

Departmental Vision

To develop responsible citizens who would ‘think global and act local’ and become the change agents of society to meet the challenges of future.

Departmental Mission

The mission of the Computer Science and Engineering Department is to build and sustain a high quality and broad area-based teaching and research program in computer science, to prepare students for successful professional careers both in industry, academics and as entrepreneur, and to provide service to the nation as a good human being.

Program Educational Objectives (PEO)

- PEO1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.
- PEO2:** Graduates are prepared to take up Masters / Research programs.
- PEO3:** Graduates are prepared to be responsible computing professionals in their own area of interest.
- PEO4:** Graduates are prepared to be good entrepreneur and responsible social representatives.

Program Outcome (PO)

PO1. Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis:

Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage:

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

- PSO1.** Specify, design, develop, test and maintain usable software systems that behave reliably and efficiently and satisfy all the requirements that customers have defined for them
- PSO2.** Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems.
- PSO3.** Use professional engineering practices, strategies and tactics for the development, operation and maintenance of software.

Departmental Curriculum Structure

Curriculum for B. Tech in Computer Science & Engineering Under Autonomy

1 st Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	PH 101	Physics - I	3	1	0	4	4
3	EC 101	Basic Electronics Engineering	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
A. PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	PH191	Physics -I Lab	0	0	3	3	2
8	EC 191	Basic Electronics Engineering Lab	0	0	3	3	2
9	ME 192	Workshop Practice	0	0	3	3	2
B. SESSIONAL							

10	XC181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total of Practical & Sessional						13	08

2 nd Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201	Chemistry	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291	Chemistry Lab	0	0	3	3	2
8	EE 291	Basic Electrical Engineering Lab (Gr.	0	0	3	3	2
9	ME 291	Engg Drawing & Graphics	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

3 rd Semester								
<u>SL No</u>	<u>Type</u>	<u>Code</u>	<u>A. THEORY</u>	<u>Contact hours</u>				<u>Cr. Points</u>
				<u>L</u>	<u>T</u>	<u>P</u>	<u>Total</u>	
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	ES	EE(CSE)301	Circuit Theory and Network	3	0	0	3	3
4	PC	CS301	Data Structures	3	0	0	3	3
5	PC	CS302	Digital Electronics and Computer Organization	3	0	0	3	3
			Total Theory				16	16
<u>B. PRACTICAL</u>								
6	BS	PH391	Physics-II Lab	0	0	3	3	2
7	ES	EE(CSE)391	Circuit Theory and Network Lab	0	0	3	3	2
8	PC	CS391	Data Structures Lab	0	0	3	3	2
9	PC	CS392	Digital Electronics and Computer Organization Lab	0	0	3	3	2
			Total Practical				12	8
<u>C. SESSIONAL</u>								

10	HU	HU381	Technical Report writing and Language Practice Lab	0	0	2	2	1
			Total				30	25

4 th Semester								
				Contact hours				Cr. Points
<u>SL No</u>	<u>Type</u>	<u>Code</u>	<u>A. THEORY</u>	L	T	P	Total	
1	BS	M(CSE)401	Numerical Methods and Statistics	3	0	0	3	3
2	HS	HU401	Environmental science	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS 403	Formal Language And Automata Theory	3	0	0	3	3
Total Theory							14	14

B. PRACTICAL								
6	BS	M(CSE)491	Numerical Methods and Statistics Lab	0	0	3	3	2
7	PC	CS491	Computer Architecture Lab	0	0	3	3	2
8	PC	CS492	Algorithms Lab	0	0	3	3	2
9	PC	CS493	Programming with C++ Lab	1	0	2	3	2
Total Practical							12	8
C. MANDATORY COURSES								
10	MC	MC 481	Technical Communication & Soft Skills	0	0	3	3	2 Unit
Total							29	22

5TH SEMESTER								
<u>SL No</u>	<u>Type</u>	<u>Code</u>	<u>A. THEORY</u>	<u>Contact hours</u>				<u>Cr. Points</u>
				<u>L</u>	<u>T</u>	<u>P</u>	<u>Total</u>	
1	HS	HU 501	Economics for Engineers	2	0	0	2	2
2	PC	CS501	Computer Graphics	3	0	0	3	3
3	PC	CS502	Operating System	3	0	0	3	3
4	PC	CS503	Data Base Management System	3	0	0	3	3
5	FE	CS 504	Object Oriented Programming using Java	3	0	0	3	3

			Multimedia Technology Communication Engineering					
6	PE	CS505	A. Operations Research B. Computational Geometry C. Digital Signal Processing	3	0	0	3	3
Total Theory							17	17
B. PRACTICAL								
7	PC	CS591	Computer Graphics Lab	0	0	3	3	2
8	PC	CS592	Operating System Lab	0	0	3	3	2
9	PC	CS 593	Data Base Management System Lab	0	0	3	3	2
10	FE	CS594	Object Oriented Programming Lab Multimedia Technology Lab Communication Engineering Lab	0	0	3	3	2
11		CS 581	Mini Project	0	0	3	3	2
Total Practical							15	10
C. MANDATORY COURSES								
12	MC	MC581	General Aptitude /Foreign Language	0	0	3	3	2 Unit
Total							35	27

6TH SEMESTER								
SL No	Type	Code	A. THEORY	Contact hours				Cr. Points
				L	T	P	Total	
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessor and Microcontroller	3	0	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604	Compiler Design Robotics Simulation and modeling	3	0	0	3	3
5	FE	CS605	A. Pattern Recognition B. Distributed Operating System C. Distributed Database D. Computer Vision	3	0	0	3	3
6	FE	CS606	A. Data Warehousing and Data Mining B. Digital Image Processing C. E-commerce and ERP	3	0	0	3	3
Total Theory							18	18
<u>B. PRACTICAL</u>								
7	PC	CS691	Computer Network Lab	0	0	3	3	2
8	PC	CS692	Microprocessor and Microcontroller Lab	0	0	3	3	2

9	PC	CS693	Software Engineering Lab	0	0	3	3	2
Total Practical							9	6
C. SESSIONAL								
10		CS681	Group Discussion and Seminar	0	0	3	3	2
Total							30	26

7TH SEMESTER								
<u>SL No</u>	<u>Type</u>	<u>Code</u>	<u>A. THEORY</u>	<u>Contact hours</u>				<u>Cr. Points</u>
				<u>L</u>	<u>T</u>	<u>P</u>	<u>Total</u>	
1	HS	HU701	Values & Ethics in Profession	2	0	0	2	2
2	PC	CS701	Artificial Intelligence	3	0	0	3	3
3	PE	CS702	A. Soft Computing B. Natural Language Processing C. Web technology	3	0	0	3	3
4	PE	CS703	A. Cloud Computing B. Data Analytics C. Sensor Network and IOT	3	0	0	3	3
5	PE	CS704	A. Distributed Algorithms B. Bio-informatics C. Cryptography and Network	3	0	0	3	3

			Security					
Total Theory							14	14
<u>B. PRACTICAL</u>								
6	PC	CS791	Artificial Intelligence Lab	0	0	3	3	2
7	PE	CS792	A. Soft Computing Lab B. Natural Language Processing Lab C. Web Technology Lab	0	0	3	3	2
8		CS795	Project-1	0	0	3	3	2
Total Practical							9	6
<u>C. SESSIONAL</u>								
9		CS781	Industrial Training	0	0	0	0	2
Total Sessional								
<u>D. MANDATORY COURSES</u>								
10	MC	MC781	Technical Skill Development	0	0	3	3	2Unit
Total							26	22

8TH SEMESTER								
				Contact hours				Cr. Points
			8th Semester	L	T	P	Total	
<u>SL No</u>	<u>Type</u>	<u>Code</u>	<u>A. THEORY</u>					
1	HS	HU801	A. Principle of Management B. Organizational	2	0	0	2	2

			Behavior					
2	PE	CS801	A. Mobile Computing B. Human computer Interaction C. Cyber Law and Security Policy D. VLSI Design	3	0	0	3	3
3	PE	CS802	A. Parallel Computing B. Machine Learning C. Real Time Operating System and Embedded System D. Advanced Computer Architecture	3	0	0	3	3
Total Theory							8	8
<u>B. PRACTICAL</u>								
4	PC	CS891	Design lab	0	0	3	3	2
5		CS892	Project 2	0	0	12	9	6
6		CS893	Seminar Presentation	0	0	3	3	2
Total Practical							18	12
<u>C. SESSIONAL</u>								
7		CS881	Grand Viva	0	0	0	0	4
Total							26	22
Grand Total								198

Course Outcome (CO)

Course Code: M101

Course Name: Mathematics I

On completion of the course students will be able to

M101.1	Able to explain the applicability of determinant and matrix in the different types of engineering problem.
M101.2	Able to apply Mean value theorems & expansion of function in engineering field.
M101.3	Able to apply the area & volume integrals in different engineering problems.
M101.4	Able to apply vector concepts in numerous engineering experiments and problems.
M101.5	Application of improper integral in engineering field.

Course Code: PH101
Course Name: Physics I

On completion of the course students will be able to

PH101.1	Able to explain the different types of vibrations.
PH101.2	Able to apply the laser principles to holography.
PH101.3	Able to analyze the problems of black body radiation.
PH101.4	Able to evaluate X-ray in different experiments/processes.

Course Code: EC101

Course Name: Basic Electronics Engineering

On completion of the course students will be able to

EC101.1	Able to identify semiconductor materials, draw energy band diagram, distinguish between intrinsic and extrinsic semiconductor, calculate drift and diffusion current component.
EC101.2	Able to characterize semiconductors, diodes, transistors and operational amplifiers.
EC101.3	Able to know the application of Diode, BJT & OPAMP.
EC101.4	Able to identify functions of digital Multimeter, cathode ray oscilloscope and transducers in the measurement of physical variables.

Course Code: HU101

Course Name: Communicative English

On completion of the course students will be able to

HU101.1	Able to understand basic grammar principles.
HU101.2	Able to write clear and coherent passages, effective letters for job application and complaints, technical reports.
HU101.3	Able to enhance reading comprehension.
HU101.4	Able to comprehend English speech sound system, stress and intonation.

Course Code: ME101

Course Name: Engineering Mechanics

On completion of the course students will be able to

ME101.1	Able to determine the resultant force and moment for a given system of forces.
ME101.2	Able to analyze planar and spatial systems to determine the forces in members of trusses, frames and problems related to friction.
ME101.3	Able to calculate the motion characteristics of a body subjected to a given force system.
ME101.4	Able to determine the deformation of a shaft and understand the relationship between different material constants.
ME101.5	Determine the centroid and second moment of area.

Course Code: HU191
**Course Name: Language Laboratory & Seminar
Presentation**

On completion of the course students will be able to

HU191.1	Able to understand advanced skills of Technical Communication in English through Language Laboratory.
HU191.2	Able to apply listening, speaking, reading and writing skills in societal and professional life.
HU191.3	Able to demonstrate the skills necessary to be a competent Interpersonal communicator.
HU191.4	Able to analyse communication behaviours.
HU191.5	Able to adapt to multifarious socio-economical and professional arenas with the help of effective communication and interpersonal skills.

Course Code: PH191

Course Name: Physics - I Laboratory

On completion of the course students will be able to

PH191.1	Able to use CRO, Signal generator, spectrometer, polarimeter and GM counter for making measurements.
PH191.2	Able to test optical components using principles of interference and diffraction of light.
PH191.3	Able to determine the selectivity parameters in electrical circuits.
PH191.4	Able to determine the width of narrow slits, spacing between close rulings using lasers and appreciate the accuracy in measurements.

Course Code: EC191
Course Name: Basic Electronics Engineering
Laboratory

On completion of the course students will be able to

EC191.1	Knowledge of Electronic components such as Resistors, Capacitors, Diodes, Transistors measuring equipment like DC power supply, Multimeter, CRO, Signal generator, DC power supply.
EC191.2	Analyze the characteristics of Junction Diode, Zener Diode, BJT & FET and different types of Rectifier Circuits.
EC191.3	Determination of input-offset voltage, input bias current and Slew rate, Common-mode Rejection ratio, Bandwidth and Off-set null of OPAMPs.
EC191.4	Able to know the application of Diode, BJT & OPAMP.

Course Code: ME192

Course Name: Workshop Practice

On completion of the course students will be able to

ME192.1	Able to study and practice on machine tools and their operations.
ME192.2	Able to practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.
ME192.3	Able to identify and apply suitable tools for machining processes including turning, facing, thread cutting and tapping.
ME192.4	Able to apply basic electrical engineering knowledge for house wiring practice.

Course Code: XC181
Course Name: Extra-Curricular Activity
(NSS/ NCC)

On completion of the course students will be able to

XC181.1	Able to up-to-date, in-depth knowledge of an academic specialty, as well as a broad range of cultural and general knowledge.
XC181.2	Able to exhibit the professional knowledge and accepting ethical responsibility to the problems of industry and society.
XC181.3	Able to develop Character, Comradeship, Discipline, Leadership, Secular Outlook, Spirit of Adventure and Ideals of Selfless Service amongst the Youth of the Country;
XC181.4	Able to develop confidence for self-education for lifelong learning of advancements being happened around the world.

Course Code: M201

Course Name: Mathematics II

On completion of the course students will be able to

M201.1	Able to apply the knowledge of first order differentiation in engineering field.
M201.2	Able to analyse type of higher order equations and apply in numerous engineering application.
M201.3	Able to analyze graph theory concepts in explaining the behavior of electrical, communication and electromagnetic field.
M201.4	Able for application of Laplace Transform for solving various engineering problems.

Course Code: CH201

Course Name: Chemistry

On completion of the course students will be able to

CH201.1	Able to apply fundamental concepts of thermodynamics in different engineering applications.
CH201.2	Able to prepare composites, Synthetic polymers, etc.
CH201.3	Able to apply the knowledge of chemical reactions to industries and scientific and technical fields.
CH201.4	Able to apply the knowledge of corrosion to prevent corrosion in different industries.
CH201.5	Capable to evaluate theoretical and practical aspects relating to the transfer of the production of chemical products from laboratories to the industrial scale, in accordance with environmental considerations.

Course Code: EE201

Course Name: Basic Electrical Engineering

On completion of the course students will be able to

EE201.1	Able to understand basics of R , L , C circuit elements and voltage and current sources.
EE201.2	Able to Appreciate and analyze DC , AC and magnetic circuits using KVL and KCL.
EE201.3	Able Understand working principle of various analogue electrical measuring instruments.
EE201.4	Able to Comprehend the working of DC machines, transformers and induction Motors.

Course Code: CS201

**Course Name: Computer Fundamentals &
Principle of Computer Programming**

On completion of the course students will be able to

CS201.1	Able to develop algorithms for mathematical and scientific problems.
CS201.2	Able to understand the components of computing systems.
CS201.3	Able to choose data types and structures to solve mathematical and scientific problem.
CS201.4	Able to develop modular programs using control structures.
CS201.5	Able to develop the programming skills in general, this will create the backbone of programming concepts in future.

Course Code: ME201

**Course Name: Engineering Thermodynamics &
Fluid Mechanics**

On completion of the course students will be able to

ME201.1	Able to apply fundamental concepts of thermodynamics to engineering applications.
ME201.2	Able to estimate thermodynamic properties of substances in gas and liquid states
ME201.3	Capable to determine thermodynamic efficiency of various energy related processes.
ME201.4	Able to Know the basic principles of fluid mechanics
ME201.5	Able to analyze fluid flow problems with the application of the momentum and energy equations

Course Code: CS291

**Course Name: Computer Fundamentals & Principle
of Computer Programming Lab**

On completion of the course students will be able to

CS291.1	Learn the concept of DOS system commands and editor.
CS291.2	Learn the concept of simple programs with decision taking concept.
CS291.3	Learn the concepts of programs with loop control structure.
CS291.4	Learn the concept of programs with Arrays, Pointers, Structures, Union and Files.

Course Code: CH291

Course Name: Chemistry Lab

On completion of the course students will be able to

CH291.1	Able to analyse different parameters of water considering environmental issues.
CH291.2	Able to operate different types of instruments for estimation of small quantities chemicals used in industries and scientific and technical fields.
CH291.3	Able to work as an individual also as an team member
CH291.4	Able to synthesize Nano and polymer materials.
CH291.5	Capable to design innovative experiments applying the fundamentals of chemistry

Course Code: EE291

**Course Name: Basic Electrical Engineering
Laboratory**

On completion of the course students will be able to

EE291.1	Able to determine of B/H curve of a magnetic material.
EE291.2	Able to analyze AC series, parallel and balanced three phase circuits.
EE291.3	Able to determine Voltage regulation and efficiency of a single phase transformer by direct loading.
EE291.4	Able to control the Speed of a DC motor by varying: - a. field current with armature voltage kept constant b. armature voltage with field current kept constant.
EE291.5	Able to study the Reversal of direction of rotation of a three phase induction motor.

Course Code: ME291

Course Name: Engineering Drawing & Graphics

On completion of the course students will be able to

ME291.1	Able to draw Orthographic projections of Lines, Planes, and Solid.
ME291.2	Able to construct Isometric Scale, Isometric Projections and Views.
ME291.3	Able to draw Sections of various Solids including Cylinders, cones, prisms and pyramids.
ME291.4	Able to draw projections of lines, planes, solids, isometric projections and sections of solids including Cylinders, cones, prisms and pyramids using AutoCAD.

Course Code: MC281

Course Name: Soft Skill Development

On completion of the course students will be able to

MC281.1	Able to handle emotions including tolerance and behavioural responses, building positive friendships and bonding with peers and classmates, learning to show understanding and to demonstrate respect for the opinions, personal space and beliefs of others.
MC281.2	Able to develop the self-motivation, raised aspirations and belief in one's own abilities, defining and committing to achieving one's goals.
MC281.3	Able to assess the requirements of a task, identifying the strengths within the team, utilising the diverse skills of the group to achieve the set objective, awareness of risk/safety.
MC281.4	Able to demonstrate the clear briefing and listening skills, not being afraid to ask for help and support when necessary.
MC281.5	Able to develop the employability skills – time and resource management, conflict resolution, teaching and mentoring others

Course Code: M(CSE)301

Course Name: Mathematics-III

On completion of the course students will be able to

M(CSE)301.1	Able to apply the knowledge of Fourier series and transform in engineering problems like finding the frequency of wave propagation.
M(CSE)301.2	Able to apply the knowledge of Complex Analysis viz the Cauchy Residue Theorem to evaluate integrals and sum series.
M(CSE)301.3	Able to solve the stochastic model of engineering problems using the idea of different kind of engineering problems.
M(CSE)301.4	Able to know that differential equation is a very important mathematical model of many problems in the application of engineering and also be able to utilize theories and methods learned in the course to analyze and solve a differential equation.

Course Code: PH301

Course Name: Physics II

On completion of the course students will be able to

PH301.1	Able to explain the different types of vibrations.
PH301.2	Able to apply the laser principles to holography.
PH301.3	Able to analyze the problems of black body radiation.
PH301.4	Able to evaluate X-ray in different experiments/processes.

Course Code: EE(CSE) 301

Course Name: Circuit Theory and Network

On completion of the course students will be able to

EE(CSE) 301.1	Able to understand basics electrical circuits with nodal and mesh analysis.
EE(CSE) 301.2	Able to appreciate electrical network theorems.
EE(CSE) 301.3	Able to apply Laplace Transform for steady state and transient analysis.
EE(CSE) 301.4	Able to determine different network functions.

Course Code: CS301

Course Name: Data Structures

On completion of the course students will be able to

CS301.1	Able to access how the choices of data structure & algorithm methods impact the performance of program.
CS301.2	Able to Solve problems based upon different data structure & also write programs.
CS301.3	Able to Choose an appropriate data structure for a particular problem.

Course Code: CS302

**Course Name: Digital Electronics and Computer
Organization**

On completion of the course students will be able to

CS302.1	Understand the overall fundamentals of computer design, measuring and summarizing the performance of computer system
CS302.2	Understand the development of computer systems and examine the operation of the major building blocks of a computer system and performance enhancements for each component
CS302.3	Design, modify, analyze and troubleshoot digital logic circuits, embedded microprocessor-based and microcontroller-based systems, including assembly and high-level language programs in electronics and computer science that meets desired specifications and requirements.
CS302.4	Identify, formulate, and solve computer and electronics engineering problems.

Course Code: PH391

Course Name: Physics - II Laboratory

On completion of the course students will be able to

PH391.1	Able to use CRO, Signal generator, spectrometer, polarimeter and GM counter for making measurements.
PH391.2	Able to test optical components using principles of interference and diffraction of light.
PH391.3	Able to determine the selectivity parameters in electrical circuits.
PH391.4	Able to determine the width of narrow slits, spacing between close rulings using lasers and appreciate the accuracy in measurements.

Course Code: EE(CSE) 391
**Course Name: Circuit Theory & Network
Laboratory**

On completion of the course students will be able to

EE(CSE) 391.1	Explain the concept of circuit laws and network theorems and apply them to laboratory measurements.
EE(CSE) 391.2	Become proficient with computer skills (e.g., TSPICE and PSPICE) for the analysis and design of circuits.
EE(CSE) 391.3	Understand Transient Response in Series & Parallel Resonant circuits, R-L & R-C Networks;
EE(CSE) 391.4	Understand of Impedance (Z), and Admittance (Y) parameters of Two-port networks.

Course Code: CS391

Course Name: Data Structures Lab

On completion of the course students will be able to

CS391.1	Choose appropriate data structure as applied to specified problem definition.
CS391.2	Handle operations like searching, insertion, deletion, traversing mechanism on various data structures.
CS391.3	Have practical knowledge on the applications of data structures.

Course Code: CS392

**Course Name: Digital Electronics and Computer
Organization Lab**

On completion of the course students will be able to

CS392.1	Understand the fundamental concepts and techniques used in digital electronics and computer organization.
CS392.2	Understand and examine the structure of various number systems and its application in digital design and computer organization.
CS392.3	Understand, analyze and design various combinational and sequential circuits.
CS392.4	Identify and prevent various hazards and timing problems in a digital design and develop skill to build, and troubleshoot digital circuits.

Course Code: HU381

**Course Name: Technical Report writing and
Language Practice Lab**

On completion of the course students will be able to

HU381.1	Build confidence in speaking, reading and writing English professionally.
HU381.2	Understanding communication techniques and learning the method of technical writing.
HU381.3	To be prompt in public speaking spontaneously on given subjects.
HU381.4	To preserve proper body language.
HU381.5	To have confidence to participate in any kind of given conversation and deliver presentations

Course Code: M(CSE)401

Course Name: Numerical Methods and Statistics

On completion of the course students will be able to

M(CSE)401.1	Able to get the knowledge of General Basic ideas of environment.
M(CSE)401.2	Able to understand basics of finite precision arithmetic, conditioning of problems and stability of numerical algorithms.
M(CSE)401.3	Able to solve numerically a scalar nonlinear equation.
M(CSE)401.4	Able to solve dense systems of linear equations and have a working knowledge of LU factorizations for these problems.
M(CSE)401.5	Able to use the method of lines to solve basic partial differential equations.

Course Code: HU401

Course Name: Environmental science

On completion of the course students will be able to

HU401.1	Able to numerically approximate functions with polynomials.
HU401.2	Understand the Environmental degradation, Elements of ecology, Structure and function of ecosystem, Biogeochemical Cycle and Biodiversity.
HU401.3	Able to know the Air pollution and control Atmospheric Composition.
HU401.4	Able to get the knowledge of Energy balance, Green house effects, Lapse rate, Atmospheric dispersion, Definition of pollutants and contaminants, Primary and secondary pollutants, Depletion Ozone layer.
HU401.5	Understand the Water Pollution and Control, Land Pollution, Noise Pollution and Environmental Management.

Course Code: CS401

Course Name: Computer Architecture

On completion of the course students will be able to

CS401.1	Learn pipeline concepts with a prior knowledge of stored program methods.
CS401.2	Learn about memory hierarchy and mapping techniques.
CS401.3	Study of parallel architecture and interconnection network.

Course Code: CS402

Course Name: Design Analysis and Algorithm

On completion of the course students will be able to

CS402.1	Understanding basic ideas about algorithms
CS402.2	Apply design principles and concepts to algorithm design
CS402.3	Analyze the efficiency of algorithms using time and space complexity theory.
CS402.4	Develop efficient algorithms for simple computational tasks

Course Code: CS 403

**Course Name: Formal Language and Automata
Theory**

On completion of the course students will be able to

CS403.1	Understand and apply formal notations via regular expressions and grammars, as well as their recognizers
CS403.2	Provide relevant formal definitions for given languages.
CS403.3	Discuss virtual machines and intermediate languages tradeoffs.
CS403.4	Understand and apply basic language processing techniques: compilation and interpretation

Course Code: M(CSE)491
Course Name: Numerical Methods and Statistics
Lab

On completion of the course students will be able to

M(CSE)491.1	Able to numerically approximate functions with polynomials.
M(CSE)491.2	Able to understand basics of finite precision arithmetic, conditioning of problems and stability of numerical algorithms.
M(CSE)491.3	Able to solve numerically a scalar nonlinear equation.
M(CSE)491.4	Able to solve dense systems of linear equations and have a working knowledge of LU factorizations for these problems.
M(CSE)491.5	Able to use the method of lines to solve basic partial differential equations.

Course Code: CS491

Course Name: Computer Architecture Lab

On completion of the course students will be able to

CS491.1	Able to review of digital logic components.
CS491.2	Able to review of digital logic circuit analysis, design, and optimization.
CS491.3	Able to review of digital logic circuit design and simulation tools.

Course Code: CS492

Course Name: Algorithms Lab

On completion of the course students will be able to

CS492.1	Understand how several fundamental algorithms work particularly those concerned with Stack, Queues, Trees and various Sorting algorithms.
CS492.2	Design new algorithms or modify existing ones for new applications and able to analyze the space & time efficiency of most algorithms..

Course Code: CS493

Course Name: Programming with C++ Lab

On completion of the course students will be able to

CS493.1	Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++.
CS493.2	Be able to program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.
CS493.3	At the end of the course students will able to simulate the problem in the subjects like Operating system, Computer networks and real world problems.

Course Code: MC481

Course Name: Technical Communication & Soft Skills

On completion of the course students will be able to

MC481.1	Able to handle emotions including tolerance and behavioural responses, building positive friendships and bonding with peers and classmates, learning to show understanding and to demonstrate respect for the opinions, personal space and beliefs of others.
MC481.2	Able to develop the self-motivation, raised aspirations and belief in one's own abilities, defining and committing to achieving one's goals.
MC481.3	Able to assess the requirements of a task, identifying the strengths within the team, utilising the diverse skills of the group to achieve the set objective, awareness of risk/safety.

Course Code: HU501

Course Name: Economics for Engineers

On completion of the course students will be able to

HU501.1	Be able to perform and evaluate present worth, future worth and Annual worth analyses on one of more economic alternatives.
HU501.2	Be able to perform and evaluate payback period and capitalized Cost on one or more economic alternatives.
HU501.3	Be able to carry out and evaluate benefit/cost, life cycle and Breakeven analyses on one or more economic alternatives.

Course Code: CS501**Course Name: Computer Graphics****On completion of the course students will be able to**

CS501.1	Identify and explain the core concepts of computer graphics.
CS501.2	Illustrate and discover a selection of classic raster algorithms such as Bresenham's line-drawing algorithm in 2D space, scan-line conversion of polygons and Cohen-Sutherland two-dimensional clipping algorithm on points in world-coordinate space,.
CS501.3	Apply linear affine transformations such as scaling, translation, and rotation to points in two- and three-dimensional space and analyze the effects of such transformations on the points in a rendered scene
CS501.4	Analyze and Define and perform the perspective and orthographic projections on points and scenes in three-dimensional space and to solve graphics programming issues, including 3D transformation, objects modelling, lighting, textures, and ray tracing
CS501.5	Interpret the mathematics, underlying two and three-dimensional interpolating curves and surfaces

Course Code: CS502

Course Name: Operating System

On completion of the course students will be able to

CS502.1	To understand the role and responsibilities of OS in the computer system.
CS502.2	To explain how the OS deals with process management, memory management and secondary storage management.
CS502.3	To analyze process synchronization and deadlocks.
CS502.4	To apply the knowledge about OS, for the Linux operating system case study.

Course Code: CS503

Course Name: Database Management System

On completion of the course students will be able to

CS503.1	Construct an Entity Relationship (E-R) Diagram for an application.
CS503.2	Create a normalized relational database model
CS503.3	Answer real world queries to generate reports from it.
CS503.4	Determine whether the transaction satisfies the ACID properties.
CS503.5	Organize and maintain the database of an organization.

Course Code: CS504A

**Course Name: Object Oriented Programming using
Java**

On completion of the course students will be able to

CS504A.1	Understand the principles of object-oriented programming.
CS504A.2	Understand concepts of data encapsulation, inheritance, and polymorphism to large-scale software using Java.
CS504A.3	Understand the concepts of Graphical User Interfaces (GUI) in Java using applet.
CS504A.4	Be able to simulate the problem in the subjects like Operating system, Computer networks and real world problems.

Course Code: CS504B

Course Name: Multimedia Technology

On completion of the course students will be able to

CS504B.1	Identify different media; representations of different multimedia data and data formats.
CS504B.2	Analyze various compression techniques.
CS504B.3	Compare various audio and video file formats.
CS504B.4	Apply different coding technique for solving real world problems.
CS504B.5	Choose optical storage media suitable for multimedia applications.

Course Code: CS505B

Course Name: Computational Geometry

On completion of the course students will be able to

CS505B.1	Familiarization with fundamentals of computational geometry techniques.
CS505B.2	To understand Voronoi Diagrams and related algorithms.
CS505B.3	To Understand Motion Planning and approximation methods related problems and algorithms.
CS505B.4	To know polygon triangulation algorithms.
CS505B.5	To understand the concept of linear programming techniques and algorithms.

Course Code: CS591

Course Name: Computer Graphics Lab

On completion of the course students will be able to

CS591.1	To implement various graphics drawing algorithms, 2D-3D transformations and clipping techniques.
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Course Code: CS592

Course Name: Operating System Lab

On completion of the course students will be able to

CS592.1	To make students able to implement CPU scheduling algorithms and Bankers algorithm used for deadlock avoidance and prevention.
CS592.2	Students will also be able to implement page replacement and memory management algorithms.

Course Code: CS593

Course Name: Data Base Management System Lab

On completion of the course students will be able to

CS593.1	To understand the basic concepts regarding database, know about query processing and techniques involved in query optimization and understand the concepts of database transaction and related database facilities including concurrency control, backup and recovery.
CS593.2	To understand the introductory concepts of some advanced topics in data management like distributed databases, data warehousing, deductive databases and be aware of some advanced databases like partial multimedia and mobile databases.
CS593.3	To understand the difference between DBMS and advanced DBMS and use of advanced database concepts and become proficient in creating database queries.

Course Code: CS594A

Course Name: Object Oriented Programming Lab

On completion of the course students will be able to

CS594A.1	To familiarize the students with language environment
CS594A.2	To implement various concepts related to language.

Course Code: CS594B

Course Name: Multimedia Technology Lab

On completion of the course students will be able to

CS594B.1	To understand about various latest interactive multimedia devices, the basic concepts about images and image formats.
CS594B.2	To understand about data compression techniques, image compression techniques like JPEG, video compression techniques like MPEG, and the basic concepts about animation.
CS594B.3	To develop an interactive multimedia presentation by using multimedia devices and identify theoretical and practical aspects in designing multimedia applications surrounding the emergence of multimedia technology.

Course Code: CS581

Course Name: Mini Project

On completion of the course students will be able to

CS581.1	To understand the programming language concepts and basics of Software Development Life Cycle model for the implementation of the project.
CS581.2	To plan, analyze, design and implement a software project using SDLC model.
CS581.3	To learn to work as a team and to focus on getting a working project done within a stipulated period of time.

Course Code: CS601

Course Name: Computer Network

On completion of the course students will be able to

CS601.1	Demonstrate the networking strategies.
CS601.2	Examine the protocols operation of various layers of Data networks.
CS601.3	Identify the technical issues related to networking technologies.
CS601.4	Design and build a network using routers.

Course Code: CS602

Course Name: Microprocessor and Microcontroller

On completion of the course students will be able to

CS602.1	Introduction to the Architecture and programming of the microprocessor.
CS602.2	Learning about interfacing and various applications of microprocessor.
CS602.3	A study of advanced microprocessors.

Course Code: CS603

Course Name: Software Engineering

On completion of the course students will be able to

CS603.1	Identify the customer requirements And
CS603.2	Help to understand the software design and coding techniques.
CS603.3	Understand the concept o project management.
CS603.4	Apply the suitable testing methodology.

Course Code: CS604A
Course Name: Compiler Design

On completion of the course students will be able to

CS604A.1	Design lexical and syntax analyzer phases of compiler.
CS604A.2	Demonstrate the basic notions and techniques for programming language translation
CS604A.3	Demonstrate the basic notions and techniques for intermediate code generation.
CS604A.4	Generate and program a small compiler or interpreter.

Course Code: CS604B
Course Name: Robotics

On completion of the course students will be able to

CS604.1	Understand basic structure of industrial robot and its components, tooling, sensors, actuators and artificial intelligence in robotics.
CS604.2	Apply analytical techniques and basic principles of robotic design for solving the kinematics of a robot manipulator
CS604.3	Compare and analyze robotics for various industrial applications.
CS604.4	Make comparison, recommend and justify usage of robotic systems with relevant sensors and vision systems
CS604.5	Modify, design and develop various RPLs, AI and expert systems for industrial applications of robotic systems.

Course Code: CS605A

Course Name: Pattern Recognition

On completion of the course students will be able to

CS605A.1	To explain the concept of pattern recognition and its different phases.
CS605A.2	To discuss on the idea of feature extraction and different approaches towards prototype selection.
CS605A.3	To illustrate the Support Vector Machine and its application in real life problem solving.
CS605A.4	Understand the model for an image analysis process.

Course Code: CS605B

Course Name: Distributed Operating System

On completion of the course students will be able to

CS605B.1	To identify the core concepts of distributed systems
CS605B.2	To examine how existing systems have applied the concepts of distributed systems
CS605B.3	To apply these concepts to develop sample systems.

Course Code: CS605C

Course Name: Distributed Database

On completion of the course students will be able to

CS605C.1	Describe database management system internals. Understand and describe internal algorithms in detail.
CS605C.2	Identify and be able to use recent and advanced database techniques (e.g. in concurrency control, buffer management, and recovery)
CS605C.3	Decide on configuration issues related to database operation and performance. Identify which parameters are suitable and what are its implications.
CS605C.4	Analyze and optimize transactional code, identifying causes of possible anomalies and correct them.
CS605C.5	Decide on optimization issues given a known database workload, by manipulating indexes, choosing more adequate data types, and modifying queries.

Course Code: CS605D

Course Name: Computer Vision

On completion of the course students will be able to

CS605D.1	Understand fundamental image processing techniques required for computer vision
CS605D.2	Understand 3D vision techniques
CS605D.3	Implement boundary tracking techniques
CS605D.4	Apply chain codes and other region descriptors to perform shape analysis
CS605D.5	Apply Hough Transform for line, circle, and ellipse detections and develop applications using computer vision techniques

Course Code: CS606A

Course Name: Data Warehousing and Data Mining

On completion of the course students will be able to

CS606A.1	Learn implementation of classical algorithms in data mining and data warehousing;
CS606A.2	Learn to identify the application area of algorithms, and apply them.
CS606A.3	Learn to deploy the idea of data mining in real applications.

Course Code: CS606B

Course Name: Digital Image Processing

On completion of the course students will be able to

CS606B.1	Demonstrated understanding of the basic concepts of two-dimensional signal acquisition, sampling, and quantization.
CS606B.2	Demonstrated understanding of 2D Fourier transform concepts, including the 2D DFT and FF, and their use in frequency domain filtering.
CS606B.3	Demonstrated understanding of spatial filtering techniques, including linear and nonlinear methods.
CS606B.4	Demonstrated understanding of the fundamental image enhancement algorithms such as histogram modification, contrast manipulation, and edge detection.
CS606B.5	Demonstrated programming skills in digital image processing related problems

Course Code: CS606C

Course Name: E-commerce and ERP

On completion of the course students will be able to

CS606C.1	An ability to identify why information systems are so important today for business and management.
CS606C.2	Assess the impact of the Internet and Internet technology on business electronic commerce and electronic business.
CS606C.3	Identify the major management challenges to building and using information systems and learn how to find appropriate solutions to those challenges.
CS606C.4	Student will detect the effects of e-commerce on supply chains and ERP.
CS606C.5	Student will describe how IT support supply chain through ERP.

Course Code: CS691

Course Name: Computer Network Lab

On completion of the course students will be able to

CS691.1	To design and implement small size network and to understand various networking commands.
CS691.2	To provide the knowledge of various networking tools and their related concepts
CS691.3	To understand various application layer protocols for its implementation in client/server environment

Course Code: CS692

**Course Name: Microprocessor and Microcontroller
Lab**

On completion of the course students will be able to

CS692.1	Provide practical hands-on experience with microprocessor applications and interfacing techniques.
CS692.2	Understand microprocessor kit, knowledge of instruction set and ability to utilize it in assembly language programming.
CS692.3	Understand real mode Memory addressing and ability to interface various devices to the microprocessor.

Course Code: CS693

Course Name: Software Engineering Lab

On completion of the course students will be able to

CS693.1	Understand and apply the concept of software engineering.
CS693.2	Knowledge about software development life cycle and the problem articulation.
CS693.3	Should be able to apply the project management and analysis principles to S/W project development.
CS693.4	Should be able to apply the design & testing principles to S/W project development

Course Code: CS681

Course Name: Group Discussion and Seminar

On completion of the course students will be able to

CS681.1	To help students develop their soft skills and equip them with the requisite skills to make their communication effective.
CS681.2	To develop other skills this will make the transition from college to workplace, Smoother and help them to excel in their jobs.
CS681.3	To enhance students performance at placement interviews, group discussion and other recruitment process.
CS681.4	Understand and participate in Group Discussions and related activities.

Course Code: HU701

Course Name: Values & Ethics in Profession

On completion of the course students will be able to

HU701.1	To inculcate Ethics and Human Values into the young minds.
HU701.2	To develop moral responsibility and mould them as best professionals.
HU701.3	To create ethical vision and achieve harmony in life.

Course Code: CS701

Course Name: Artificial Intelligence

On completion of the course students will be able to

CS701.1	Get the concepts of Artificial intelligence
CS701.2	Get the concepts of Intelligent Agents And issues in the design of search programs.
CS701.3	Know various AI search algorithms (uninformed, informed, heuristic, constraint satisfaction, genetic algorithms).
CS701.4	Get the concepts of And Knowledge & reasoning of predicate logic and Representing knowledge using rules, Probabilistic reasoning.
CS701.5	Have working knowledge in Prolog in order to write simple Prolog programs and explore more sophisticated Prolog code on their own.

Course Code: CS702A

Course Name: Soft Computing

On completion of the course students will be able to

CS702A.1	Efficiently and reliably implement the algorithm
CS702A.2	Describe principles of more general optimization algorithms
CS702A.3	Able to apply the concept of supervised and unsupervised learning in real application.

Course Code: CS702B

Course Name: Natural Language Processing

On completion of the course students will be able to

CS702B.1	Understand natural language processing and learned how to apply basic algorithms in this field.
CS702B.2	To get acquainted with the algorithmic description of the main language levels: morphology, syntax, semantics, and pragmatics, as well as the resources of natural language data - corpora.
CS702B.3	To conceive basics of knowledge representation, inference, and relations to the artificial intelligence.

Course Code: CS702C

Course Name: Web Technology

On completion of the course students will be able to

CS702C.1	Develop client-server applications in local area network.
CS702C.2	Demonstrate the basics of web services.
CS702C.3	Develop web based online application with database connectivity
CS702C.4	Develop e-commerce based secured web application
CS702C.5	Demonstrate common types of vulnerabilities and attacks in web applications, and defence against them

Course Code: CS703A

Course Name: Cloud Computing

On completion of the course students will be able to

CS703A.1	Classify and describe the architecture and taxonomy of cloud computing.
CS703A.2	Characterize the distinctions between Infrastructure, Platform and Software as a Service (IaaS, PaaS, SaaS) abstractions.
CS703A.3	Understand Public , Private and Hybrid Clouds, and analyze their advantages and disadvantages
CS703A.4	Understand virtualization and their role in elastic computing
CS703A.5	Understand the use of load balancing techniques for stateful and stateless applications.

Course Code: CS703B

Course Name: Data Analytics

On completion of the course students will be able to

CS703B.1	Understand the current challenges in processing data
CS703B.2	Aware of the technologies available for handling data
CS703B.3	Understand how data are generated in different industries
CS703B.4	Understand the ideas behind data mining methods targeted for data
CS703B.5	Analyse datasets through the use of application software

Course Code: CS703C

Course Name: Sensor Network and IOT

On completion of the course students will be able to

CS703C.1	Architect sensor networks for various application setups.
CS703C.2	Determine suitable medium access protocols and radio hardware.
CS703C.3	Provision quality of service, fault-tolerance, security and other dependability requirements while coping with resource constraints.

Course Code: CS704A

Course Name: Distributed Algorithms

On completion of the course students will be able to

CS704A.1	Understand the principles of parallel and distributed algorithms
CS704A.2	Understand and account for models, limitations, and fundamental concepts in the area of message passing and shared memory concurrency, and apply this understanding to example systems and algorithms
CS704A.3	Apply, adapt and design algorithms for execution in parallel and distributed settings
CS704A.4	Analyze the algorithms for correctness, reliability, security, and performance

Course Code: CS704B

Course Name: Bioinformatics

On completion of the course students will be able to

CS704B.1	Know concepts of genomics and proteomics,
CS704B.2	Describe bioinformatics algorithms such as dynamic programming, hidden markov models and monte carlo.
CS704B.3	Utilize bioinformatics tools such as Pymol, Blast, and ClustalW.
CS704B.4	Code solutions to bioinformatics problems utilizing tools such as R, biopython, bioperl.
CS704B.5	Do research areas in bioinformatics.

Course Code: CS704C

Course Name: Cryptography & Network Security

On completion of the course students will be able to

CS704C.1	Demonstrate the concept and functionalities of Network Security Application network threats
CS704C.2	Analyze, employ and review the cryptographic algorithms and protocols
CS704C.3	Demonstrate, review and develop the existing and new concepts of software security and trusted systems, management issues and e-mail security.
CS704C.4	Design and implement algorithms for Internet security for solving engineering problems

Course Code: CS791

Course Name: Artificial Intelligence Lab

On completion of the course students will be able to

CS791.1	Learn the concept of simple programming using PROLOG.
CS791.2	Learn the concept of AI based programs using PROLOG.
CS791.3	Learn the concepts of programs with LISP.

Course Code: CS792A

Course Name: Soft Computing Lab

On completion of the course students will be able to

CS792A.1	Understand basics of fuzzy system, genetic algorithms & their relations.
CS792A.2	Learn artificial neural n/ws, models 7 their functions.
CS792A.3	Apply genetic algorithms & artificial neural N/ws as computation tools to solve a variety of problems in various areas of interest ranging from optimization problems to text analytics.

Course Code: CS792B

Course Name: Natural Language Processing Lab

On completion of the course students will be able to

CS792B.1	To understand the approaches to syntax and semantics in Natural Language Processing, the various types of language processors, the elements of formal language theory, the types of grammar, and the computational morphology.
CS792B.2	To understand the basic parsing strategies for context-free grammars, the data structures and algorithms for parsing, and the approaches to ambiguity resolution, generation and dialogue.
CS792B.3	Explain and apply the fundamental algorithms and techniques in the area of Natural Language Processing.

Course Code: CS792C

Course Name: Web Technology Lab

On completion of the course students will be able to

CS792C.1	Create a static website using HTML and add dynamic functionality to it by using java Script.
CS792C.2	Implement the advanced concepts of java such as servelets & jsp to create dynamic web pages & add functionality to the WebPages by using XML.
CS792C.3	Gain confidence to create dynamic website on real world problems.

Course Code: CS795

Course Name: Project-1

On completion of the course students will be able to

CS795.1	Learn about different software development process models and software engineering principles and develop an ability to apply them to software design of real life problems.
CS795.2	Plan, analyze, design and implement a software project using programming languages like Java, ASP, PHP etc.
CS795.3	Gain confidence at having conceptualized, designed and implemented a working major project with their team.

Course Code: CS781

Course Name: Industrial Training

On completion of the course students will be able to

CS781.1	Able to increase exposure to industries.
CS781.2	Able to be accustomed with working environment in industries.
CS781.3	Able to get the opportunity to work with live projects.

Course Code: MC781

Course Name: Technical Skill Development

On completion of the course students will be able to

MC781.1	Able to design live websites.
MC781.2	Able to design software.
MC781.3	Able to design some Android App.
MC781.4	Able to design some research based algorithms.

Course Code: HU801A

Course Name: Principle of Management

On completion of the course students will be able to

HU801A.1	Understand the major internal features of a business system and the environment in which it operates.
HU801A.2	Demonstrate critical thinking when presented with managerial problems and express their views and opinions on managerial issues in an articulate way.
HU801A.3	Understand how organizations adapt to an uncertain environment and identify techniques managers use to influence and control the internal environment.
HU801A.4	Identify and explain the importance of the management process and identify some of the key skills required for the contemporary management practice.

Course Code: HU801B

Course Name: Organizational Behavior

On completion of the course students will be able to

HU801B.1	Appreciate the role that individual characteristics, personality and values have on behavior in organizations
HU801B.2	Discuss attitude measurement and job satisfaction characteristics
HU801B.3	Summarize and discuss perceptions, learning, individual decision and motivation theories.
HU801B.4	Define leadership and analyze key related theories.

Course Code: CS801A

Course Name: Mobile Computing

On completion of the course students will be able to

CS801D.1	Analyze the working of modern communication technologies.
CS801D.2	Demonstrate the various routing algorithms for both infrastructure based and ad hoc networks.
CS801D.3	Develop mobile content applications using Wireless Application Protocols.
CS801D.4	Design and build a mobile computing environment using heterogeneous wireless technologies

Course Code: CS801B

Course Name: Human computer Interaction

On completion of the course students will be able to

CS606C.1	Think critically about human computer interaction
CS606C.2	Incorporate interaction design theory as well as elements of cognitive psychology when designing, critiquing or talking about software and/or hardware.
CS606C.3	Design mock-ups and carry out user and expert evaluation of interfaces.
CS606C.4	Formulate general ways in which to test hypotheses about human computer interaction.
CS606C.5	Recognize how a computer system may be modified to include human diversity.

Course Code: CS801D

Course Name: VLSI Design

On completion of the course students will be able to

CS801D.1	To be aware about the trends in semiconductor technology, and how it impacts scaling and performance.
CS801D.2	Able to learn Layout, Stick diagrams, Fabrication steps, Static and Switching characteristics of inverters
CS801D.3	Synthesis of digital VLSI systems from register-transfer or higher level descriptions in hardware design languages.
CS801D.4	To understand MOS transistor as a switch and its capacitance

Course Code: CS802A

Course Name: Parallel Computing

On completion of the course students will be able to

CS802A.1	Explain how large scale parallel system architecture and how massive parallelism are implemented in accelerator architectures.
CS802A.2	Write parallel programs for large-scale parallel systems, shared address space platforms, and heterogeneous platforms;
CS802A.3	Design efficient parallel algorithms and applications.

Course Code: CS802B

Course Name: Machine Learning

On completion of the course students will be able to

CS802B.1	Understand the fundamental issues and challenges of machine learning: data, model selection, model complexity etc.
CS802B.2	Understand a wide variety of Machine learning algorithms
CS802B.3	Understand the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.
CS802B.4	Be able to design and implement various machine learning algorithms in a range of real-world applications.

Course Code: CS802D

Course Name: Advanced Computer Architecture

On completion of the course students will be able to

CS802D.1	Study basic computer organization, design and micro-operations.
CS802D.2	Understanding of CPU functioning and computer arithmetic.
CS802D.3	Learning various methods and techniques of memory organization.

Course Code: CS891

Course Name: Design lab

On completion of the course students will be able to

CS891.1	Able to design live websites.
CS891.2	Able to design software.
CS891.3	Able to design some Android App.
CS891.4	Able to design some research based algorithms.

Course Code: CS892

Course Name: Project 2

On completion of the course students will be able to

CS892.1	Learn about different software development process models and software engineering principles and develop an ability to apply them to software design of real life problems.
CS892.2	Plan, analyze, design and implement a software project using programming languages like Java, ASP, PHP etc.
CS892.3	Gain confidence at having conceptualized, designed and implemented a working major project with their team.

Course Code: CS893

Course Name: Seminar Presentation

On completion of the course students will be able to

CS893.1	Ability to develop skills in presentation and discussion of research topics in a public forum.
CS893.2	Able to get exposure to a variety of research projects and activities in order to enrich their academic experience
CS893.3	Ability to develop and enhance leadership skills.
CS893.4	Able to improving communication skills, presentation skills and other soft skills.

Course Code: CS881

Course Name: Grand Viva

On completion of the course students will be able to

CS881.1	Able to evaluate overall technical knowledge and industry readiness.
CS881.2	Able to go under a virtual environment of technical interview.
CS881.3	Able to analyze various application of Computer Science & Engineering in real life problem solving.