of Database problems. (L3)
4BCS503	T SYSTEMS	2303.3	
			Outline basic concepts in data communications, OSI and TCP/IP
		C504.1	Protocol Stack. (L2)
			Understand the transfer of data from source to the destination using
		C504.2	different protocols and addressing. (L2)
		1	Summarize the functions of Application layer protocols and how to
		C504.3	meet the QoS requirements in networking. (L2)
		1	Identify the limits and importance of compression, encoding, sampling,
		C504.4	quantization methods. (L3)
	COMPUTER	1	Demonstrate how the communication is achieved securely without
4BCS504	NETWORKS	C504.5	using any kind of connection. (L2)
.200,04			Explain the concepts in automata theory and formal languages and also apply finite state machines for modeling and
		1	
		C505.1	solving computing
		C505.1	problems. (L3)
		1	Explain and implement the concepts of regular languages and context-
	1	C505.2	free languages for solving problems. (L3)
			Construct context free communes Duck deven Automate and evaluin the
			Construct context free grammars, Push down Automata and explain the
	FORMAL	C505.3	construct conext nee grammars, rusii down Adiomata and exprain the mechanism in it. (L3)
	FORMAL LANGUAGE AND	C505.3	





		T	
	AUTOMATA		
	THEORY	C505.5	Explain decidability and intractability of computational problems. (L2)
4BCS505			
			Compose Abstract and Literature Review as parts of academic writing
		C506.1	(L5)
		C506.2	Prepare agenda, Minutes and Memos in specific business set up (L5)
		0300.2	Apply skills of argumentation using various techniques of arguments
		0504.2	
		C506.3	and deliberation. (L3)
	PROFESSIONA L		
	COMMUNICA	C506.4	Exhibit basics of interview etiquette in a given professional set up (L3).
	TION – V		
4BHS506		C506.5	Plan and prepare presentation using media and advertisements (L5)
			Students will you the concents of work time of cinery and distance time aread to calco making related to the
			Students will use the concepts of work-time-efficiency and distance- time-speed to solve problems related to the
			measurement of effort or
		C507.1	performance. (L3)
			Students will analyze geometric shapes and use mensuration formulas
		C507.2	to mathematically measure 2D and 3D solids. (L4)
			Students will illustrate their conceptual knowledge of blood relationships and direction sense through the
			creation of schematic
		C507.3	diagrams and solving related problems. (L3)
			Students will apply the concepts of input-output, series, as well as coding and decoding to discern specific patterns
			(finding the odd term,
		C507.4	types of codes etc) from given data to solve problems.(L3)
			Students will utilize verbal reasoning logic to solve tasks based on
		C507.5	verbal data (para-completion, para- jumbles etc). (L4)
	PREPARE PROGRAM		Students will demonstrate their reading and comprehension abilities by understanding a variety of writing styles and
	PREPARE PROGRAM		differentiating between
	_	C507.6	close interpretations of text. (L3)
4BME507	III	+	
			Conduct a survey of several available literature in the preferred field of
		C508.1	study. (L5)
			Demonstrate practical knowledge within the chosen area of technology
		C508.2	for project development. (L2)
			Analyze the problem requirements and arrive at workable design
		C508.3	solutions. (L4)
			Compare and contrast the several existing solutions for the attempted
		C508.4	problem. (L5)
		C308.4	
	MINI PROJECT – I		Summarize the report and present the findings of the study conducted
4BCS508		C508.5	in the preferred domain. (L2)
		C509.1	Explain the concepts of Data mining and its issues. (L1)
		C509.2	Analyze and apply association rule mining techniques. (L3)
		C509.3	Analyze various classification algorithms. (L2)
		C509.4	Elaborate the clustering algorithms. (L3)
mace	D. T. C. C. C.	C509.5	Explain various density based methods. (L1)
4BCS511	DATA MINING	2307.3	
			Explain main concepts, key technologies, strengths and limitations of
		C510.1	cloud computing. (L2)
			Explain the cloud enabling technologies that help in the development
		C510.2	of cloud. (L2)
			Develop the ability to use the architecture of compute and storage
		C510.3	cloud, service and delivery models. (L3)
			Explain core issues of cloud computing such as resource management
		C510.4	and security. (L2)
		C510.4	• • • • • • • • • • • • • • • • • • • •
	CLOUD COMPUTING		Choose the appropriate technologies, algorithms and approaches for
4BCS512		C510.5	implementation and use of cloud. (L3)
		C511.1	Explain the basic concepts of Data Visualization. (L2)
		C511.2	Analyze the basic visualization tools to understand the data. (L4)
		C511.3	Apply specialized visualization tools to make effective decisions. (L3)
	1	C311.3	1 -TF-7 -F





	DATA MOHATIZATI	C511.4	Blustests the advanced visualization to 1- (6.2)
	DATA VISUALIZATI ON	C511.4 C511.5	Illustrate the advanced visualization tools. (L2)
ADCG512	ON	C311.5	Analyze geospatial data using visualization tools. (L4)
4BCS513	1	1	th 6 Semester
	OF GLOBALIZATI		Demonstrate understanding of globalization process with emphasis on
	ON AND	C601.1	inter-dependence of communities and societies. (L1)
	SUSTAINABLE		Analyse the critical issues in social development in the given context.
	DEVELOPMEN T	C601.2	(L2)
4BHS6A1/			Develop technological interventions for social and community
5A1		C601.3	development. (L3)
			Identify fundamental notions of system security, threats, vulnerabilities,
		C602.1	attacks and countermeasures. (L3)
		C602.2	Explain the various concepts of information network security. (L2)
			Illustrate key distribution, key management issues and different
		C602.3	cryptographic standards and certificates. (L2)
	INFORMATIO N AND		Explain the concepts of authentication, cyber law, web security and
	NETWORK	C602.4	cyber ethics. (L2)
	SECURITY		Develop various network algorithms and simulate wired/wireless
4BCS602		C602.5	networks to evaluate different network parameters. (L3)
			Explain the fundamental concepts of mobile application development.
		C603.1	[L2]
			Design responsive user interfaces that work across a wide range of
		C603.2	devices. [L6]
			Demonstrate the knowledge of data persistence in mobile applications.
		C603.3	[L2]
			Outline networking and web services concepts in mobile applications.
		C603.4	[L2]
	MOBILE COMPUTING		Apply the steps involved in publishing mobile application to share with
4BCS603		C603.5	the world. [L3]
			Explain the foundations and concepts of service based computing (L2)
		C641.1	
			Illustrate the basic operational model of web services (L2)
		C642.2	
			Analyse key technologies in the service oriented computing arena. (L4)
		6642.2	
		C643.3	Duild the right coming from weath with page at to COA (7.2)
		C644.4	Build the web service framework with respect to SOA. (L3)
		20111	Develop web services using SOA (L3)
4DITE CO	Microservice	C645.5	2. Stop not see the same sort (LD)
4BIT641		+	
			The section of the se
		C605.1	Identify the various aspects of Software Product Engineering. (L1)
			Explain common Software Lifecycle processes including waterfall (linear), incremental approaches (such as Unified
		C605.2	process), and agile approaches. (L2)
		C003.2	approximates
			Prepare technical documentations and make presentations on various aspects of a software development project,
			Prepare technical documentations and make presentations on various aspects of a software development project, including the technical aspects (architecture, design, quality assurance) as well as the
			managerial aspects (grantecture, design, quanty assurance) as well as the managerial aspects (planning, scheduling, and delivery). (L3)
		C605.3	ga wpeer (punning, serieuung, me series j). (Es)
	SOFTWARE	C605.4	Explain the basics of software testing. (L2)
4DCG(05	SOFTWARE ENGINEERING	C605.5	Explain the various software cost estimation models. (L2)
4BCS605	Z. (O. I.Z.I.C.)		
		C606.1	Demonstrate the advanced skills of presentation. (L3)
		C606.2	Compose Technical Documents following proper format and style (L6)
	1	1 C000.2	compose recimical Documents fonowing proper format and style (E0)





			Evaluate cases pertaining to a specific domain and recommend
		C606.3	innovative suggestion/s to the case. (L4)
	PROFESSIONA L		Apply the registers of technical English in oral and written mode of
	COMMUNICA	C606.4	communication.(L3)
	TION – VI	C606.5	Collaborate and express themselves in an Interview round. (L6)
4BHS606			
			Students will infer the concepts of permutation, combination, and probability from a given set to solve problems of
			various arrangements
		C607.1	(circular, linear etc) and criteria (expected value, biased dice etc). (L4)
	i	C007.1	
			Students will apply concepts from statistics (mean, median etc) and progressions (AP, GP, HP) to analyze groups of
			numbers on the
		C607.2	mentioned parameters. (L3)
			Students will use indices and surds to solve problems related to representation of numbers (large integers,
		C607.3	irrational roots etc). (L3)
			Students will examine four types of logical statements to solve puzzles
		C607.4	based on syllogisms. (L4)
			Students will apply the concepts of venn diagrams and cubes to solve
		C607.5	puzzles using set theory, breaking-building rules etc. (L3)
		2007.5	Students will be able to combine logic with their knowledge of advanced English vocabulary and grammar to solve
	PREPARE PROGRAM		
	-		verbal data
4BME607	IV	C607.6	tasks(e.g. para-completion etc) and articulate their ideas. (L4)
			Demonstrate practical knowledge within the chosen area of technology
		C608.1	for project development. (L2)
			Identify, analyze, formulate and handle computer/IT projects with a comprehensive and systematic approach to give
			workable design
		C608.2	solutions (L4)
			Conduct a survey of several available literature in the preferred field of study and Compare the several existing
			solutions for the attempted
		C608.3	problem. (L5)
			Propose innovative solution for the development of components,
		C608.4	processes or technologies in CS/IT field. (L6)
			To report and present the findings of the study conducted in the preferred domain as well develop effective
	MINI PROJECT – II		communication skills for
4BCS608		C608.5	presentation of project related activities. (L3)
		C609.1	Elaborate the fundamental concepts of No-SQL databases. (L2)
		C609.2	Analyze the features and use cases of key-value databases. (L3)
			Explain the features and challenges pertaining to document databases.
		C600.2	
		C609.3	(L2)
			Illustrate the characteristics of column oriented No-SQL databases.
	No-SQL DATABASES	C609.4	(L4)
4BCS621		C609.5	Describe the design and use cases of graph databases. (L3)
		C610.1	Explain basic concepts for Storage systems (L2)
		C610.2	Apply the concepts of storage networking technologies. (L3)
		C610.3	Explain the concepts in Backup, Archive and Replication. (L2)
	STORAGE AREA	C610.4	Analyse the concepts of cloud computing and virtualization. (L4)
	NETWORKS		Explain various concepts in managing and securing storage
4BCS622		C610.5	infrastructure (L2)
₹DC3022			
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C611.1	system through convolution. (L2)
			Demonstrate the frequency transforms for the signal using DFT, FFT
		C611.2	and DCT. (L2)
		C611.3	Design IIR and FIR filters. (L3)
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
		C611.4	representation of speech. (L2)





	DIGITAL SIGNAL		Explain the DSP processors and getting the concept of Image
	PROCESSING	C611.5	processing. (L2)
4BCS623			
			7 th Semester
		C701.1	Explain basic concepts of Machine Learning. (L2)
		C701.2	Analyse Data to perform Exploratory Data Analysis. (L4)
			Implement Supervised Machine Learning algorithms to solve
		C701.3	problems. (L6)
			Implement Un-Supervised Machine Learning algorithm to analyses data.
	MACHINE	C701.4	(L6)
4BCS701	LEARNING	C701.5	Evaluate models to perform Model Selection. (L5)
			Explain the syntax and semantics of Python Programming language.
		C702.1	(L2)
		C702.2	Demonstrate proficiency in handling Strings and File systems. (L2)
		C702.3	Apply python packages in solving real-time problems. (L3)
	PYTHON		Build Web Services and introduction to Network and Database
	PROGRAMMI	C702.4	Programming in Python. (L3)
4BCS702	NG	C702.5	Interpret Data Visualization concepts in Python. (L2)
		C703.1	Demonstrate the skills in professional career goals. (L2)
			Administer the insight into a possible career path of interest with
		C703.2	organizational structure, roles and responsibilities. (L3)
			Develop professional connections with leadership strategy and skill
		C703.3	development. (L4)
			Identify the professions to suit the interest as a result of this experience.
		C703.4	(L3)
			Conquer additional skills that will need to be developed to ensure career readiness such as new technology,
		C703.5	developing a broader network, additional coursework. (L4)
4BCS703	INTERNSHIP	C/03.3	nework, auditorial coursework. (L4)
			Contractive of the second of t
		C704.1	Students will be able to apply number theory concepts and formulas to solve problems of base system, remainder theorem etc. (L3)
		C/04.1	Students will be able to categorize contradictions within the area of binary logic to solve problems using concepts
			of contradictions truth
		C704.2	tellers, liars and alternators.
			Students will be able to solve types of pattern recognition problems (fillers, calendar etc) by utilizing different functions
			that fit the given
		C704.3	criteria. (L3)
			Students will be able to analyze the sufficiency of data and interpret its specific components by solving problems using
			data reasoning and
		C704.4	interpretation of its numerical and graphic representations. (L4)
			Students will be able to make use of advanced arithmetic, algebra and mensuration techniques to solve a variety of problems using a range of
		C704.5	concepts from partnership to permutation & combination. (L3)
		0,01.3	Students will be able to apply written and verbal communication techniques by articulating themselves in the format of
	DDED A DE TO CONTROL		discussion,
4BHS704	PREPARE PROGRAM –	C704.6	debate, interview, essay, letter etc. (L3)
			Demonstrate engineering knowledge and its framework for its implementation in the project design as well
			work in groups taking
		C705.1	leadership role and communicate effectively (L2)
			Survey relevant literature in the chosen field of study that allows
		C705.2	interrelation of design and research (L4)
			Model a material consent design that will be all the consent of th
		6705.2	Model a prototype/ concept design that exhibits the feasibility of the solution from cost, engineering and environmental aspects. (L3)
		C705.3	





		T	
			Justify the project design with a structured report that covers all the work carried out between framing the problem
			statement to the project
		C705.4	design. (L5)
	CAPSTONE PROJECT –		Design conceptual ideas that address the issues with respect to real
	DESIGN	C705.5	world problems. (L6)
4BCS705			
		C706.1	Describe the basics of the ethical hacking. (L2)
		C706.2	
		C/06.2	Describe the foot printing and scanning. (L2)
			Demonstrate the techniques and countermeasures for system hacking.
	I I	C706.3	(L3)
		C706.4	Characterize the malware and their attacks. (L2)
	ETHICAL		Analyze and prevent the security attacks in different environments.
4BCS731	HACKING	C706.5	(L4)
		C707.1	Characterize real-time systems and describe their functions. (L2)
		C707.2	Analyze various Clock-Driven Scheduling approaches. (L3)
			Apply formal methods to analyze and design a priority-driven
		C707.3	scheduling of periodic tasks. (L4)
			Compare the methods for scheduling aperiodic and sporadic jobs in
		C707.4	
		C/0/.4	priority-driven systems. (L3)
	REAL TIME		Analyze various resources and resource access control approaches.
4BCS732	SYSTEMS	C707.5	(L3)
		C708.1	Describe the framework of quantum computation
			Explain the differences between classical computation and quantum
		C708.2	computation
			Explain the concept of quantum entanglement and quantum
		C708.3	teleportation
		C708.4	Implement single cubic gates
		C/08.4	
	QUANTUM		Explain how quantum computation may be applied in future
4BCS733	COMPUTING	C708.5	technologies
		C709.1	Remember the basic concepts of optimization. (L1)
		C709.2	Recognize methods of optimization techniques. (L2)
		C709.3	Formulate and solve linear programming problems. (L2)
			Obtain solutions to constrained and unconstrained Non-linear
	OPTIMIZATIO N	C709.4	programming problems. (L2)
	TECHNIQUES		
	TECHNIQUES	C709.5	Determine the integer solutions to Linear Programming Problems. (L2)
4BCS741		1	
			Explain the sampling theorem and characterize basic properties of discrete time signals and systems and also estimate
			the response of the
		C710.1	system through convolution. (L2)
			Demonstrate the frequency transforms for the signal using DFT, FFT
		C710.2	and DCT. (L2)
		C710.3	Design IIR and FIR filters. (L3)
			Familiarize the basic mechanism of speech production and learn the basic concepts of methods for speech
			analysis and parametric
		C710.4	representation of speech. (L2)
	DIGITAL SIGNAL	C/10.4	
	PROCESSING		Explain the DSP processors and getting the concept of Image
4BCS742		C710.5	processing. (L2)
			Classify an Embedded systems based on its attributes and illustrate
		C711.1	various steps in design process.
			Distinguish various I/O ports, communication protocols and Timers
		C711.2	used in an Embedded system.
		C711.3	Classify and explain various peripherals of an Embedded Systems.
		C/11.5	Cassity and explain various peripherals of an embedded systems.
			Demonstrate characteristics and attributes of an embedded system, hardware /software co- design and firmware design
		C711.4	approaches. (L2)
	EMBEDDED		Explain the need of real time operating system for embedded system
4BCS743	SYSTEMS	C711.5	applications. (L2)
	1	1	





			th 8 Semester
			0 Octional
		C801.1	Describe the Moral Values and Ethics. (L1)
		C801.2	Explain the Engineering Ethics. (L1)
	PROFESSIONA L	C801.3	Discuss the Responsibility as Engineers. (L2)
	ETHICS FOR	C801.4	Examine the Safety and Risk. (L2)
4BHS801	ENGINEERS	C801.5	Predict the working Ethics for Engineers. (L2)
		C802.1	Apply software testing knowledge and engineering methods. (L3)
			Identify various software testing problems, and solve the problems.
		C802.2	(L2)
			Design and conduct various levels of software testing for a software
		C802.3	project. (L4)
			Apply various communication methods and ethical skills in practice-
		C802.4	oriented software testing projects. (L3)
	COPTWARE	C002.4	Analyze the needs of software test automation and develop a test tool
	SOFTWARE TESTING	C802.5	to support test automation. (L2)
4BCS802	TESTING		
		C803.1	Apply concepts of RNN and LSTM. (L3)
			Demonstrate concepts of Self-organizing maps in real-world
		C803.2	applications. (L3)
			Illustrate Problems through pre trained model such as auto-encoders.
		C803.3	(L3)
	DEEP LEARNING	C803.4	Interpret about Boltzmann machines and its applications. (L3)
4BCS803		C803.5	Apply the concept of GANs and know its applications. (L4)
		C804.1	Explain the concept of IoT. (L2)
		C804.2	Analyze various protocols for IoT. (L2)
		C804.3	Design a PoC of an IoT system using Rasperry Pi/Arduino. (L4)
	INTERNET OF THINGS	C804.4	Apply data analytics and use cloud offerings related to IoT. (L3)
BCS804		C804.5	Analyze applications of IoT in real time scenario. (L2)
ирсэооч			Compare the project built with other possible existing solutions to
		C805.1	come to a conclusion about its feasibility and reliability. (L4)
		C803.1	
		6005.2	Utilize proper project management techniques and planning methods to
		C805.2	produce cost effective projects (L3)
			Recommend the need to implement the project with supporting justification and possible areas to improve it and
			Compile a clear report containing the step by step process of building the project that includes
			all calculations, analysis and fabrication methods involved. (L5)
		C805.3	
			Build the real world implementation of the design that will realize the
	CAPSTONE PROJECT –	C805.4	objectives of the prototype/ design. (L6)
	BUILD		Demonstrate working in groups taking leadership role and
4BCS805		C805.5	communicating effectively. (L2)
			Identify fundamental image processing techniques required for
		C806.1	computer vision. (L1)
		2000.1	1
			Represent chain codes and other region descriptors, Hough Transform for line, circle, and ellipse detections, 3D visio
		C806.2	techniques. (L2)
		C806.2	
		C806.3	Illustrate boundary tracking techniques. (L5)
	COMPUTER VISION	C806.4	Analyze and Implement motion related techniques. (L4)
BCS851	1	C806.5	Construct applications using computer vision techniques. (L3)
		C807.1	Analyze the natural language text. (L4)
		C807.2	Create the natural language. (L6)
	NATURAL	C807.3	Analyze Text mining. (L4)
	LANGUAGE	C807.4	Evaluation of Self Explanation (L2)
BCS852	PROCESSING	C807.5	Apply information retrieval techniques. (L3)
		C808.1	Explain the concepts of Data mining and its issues. (L1)
		C808.2	Analyze and apply association rule mining techniques. (L3)
		C808.3	Analyze various classification algorithms. (L2)
	1	C808.4	Elaborate the clustering algorithms. (L3)





4D 000 52	D.T. MIDIG		
4BCS853	DATA MINING		
		C809.1	Explain the fundamentals of Digital forensics. (L2)
			Illustrate computer forensic techniques to identify the digital forensics
		C809.2	associated with criminal activities. (L2)
			Apply forensic analysis tools to recover important evidence for
		C809.3	identifying computer crime. (L3)
			Explain Computer Crime and Criminals and Liturgical Procedures.
	DIGITAL	C809.4	(L2)
4BCS854	FORENSICS	C809.5	Analyze laws and ethics involved in cybercrime. (L4)
		C810.1	Explain the models of distributed computing. (L2)
		C810.2	Analyze distributed shared memory models. (L4)
		C810.3	Design and Implement distributed file systems. (L6)
		C810.4	Build the distributed algorithms for handling deadlocks. (L3)
	DISTRIBUTED		Importance of the inherent difficulties that arise due to distributedness
4BCS8555	COMPUTING	C810.5	of computing resources. (L5)







SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of Information Technology

COs

2023 Batch



I SEMESTER

4PHYS1011: ENGINEERING PHYSICS

Course Outcomes:

On successful completion of the course, students will be able to:

CO1: Plot the I-V characteristics of photo-diode, LED and solar cells. L3 CO2: Make use of Lasers and Optical fibers for different industrial applications. L3

CO3: Explain the use of Semiconducting and Superconducting materials for different Engineering applications. L2

CO4: Analyze the applications of quantum mechanics in technology.

L4 L4

CO5: Infer the results obtained in different experiments.

4ENEE1081: ELEMENTS OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Outcomes:

On successful completion of the course, students will be able to:

CO1: Analyze electrical circuits by relevant Laws in DC circuits.

L4

CO2: Demonstrate the single phase and three-phase power generation by using the phasor diagrams. L3

CO3: Analyze digital circuits

L4

CO4: Demonstrate the knowledge of Karnaugh maps by simplifying the algebraic equations and design the combinational circuits.



Course Outcomes:		
On successful completion of the course, students will be able to:		
CO1: Demonstrate functioning of different sub-systems, OS and different types of OS	. L3	
CO2: Use different types of data structures, operations and algorithms.		L3
CO3: Describe the fundamental elements of relational database management systems.	L2	
CO4: Comprehend the layered protocol model & Classification of networks.	L3	
CO5: Demonstrate need for Linux OS and Linux commands.	L3	

4ENME1011: COMPUTER AIDED ENGINEERING DRAWING

Course Outcomes:

On successful completion of the course, students will be able to:

CO1: Illustrate competence in basics of orthographic projections of points, lines, planes and solids in three different views.

L3

CO2: Apply the concepts of orthographic projections for simple objects L3

CO3: Develop surfaces of solids of simple objects. L3

CPSHD1011 Design Thinking-1

Course Outcomes: On successful completion of the course, Students will be able to,

O1: Apply teamwork towards building a solution. (Level 3)

O2: Apply basic Design Research (Level 3)

O3: Apply brainstorming as a way of innovative thinking. (Level

3)

O4: Apply story-telling in Design Thinking. (Level 3)





Oral and Written Communication

Course Code: CPSHL2041 (SOET)

Batch- 2023

Course Outcomes: On successful completion of the course, Students will be able to:

CO1: Identify the Speech sounds and accent of British English and American English. (L1)

CO2: Express themselves in different professional setting. (L2)

CO3: Use the different methods and classifications of reading. (L3)

CO4: Draft letters, E-mails using appropriate tone and structure. (L3)

CO5: Construct sentences to improve their Verbal Skills.(L3). (L4)

II SEMESTER

4MATH1021: ENGINEERING MATHEMATICS II	
Course Outcomes:	
On successful completion of the course, students will be able to: CO1: Solve first order linear ordinary differential equations	
L3 CO2: Solve higher order differential equations arising through physical processes. CO3: Construct a variety of partial differential equations and solve them.	L3 L4
CO4: Use periodic signals to represent periodic functions in the form series. CO5: Make use of matrix theory for solving system of linear equations	of Fourier L3 L3

4CHEM1012: ENGINEERING CHEMISTRY	
Course Outcomes:	
On successful completion of the course, students will be able to:	
CO1: Explain the construction and working of Energy storage devices.	L2
CO2: Explain corrosion of metals, factors and prevention techniques.	L2
CO3: Explain the importance of the modern emerging field of nanotechnology.	
L2 CO4: Use instruments which give quick and accurate results for material analysis.	L3
CO5: Carry out different types of titrations for estimation of concentration of an analyte.	L3

Course Outcomes:

On successful completion of the course, students will be able to:

CO1 Recognize the impact of energy sources on the environment and sustainability.





CO2 Explain the working principles of water, vapour and gas-powered systems.	
CO3 Discuss the working principles of refrigeration systems and IC engines.	2
CO4 Compute various performance parameters of IC engines.	L2
CO5 Demonstrate soldering, brazing and welding of sheet metal & welded joints.	L2
	L3
	L2

4ENCV1011: ELEMENTS OF CIVIL ENGINEERING		
Course Outcomes:		
On successful completion of the course, students will be able to:		
CO1: Explain the basics of Civil Engineering and related fields.	L2	
CO2: Develop working models with the laws of mechanics.	L3	
CO3: Analyze equilibrium of coplanar, concurrent and non-concurrent forces.		
L4 CO4: Determine centroid and moment of inertia of simple geometric figures.		
L3 CO5: Apply D'Alembert's principle in any specific application.		
L3		

4CSPL1011: PROBLEM SOLVING USING PYTHON		
Course Outcomes:		
On successful completion of the course, students will be able to:		
CO1: Understand the basis of algorithm problem solving	L2	
CO2: Read/Write simple simple python programs	L3	
CO3: Develop python programs with conditionals and loops	L4	
CO4: Use python functions and python data structures	L3	
CO5: Read and write data from/to files in python programs	L3	

CPHSD2011 Design Thinking-2

Course Outcomes: On successful completion of the course, Students will be able to:

CO1: Create an appropriate research plan to explore the problem, execute the design research and present findings as a team. (level 5)

CO2: Evaluate research findings, identify insights and brainstorm solutions as a team. (level 4)

CO3: Create a prototype and iterate based on feedback received as a team. (level 5)

CPSSF1011: French -Level-1

Course Outcomes: On successful completion of the course, Students will be able to,





CO1: Introduce themselves and others, and use common French salutations appropriately.(L1,L2)

CO2: Use polite expressions in French appropriately in social interactions. (L2)

CO3: Discuss daily activities with improved fluency and accuracy (L3)

CO4: Identify and use parts of speech correctly in sentences.

CPSSF1021: German – Level-1

Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Introduce themselves and others, and use common German salutations appropriately.(L1,L2)

CO2: Use polite expressions in German appropriately in social interactions. (L2)

CO3: Discuss daily activities with improved fluency and accuracy (L3)

CO4: Identify and use parts of speech correctly in sentences.

CPSSF1041: Spanish –Level-1

Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Introduce themselves and others, and use common Spanish salutations appropriately.(L1,L2)

CO2: Use polite expressions in Spanish appropriately in social interactions. (L2)

CO3: Discuss daily activities with improved fluency and accuracy (L3)

CO4: Identify and use parts of speech correctly in sentences.

FUNCTIONAL ENGLISH

Course Code: CPSAL1111 Batch:2023

Course Outcomes: On successful completion of the course, Students will be able to:

CO1: Define Social Values and Critical Thinking skills (L1)

CO2: Compare the poetical terms and integrate creative ideas in the English Language. (L2)

CO3: Develop vocabulary and interpret in one academic and professional life.(L2)

CO4: Develop skills of comprehending and analytical to improve their language proficiency.

(L3) CO5: Construct sentences to improve their Verbal Skills.(L3)

GPSDR1081: Personal Effectiveness





Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Students will be able to set clear and achievable goals that align with personal objectives. (L3)

CO2: Students will be able to make informed decisions based on data, consider multiple options, and evaluate potential outcomes. (L5)

CO3: Students will be able to understand and manage one's own emotions, and empathize with and respond to the emotions of others. (L2/L3)

CO4: Students will be able to take responsibility for one's actions, and demonstrate integrity and trustworthiness in professional and personal relationships. (L5)

Ш Semester

4MATH2041-Probability and Statistics (Semester III-Common to CS/IT/DS/ML)

Course Outcomes:

On successful completion of the course, students will be able to:

CO1: Apply Binomial and Normal distribution concepts to solve probability problems -L3

CO2: Apply the knowledge of covariance and correlation to solve joint probability problems -L3

CO3: Explain the concept of testing of hypothesis for small and large samples -L2

CO4: Solve continuous and discontinuous piecewise linear functions using linear least square- L3

CO5: Apply least square techniques in solving various engineering problems

L3

4CSPL1121: Programming in C and Data Structures

Course Outcomes:

and algorithms

On successful completion of the course, students will be able to:

CO1: Explain the basic computer concepts and programming principles of

C language

CO2: Develop C programs to solve simple mathematical, engineering problems using conditionals and looping constructs.

CO3: Use different types of data structures, operations and algorithms

CO4: Use different types of data structures, operations

CO5: Implement and utilize stack, queue, linked list, tree, and graph data structures in

problem- solving.



L3



4ENIT3072: Computer Networks			
	Course Outcomes (COs):		
On s	uccessful completion of the course, students will be able to:		
CO1	Interpret the different building blocks of Communication		
	network and its architecture	L2	
CO2	Identify and analyze error and flow control mechanisms in data link		
	layer	L3	
CO3	Design subnetting and analyze the performance of network layer		
_		L3	
CO4	Construct and examine various routing protocols and to find suitable Application layer protocols for specific applications and its respective security mechanisms	L3	
CO5	Construct and examine various routing protocols and to compare various congestion control mechanisms and identify appropriate Transport layer protocol for real time applications	L3	

4ENIT3011 - Computer Organization and Architecture				
Course Outcomes:				
	ion of the course, students will be functional units of digital com		L4	
CO2:Illustrate	different	concepts		of
CPU	L3	_		
CO3: Outline instruction execution using pipeline			L3	
CO4:Apply various hard	ware software concepts on instru	actions to exploit ILP	L2	
CO5:Explain Cache optin	mization techniques to improve	system performance	L2	

CKSAM1051: Indian Constitution		
Course Outcomes: On successful completion of the course, Students will be able to,		
01: Study a particular event in Indian history and trace the impact that can be felt to the present day. (L1)		
02: Understand the impact of the way a democracy is structured. (L2) 03: Understand the freedoms that a citizen of India has, and what those mean in daily life. (L2)		
04: Understand the duties of an Indian citizen and how they translate to daily life. (L2) 05: Gain an understanding of the workings of the government in their		
residential locality. (L2)		
06: Trace the impact of a single vote from their area of residence to		
the national scale. (L3)		
07: Understand the Indian democratic process and their role in it. (L2) 08: Identify ways in which they can contribute to the progress of the country. (L3)		





[CKSAA1033]: Introduction to Philosophical Thought

Course Outcomes: On successful completion of the course, students will be able to:

CO1: Examine various philosophical systems and apply the concepts to actual states of affairs. (L4)

CO2: To be able to evaluate the moral acts of individuals belonging to different cultures and societies. (L4)

CO3: Analyze, evaluate, and recognize their psychic inclination towards the specific philosophical thought system. (L6)

Preparing for Aptitude Tests [UG-1/4]

Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Understand how to use calculation techniques for quick calculations and manipulation of numbers. [Level-1]

CO2: Understand the number theory to solve problems. [Level-1]

CO3: Understand the concepts of percentages and exponents for computing simple and compound interests. [Level-1]

CO3: Understand how to solve problems of various arrangements (Circular and Linear).

[Level-1] CO4: Understand distributive arrangements that adhere to the given parameters.

[Level-1]

CO5: Understanding data by analyzing it, grasping its context, and extracting meaningful insights through informed inferences [Level-1]

Career Essentials GPSBD1171

Course Outcomes: On successful completion of the course, Students will be able to:

CO1: Assess personal strengths, weaknesses, and interests to construct a viable career plan. (L5)

CO2: Analyse the importance of social and emotional intelligence to facilitate successful relationships. (L4) CO3: Understand the implications of digital footprints on personal and professional life. (L2)

CO4: Construct a professional resume and customise it for various job applications / internship applications. (L3)

CO5: Build awareness on thoughtfulness, develop honesty, discipline and decisiveness. (L3)





IV Semester

4MATH2051- Discrete Mathematics and Combinatorics (Semester IV-Common to CS/IT/DS/ML)

Course Outcomes:

CO1: Explain the propositional, predicate logic and truth table by evaluating correctness of argument

CO2: Discuss the type of relationship and apply the knowledge using the Hasse diagram

-L2

CO3: Demonstrate the knowledge of combinatorics by solving relevant problems.-L2

CO4: Explain the basic concepts of graph theory.

L2

O5: Solve linear recurrence relations by recognizing homogeneity, linearity and constant coefficients. L3

4ENIT4021: Design and Analysis of Algorithms

Course Outcomes:

On successful completion of the course, students will be able to:

CO1: Design new algorithms, prove them correct, and analyze their asymptotic and absolute runtime and memory demands.

L4, L6

CO2: Understand the basic concepts of data structures along with their applications. L5,

CO3: Understand the advantages and disadvantages of Divide and Conquer strategy and the application in various fields

L2.

CO4: Understand the concept of Dynamic programming with the help of various examples.

L2,

CO5:Understand backtracking techniques and some branch and bound problems. L3

L2,





4ENIT3062: ARTIFICIAL INTELLIGENCE			
Course Outc	omes (COs):		
On successfu	ll completion of the course, students will be able to:		
CO1	Elucidate the basic concepts of Artificial Intelligence	L2	
CO2	Analyze Artificial Intelligence techniques, such as search algorithms, for problem solving	L4	
CO3	Apply techniques of Knowledge Representation and Planning	L3	
CO4	Apply knowledge of reasoning in the presence of incomplete or uncertain information	L3	
CO5	Explain different forms of Learning	L2	

	4ENIT3052 – Software Engineering Course Outcomes:		
Course			
On su	ccessful completion of the course, students will be able to:		
CO1	Identify the various aspects of software product engineering	L1	
CO2	Prepare technical documentations and make presentations on various aspects of a software development project, including the technical aspects (architecture, design) as well as the managerial aspects (planning, scheduling, and delivery)	L3	
CO3	Understand the basics of software testing	L2	
CO4	Explain the various software cost estimation models	L2	
CO5	Apply quality attributes in software development life cycle	L3	

4CSPL2012: WEB DEVELOPMENT USING PYTHON AND DJANGO		
Course Outcomes:		
On successful completion of the course, students will be able to:		
CO1: Create database using SQLite	L6	
CO2:Create web client programs using python	L6	
CO3:Create web server programs using python	L6	
CO4: Create website using Django framework	L6	
CO5:Create to-do application using Django and React JS	L6	





Course Outcomes: On successful completion of the course, students will be able to: CO1: Demonstrate the interfacing of basic input and output devices using Arduino. CO2: Explain the working principles of various sensors and renewable energy sources. CO3: Apply the understanding of Arduino programming by interfacing sensors and communication devices. CO4: Analyze and Build a real-time application employing Arduino / Raspberry Pi. L4 CO5: Demonstrate the project L3

CKSMM1012 - Critical Inquiry (CIY)

Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Examine their own of thinking and apply critical inquiry in dealing with their day-to day life challenges (L 5)

CO2: Investigate into the origins and sources of their beliefs and knowledge system (Indian and Western doctrines). (L5)

CO3: Evaluate and implement the methods of logical reasoning in their decision making (L5)

CO4: Construct arguments based on the principles of validity and soundness ()(L 6)

CO5: Analyze the value of diverse perspectives and varied interpretation of same information. (L4)

PSBD1191: Career Readiness

Course Outcomes: On successful completion of the course, Students will be able to,

CO1: Students will be able to identify personal values, interests, and skills and connect them to potential career paths. (L3)

CO2: Students will be able to develop effective communication skills and build a network of professional connections. (L5)

CO3: Students will be able apply problem-solving and critical thinking skills, and apply workplace etiquette and professionalism in their workplace. (L3)

CO4: Students will be able to work collaboratively in a team to achieve work-related goals.(L3)





Preparing for Aptitude Tests [UG-2/4]

Course Outcomes: On successful completion of the course, Students will be able to,

O1: Understand the concepts of ratio, proportions, and averages to calculate class/set relationships. [Level-1] O2: Understand the theory of linear and quadratic equations using methods of equation formation. [Level-1] O3: Understand how to solve problems relating to equations, averages, mixtures, and alligations. [Level-1] O4: Understand the sufficiency of data and interpret its specific components by solving problems. [Level-1]

O5: Understand the four types of logical statements to solve puzzles based on syllogisms and apply the concepts of Venn diagrams to solve puzzles using set theory. [Level-1]













CURRICULUM GLOSSARY

Credit Distribution: Allocation of credits under lecture (L), tutorials (T), and practical (P) viz. L- T-P-C. Eg. A 4-credit course has a credit distribution as 3-0-1-4 implying 3 credits for lecture and 1 credit for practicals and total of 4 credits

Program Core (Credit Courses):

Each academic programme is divided into mandatory and choice segments, with levels within them. Mandatory segments are those which lay a firm foundation of the knowledge required to complete a programme in the chosen domain, ending with a multifaceted assignment that serves as a culminating academic and intellectual experience for students, typically during their final year. Choice segments are those which a student could opt for to specialize further and / or to improve their interdisciplinary skills. All segments carry credits, and the students are expected to earn the minimum number of credits in their coursework towards program core during their academic programme. The Program Core courses are categorized as follows:

- a. **Foundation:** A core course that must be satisfactorily completed in order to complete the requirements of the program. It lays the foundations for higher level courses. A foundation course assures that students are academically and personally ready to progress their degree. The foundation courses are further categorized as follows:
 - **i.Fundamental:** A required course you have to complete in order to enroll in a more advanced course. The prerequisite course usually teaches the basic information necessary to succeed in the more advanced course. It is the most <u>basic</u> or most <u>important</u> course on which other courses <u>depend</u>.
 - **ii.Intermediate:** Courses that are suitable for learners with some degree of skill or competence in that particular discipline area of study
 - iii. Advanced: Courses that involve higher and more complex levels of knowledge and understanding than introductory or foundational learning. It means the student has attained a level of knowledge and understanding of a particular area or topic that goes beyond basic terminology and definitions and is ready to be involved in Analysis, Synthesis and Evaluation of information related to a specific topic or area of learning.
 - b. **Elective:** A course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course. Elective courses can fall either under specialization or general category.
 - **i.General:** Courses that are designed to develop learners' general knowledge, skills and attitudes, often to prepare students for more advanced education programmes. General courses complement the more specialized learning undertaken in a student's chosen field of study and contributes to the flexibility which graduates are increasingly required to demonstrate.
 - **ii.Specialization:** A set of related courses which are structures for students to achieve specific learning outcomes. Specializations can be in a single discipline or multi-disciplinary. Specialization courses is a specified sequence of courses that equips one with specialized knowledge in one's discipline





- c. **Interdisciplinary:** These are courses that are entirely outside of the program of study. One may take the course from other disciplines, as long as one meets the course requirements (prerequisites)
- d. **Mini Project:** A mini project is considered as a special course involving application of knowledge gained from studying a particular discipline or a particular area of the program of study in solving / analyzing /exploring a real-life situation / difficult problem. A process that fosters learners' engagement in studying authentic problems or issues centered on a particular project, theme, or idea. This process is inquiry-based, outcome- oriented, and associated with conducting the curriculum in real-world contexts.
- e. **Internship:** An internship is a full-time or part-time work experience during the program study for which one earns course credit and may be paid or considered as volunteer work. Internships allow students to gain real-world experience, determine if they have an interest in a particular career and create a network of professional contacts.
- f. **Dissertation:** An elective course designed to acquire special / advanced knowledge, which a student studies on his own with an advisory support by a faculty member. Dissertation is an ordered and critical exposition of existing knowledge in any field or part of a field of study and is expected to provide a good training for the student in R&D work and technical leadership.
- g. Capstone project: A final course in a sequence of courses that provides an opportunity for students to integrate the knowledge and skills they have acquired. The learning outcomes of the capstone will normally map into the learning outcomes for the program. It is a substantial, compulsory project that consolidates one's learning and demonstrates that one has acquired the necessary skills and knowledge during the program of study. One usually completes it during the final year of your course.

Common Core (Credit Courses):

Students are expected to earn a certain specified number of credits in their coursework towards Common Core, during their academic programme. While some courses are in workshop mode, which can be completed over a few days at a stretch, there are other courses which are offered for a few hours per week throughout a semester. Students take these courses planned for each academic programme, over multiple semesters. Credits range from 1 to 4, which are directly proportional to the number of hours required to complete a course. There are both 'mandatory' and 'choice' courses, with levels within them.

Common Core (Non – Credit): Graduate Requirement:

Engagements under this category do not carry credits but are mandatory for the students to complete them during the academic programme, to be considered eligible to graduate / earn the degree. These could be:

- 1. **Courses** embedded in the academic programme, where the students must ensure that they attend a minimum of 75% of the classroom hours and meet the assessment criteria, if any.
- 2. Community Service activities under which the students have to log a minimum number of hours in a semester by rendering certain prescribed services to the society





and collect evidence from the concerned authority for having done so. A reflective presentation on the learning and experience gained, together with the impact on the society has to be sur bm 1 in the 1 e 1 or 1 be 1 in 1 the 1 e 1 or 1 or 1 the 1 e 1 or 1 or





Courses under various categories can be further classified as:

- 100 Level Courses: These courses offer an introduction to a subject area and are designed for students in the first year of study. These courses have no prerequisites and are generally courses defining basic concepts or presenting the terminology of a discipline
- 200 Level Courses: These courses are built on previous units and are normally taken in the second year or later; they may also be available to students with advanced prior knowledge. They are Courses of intermediate college-level difficulty; courses with 100-level course(s) as prerequisite(s)
- **300 Level Courses**: These courses are usually taken in third year or later, after 200-level study in the area. They may also be available to students with advanced prior knowledge. They are courses of advanced college-level difficulty offered for students clearly interested in the discipline or in any stream of the discipline
- **400 Level Courses**: These units of study are advanced courses and are normally taken in the third year or later as the final elements of a three year or four-year degree or an integrated

degree. The level indicates that the student will be demonstrating coherence and breadth or depth of knowledge and skills. The student may need to have completed a prerequisite course to study a 400-level course.

Prerequisite: A prerequisite to "Course X" is a course that must be successfully completed before the student can undertake "Course X"

