NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR

(AN AUTONOMOUS INSTITUTE)

Affiliated to

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

Evaluation Scheme & Syllabus

For

Bachelor of Technology

Mechanical Engineering

First Year

(Effective from the Session: 2025-26)

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR

(AN AUTONOMOUS INSTITUTE)

Bachelor of Technology

Mechanical Engineering

Evaluation Scheme

SEMESTER-I

Sl. No.	Subject code	Subject	Types of Subjects	Periods			Evaluation Schemes				End Semester		Total	Credit
				L	T	P	CT	TA	TOTAL	PS	TE	PE		
1	CAS0103	Calculus and Linear Algebra	Mandatory	3	1	0	30	20	50		100		150	4
2	CAS0101A	Engineering Physics	Mandatory	3	0	0	30	20	50		100		150	3
3	CME0102	Emerging Trends in Mechanical Engineering	Mandatory	3	0	0	30	20	50		100		150	3
4	CASCC0101	Design Thinking-I	Mandatory	2	0	0	60	40	100				100	2
5	CAS0151A	Engineering Physics Lab	Mandatory	0	0	2				25		25	50	1
6	CCSE0151	C Programming	Mandatory	0	0	4				50		50	100	2
7	CCSE0152	Web Designing	Mandatory	0	0	2				25		25	50	1
8	CME0153	Digital Manufacturing Lab	Mandatory	0	0	2				25		25	50	1
9	CASL0151	Acquiring Business Communication (ABC) Lab	Mandatory	0	0	4				50		50	100	2
10	CNC0103/ CNC0102	Essence of Indian Traditional Knowledge / Constitution of India, Law and Engineering	Compulsory Audit	2	0	0	30	20	50				50	NA
11		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL		13	1	14			250	175	300	175	**900**	**19**

*List of MOOCs Based Recommended Courses for First Year (Semester-I)					
S. No.	**Subject Code**	**Course Name**	**University / Industry Partner Name**	**No of Hours**	**Credits**
1	CMC0011	Factory Automation: Shaping the Future of Manufacturing	Infosys Wingspan (Infosys Springboard)	8h 28m	0.5
2	CMC0001	Next Gen Technologies	Infosys Wingspan (Infosys Springboard)	10h 14m	0.5

PLEASE NOTE: -

- **A 3-4 weeks Internship shall be conducted during summer break after semester-II and will be assessed during semester-III**
- **Compulsory Audit (CA) Courses (Non-Credit - CNC0103/0102)**
  - All Compulsory Audit Courses (a qualifying exam) do not require any credit.
  - The total and obtained marks are not added in the grand total.

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE: Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR

(AN AUTONOMOUS INSTITUTE)

Bachelor of Technology

Mechanical Engineering

Evaluation Scheme

SEMESTER-II

Sl. No.	Subject code	Subject	Types of Subjects	Periods			Evaluation Schemes				End Semester		Total	Credit
				L	T	P	CT	TA	TOTAL	PS	TE	PE		
1	CAS0203C	Differential Equations and Numerical Techniques	Mandatory	3	1	0	30	20	50		100		150	4
2	CEC0201	Digital Electronics and IoT Systems	Mandatory	3	0	0	30	20	50		100		150	3
3	CME0201	Automotive Engineering	Mandatory	2	0	0	30	20	50		50		100	2
4	CCSAI0201	Fundamentals of Artificial Intelligence	Mandatory	2	0	0	30	20	50		50		100	2
5		Foreign Language	Core Elective	2	0	0	60	40	100				100	2
6	CEC0251	Digital Electronics and IoT Systems Lab	Mandatory	0	0	2				25		25	50	1
7	CME0251	Computer aided Engineering Drawing	Mandatory	0	0	4				50		50	100	2
8	CCSE0252	Problem Solving using Python	Mandatory	0	0	6				50		100	150	3
9	CASL0251	Communication for Career Enhancement	Mandatory	0	0	4				50		50	100	2
10	CMB0201	Innovation and Entrepreneurship	Mandatory	2	0	0	60	40	100				100	2
11	CNC0202/ CNC0203	Constitution of India, Law and Engineering/ Essence of Indian Traditional Knowledge	Compulsory Audit	2	0	0	30	20	50				50	NA
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL		16	1	16			400	175	300	225	1100	23

Foreign Language:

S. No.	Subject Code	Course Name	Types of Subjects
1.	CASL0202	French	Core Elective
2.	CASL0203	German	Core Elective
3.	CASL0204	Japanese	Core Elective

***List of MOOCs Based Recommended Courses for First Year (Semester-II)**

S. No.	Subject Code	Course Name	University / Industry Partner Name	No of Hours	Credits
1	CMC0013	Production Management Course	Infosys Wingspan (Infosys Springboard)	8h 19m	0.5
2	CMC0012	Start a Business: Design Thinking & Entrepreneurship	Infosys Wingspan (Infosys Springboard)	7h 15m	0.5

PLEASE NOTE: -

- **Compulsory Audit (CA) Courses (Non-Credit - CNC0202/CNC0203)**
  - All Compulsory Audit Courses (a qualifying exam) do not require any credit.
  - The total and obtained marks are not added in the grand total.

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE: Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

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A student will be eligible to get Under Graduate degree with Honours only, if he/she completes the additional MOOCs courses such as Coursera certifications, or any other online courses recommended by the Institute (Equivalent to 20 credits). During Complete B.Tech. Program Guidelines for credit calculations are as follows.

1. For 6 to 12 Hours =0.5 Credit
2. For 13 to18 =1 Credit
3. For 19 to 24 =1.5 Credit
4. For 25 to 30 =2 Credit
5. For 31 to 35 =2.5 Credit
6. For 36 to 41 =3 Credit
7. For 42 to 47 =3.5 Credit
8. For 48 and above =4 Credit

For registration to MOOCs Courses, the students shall follow Coursera registration details as per the assigned login and password by the Institute these courses may be cleared during the B. Tech degree program (as per the list provided). After successful completion of these MOOCs courses, the students shall provide their successful completion status/certificates to the Controller of Examination (COE) of the Institute through their coordinators/Mentors only.

The students shall be awarded Honours Degree as per following criterion.

i. If he / she secures 7.50 as above CGPA.

ii. Passed each subject of that degree program in the single attempt without any grace.

iii. Successful completion of MOOCs based 20 credit

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CAS0103	Course Name: Calculus and Linear Algebra	L	T	P	C
Course Offered in: B.Tech- First Semester ME		3	1	0	4

Pre-requisite: Knowledge of Mathematics up to 12th standard

Course Objectives: The objective of this course is to familiarize the graduate engineers with techniques in linear algebra, differential calculus-I, differential calculus-II and multivariable calculus. It aims to equip the students with standard concepts and tools from intermediate to advanced level that will enable them to tackle more advanced level of mathematics and applications that they would find useful in their disciplines.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply the concept of matrices to solve linear simultaneous equations	K3
CO2	Apply the concept of successive differentiation and partial differentiation to solve problems of Leibnitz theorems and total derivatives.	K3
CO3	Apply partial differentiation for evaluating maxima, minima, Taylor's series and Jacobians.	K3
CO4	Apply the concept of multiple integral to find area, volume, centre of mass and centre of gravity.	K3
CO5	Apply the concept of vector calculus to evaluate line, surface and volume integrals.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	1	3	2	-	-	-	1	2		
CO2	3	3	2	3	3	-	-	-	-	1	3		
CO3	3	2	3	3	3	2	-	-	-	1	3		
CO4	3	2	3	3	2	2	-	-	-	1	2		
CO5	3	2	3	2	3	1	-	-	-	1	1		

Course Contents / Syllabus

Module 1	**Matrices**	**10 hours**

Types of Matrices: Symmetric, Skew-symmetric and Orthogonal Matrices; Complex Matrices, Inverse and Rank of matrix using elementary transformations, System of linear equations, Characteristic equation, Cayley-Hamilton Theorem and its application, Eigen values and eigenvectors; Diagonalisation of a Matrix.

Module 2	**Differential Calculus -I**	**9 hours**

Successive Differentiation (nth order derivatives), Leibnitz theorem and its application, Asymptotes, Curve tracing: Cartesian and Polar co-ordinates. Partial derivatives, Total derivative, Euler's Theorem for homogeneous functions.

Module 3	**Differential Calculus -II**	**9 hours**

Taylor and Maclaurin's theorems for a function of one and two variables, Jacobians, Approximation of errors. Maxima and Minima of functions of several variables, Lagrange Method of Multipliers.

Module 4	**Multivariable Calculus**	**10 hours**

Multiple integration: Double integral, Triple integral, Change of order of integration, Change of variables, Application: Areas and volumes, Beta & Gama function and their properties, Dirichlet's integral and its applications.

Module 5	**Vector Calculus**	**10 hours**

Vector differentiation: Gradient, Curl and Divergence and their Physical interpretation, Directional derivatives, Tangent and Normal planes. Vector Integration: Line integral, Surface integral, Volume integral, Gauss's Divergence Theorem, Green's theorem, Stoke's theorem (without proof) and their applications.

NIET Greater Noida Autonomous Institute	**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY** **GREATER NOIDA-201306** **(An Autonomous Institute)**

	Total Lecture Hours	**48 hours**
Textbook:		
S.No	**Book Title**	**Author**
1	Higher Engineering Mathematics, Tata Mc Grew-Hill Publishing Company Ltd.	B. V. Ramana
2	Higher Engineering Mathematics, Khanna Publisher.	B. S. Grewal
3	Advance Engineering Mathematics, Narosa Publishing House.	R K. Jain & S R K. Iyenger
4	Advance Engineering Mathematics, University Science Press	N.P. Bali
Reference Books:		
S.No	**Book Title**	**Author**
1	Advance Engineering Mathematics, John Wiley & Sons.	E. Kreyszig
2	Advance Engineering Mathematics, Thomson (Cengage) Learning.	Peter V. O'Neil
3	Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole.	D. Poole
4	Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi.	Veerarajan T.
5	Advanced Engineering Mathematics, Tata Mc-Grew-Hill; Sixth Edition.	Ray Wylie C and Louis C Barret
6	Engineering Mathematics, 1st Edition, Pearson India Education Services Pvt. Ltd.	P. Siva Ramakrishna Das and C. Vijayakumari
7	Advanced Engineering Mathematics.	Chandrika Prasad, Reena Garg.
8	Engineering Mathematics – I.	Reena Garg
9	Calculus, Eleventh Edition, Pearson.	Maurice D. Weir, Joel Hass, Frank R. Giordano, Thomas
NPTEL/ Youtube/ Faculty Video Link:		
Module 1	**https://www.youtube.com/watch?v=kcL5WWJjmIU** **https://www.youtube.com/watch?v=VTHz4gjzsKI** **https://youtu.be/56dEt9EOZ_M** **https://www.youtube.com/watch?v=njDiwB43w80** **https://www.youtube.com/watch?v=N33SOw1A5fo** **https://www.youtube.com/watch?v=yLi8RxqfowA** **www.math.ku.edu/~lerner/LAnotes/Chapter5.pdf** **http://www.math.hawaii.edu/~lee/linear/sys-eq.pdf** **https://youtu.be/41Y38WjHbtE** **https://www.youtube.com/watch?v=4jcvZmMK_28** **https://www.youtube.com/watch?v=G4N8vJpf7hM** **https://www.youtube.com/watch?v=r5dIXpssvrA** **https://youtu.be/ZX5YnDMzwbs http://web.mit.edu/2.151/www/Handouts/CayleyHamilton.pdf**	
Module 2	**https://www.youtube.com/watch?v=tQxk5IX9S_8&list=PLbu_fGT0MPstS3DTIyqkUecSW_7axdxKe** **https://www.youtube.com/watch?v=U5sGFf0DjLs&t=34s** **https://www.youtube.com/watch?v=TCPPvRfHtXw** **https://www.youtube.com/watch?v=PkuPGKSacu0&list=PL2FUpm_Ld1Q3H00wVFuwjWOo1gtMXk1eb** **https://www.youtube.com/watch?v=QeWrQ9Fz3Wo&t=22s** **https://www.youtube.com/watch?v=5dFrWCE6bHg**	

	https://www.youtube.com/watch?v=WX6O9TiFYsA&t=110s **https://www.youtube.com/watch?v=GII1ssdR2cg&list=PLhSp9OSVmeyK2yt8hdoo3Qze3O0Y67qaY**
Module 3	**https://www.youtube.com/watch?v=6tQTRlbkbc8** **https://www.youtube.com/watch?v=McT-UsFx1Es** **https://www.youtube.com/watch?v=_1TNtFqiFQo** **https://www.youtube.com/watch?v=X6kp2o3mGtA** **https://www.youtube.com/watch?v=btLWNJdHzSQ** **https://www.youtube.com/watch?v=jiEaKYI0ATY** **https://www.youtube.com/watch?v=r6lDwJZmfGA** **https://www.youtube.com/watch?v=Jk9xMY4mPH8** **https://www.youtube.com/watch?v=fqq_UR4zhfI** **https://www.youtube.com/watch?v=G0V_yp0jz5c** **https://www.youtube.com/watch?v=9-tir2V3vYY https://www.youtube.com/watch?v=jGwA4hknYp4**
Module 4	**https://www.youtube.com/watch?v=3BbrC9JcjOU https://www.youtube.com/watch?v=-DduB46CoZY** **https://www.youtube.com/watch?v=VvKAuFBJLs0** **https://www.youtube.com/watch?v=4rc3w1sGoNU** **https://www.youtube.com/watch?v=X6kp2o3mGtA&t=1003s** **https://www.youtube.com/watch?v=wtY5fx6VMGQ&t=1151s** **https://www.youtube.com/watch?v=-I3HUeHi1Ys&t=1933s** **https://www.youtube.com/watch?v=kfv9h3c46CI** **https://www.youtube.com/watch?v=9_m36W3cK74** **https://www.youtube.com/watch?v=HQM7XMd5QQo** **https://www.GovernmentAdda.com**
Module 5	https://youtu.be/IwgqKjA6wko https://youtu.be/d4OyeuRTZNA https://youtu.be/j36lJKSJMQk https://youtu.be/DhwMOrl6Q9g https://youtu.be/DhwMOrl6Q9g https://youtu.be/fsMouTxce_A https://youtu.be/yq5olnzDCGc https://youtu.be/2SB3IVCwW1w https://www.khanacademy.org/math/multivariable-calculus/integrating-multivariable-functions/line-integrals-vectors/v/line-integra https://www.khanacademy.org/math/multivariable-calculus/integrating-multivariable-functions/3d-flux/v/vector-representation-of-a-su http://nucinkis-lab.cc.ic.ac.uk/HELM/workbooks/workbook_29/29_2_surfac https://www.youtube.com/watch?v=Mb6Yb-SGqio

	https://www.khanacademy.org/math/multivariable-calculus/greens-theorem-and-stokes-theorem/stokes-theorem/v/stokes-theorem-intuition https://www.youtube.com/watch?v=eSqznPrtzS4

Mode of Evaluation

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			100	150

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CAS0101A	Course Name: Engineering Physics	L	T	P	C
Course Offered in: B.Tech- First Semester ME		3	0	0	3

Pre-requisite:

1. Unit and dimensions.
2. Basic laws of electricity and magnetism.
3. Atomic structure and atomic spectra.
4. Properties of matter.
5. Basics of Heat and Thermodynamics.

Course Objectives:

1.To provide the knowledge of measurement and errors and their uses in engineering applications
2.To provide the knowledge of motion and their uses in engineering applications.
3.To provide the knowledge of the basic concept of thermodynamics and its uses in engineering applications.
4.To provide the knowledge of Crystallography and its uses in engineering applications.
5.To provide the basic knowledge of Superconductivity and Nanotechnology which is necessary to understand the working of modern engineering tools and techniques.

Course Outcome: After completion of the course, the student will be able to:		Bloom's Knowledge Level (KL)
CO1	Implement various measurement techniques to engineering applications.	K3
CO2	Describe the knowledge of kinematics and dynamics.	K2
CO3	Use the phenomenon of thermodynamics in engineering applications.	K3
CO4	Calculate the various parameters of crystal structures	K3
CO5	Define the basic phenomena of superconductivity and nanotechnology.	K1

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	-	2	1	-	-	-	-	2	-	-
CO2	3	2	1	-	2	1	-	-	-	-	2	-	-
CO3	3	2	1	-	2	1	-	-	-	-	2	-	-
CO4	3	2	2	-	1	1	-	-	-	-	2	-	-
CO5	3	2	2	-	1	1	-	-	-	-	2	-	-

Course Contents / Syllabus

Module 1	**Measurement and errors**	**8 hours**

Introduction to Measurement, Systems of Units and standards, Measurement Errors and Uncertainty, Types of Error, Statistical Analysis, Probability of Errors, Limiting Errors. Calibration and Standards, Data Recording and Analysis. Relevant problems. Instruments of measurements.

Module 2	**Kinematics and Dynamics**	**8 hours**

Introduction to Motion (definition of kinematics and its relation to mechanics), Velocity, Acceleration, Types of Motion (rectilinear, curvilinear, relative), Coordinate system, Graphical representation of Motion.

Newton's laws of Motion, Mass and Weight, Work-Energy theorem, Impulse and Momentum, Rotational dynamics (Torque, moment of inertia, Angular momentum, K.E of rotation.

Module 3	**Thermodynamics**	**8 hours**

Zeroth law of Thermodynamics, First law of Thermodynamics & its applications, Second law of Thermodynamics, Concept of Engine, Efficiency of Engine, Third law of Thermodynamics, Entropy, Change in entropy in reversible and irreversible processes.

Module 4	**Crystal Physics**	**8 hours**

Crystalline and Non-Crystalline Materials, Crystal systems and Bravais lattices, Space lattices of Cubic systems, Miller indices, Relation between inter-planer distance and cube edge, Crystal structure of NaCl and Diamond, Atomic Packing Factor of the Cubic system, Relation between Lattice constant and Density. Diffraction of X-rays by crystal planes, Bragg's law.

Module 5	**Superconductivity and Nanotechnology**	**8 hours**

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Superconductivity: Temperature dependence of Resistivity, Meissner Effect, Penetration Depth, Type-I and Type-II Superconductors, Critical Field and High Temperature Superconductors.

Nanotechnology: The Nanoscale and Nanomaterials, Surface to Volume ratio and its Importance in engineering, Bucky ball and its applications, Carbon Nanotubes(CNTs.) and their types, Applications of CNTs.

Total Lecture Hours	**40 hours**

Textbook:

S.No	Book Title	Author
1	Engineering Physics	R. K. Gaur and S. L. Gupta

Reference Books:

S.No	Book Title	Author
1	Measurements and Instrumentation	A. K. Sawhney
2	Engineering Metrology and Measurements	Krishnamurthy and Raghavendra
3	Theory of Machines	S.S. Rattan
4	Materials Science and Engineering	V. Raghavan
5	Heat and Thermodynamics	Mark Zemansky
6	Engineering Thermodynamics	P. K. Nag
7	Nanotechnology	R. Booker and E. Boysen

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=kJQOlZDnLdk
Module 2	https://www.youtube.com/watch?v=2QC2EW8b_Ww
Module 3	https://www.youtube.com/watch?v=BjVTdZ_htu8
Module 4	https://www.youtube.com/watch?v=vlzYLk5ll14
Module 5	https://www.youtube.com/watch?v=OLa8DQkKlyU https://www.youtube.com/watch?v=h6FYs_AUCsQ

Mode of Evaluation

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			100	150

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CME0102	Course Name: Emerging Trends in Mechanical Engineering	L	T	P	C
Course Offered in: B.Tech- First Semester ME		3	0	0	3

Pre-requisite: NIL

Course Objectives: This course aims to introduce first-year students to the latest developments in the field of Mechanical Engineering, covering product design, prototyping, manufacturing, and emerging sectors such as 3D printing and robotics. Students will gain thorough insight over prototyping techniques, learn design tradeoffs, and understand the concepts of Industry 4.0 and 5.0. The course prepares students to navigate the evolving landscape of mechanical engineering and contribute to innovative solutions.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the concepts of mechanical engineering, product design, prototyping and manufacturing processes.	K2
CO2	Gain knowledge about emerging sectors in mechanical engineering and their applications.	K2
CO3	Know various prototyping techniques and their use in mechanical engineering projects.	K2
CO4	Understand the concept of design tradeoffs in mechanical engineering projects.	K2
CO5	Understand the concepts of Industry 4.0 and Industry 5.0 and their applications in various engineering domains.	K2

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	2	2	2	2	1	1	2	2	3
CO2	3	2	2	2	2	2	3	2	2	1	1	2	3	3
CO3	3	2	2	1	2	2	2	2	1	1	1	2	2	2
CO4	3	2	3	2	2	1	2	2	2	1	3	2	2	2
CO5	3	2	1	1	2	2	2	2	1	1	2	2	3	3

Course Contents / Syllabus

Module 1	Introduction to Mechanical Engineering and Product Manufacturing	10 hours

Overview of Mechanical Engineering: Role of mechanical engineers, tools in ME, skills and abilities, ethics in engineering.
Traditional and emerging sectors in mechanical engineering: Competencies required for traditional and emerging sectors, Major employers in each sector for freshers. History of machines and mechanisms.
Introduction to product concept, design, and prototyping: Shape, size, design and contour, Product Lifecycle Management.
Product engineering and manufacturing processes: Process selection and tooling, Production, productivity and quality control, Product centring, quality, and reliability, Planning and supply chain management, Material, and part selection.

Module 2	Emerging Sectors in Mechanical Engineering	10 hours

3D Printing: Creation of custom parts and components, Custom prosthetics, Implants, Medical devices.
Electric Vehicles: The future of automobiles, batteries, electric motors, power electronics, and charging infrastructure.
Robotics and Automation: Sensors, Actuators, use in Welding, Machining, Assembling
Internet of Things (IoT) and IIoT: To create connected products, monitor, control and automate processes, machine -to -machine communication.
Artificial Intelligence: Makes Machines Smarter, use in Mechanical processes, analyse data, Decisions making, autonomous vehicles, robots.
Sustainable Design: Tackles Climate Change, use in solar panels, wind turbine.
Digital Twins and CAD Evolution: Digital - physical fusion, use to simulate, predict, and optimize a product and its production system.

Module 3	Prototyping	10 hours

Introduction to prototyping techniques: Importance of prototyping in mechanical engineering.
Types of prototyping: Rapid (Throwaway) prototyping, Evolutionary prototyping, Incremental prototyping, Extreme prototyping.
Prototyping techniques: 3D printing for prototyping, Hand sketching and model making, CNC machining for prototyping, Other prototyping methods.
Prototyping tools and software: Overview of prototyping tools and software, Selection of appropriate tools and software.

Testing and validation of prototypes: Importance of prototype testing and validation, Techniques for testing and validating prototypes.

Module 4	**Design Trade-offs**	**9 hours**

Introduction to Design Trade-offs: Definition, Importance, customer requirements and segmentation. Design for X, Design for Manufacturing, Design for Assembly, Design for cost, Design for Safety and Reliability, Design for Maintenance & Serviceability, Design for Testing, Design for safe disposal and Recycling.
Ethical Considerations in Design Trade-offs: Professional Responsibility, Legal Consideration, and Social & Environmental Impact.

Module 5	**Industry 5.0 and Applications**	**9 hours**

Overview of Industry 4.0: Mass customization and intelligent supply chain systems, Key technologies, and principles of Industry 4.0.
Introduction to Industry 5.0: Hyper customization and responsive supply chain systems, Smart products, and human-centric industry. Applications of new technologies in various engineering domains: Aerospace, aviation, defence, marine, nuclear, agriculture.
Future trends and challenges in Industry 5.0: Potential impact of Industry 5.0 on mechanical engineering, Challenges, and opportunities for future professionals.

Total Lecture Hours	**48 hours**

Textbook:

S. No.	Book Title	Author
1	Emerging Trends in Mechanical Engineering	Dinesh V. Lohar, Ganesh J. Pagar, Shailesh S. Parkhe, Alkesh S. Ajamere, N
2	Emerging Trends in Mechanical Engineering	L. M. Das, Naveen Kumar, Rohit Singh Lather, Pramod Bhatia
3	Advanced Research and Real-World Applications of Industry 5.0	Elspeth McKay, Mahmoud Numan Bakkar
4	Engineering Design: A Project-Based Introduction	Clive L. Dym, Patrick Little, Elizabeth J. Orwin, and Richard T. Spjut
5	Rapid Prototyping: Theory and Practice edited	Ali K. Kamrani and Emad Abouel Nasr
6	Prototyping for Mechanical and Aerospace Design	Haitham Hassan

Reference Books:

S. No	Book Title	Author
1	Automation, Productions systems, Computer Integrated Manufacturing	Mikell P. Groover by Pearson
2	Rapid Product Development	Kimura Fumihiko
3	Mechatronics	William Bolton
4	Industrial automation and Robotics	A.K. Gupta., S K Arora, Laxmi publication
5	CNC Fundamentals and Programming	P.M Agarwal, V.J Patel, Charotar Publication
6	Mechanical Design Process	David G. Ullman

NPTEL/ YouTube/ Faculty Video Link:

YouTube Learning videos	https://youtu.be/djB9oK6pkbA?si=b_1sqHAzXKxYIEVb
YouTube Learning videos	https://youtu.be/OLz2foqM5r0?si=ldwzjd00oob13M3k 2. Industry 5.0: https://youtu.be/ODFA8S8CmnU?si=indxB8xTIp3-o8yL
YouTube Learning videos	https://www.youtube.com/watch?v=9WPZStQp03Q https://archive.nptel.ac.in/courses/112/107/112107217/

Mode of Evaluation:

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			100	150

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
(An Autonomous Institute)

LAB Course Code: CAS0151	LAB Course Name: Engineering Physics Lab	L	T	P	C
Course Offered in: B.Tech- First Semester ME		0	0	2	1

Pre-requisite: Least count, Screw gauge, Vernier calipers

Course Objectives:

1. To provide the practical knowledge of the thermal and electrical conductivity.
2. To provide the practical knowledge of the measuring techniques.
3. To provide the practical knowledge of the flow of liquid and electrochemical equivalent.
4. To provide the practical knowledge of the ultrasonic waves and X-rays.
5. To provide the practical knowledge of nanoparticles and thin films.

Course Outcome: After completion of the course, the student will be able to:		Bloom's Knowledge Level (KL)
CO1	Understand the practical knowledge of the thermal and electrical conductivity.	K2
CO2	Apply the practical knowledge of the measuring instruments.	K3
CO3	Analyze the flow of liquid and electrochemical equivalent.	K4
CO4	Understand the practical knowledge of the ultrasonic waves and X rays.	K2
CO5	Create the nanoparticles and thin films.	K6

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2	-	-	-	2	-	2	1	2	1	1	-	-
CO2	3	-	-	-	2	-	1	1	2	1	1	-	-
CO3	3	-	-	-	2	-	1	1	2	1	1	-	-
CO4	2	-	-	-	2	-	1	1	2	1	1	-	-
CO5	3	-	-	-	2	-	1	1	2	1	1	-	-

List of Practical's (Indicative & Not Limited To)

1. To determine the thermal conductivity of a metallic rod by Searle's method.
2. Use of Vernier Calipers to (i) measure diameter of a small spherical/cylindrical body, (ii) measure the dimensions of a given regular body of known mass and hence to determine its density; and (iii) measure the internal diameter and depth of a given cylindrical object and hence to calculate its volume.
3. To measure the thickness of the given glass plate using Screw Gauge.
4. To measure the thickness of the given glass plate using Spherometer
5. To determine the value of 'g' by using a Simple Pendulum.
6. To determine E. C. E. of copper using tangent galvanometer.
7. Calibration of voltmeter/ammeter using potentiometer.
8. Determination of ultrasonic waves velocity in liquid media.
9. To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).

10. To determine the Coefficient of viscosity of a liquid.
11. Determine mechanical equivalent of heat by electrical method.
12. Thermal conductivity of a metal by Forbe's method.
13. Analysis of crystal structure of X ray diffractogram.
14. Synthesis of Nanoparticles by chemical route.
15. To synthesize the Thin Films using Sol-Gel Spin Coating system.
Total Hours: 24 hrs.

Mode of Evaluation

CIE			PE (If mentioned in curriculum)	Total
PS1 **5**	**PS2** **10**	**PS3** **10**		
25			**25**	**50**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSE0151	**LAB Course Name: C Programming**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester CSE/CSE (R)/ IT/ CS/ CSE(DS)/ CSE(IOT)/CSE(AIML)/CSE(AI)/CYS/ ECE/ECE(VLSI)/ ME/M.Tech (Integrated)/ BT		**0**	**0**	**4**	**2**

Pre-requisite: Basic Mathematics and Number Systems

Course Objectives: The objective of a C programming course is to provide students with a solid foundation about writing syntax, concepts, and principles as well as develop their ability to write efficient and effective code.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the fundamentals, flowcharts, program structure.	K2
CO2	Apply modular and efficient programs using conditional branching, loops, and functions.	K3
CO3	Implement and manipulate one-dimensional and two-dimensional arrays and strings, applying them to solve problems like searching, sorting, matrix operations, structures, unions, and file handling.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	3	2	1	2	2	1	1	1	2	1	3	3	2	1	2
CO2	3	2	3	2	2	1	1	1	1	1	2	3	2	1	2
CO3	3	2	3	2	3	2	1	1	1	1	2	3	2	1	2

Course Contents / Syllabus

Module 1	**Introduction to Algorithm and C Program**	**9 hours**

Programming using C: Concepts of Algorithm and Flowchart, Translators and its types, and its types, Applications of C programming, Structure of C program, Overview of compilation and execution process in an IDE, transition from algorithm to program, Syntax, logical errors, runtime errors, object and executable code, Keywords, identifiers, constants, and data types. Operators and their types, Arithmetic expressions and precedence: operators, operator precedence and associativity, type conversion, and mixed operands.

Module 2	**Control Statement**	**10 hours**

Conditional Branching (if, else-if, nested if else, switch statements) use of break, and default with switch, Iteration and loops: Concept of loops, for, while, and do-while; while, multiple-loop variables; use of break and continue statements; nested loop. Managing Input and Output Operations: Reading a Character, Writing a Character, Formatted Input, Formatted Output. Functions: Concept of sub programming, function, types of functions, passing parameters to functions: call by value Definition, Recursion: Definition, Types of Recursive Functions Tower of Hanoi problem, Storage: scope of variable, local and global variables, Nesting of scope Storage classes: Auto, Register, static, and Extern. Pointers: defining and declaring pointer, pointer arithmetic and scaling, pointer aliasing, and Aliasing, call by reference.

Module 3	**Array**	**9 hours**

Array notation and one-dimensional arrays, Declaration of one-dimensional arrays, initialization of one-dimensional arrays, Example programs: (searching and sorting), Two-dimensional arrays, declaration of Two-dimensional arrays, Initialization of Two-dimensional Arrays, Example programs: Matrix multiplication, transpose of a matrix.

Strings: Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, String-handling Functions, Example Programs (with and without using built-in string functions)

Module 4	**Structure**	**10 hours**

Introduction, Initializing, defining, and declaring structure, accessing members, Operations on individual Structure within structures Array of structure.

Union: Introduction, Initializing, defining, and declaring structure, Accessing members, Operations on individual members, Operations on the union, Difference between Structure and Union, Dynamic Memory Allocation: Introduction, Library functions malloc, calloc, realloc, and free.

Module 5	File Handling and Object Oriented Programming	10 hours

File Handling: Introductory Concepts of File Stream.
Introduction to Object-oriented programming: Introduction to User-Defined Data datatype, Fundamentals of the object-oriented approach, introduction to class and its components, constructors, referring to objects of a class, static members, classes and Their Friends, Introduction to STL and application.

Total Lecture Hours	**48 hours**

Textbook:

S.No	Book Title with publication agency & year	Author
1	C: The Complete Reference, McGrawHill,4thEdition,2002	Herbert Schildt
2	Programming in C, McGrawHill	E Balaguruswami
3	Let Us C , BPB publication	Yashwant P.Kanetkar
4	Mastering C	K.R Venugopal
5	Working with C	Yashwant P. Kanetkar

Reference Books:

S.No	Book Title with publication agency & year	Author
1	The C programming , Pearson Education	Kernighan Brain W.and Ritchie Dennis
2	Computer Science-A Structured Programming Approach Using C, Third Edition, Cengage Learning-2007.	Behrouz A. Forouzan, RichardF. Gilberg
3	Computer Basics and C Programming , PHI Learning pvt. Limited,2015.	V.Rajaraman
4	Schrum's Outline of Programming with C , McGraw-Hill	Byron ,Gottfried
5	Computer Fundamentals and Programming in C, Oxford Publication	Reema Thareja

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://en.wikibooks.org/wiki/C_Programming
Module 2	https://en.wikibooks.org/wiki/A_Little_C_Primer
Module 3	https://youtu.be/XM7f5x94068
Module 4	https://youtu.be/FYdYkiIHvRQ
Module 5	https://youtu.be/lVD74GSU-3w

List Of Practical's (Indicative & Not Limited To)

1. Write a C Program to implement a half pyramid of *
2. Write a C Program to implement a Half pyramid of numbers
3. Write a C Program to implement a half pyramid of alphabets
4. Write a C Program to implement an inverted half pyramid of *
5. Write a C Program to implement an inverted half pyramid of numbers
6. Write a C Program to implement a full pyramid of *
7. Write a C Program to implement a full pyramid of numbers
8. Write a C Program to implement an inverted full pyramid of *
9. Write a C Program to implement Pascal's triangle
10. Write a C Program to implement Floyd's triangle
11. C Program to Print Diamond Pattern
12. C Program to Print Floyd's Triangle
13. C Program to Print Pascal Triangle

14. Star Pattern Programs in C
15. Pyramid Patterns in C
16. Write a C program for a matchstick game being played between the computer and a user. Your program should ensure that the computer always wins. Rules for the game are as follows:
There are 21 matchsticks.
The computer asks the player to pick 1, 2, 3 or 4 matchsticks.
After the person picks, the computer does its picking. – Whoever is forced to pick up the last matchstick loses the game.
17. Write a program that plays tic-tac-toe. The tic-tac-toe game is played on a 3x3 grid the game is played by two players, who take turns. The first player marks move with a circle, the second with a cross. The player who has formed a horizontal, vertical, or diagonal sequence of three marks wins. Your program should draw the game board, ask the user for the coordinates of the next mark, change the players after every successful move, and pronounce the winner.
18. Design a calculator that performs Number system conversion
19. C Program to Simulate a Simple arithmetic Calculator
20. C Program to Evaluate the Given Polynomial Equation
21. C Program to Find Mean, Variance and Standard Deviation
22. C Program to Add Two Complex Numbers
23. C Program to Find Power of a Number
24. C Program to Calculate Pow (x,n)
25. C program to Find the Sum of Arithmetic Progression Series
26. C program to Find the Sum of Geometric Progression Series
27. C program to Find the Sum of Harmonic Progression Series
28. C Program to Find Sum of Series 1 + 1/2 + 1/3 + 1/4 + ……. + 1/N
29. C Program to Find Sum of Series 1^2 + 2^2 + …. + n^2
30. C Program to Find Sum of Series 1^3 + 2^3 + 3^3 + … + n^3
31. C Program to Find Sum of the Series 1/1! + 2/2! + 3/3! + ……1/N!
32. Design a program which displays following options on screen
1. Figure
2. Exit
3. Enter Choice

Once valid choice is entered it executes further.
If choice one is entered, then it should display
    1. TRAINGLE
    2. SQUARE
    3. RHOMBUS
    4. TRAPEZIUM
    5. RETURN TO PREVIOUS MENU

ENTER CHOICE
Once valid choice is entered it executes further.
After that it ask for specific data and prints the area and volume and perimeter/circumference of the respective figure.
After that a choice is to be asked for
Do you wish to continue (Y/N)? And should work accordingly. Before every menu, the screen should be cleared.
33. C Program to Find the Largest Number Among Three Numbers
34. C Program to Find the Roots of a Quadratic Equation
35. C Program to Check Leap Year. Evaluate all the cases.
36. C Program to Check Whether a Number is Positive or Negative
37. C Program to Check Whether a Character is an Alphabet or not
38. C Program to Calculate the Sum of Natural Numbers
39. C Program to Find Factorial of a Number
40. C Program to Generate Multiplication Table
41. C Program to Display Fibonacci Sequence
42. C Program to Find GCD of two Numbers

43. C Program to Find LCM of two Numbers
44. C Program to Display Characters from A to Z Using Loop
45. C Program to Reverse a Number using looping concepts
46. C Program to Check Whether a Number is Palindrome or Not
47. C Program to Check Whether a Number is Prime or Not
48. C Program to Check Armstrong Number
49. C Program to Display Armstrong Number Between Two Intervals
50. C Program to Display Factors of a Number
51. C Program to Reverse a Number using looping concepts
52. C Program to Check Whether a Number is Palindrome or Not
53. C Program to Check Whether a Number is Prime or Not
54. C Program to Check Armstrong Number
55. C Program to Display Armstrong Number Between Two Intervals
56. C Program to Display Factors of a Number
57. C Program to Make a Simple Calculator Using switch...case
58. C Program to Check Whether a Number is Even or Odd
59. C Program to Check Whether a Character is a Vowel or Consonant
60. C Program to Find the Largest Number Among Three Numbers
61. C Program to Check Whether a Number is Positive or Negative
62. C Program to Calculate the Sum of Natural Numbers
63. C Program to Find Factorial of a Number
64. C Program to Generate Multiplication Table
65. C Program to Display Fibonacci Sequence
66. C Program to Display Prime Numbers Between Intervals Using Function
67. C Program to Check Prime or Armstrong Number Using User-defined Function
68. C Program to Check Whether a Number can be Expressed as Sum of Two Prime Numbers
69. C Program to Find the Sum of Natural Numbers using Recursion
70. C Program to Find Factorial of a Number Using Recursion
71. C Program to Find G.C.D Using Recursion
72. C Program to Convert Binary Number to Decimal and vice-versa
73. C program to calculate the power using recursion
74. C Program to Check Prime or Armstrong Number Using User-defined Function
75. C Program to Find the Sum of Natural Numbers using Recursion
76. Design a calculator

Design a Menu Driven program which performs the functions as per the menu
Add Details of students
Search the student data

a. Display the records Name must not be blank, and first letter should be alphabet

Student details should contain Name. Age, Class, Roll-No
Exit

Enter the Choice:

Note: Choice must be between 1-4 Only. Other than that, an error message must be displayed and entry should be done again

77. C Program to Add Two Numbers Using Recursion.
78. C Program to find the sum of digits of a number using recursion.
79. Write a method in C that will remove any given character from a string.
80. C Program to Calculate Average Using Arrays
81. C Program to Find Largest Element in an Array
82. C Program to search an element
83. C Program to Add Two Matrices Using Multi-dimensional Arrays
84. C Program to Multiply Two Matrices Using Multi- dimensional Arrays

85. C Program to Find Transpose of a Matrix
86. C program to illustrate Point Arithmetic
87. C Program to Access Array Elements Using Pointer
88. C Program to Find Largest Number Using Dynamic Memory Allocation
89. C Program to Calculate Average Using Arrays
90. C Program to Find Largest Element in an Array
91. C Program to Calculate Standard Deviation
92. C Program to Find the Frequency of Characters in a String
93. C Program to Count the Number of Vowels, Consonants and so on
94. C Program to Remove all Characters in a String Except Alphabets
95. C Program to Find the Length of a String
96. C Program to Concatenate Two Strings
97. C Program to Copy String Without Using strcpy()
98. C Program to Sort Elements in Lexicographical Order (Dictionary Order)
99. C Program to Find the Frequency of Characters in a String
100.Write a method in C which will remove any given character from a String.
101.Write a program in C to count occurrence of a given character in a String.
102.Write a program in C to check if two Strings are Anagram.
103.Write a program in C to check a String is palindrome or not.
104.C program to check given character is vowel or consonant.
105.C program to check given character is digit or not.
106.C program to replace the string space with a given character.
107.C program to convert lowercase char to uppercase of string.
108.C program to convert lowercase vowel to uppercase in string.
109.C program to delete vowels in a given string.
110.C program to count Occurrence Of Vowels & Consonants in a String.
111.C program to print the highest frequency character in a String.
112.C program to Replace First Occurrence Of Vowel With '-' in String.
113.C program to count alphabets, digits and special characters.
114.C program to separate characters in a given string.
115.C program to remove blank space from string.
116.C program to count blank space from string.
117.C program to concatenate two strings.
118.C program to remove repeated character from string.
119.C program to calculate sum of integers in string.
120.C program to print all non-repeating character in string.
121.C program to copy one string to another string.
122.C Program to sort characters of string.
123.C Program to sort character of string in descending order.
124.Write a program in C for, In array 1-100 numbers are stored, one number is missing how do you find it.
125.Write a program in C for, In a array 1-100 multiple numbers are duplicates, how do you find it.
126.Write a program in C to find first duplicate number in a given array.
127.Write a program in C to remove duplicate elements form array in C.
128.Write a program in C for, Given two arrays 1,2,3,4,5 and 2,3,1,0,5 find which number is not present in the second array.
129.Write a program in C for, How to compare two array is equal in size or not.
130.Write a program in C to find largest and smallest number in array.
131.Write a program in C to find second highest number in an integer array.
132.Write a program in C to find top two maximum number in array?
133.C program to print array in reverse Order.
134.C program to reverse an Array in two ways.

135.C Program to calculate length of an array.
136.C program to insert an element at end of an Array.
137.C program to insert element at a given location in Array.
138.C Program to delete element at end of Array.
139.C Program to delete given element from Array.
140.C Program to delete element from array at given index.
141.C Program to find sum of array elements.
142.C Program to print all even numbers in array.
143.C Program to print all odd numbers in array.
144.C program to perform left rotation of array elements by two positions.
145.C program to perform right rotation in array by 2 positions.
146.C Program to merge two arrays.
147.C Program to find highest frequency element in array.
148.C Program to Store Information of a Student Using Structure
149.C Program to Store Information of Students Using Structure
150.C Program to Store Data in Structures Dynamically
151.C Program to Store Information of a Student Using Structure
152.C Program to Add Two Distances (in inch-feet system) using Structures
153.Snake Game Mini Project in C is a basic console program with no graphics. You may play the famous "Snake Game" in this project exactly as you would anywhere else. To move the snake, use the up, down, right, and left arrows. Food is placed at various co-ordinates on the screen for the snake to consume. The snake's length and score will both rise by one element each time it consumes the food.
154.C Program to Write a Sentence to a File
155.C Program to Read the First Line From a File
156.C Program to showcase use of DMA
157.C Program to Write a record to a File
158.C Program to Read the last Line From a File
159.Program to create a file using command line argument
160.Program to copy one file into another
161.Implement macro handling
162.Program to write a structure into a file and display its content
163.Program to search a record in a file
164.Program to implement multi line macro and Conditional Macros
165.Program to draw Circle/Rectangle/Triangle/ A Hut/with colors in it
166.Program to shut down/ sleep a system if not component is being touched
167.Write a program in C to create and store information in a text file.
168.Write a program in C to read an existing file.:
169.Write a program in C to write multiple lines to a text file.:
170.Write a program in C to read the file and store the lines in an array.
171.Write a program in C to find the number of lines in a text file.
172.Write a program in C to find the content of a file and the number of lines in a text file.
173.Write a program in C to count the number of words and characters in a file.
174.C Program to list all files and sub-directories in a directory
175.C Program to count number of lines in a file
176.C Program to print contents of file
177.C Program to copy contents of one file to another file
178.C Program to merge contents of two files into a third file
179.C Program to read records from a data file
180.C Program to count number of lines, words, characters, blank space in a file
181.C Program to Illustrate how User Authentication is Done

182. C Program to Shutdown Computer in Linux

183. C Program to Compute First N Fibonacci Numbers using Command Line Arguments

184. C Program to Generate Fibonacci Series using Command Line Argument

185. Design an ATM Simulation using C manage the information of workers working in a firm or organization using this Employee Management System. The file handling technique is used here to save the data in a particular file, and you get the notion of this project as soon as you hear the name.

This project uses the Insert, Edit, and Delete file actions, but the sole constraint is that you can only display the data, not search for any data item in particular. If you have more experience with C, you may alter this program by using the searching strategies.

186. The following modules are included in this project. Add Employee Details
Edit Employee details
Modify Employee
Delete Employee
Create a Database using C file structure

187. A Library in charge is facing problems in handling books and customers. Design a solution using C regarding his problem

188. Design a Simple Result System in the C programming language. You can keep track of the pupils' grades and update them at any time. Students might be given marks based on their performance in each subject. The project is straightforward and straightforward to use. The system is written entirely in the C programming language.

Mode of Evaluation

CIE			PE	Total
PS1	**PS2**	**PS3**	**(If mentioned in curriculum)**	
10	**20**	**20**		
50			**50**	**100**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

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LAB Course Code: CCSE0152	**LAB Course Name: Web Designing**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester ME		**0**	**0**	**2**	**1**

Pre-requisite: Basic Knowledge about web pages

Course Objectives: The objective is to understand the principles of web page design and types of websites, visualize and recognize the basic concepts of HTML and its application, recognize and apply the elements of Creating Style Sheet (CSS) with help of Java Script.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the principles of web page design, types of websites, and basic concepts of HTML and CSS.	K2
CO2	Apply the basic concepts of Java Script and its application to the web page.	K3
CO3	Implement the fundamental ideas of registering domains and web hosting for website.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	3	2	3	2	2	2	1	2	1	-	2	2	3	2	1
CO2	3	2	3	2	3	1	2	1	-	-	2	2	2	2	2
CO3	3	2	2	2	2	2	2	1	2	3	3	3	1	3	3

Course Contents / Syllabus

Module 1	**Introduction to Websites and HTML**	**6 hours**

Introduction: Basic principles involved in developing a web site, Planning process, Responsive Web Designing, Types of Websites (Static and Dynamic Websites), Web Standards and W3C recommendations.

Introduction to HTML: HTML Documents, Basic structure of an HTML document, creating an HTML document, Mark up Tags, Heading-Paragraphs, Line Breaks.

Module 2	**Elements of HTML**	**4 hours**

Elements of HTML: HTML Tags, Working with Text, working with Lists, Tables and Frames, working with Hyperlinks, Images, Working with Forms and controls.

Module 3	**Concept of CSS**	**5 hours**

Concept of CSS: Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, working with Lists and Tables, CSS Id and Class, Box Model:- Introduction, Border properties, Padding Properties, Margin properties.

Module 4	**Introduction to JavaScript**	**5 hours**

Introduction to JavaScript: Introduction to Client Side Scripting, Introduction to Java Script, JavaScript Types, Variables in JS, Operators in JS, Conditional Statements, Java Script Loops, JS Popup Boxes, JS Functions and Events.

Module 5	**Web Hosting**	**4 hours**

Web Hosting: Web Hosting Basics, Registering Domains, Defining Name Servers, Using Control Panel, Creating Emails in Cpanel, Deployment and Management of websites using FTP client, Maintaining a Website.

	Total Lecture Hours	**24 hours**

Textbook:

S.No	**Book Title with publication agency & year**	**Author**
1	"HTML, XHTML, and CSS Bible, 5ed", Wiley India (2010).	Steven M. Schafer
2	Beginning CSS: Cascading Style Sheets for Web Design 3rd Edition, Wiley India(2011)	Ian Pouncey and Richard York

NIET Greater Noida Autonomous Institute	**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY** **GREATER NOIDA-201306** **(An Autonomous Institute)**

Reference Books:

S.No	Book Title with publication agency & year	Author
1	The Principles of Beautiful Web Design, SitePoint 4th edition(2020)	Jason Beaird & James George
2	Responsive Web Design, A Book Apart 2nd Edition(2014)	Ethan Marcotte
3	HTML and CSS: Design and Build Websites, Wiley India Ist Edition(2011)	Jon Duckett

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=x3c1ih2NJEg
Module 2	https://www.youtube.com/watch?v=x3c1ih2NJEg
Module 3	https://www.youtube.com/watch?v=PMsVM7rjupU&list=PL6n9fhu94yhUA99nOsJkKXBqokT3MBK0b
Module 4	https://www.youtube.com/watch?v=uDwSnnhl1Ng&list=PLsyeobzWxl7qtP8Lo9TReqUMkiOp446cV
Module 5	https://www.techradar.com/in/web-hosting/what-are-the-different-types-of-web-hosting

List Of Practical's (Indicative & Not Limited To)

1. Create mypage.html with your name as an <h1> heading, a short paragraph introducing yourself, and an <hr> tag for separation.
2. Create an HTML file (practice.html) ensuring all essential tags are present (<!DOCTYPE html>, <html>, <head>, <title>, <body>).
3. Create city.html. Use <h1> for the city name, <h2> for its famous landmarks, and paragraphs (<p>) to describe them, using <br> for line breaks where appropriate.
4. Create a html page to insert horizontal rules.
5. Create a new HTML file and add comments (``) explaining the purpose of each main tag (head, body, title).
6. Create a mobile-responsive layout using basic HTML.
7. In your index.html file, explicitly set the language of the document using the lang attribute in the <html> tag (e.g., <html lang="en">).
8. Create coming-soon.html with an <h1> "Website Under Construction" and a simple paragraph with a "Coming Soon!" message.
9. Create homepage.html with a clear <h1> "Welcome to Our Site" and a paragraph about the site's purpose.
10. Create a page explaining W3C and its purpose.
11. Create an ordered and unordered list.
12. Create a list inside another list.
13. Create a definition list for at least five web development terms (e.g., HTML, CSS, JavaScript, Server, Browser).
14. Create a table with 3 rows and 3 columns.
15. Create a table name Student Gared with <thead> for headers (Name, Subject, Grade) and <tbody> for at least three student records.
16. Design a table for a simple product catalog with columns like Product Name, Price, and Stock, using <th> and <td> tags.
17. Create a table with rowspan and colspan property.
18. Create a web page that provide a basic frame layout.
19. Design a webpage that add an image.
20. Create an image with clickable hyperlink.
21. Create an HTML page with three distinct sections (<section id="section1">, <section id="section2">, etc.)
22. Design a complete registration form including fields for: Username (text), Password (password), Email (email), Age (number), and a Submit button. Include appropriate label tags.
23. Create a feedback form asking: "How would you rate our service?" (radio buttons: Excellent, Good, Fair, Poor) and "What services are you interested in?" (checkboxes: Web Design, SEO, Hosting).
24. Create a form with text input, radio button, checkbox, and submit button.
25. Design a webpage using CSS that change background color of the body.
26. Design a webpage that should be add margin and padding to elements in CSS.

27. Create one HTML page that uses inline CSS on an <h1>, internal CSS on a <p>, and links to an external style.css for the <body> background color.
28. Create a style lists using CSS.
29. Create two CSS classes:.highlight (yellow background) and .important (red text). Apply these classes to different paragraphs and observe their effects.
30. Create three elements. Give each a different border-width, border-style, and border-color. Apply padding and margin values to visually differentiate them.
31. Create a div and a p element. Use CSS to set their width and height, and observe how they behave as block elements.
32. Write a script that implement variables and data types
33. Create an alert box using JavaScript.
34. Create a webpage to show a prompt asking for user's name.
35. Write a script to add two numbers.
36. Create an HTML button. When clicked, a JavaScript function should change the text content of a <p> element from "Hello" to "Goodbye!".
37. Create a script that display the current date and time.
38. Create a script to make a form field required using JavaScript validation
39. Create a JavaScript function to validate a form.
40. Create a form with a single text input and a submit button. Use JavaScript to prevent submission if the input field is empty, displaying an alert() message.
41. Write a script to check if a number is even or odd.
42. Create a script to use confirm box before submitting a form.
43. Create a button that, when clicked, uses confirm() to ask "Are you sure you want to delete?". Display an alert() based on the user's Yes/No choice.
44. Write a JavaScript function calculateArea(length, width) that takes two parameters, calculates the area, and returns the result. Display the result in the browser.
45. Create an <img> tag and two buttons ("Next Image", "Previous Image"). Use JavaScript to change the src attribute of the image when buttons are clicked, cycling through an array of image paths.
46. Create an HTML page and upload it using an FTP client.
47. Register a free domain and map it to hosting (use demo platform like InfinityFree).
48. Create email using cPanel.
49. Create a monthly website maintenance checklist that includes tasks like checking for broken links, updating content, checking contact forms, and reviewing analytics.
50. Create a static HTML/CSS website and upload to GitHub Pages.

Mode of Evaluation

CIE			PE	Total
PS1	**PS2**	**PS3**	**(If mentioned in curriculum)**	
5	**10**	**10**		
25			**25**	**50**

NIET Greater Noida Autonomous Institute	**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY** **GREATER NOIDA-201306** **(An Autonomous Institute)**

LAB Course Code: CME0153	**LAB Course Name: Digital Manufacturing**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester ME		**0**	**0**	**2**	**1**

Pre-requisite: Nil

Course Objectives: To provide students with practical knowledge and hands-on experience in 3D modeling, slicing, and printing processes, enabling them to design, prepare, and fabricate objects using various 3D printing technologies and post-processing techniques.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Identify and explain the components and working principles of a 3D printer.	K2
CO2	Develop and convert 3D CAD models into printable formats (e.g., STL) and analyze readiness for printing.	K4
CO3	Utilize slicing software (e.g., Cura) to configure machine settings, generate support structures, and produce G-code for 3D printing.	K3
CO4	Execute the 3D printing process for single and multi-part assemblies, ensuring proper orientation, tolerance, and post-processing.	K5
CO5	Analyze and compare various types of 3D printers through case studies and practical evaluations.	K5

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	1	1	1	1	1	1	1	1	1	2	2	3
CO2	1	2	3	1	3	1	1	1	1	1	1	2	3	3
CO3	1	1	3	1	3	1	1	1	2	1	1	2	3	2
CO4	1	1	3	3	1	1	1	1	2	1	1	2	2	2
CO5	0	3	1	3	1	1	1	1	2	1	1	2	3	3

List of Practical's (Indicative & Not Limited To)

1. To introduce the 3D Printer Machine and its components.
2. To introduce various A files used in 3D modelling, create a basic 3D object, convert the model into .stl format, and open the .stl file to verify the size, form, and readiness for slicing and 3D printing.
3. **Introduction to 3D printer software (e.g., Cura)** and explore features and specifications like Machine setting (e.g., Nozzle, Print Bed, etc.).
4. **To upload the part and set up the position and orientation of the model (use of various commands like Move, Scale, Rotate, Mirror etc.)**
5. To study and apply the generation of support structures for 3D printed objects using slicing software (e.g., Cura), and analyze the effect of support on print quality and material usage, **Slicing of the model (Layering Study).**

6.	To use slicing software for converting a 3D CAD model into a G-code file and visually inspect the layer-by-layer preview to ensure correct generation of layers, infill, and support structures before printing.
7.	To generate G-code for a 3D printed part using slicing software and to study the structure and meaning of G-code commands used to control the 3D printer**.**
8.	To understand and perform the 3D printing of a multi-part assembly, including proper orientation, tolerance adjustment, and post-print fitting of components.
9.	To perform post-processing operations on a 3D printed part to improve its surface finish, dimensional accuracy, appearance, and functionality by removing supports, smoothing surfaces, and assembling parts, Removal of support, surface finishing, colouring, etc.
10.	A case study on different types of 3D printers.

Mode of Evaluation:

CIE			**PE**	**Total**
PS1	**PS2**	**PS3**	**(If mentioned in curriculum)**	
5	**10**	**10**		
25			**25**	**50**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Offered in: B.Tech- First Semester **ME**	**0**	**0**	**4**	**2**

Pre-requisite: Comprehension of basic English language

Course Objectives:

1. To improve proficiency in the English language to the Intermediate level of CEFR (Common European Framework of Languages).
2. To motivate students to look within and create a better version of 'self.'
3. To introduce the key concepts of etiquette and soft skills.

Course Outcome: After completion of the course, the student will be able to

S. No	Course Outcome	Bloom's Knowledge Level (KL)
CO1	Identify essential soft skills for the workplace	K1
CO2	Apply effective listening skills	K3
CO3	Acquire fluency and clarity of speech	K3
CO4	Understand and analyse written texts	K4
CO5	Create clear, correct, and concise written content	K6

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	1	1	1	1	1	1	2	3	1		
CO2	1	1	1	1	1	1	1	1	2	3	1		
CO3	1	1	1	1	1	1	1	1	2	3	1		
CO4	1	2	2	2	2	2	2	1	2	3	1		
CO5	2	1	2	1	2	1	2	1	2	3	1		

List Of Practical

1. **Orientation**

a. Introduction to the course

b. Introduction to the evaluation scheme & the British Council EnglishScore Tests

Developing Communication Skills

- Confidence building activities
- Overcoming initial hesitations

2. ***Anubhav* Activity**

- The Students will share their own reservations and expectations from the course.

Showcasing talents

- Participants will gain confidence in expressing themselves through song/dance, overcome inhibitions, and develop a sense of freedom and creativity.

3. **Developing active listening and accurate communication skills**

- The students will enhance their listening skills, practice conveying information accurately, and understand the importance of clear communication and active listening.

4. **Language Toolbox 1: Vocabulary enrichment**

- The students will be exposed to General Service List (GSL) by West and Academic Word List (AWL); the students will be asked to keep a journal of new words learnt every day.

5. **Think-Pair-Share for Reading Comprehension**

- The students will actively interact with the reading material by engaging in this activity, collaborating with their peers, and refining their comprehension skills.

6. **Essentials of Writing – Requisites of a good sentence**

- The students will learn to construct sentences which showcase clarity, consistency and correctness in structure, word usage and punctuation through activities like picture prompts and verbal clues.

7**. Professional Introductions (Video recorded)**

- The students will practice professional introductions with emphasis on clarity, correctness, voice modulation, and engaging content.

8**. Listen and write**

- The students will practice writing exactly what they hear.

Listen and Repeat

- The students will practice speaking, with correct pronunciation and intonation, what they hear.

9. **Pronunciation**

- Vowel & Consonant sounds which are difficult for Indian speakers
- Syllable division & accent

10. **Reading Techniques for Time Management**

- The students will be able to identify keywords, headings, and topic sentences. Further, they will be able to analyze and synthesize information from the selected texts.

11. **Paragraph Writing (Unity, Cohesion, Emphasis)**

- The students will learn to write with emphasis on correctness of grammatical structure, concord, voice, and tenses.

12. **Language Toolbox 3: Vocabulary Building – Homophones, homonyms, synonyms, antonyms, phrases & idioms**

- The students will be able to bring in variety in the usage of words.

13. **Building formal attitude through language, dress, and behavior**

- The students will understand the importance of formal dressing and professional behavior in academic and workplace settings.

14. **Clarity in articulation**

- The students will practice accent, rhythm, and intonation in connected speech (Ref. English Score – Speaking/ SVAR/ Versant/etc.)

15. **Listening to follow directions and instructions precisely**

- The students will improve their listening comprehension and enhance their ability to follow instructions & directions.

16. **Speaking in front of an audience**

JAM, Extempore

- The students will develop the ability to speak confidently and fluently in front of an audience by organizing their thoughts quickly, expressing ideas clearly, managing time effectively, and using appropriate body language, voice modulation, and eye contact to overcome stage fear and hesitation.

17. **Analysing Caselets**

- The students will improve their analytical and speaking skills by analysing & providing solutions to the issues in the caselets.

18. **Basics of Email Writing**

- The students will be able to write letters/applications on topics from real life scenarios.

19. ***Anubhav* Activity**

- The students will talk about their key takeaways from the sessions/test scores this far.

20. **Analysing Speech/ Ted Talks**

- The students will be able to improve their listening by analysing speeches by famous personalities/Ted Talks.

21. **Sharing views in a group discussion**

- The students will enhance their ability to express their opinions, actively listen to others, and engage in constructive discussions to develop well-rounded perspectives.

22. **Decoding infographics**

- The students will improve their ability to interpret and analyse information presented in diagrams, graphs, and pie charts.

23. **Writing Essay**

- The students will practice writing coherently, logically, precisely, and correctly on a wide variety of topics.

24. ***Anubhav* Activity**

The students will reflect on the semester and the road map ahead.

Total Hours: 48 hrs.

Mode of Evaluation

CIE			PE	Total
PS1 10	PS2 20	PS3 20		
50			50	100

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

ME					
Pre-requisite:					
Course Objectives: The objective of this course is to familiarize students with design thinking process as a tool for breakthrough innovation. It aims to equip students with design thinking skills and ignite the minds to create innovative ideas, develop solutions for real-time problems.					
Course Outcome: After completion of the course, the student will be able to					Bloom's Knowledge Level (KL)
CO1	Develop a strong understanding of the design process and apply it in a variety of business settings				K1
CO2	Analyze self, culture, and teamwork to work in a multidisciplinary environment and exhibit empathetic behavior				K3
CO3	Formulate specific problem statements of real time issues and generate innovative ideas using design tools				K4
CO4	Apply critical thinking skills to arrive at the root cause from a set of likely causes				K4
CO5	Demonstrate an enhanced ability to apply design thinking skills for evaluation of claims and arguments				K4

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1	2	2	1	1	1	2	1	2	2	2		
CO2	1	2	1	1	1	2	1	2	2	2	1		
CO3	1	2	1	2	2	1	2	1	2	2	1		
CO4	1	2	1	1	1	1	1	1	1	1	1		
CO5	1	2	1	1	1	1	1	1	1	1	1		

Course Contents / Syllabus

Module 1	**Introduction**	**6 hours**

An overview of future skills, introduction to design thinking, traditional problem solving versus design thinking, history of design thinking, wicked problems. Innovation and creativity, the role of innovation and creativity in organizations, creativity in teams and their environments, design mindset. Introduction to elements and principles of design, 13 Musical Notes for Design Mindset, Examples of Great Design, Design Approaches across the world.

Case Studies: Mumbai Dabbawallas, Gillette, Singapore, Bengaluru, Bahubali, Google, Embrace Incubator

Activity: Observation, Wicked Problem

Module 2	**Ethical Values and Empathy**	**6 hours**

Understanding humans as a combination of I (self) and body, basic physical needs up to actualization, prosperity, the gap between desires and actualization. Understanding culture in family, society, institution, startup, socialization process. Ethical behavior: effects on self, society, understanding core values and feelings, negative sentiments and how to overcome them, definite human conduct: universal human goal, developing human consciousness in values, policy, and character.

Understanding stakeholders, techniques to empathize with, identify key user problems. Empathy tools- Interviews, empathy maps, persona, emotional mapping, immersion and observations, Emotional Intelligence, customer journey maps, classifying insights after Observations, Classifying Stakeholders.

Case Studies: Pure-it, Royal Enfield, Big Basket, Air-bnb.

Activity: Moccasin Walk, Persona, Empathy map, Journey Map

Module 3	**Problem Statement and Ideation**	**6 hours**

Defining the problem statement, creating personas, Point of View (POV) statements. Research identifying drivers, information gathering, target groups, samples, and feedbacks. Idea Generation basic design directions, Themes of Thinking, inspirations and references, brainstorming, inclusion, sketching and presenting ideas, idea evaluation, double diamond approach, analyze – four W's, 5 why's, "How Might We", Defining the problem using Ice-Cream Sticks, Metaphor & Random Association Technique, Mind-Map, ideation activity games - six thinking hats, million-dollar idea, introduction to visual collaboration and brainstorming tools - Mural, JamBoard, Introduction to AI Tools.

Case Studies: The Good Kitchen, Flipkart, Uber, Redbus, Big Bazaar

Activity: 5 Why, HMW, Brainstorming, Six Thinking Hats, 30 Circles, paper prototype

Module 4	**Critical Thinking**	**6 hours**

Fundamental concepts of critical thinking, the difference between critical and ordinary thinking, characteristics of critical thinkers, critical thinking skills- linking ideas, structuring arguments, recognizing incongruences, five pillars of critical

thinking, argumentation versus rhetoric, cognitive bias, tribalism, and politics. Case study on applying critical thinking on different scenarios.
Case Studies: Byju's, Maggi noodles, Tata Nano
Activity: debate, role play

Module 5	**Logic and Argumentation**	**6 hours**

The argument, claim, and statement, identifying premises and conclusion, truth and logic conditions, valid/invalid arguments, strong/weak arguments, deductive argument, argument diagrams, logical reasoning, scientific reasoning, logical fallacies, propositional logic, probability, and judgment, obstacles to critical thinking. Group activity/role plays on evaluating arguments.
Case Studies: Aadhaar Card, Demonetization, Odd-Even Policy, Jio
Activity: Logical Fallacy Detective, Fact-Checking Challenge

	Total Lecture Hours	**30 hours**

Textbook:

S.No	**Book Title**	**Author**
1.	UnMukt : Science & Art of Design Thinking	Arun Jain
2.	Solving Problems with Design Thinking – Ten Stories of What Works	Jeanne Liedta
3.	A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Sangal, G P Bagaria
4.	Critical Thinking: An Introduction	Fisher

Reference Books:

S.No	**Book Title**	**Author**
1.	101 Design Methods	Vijay Kumar
2.	Change by Design	Tim Brown
3.	How to improve your critical thinking & reflective kills	McMillan
4.	Design of Business	Roger L. Martin

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/rUUuhnLkJ2s?si=_XCHnDbt_U1z0Frx https://www.youtube.com/watch?v=ldYzbV0NDp8 https://www.youtube.com/watch?v=0Fi83BHQsMA
Module 2	https://www.youtube.com/watch?v=q654-kmF3Pc http://www.uhv.org.in/ https://swayam.gov.in/nd1_noc19_mg60/preview
Module 3	https://www.udemy.com/course/design-thinking-for-beginners/ https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them
Module 4	https://www.forbes.com/sites/sap/2016/08/25/innovation-with-design-thinking-demands-critical-thinking/#340511486908 https://www.criticalthinking.org/pages/defining-critical-thinking/766
Module 5	https://www.udemy.com/course/critical-thinker-academy/ https://swayam.gov.in/nd2_aic19_ma06/preview

Mode of Evaluation

CIE							**ESE**	**Total**
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**TA3***	**Attendance**		
			10	**10**	**10**	**10**		
60			**40**					**100**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

Course Code: CNC0103	**Course Name: Essence of Indian Traditional Knowledge**	**L**	**T**	**P**	**C**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
(An Autonomous Institute)

Course Offered in: B.Tech- First Semester **ME**	**2**	**0**	**0**	**NC**

Pre-requisite: Philosophical Systems, Spiritual Practices, Cultural Heritage, Ayurveda and Traditional Medicine, Architecture

Course Objectives: To enable the students to understand the importance of our surroundings and encourage them to contribute towards sustainable development.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the basics of past Indian politics and state polity.	K2
CO2	Understand the Vedas, Upanishads, languages & literature of Indian society.	K2
CO3	Know the different religions and religious movements in India.	K4
CO4	Identify and explore the basic knowledge about the ancient history of Indian agriculture, science & technology, and ayurveda.	K4
CO5	Identify Indian dances, fairs & festivals, and cinema.	K1

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1	2	2	1	1	3	2	2	2	1	2		
CO2	1	1	2	1	1	3	2	2	2	1	2		
CO3	1	1	2	1	1	3	2	3	3	2	2		
CO4	2	2	3	2	2	3	3	2	2	1	2		
CO5	1	1	2	1	1	3	2	2	2	2	3		

Course Contents / Syllabus

Module 1	**Society State and Polity in India**	**8 hours**

State in Ancient India: Evolutionary Theory, Force Theory, Mystical Theory Contract Theory, Stages of State Formation in Ancient India, Kingship , Council of Ministers Administration Political Ideals in Ancient India Conditions' of the Welfare of Societies, The Seven Limbs of the State, Society in Ancient India, Purusārtha, Varnāshrama System, Āshrama or the Stages of Life, Marriage, Understanding Gender as a social category, The representation of Women in Historical traditions, Challenges faced by Women.

Module 2	**Indian Literature, Culture, Tradition, and Practice**	**8 hours**

Evolution of script and languages in India: Harappan Script and Brahmi Script. The Vedas, the Upanishads, the Ramayana and the Mahabharata, Puranas, Buddhist And Jain Literature in Pali,Prakrit And Sanskrit, **Sikh Literature**, Kautilya's Arthashastra, Famous Sanskrit Authors, Telugu Literature, Kannada Literature,Malayalam Literature ,Sangama Literature Northern Indian Languages & Literature, Persian And Urdu ,Hindi Literature

Module 3	**Indian Religion, Philosophy, and Practices**	**8 hours**

Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy, Shankaracharya, Various Philosophical Doctrines , Other Heterodox Sects, Bhakti Movement, Sufi movement, Socio religious reform movement of 19th century, Modern religious practices.

Module 4	**Science, Management and Indian Knowledge System**	**8 hours**

Astronomy in India, Chemistry in India, Mathematics in India, Physics in India, Agriculture in India, Medicine in India , Metallurgy in India, Geography, Biology, Harappan Technologies, Water Management in India, Textile Technology in India ,Writing Technology in India Pyrotechnics in India Trade in Ancient India/,India's Dominance up to Pre-colonial Times.

Module 5	**Cultural Heritage and Performing Arts**	**8 hours**

Indian Architect, Engineering and Architecture in Ancient India, Sculptures, Pottery, Painting, Indian Handicraft, UNESCO'S List of World Heritage sites in India, Seals, coins, Puppetry, Dance, Music, Theatre, drama, Martial Arts Traditions, Fairs and Festivals, UNESCO'S List of Intangible Cultural Heritage, Calenders, Current developments in Arts and Cultural, Indian's Cultural Contribution to the World. Indian Cinema

Total Lecture Hours	**40 hours**

Textbook:

S.No	Book Title	Author
1.	Indian Art and Culture: for civil services and other competitive Examinations	Nitin Singhania

Reference Books:

S.No	Book Title	Author
1.	The Wonder that was India (34th impression)	**A. L. Basham**

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=cjh7vCAvKhc
Module 2	https://www.youtube.com/watch?v=fCiOPDZW-30
Module 3	https://www.youtube.com/watch?v=JnFeKp0T3AQ
Module 4	https://www.youtube.com/watch?v=_d8N2hKMpw8
Module 5	https://www.youtube.com/watch?v=8D6UyaVj1tY

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**Attendance**		
			5	**5**	**10**		
30			**20**				**50**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Offered in: B.Tech- First Semester ME	**2**	**0**	**0**	**NC**

Pre-requisite: Basic understanding of political science

Course Objectives: Acquaint the students with legacies of constitutional development in India and help those to understand the most diversified legal document of India and philosophy behind it.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Identify and explore the basic features and modalities about Indian constitution.	K1
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level	K2
CO3	Differentiate different aspects of Indian Legal System and its related bodies.	K4
CO4	Discover and apply different laws and regulations related to engineering practices.	K4
CO5	Correlate role of engineers with different organizations and governance models.	K4

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1	1	2	1	1	3	2	2	1	2	1		
CO2	1	2	2	1	1	3	2	2	2	2	1		
CO3	1	2	2	1	1	3	2	3	1	2	1		
CO4	2	2	3	2	2	3	3	3	2	2	2		
CO5	2	2	3	2	1	3	2	3	2	3	2		

Course Contents / Syllabus

Module 1	**Introduction and Basic Information about Indian Constitution**	**8 hours**

Meaning of the constitution law and constitutionalism, Historical Background of the Constituent Assembly, Government of India Act of 1935 and Indian Independence Act of 1947,Enforcement of the Constitution, Indian Constitution and its Salient Features, The Preamble of the Constitution, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy, Parliamentary System, Federal System, Centre-State Relations, Amendment of the Constitutional Powers and Procedure, The historical perspectives of the constitutional amendments in India, Emergency Provisions: National Emergency, President Rule, Financial Emergency, and Local Self Government – Constitutional Scheme in India.

Module 2	**Union Executive and State Executive**	**8 hours**

Powers of Indian Parliament Functions of Rajya Sabha, Functions of Lok Sabha, Powers and Functions of the President, Comparison of powers of Indian President with the United States, Powers and Functions of Vice-President, Powers and Functions of the Prime Minister, Judiciary – The Independence of the Supreme Court, Appointment of Judges, Judicial Review, Public Interest Litigation, Judicial Activism, LokPal, Lok Ayukta, The Lokpal and Lok ayuktas Act 2013, State Executives – Powers and Functions of the Governor, Powers and Functions of the Chief Minister, Functions of State Cabinet, Functions of State Legislature, Functions of High Court and Subordinate Courts.

Module 3	**Introduction and Basic Information about Legal System**	**8 hours**

The Legal System: Sources of Law and the Court Structure: Enacted law -Acts of Parliament are of primary legislation, Common Law or Case law, Principles taken from decisions of judges constitute binding legal rules. The Court System in India and Foreign Courtiers (District Court, District Consumer Forum, Tribunals, High Courts, Supreme Court). Arbitration: As an alternative to resolving disputes in the normal courts, parties who are in dispute can agree that this will instead be referred to arbitration. Contract law, Tort, Law at workplace.

Module 4	**Intellectual Property Laws and Regulation to Information**	**8 hours**

Intellectual Property Laws: Introduction, Legal Aspects of Patents, Filing of Patent Applications, Rights from Patents, Infringement of Patents, Copyright and its Ownership, Infringement of Copyright, Civil Remedies for Infringement, Regulation to Information, Introduction, Right to Information Act, 2005, Information Technology Act, 2000, Electronic Governance, Secure Electronic Records and Digital Signatures, Digital Signature Certificates, Cyber Regulations Appellate Tribunal, Offences, Limitations of the Information Technology Act.

Module 5	**Business Organizations and E-Governance**	**8 hours**

Sole Traders, Partnerships: Companies: The Company's Act: Introduction, Formation of a Company, Memorandum of Association, Articles of Association, Prospectus, Shares, Directors, General Meetings and Proceedings, Auditor, Winding up. E-Governance and

role of engineers in E-Governance, Need for reformed engineering serving at the Union and State level, Role of I.T. professionals in Judiciary, Problem of Alienation and Secessionism in few states creating hurdles in Industrial development.

Total Lecture Hours	**40 hours**

Textbook:

S.No	Book Title	Author
1.	Introduction to the Indian Constitution	Brij Kishore Sharma

Reference Books:

S.No	Book Title	Author
1.	The Indian Constitution	Madhav Khosla

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=nTlEN7K8aAU
Module 2	https://www.youtube.com/watch?v=UrnObUbUSUc
Module 3	https://www.youtube.com/watch?v=RyxvZWEJBos
Module 4	https://www.youtube.com/watch?v=uGmYOelffrI
Module 5	https://www.youtube.com/watch?v=BBMD2YLbb_c

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**Attendance**		
			5	**5**	**10**		
30			**20**				**50**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
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Course Code: CAS0203C	Course Name: Differential Equations and Numerical Techniques	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		3	1	0	4

Pre-requisite: Knowledge of Mathematics I of B. Tech or equivalent.

Course Objectives: The objective of this course is to familiarize the engineering students with techniques of solving Ordinary Differential Equations, Fourier series expansion, Laplace Transform, Partial Differential Equation and Numerical Techniques and its application in real world. It aims to equip the students with adequate knowledge of mathematics that will enable them in formulating problems and solving problems analytically.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply the concept of differentiation to solve differential equations.	K3
CO2	Apply the concept of convergence of sequence and series to evaluate Fourier series.	K3
CO3	Apply the Laplace transform to solve ordinary differential equations.	K3
CO4	Apply the concept of partial differential equation to solve partial differential Equations and problems concerned with partial differential equations	K3
CO5	Apply the concept of numerical techniques to evaluate the zeroes of the Equation, concept of interpolation and numerical methods for various mathematical operations and tasks, such as integration, the solution of linear system of equations.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	3	3	-	-	-	-	1	2		
CO2	3	3	3	2	2	-	-	-	-	1	2		
CO3	3	2	3	2	3	-	-	-	-	1	2		
CO4	3	2	3	2	3	-	-	-	-	1	2		
CO5	3	2	2	2	2	-	-			1	2		

Course Contents / Syllabus

Module 1	**Ordinary Differential Equation of Higher Order**	**12 hours**

Linear differential equation of nth order with constant coefficients, Cauchy-Euler equation, Simultaneous linear differential equations, Second order linear differential equations with variable coefficients, Solution by changing independent variable, Reduction of order, Normal form, Method of variation of parameters.

Module 2	**Sequences and series**	**10 hours**

Definition of Sequence and series with examples, Convergence of sequence and series, Tests for convergence of series, (p-test, D' Alembert's test or Ratio test, Raabe's test). Fourier series, Half range Fourier sine and cosine series.

Module 3	**Laplace Transform**	**10 hours**

Laplace transform, Existence theorem, Laplace transforms of derivatives and integrals, Initial and final value theorems, Unit step function, Dirac- delta function, Laplace transform of periodic function, Inverse Laplace transform, Convolution theorem, Application to solve simple linear differential equations.

Module 4	**Partial Differential Equation**	**8 hours**

Solution of first order Lagrange's linear partial differential equations, Second order linear partial differential equations with constant coefficients (homogeneous and non-homogeneous), classification of second order partial differential equations. Solution of one-dimensional wave and heat equations.

Module 5	**Numerical Techniques**	**10 hours**

Error analysis, Zeroes of transcendental and polynomial equations using Bisection method, Regula-Falsi method and Newton-Raphson method, Interpolation: Lagrange's and Newton's divided difference formula. Solution of system of linear equations, Gauss Elimination method, Gauss- Seidel method. Numerical integration, Trapezoidal rule, Simpson's one third and three-eight rules. Numerical Solution of Ordinary Differential Equation by Runge-Kutta Method.

	Total Lecture Hours	**hours**

Textbook:

S.No	Book Title	Author
1	Higher Engineering Mathematics, Tata Mc Graw-Hill Publishing Company Ltd.	B. V. Ramana,
2	Higher Engineering Mathematics, Khanna Publisher	B.S. Grewal
3	Advance Engineering Mathematics, Narosa Publishing House.	R K. Jain & S R K. Iyenger
4	Advance Engineering Mathematics, University Science Press	N.P. Bali

Reference Books:

S.No	Book Title	Author
1	Advance Engineering Mathematics, John Wiley & Sons.	E. Kreyszig
2	Advance Engineering Mathematics, Thomson (Cengage) Learning.	Peter V. O'Neil
3	Calculus, Eleventh Edition, Pearson.	Maurice D. Weir, Joel Hass, Frank R. Giordano, Thomas
4	Calculus and Analytical Geometry, Ninth Edition Pearson.	G.B Thomas, R L Finney
5	Numerical Methods, TMH Publishing Company Ltd, New Delhi	E. Balagurusamy
6	Fourier Series and Boundary Value Problems, 8th Edition-Tata McGraw-Hill.	James Ward Brown and Ruel V Churchill
7	Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi.	Veerarajan T.
8	Ordinary Differential Equations, Application, Model and Computing, CRC Press T&F Group.	Charles E Roberts Jr
9	Advanced Engineering Mathematics, 6th Edition, Tata McGraw-Hill.	Ray Wylie C and Louis C Barret
11	Engineering Mathematics, 1st Edition, Pearson India Education Services Pvt. Ltd.	P. Sivaramakrishna Das and C. Vijayakumari
12	Advanced Engineering Mathematics By Khanna Publishing House, Delhi.	Chandrika Prasad, Reena Garg

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=Ql42qcOLKfo&t=7s https://www.youtube.com/watch?v=qIyx1kFTqT8 https://www.youtube.com/watch?v=n_3ZmnVnrc4 https://www.youtube.com/watch?v=19Vt7ds8Lvw
Module 2	**https://www.youtube.com/watch?v=NmRQ3sjp8Eo** **https://youtu.be/gG_bDhPibQo**
Module 3	https://youtu.be/nmp-5tSp-UY https://youtu.be/6ANT4eD6fII https://youtu.be/c9NibpoQjDk https://www.youtube.com/playlist?list=PLNOGlXC4kCBT8G5pWCrH71hmwaAvwsBY3
Module 4	https://www.youtube.com/watch?v=HUKR4LWrZ14&t=74s https://www.youtube.com/watch?v=uei7JPnPpVg https://www.youtube.com/watch?v=ummJvI0Ax2Q https://www.youtube.com/watch?v=bWTmUWWZnhQ https://www.youtube.com/watch?v=wpN1wn98XiA

	https://www.youtube.com/watch?v=gK1Y11UxOhw https://www.youtube.com/watch?v=Clwkvn77QrE&t=10s https://www.youtube.com/watch?v=LGxE_yZYigI
Module 5	https://archive.nptel.ac.in/courses/111/107/111107105/

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1* 5**	**TA2* 5**	**Attendance 10**		
30			**20**			**100**	**150**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CEC0201	Course Name: Digital Electronics and IoT Systems	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		3	0	0	3

Pre-requisite: Number system

Course Objective: The objective of the course is to equip students with the necessary theoretical knowledge, practical skills, and critical thinking abilities to understand, the design and implementation of digital logic circuits and IoT systems effectively.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the fundamentals of Number systems and Boolean algebra.	K2
CO2	Design and analyze combinational logic circuits.	K3
CO3	Explain the fundamental of sequential logic circuits	K2
CO4	Design and analyse the sequential logic circuits	K3
CO5	Understand the fundamental concepts, principles, and architecture of the Internet of Things (IoT)	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	-	-	-	-	-	-	-	-	2	2	1
CO2	3	3	3	-	-	-	-	-	-	-	-	2	2	2
CO3	3	3	3	-	-	-	-	-	-	-	-	3	3	2
CO4	3	3	3	-	-	-	-	-	-	-	-	3	3	3
CO5	3	3	3	-	-	-	-	-	-	-	-	3	3	3

Course Contents / Syllabus

Module 1	Number System and Boolean Algebra	08 hours

Number System and its arithmetic, signed binary numbers, compliments, Binary codes, Cyclic codes, Hamming Code. Boolean Algebra, De Morgan's Theorem, Logic Gates, Canonical SOP & POS Forms representation of Boolean function.

Module 2	Combinational Logic Circuits	08 hours

Simplification of Boolean Expression using K-map method in SOP and POS forms, Code Converters, Comparators, Half Adder, Full Adder, Half Subtractor, Full Subtractor, Multiplexers, Demultiplexers, Encoders, and Decoders.

Module 3	Fundamental of Sequential Logic Circuits	08 hours

Basic Building Blocks of Sequential circuits like SR Latch, Flip Flops: SR, JK, JK Master Slave, D and T Type Flip Flops, Excitation and characteristics Table of all Flip Flops, Conversion of Flip-Flops.

Module 4	Synchronous & Asynchronous Sequential Circuits	08 hours

Design of clocked sequential circuits, mealy and moore model, Synchronous and Asynchronous counters, MOD counters, Shift Registers, Shift register counters, RAM and ROM.

Module 5	Introduction to IOT	08 hours

Introduction to IoT and its Characteristics, Components of the IoT, Conceptual & Architectural Framework of IOT, Microcontroller for IoT. Overview of IoT programming Boards such as Arduino UNO, Arduino NANO, Arduino IDE coding, and Libraries. Interfacing of IO Sensors and Actuators using Arduino board.

	Total Lecture Hours	40 hours

Textbook:

S.No.	Book Title	Author
1.	"Digital Design", Pearson Education, Global Edition, 2018	M. Morris R. Mano and Michael D. Ciletti
2.	"The Internet of Things" Pearson, 1st Edition March 2015	Michael Miller

Reference Books:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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S.No.	Book Title	Author
1.	"Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009	R.P. Jain
2.	"Internet of Things: A Hands-On Approach", Orient Blackswan Private Limited, 1st New Delhi, 2015.	Arshdeep Bahga and Vijay Madisetti

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/playlist?list=PLbRMhDVUMngfV8C6ElNAUaQQz06wEhFM5 https://www.youtube.com/watch?v=juJR_JDJRa0 https://www.youtube.com/watch?v=2cpl_HjcI3A
Module 2	https://www.youtube.com/watch?v=sUutDs7FFeA https://www.youtube.com/watch?v=XCiLHOZsQl8
Module 3	https://www.youtube.com/watch?v=ibQBb5yEDlQ https://www.youtube.com/watch?v=LHAbLXfRYXk https://www.youtube.com/watch?v=Gc3DL-tmr-g https://www.youtube.com/watch?v=8S1kvCJRfvc
Module 4	***https://www.youtube.com/watch?v=ntiv1q7G_C4*** **https://www.youtube.com/watch?v=Qe_9CPac23c**
Module 5	**https://www.youtube.com/channel/UC6ZY_csXZc7YZZm2W8HcQ6A/video**

Mode of Evaluation

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			100	150

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
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Course Code: CME0201	Course Name: Automotive Engineering	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		2	0	0	2

Pre-requisite: NIL

Course Objectives: This course aims to introduce fundamental concepts of automobile engineering, including vehicle layout, power dynamics, and resistances. It will explore the principles and performance of internal combustion engines, as well as the emerging field of electric and hybrid vehicles. Students will gain an understanding of essential vehicle systems like transmission, breaking, and electrical components. Finally, the course will expose students to modern automotive technologies, including ADAS, connectivity, and future trends in the industry.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Describe the fundamental principles of automobile engineering, including the general layout of a vehicle and the concepts of power, torque, and various resistances to motion.	K2
CO2	Explain the working principles, components, and performance characteristics of both Spark Ignition and Compression Ignition internal combustion engines, including their cycles, timing diagrams, emissions, and firing order.	K2
CO3	Explain EV, hybrid types, propulsion types, energy, and comparing their environmental and economic impacts against conventional vehicles.	K2
CO4	Discuss ADAS, telematics, infotainment, sensors, ECUs, CAN bus, autonomous/connected concepts, advanced materials, IoT, and cybersecurity trends.	K2

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	2	2	2	2	1	1	2	2	3
CO2	3	2	2	2	2	2	3	2	2	1	1	2	3	3
CO3	3	2	2	1	2	2	2	2	1	1	1	2	2	2
CO4	3	2	1	1	2	2	2	2	1	1	1	2	3	3

Course Contents / Syllabus

Module 1	Introduction to Automotive Engineering	10 hours

Introduction to Automobile Engineering: Definition, history, and importance of automobiles in modern transportation.

Classification of Automobiles: Based on purpose, fuel type, drive type, and body style (e.g., passenger cars, commercial vehicles, electric vehicles).

Vehicle Configurations: Front-engine, rear-engine, mid-engine layouts; drive types – FWD, RWD, AWD/4WD.

Introduction to Vehicle Dimensions and Terminology: Wheelbase, track width, ground clearance, approach/departure angles, etc.

General Layout of an Automobile: Overview of main systems powertrain, chassis, suspension, braking, steering, electrical, and body components.

Transmission and Braking System: Clutch Systems, Gearboxes, Final Drive and Differential, Drive Configurations.

Module 2	**I.C. Engines Vehicles**	**8 hours**

Introduction to I.C. Engines: Basic principles and working of internal combustion engines; classification – spark ignition (SI) and compression ignition (CI) engines.

Engine Types and Configurations: 2-stroke vs 4-stroke engines, inline vs V-type engines, air-cooled vs water-cooled engines.

Main Components of I.C. Engines: Engine block, piston, crankshaft, connecting rod, camshaft, valves, cylinder head, flywheel.

Engine Systems Overview: Fuel supply system (carburetor, fuel injection, common rail direct injection). Ignition system (battery ignition, magneto, spark plugs). Cooling system (radiator, thermostat, coolant, water pump). Lubrication system (wet sump, dry sump, oil pump, oil filters).

Basic Engine Terminology: Bore, stroke, compression ratio, displacement, power, torque, efficiency.

Module 3	**Electric and Hybrid Vehicles**	**7 hours**

Introduction to Electric Vehicles (EVs): Evolution, need for electrification, advantages and challenges of electric mobility.

Classification of Electric Vehicles: Battery Electric Vehicles (BEVs), Hybrid Electric Vehicles (HEVs), Plug-in Hybrid Electric Vehicles (PHEVs), and Fuel Cell Vehicles (FCVs).

Basic Components of an Electric Vehicle: Electric motor, battery pack, power electronics, inverter, converter, and electric drivetrain.

Types of Electric Motors Used: DC motors, Brushless DC (BLDC), Induction motors, Permanent Magnet Synchronous Motors (PMSM).

Battery Technologies: Lead-acid, Nickel-Metal Hydride (NiMH), Lithium-ion batteries – structure, working, advantages, limitations.

Hybrid Powertrain Architectures: Series, parallel, and series-parallel hybrids working principles and power flow.

Regenerative Braking and Energy Recovery: Concept and operation in EVs and hybrids.

Comparison with I.C. Engine Vehicles: Efficiency, emissions, range, maintenance, and overall performance.

Module 4	**Modern Automotive Technologies**	**7 hours**

Automotive Electronics: Role of Electronic Control Units (ECUs), Integrated Circuit Modules (ICMs), sensors, and actuators in controlling vehicle performance, safety, and emissions.

On-Board Diagnostics (OBD): OBD-II and OBD-III systems, real-time monitoring, diagnostic trouble codes (DTCs), and advanced fault detection systems.

Advanced Driver Assistance Systems (ADAS) – Features like Lane Departure Warning (LDW), Forward Collision Warning (FCW), Automatic Emergency Braking (AEB), Pedestrian Detection, Adaptive Cruise Control (ACC), Traffic Sign Recognition (TSR), and 360-degree cameras.

	Total Lecture Hours	**32 hours**

Textbook:

S. No.	**Book Title**	**Author**
1	Automobile Engineering	Newton and Steeds
2	Automobile Engineering	Ramakrishna, PHI, India.

3	Automobile Engineering	Kripal Singh

Reference Books:

S. No.	Book Title	Author
1	Automotive Engineering	Hietner.
1	Automobile Engineering	Narang
2	Automobile Engineering	TTTI, Pearson India

NPTEL/ YouTube/ Faculty Video Link:

NPTL Course	http://digimat.in/nptel/courses/video/107106088/L01.html
YouTube Learning videos	https://www.google.com/search?q=https://www.youtube.com/playlist%3Flist%3DPLwdnKv6Jags1bzjeJRhFTfVn1L7JmZJma
NPTL Course	https://onlinecourses.nptel.ac.in/noc24_de03/preview

Mode of Evaluation:

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			50	100

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CCSAI0201	Course Name: Fundamentals of Artificial Intelligence	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		2	0	0	2

Pre-requisite: Basic Programming, Basic Data Interpretation Skills

Course Objectives: This subject aims to introduce students to the core principles, branches, applications, tools, and ethical considerations of Artificial Intelligence, empowering them with essential theoretical knowledge and practical skills to explore intelligent systems and pursue advanced AI research and development.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain the foundations of Artificial Intelligence and its historical evolution	K2
CO2	Interpret and differentiate types of data	K3
CO3	Develop Python-based data processing workflows	K3
CO4	Analyze the impact and real-world applications of AI	K4

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	1	1	2
CO2	2	3	-	-	2	-	-	-	-	-	-	1	1	2
CO3	2	2	2	2	3	-	-	-	-	-	-	1	2	2
CO4	2	2	2	2	3	2	1	2	-	-	-	1	1	2

Course Contents / Syllabus

Module 1	**Introduction to AI**	**8 hours**

Introduction to AI – History, Approaches and Philosophy, Application of AI, Intelligent Agent, Types of Agent, Domains of AI- Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Generative AI

Module 2	**Data Literacy and Analysis**	**8 hours**

Importance of Data, Information, Knowledge, Wisdom, Types of Data [Unstructured, Structured], Data Collection, Data Processing, Data Analysis – Descriptive and Inferential.

Module 3	**Compute, Analysis and Visualization**	**10 hours**

Introduction to Python, Libraries (Pandas, NumPy, Matplotlib), Import and Export of Data, IDE, Google Colab, Kaggle Kernel.

Module 4	**Applications of AI**	**4 hours**

AI in Healthcare, Finance, Agriculture, Transportation, Retail and E-commerce, Entertainment and Media, Smart Homes and IoT, Robotics and Automation

Total Lecture Hours	**30 hours**

Textbook:

S.No	Book Title	Author
1	Artificial Intelligence: A Modern Approach, Pearson Education, 4th Edition, 2020	Stuart Russell & Peter Norvig
2	Artificial Intelligence, McGraw-Hill Education, 3rd Edition, 2009	Elaine Rich, Kevin Knight, Shivashankar B. Nair

Reference Books:

S.No	Book Title	Author
1	Artificial Intelligence and Machine Learning, Dreamtech Press, 1st Edition, 2020	P. S. Deshpande
2	Python Data Analytics: With Pandas, Numpy, and Matplotlib, Apress; 2nd edition (1 January 2018)	Wolfgang Ertel

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=fV2k2ivttL0&ab_channel=nptelhrd
Module 2	https://www.youtube.com/watch?v=dJYGatp4SvA&ab_channel=MichiganOnline

Module 3	https://www.youtube.com/watch?v=VX6kCjwdNPw
Module 4	https://www.youtube.com/watch?v=kaI20cdbMjo

Mode of Evaluation

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20			50	100

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

LAB Course Code: CEC0251	LAB Course Name: Digital Electronics and IoT Systems Lab	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		0	0	2	1

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Pre-requisite:

Course Objectives: The student will learn about

1. Verification of truth table of various type of logic gates.
2. Designing and verification of different type of combinational circuits.
3. Implementation and verification of truth table of various type of flip-flops.
4. Designing and implementation of different types of sequential circuits.
5. Implementation of Programming in IoT development boards with IO sensors.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Verify truth table of various type of Logic Gates.	K2
CO2	Design, implement and verify combinational logic circuits.	K4
CO3	Implement and verify truth table of various types of flip-flops.	K3
CO4	Design and analyse different types of sequential logic circuits.	K4
CO5	Implement programming in IoT development boards with IO sensors	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	3	2	2	1	2	2
CO2	3	3	3	-	-	-	-	-	3	2	2	1	2	2
CO3	3	2	3	-	-	-	-	-	3	2	2	1	2	2
CO4	3	3	3	-	-	-	-	-	3	2	2	1	2	2
CO5	3	3	3	-	-	-	-	-	-	2	2	1	2	2

List Of Practical's (Indicative & Not Limited To)

1. Verification of the truth tables of Basic Logic Gates and Universal Logic Gates using TTL ICs.

a) AND (7408)
b) OR (7432)
c) NOT (7404)
d) NAND (7400)
e) NOR (7402)

2. Implementation of the given Boolean function using TTL Logic Gates (NOT, AND and OR Gates) in SOP for following Boolean expressions:

a) Y1=AB' +A'B
b) Y2=ABC + A'B'C' + A'C
c) F(A,B,C,D)=∑(0,2,5,7,8,10,13,15)

3. Implementation of the given Boolean function using TTL Logic gates (NOT, AND and OR Gates) in POS forms for following Boolean expressions:

a) Y1=(A'+B)(A+B')
b) Y2= (A+B+C)(A'+B'+C')(A'+C)
c) F(A,B,C,D)= M(0,2,5,7,8,10,12,15)

4. Implementation of Half-adder, Full-adder and Full-adder using two Half-adder with TTL Logic Gates (EXOR-7486, AND-7408, OR-7432) and verify its truth table.

5. Implementation of Half-subtractor, Full-subtractor and Full-subtractor using two Half-subtractor with TTL Logic Gates (EXOR-7486, AND-7408, OR-7432) and verify its truth table.

6. Implement 2 Bit magnitude comparator using logic gates and verify the truth table.

7. Implement and verify F (A,B,C) = ∑ (3, 5, 6, 7) using

a) 8:1 multiplexer.
b) 4:1 multiplexer

8. Verification of truth table of flip-flop using NAND gate (7400) & NOR gates (7402).
a) RS Flip Flop
b) JK Flip Flop
c) D Flip Flop
d) T Flip Flop

9. Implement D flip flop using SR flip flop and verify the truth table.

10. Design Mod – N Synchronous Up Counter & Down Counter using 7476 JK Flip-flop

11. Describing hardware in IoT: Hardware Architecture of Arduino UNO Board, Types of Arduino Board

12. Fundamentals of Arduino Programming: Installation of Arduino IDE, Working with structures, Variables, Flow control, Digital i/o f. Analog i/o, Time, Math, Random, Serial

13. Interfacing Arduino with I/O Devices: Push button, LED, Ultrasonic Sensor

Total Hours: 48 hrs.

Mode of Evaluation

CIE			PE	Total
PS1	PS2	PS3	(If mentioned in curriculum)	
5	10	10		
25			25	50

LAB Course Code: CCSE0252	LAB Course Name: Problem Solving using Python	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		0	0	6	3

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Pre-requisite: Basic Computer Knowledge, Logical Thinking & Basic Mathematics

Course Objectives: To provide Basic knowledge of Python programming and to implement programming skill for solving real world problems

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply basic Python constructs (variables, data types, control flow)	K2
CO2	Develop modular programs using functions, recursion, and modules.	K4
CO3	Use data structures, file operations, and exception handling in Python.	K5
CO4	Implement object-oriented concepts	K4
CO5	Build GUI applications using Tkinter and OOP techniques.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	1	1	-	2	-	-	1	-	-	2			
CO2	3	2	2	1	2	-	-	1	-	-	2			
CO3	2	2	2	1	1	-	-	1	-	-	2			
CO4	3	3	2	1	2	-	-	1	-	-	2			
CO5	3	3	2	-	2	-	-	1	-	2	2			

Course Contents / Syllabus

Module 1	**Introduction**	**14 hours**

Introduction: A Brief History of Python, Applications areas of python, Keywords and Identifiers, variables, data types and type conversion, Indexing and Slicing, operators in python, Operator precedence and associativity, Conditional Statements: if statement, if-else statement, Nested-if statement and elif statements. Loops: Purpose and working of loops, while loop, for loop, else with loop statement, Nested Loops, break, continue and pass statement

Module 2	**Function and Modules**	**15 hours**

Function: Built in function, user defined function, Function arguments, passing functions to a function, recursion, Lambda functions, Namespaces. Functional Programming: higher order functions, Map, filter, Reduce. Closures and its characteristics, Decorators, decorating function with argument and iterator, Modules and Packages: Importing Modules, writing own modules, Standard library modules, Packages in Python

Module 3	**Basic Data structures, Exception and File Handling**	**14 hours**

Python Basic Data Structures: Strings, Basic operations of strings, comparing strings, string formatting, Built-in string methods and function, Lists, Tuples, Sets and Dictionaries with built-in methods, List Comprehension. Exception Handling: Errors, Run Time Errors, Try-except statement, Raise, Assert. Files and Directories: Open a File, Reading and Writing data from files close a File, Read and Write operation.

Module 4	**Object Oriented Concepts**	**14 hours**

Object-oriented programming: User-defined classes, Object as an argument, Class variables and Instance variables, Constructor, Parameterized constructor, Encapsulation: Introduction, Data hiding, Instance methods, Class method, Static methods, property method, Magic Methods in python, Instances as Return Values.

Module 5	**Advanced Object-Oriented Techniques and GUI Programming**	**15 hours**

Introduction to inheritance, Types of inheritance, super () function, Abstract class, Polymorphism: Method overriding, Method Overloading.Tkinter: Creating a GUI Application, Widgets: Frame, Label, Button, Entry, Radio button, Check button, Canvas, and Menu.

Total Lecture Hours		**72 hours**
Textbook:		
S.No	**Book Title**	**Author**

1	"Beginning Python-From Novice to Professional"—Third Edition, Apress	Magnus Lie Hetland
2	Python Programming using Problem solving approach by OXFORD Higher education	Reema Thareja

Reference Books:

S.No	**Book Title**	**Author**
1.	Introduction to Computation and Programming Using Python ‘‘, Revised and expanded Edition, MIT Press.	John V Guttag
2.	Introduction to Computer Science using Python: A Computational Problem-Solving Focus, Wiley India Edition.	Charles Dierbach
3.	“Think Python: How to Think Like a Computer Scientist”, 2nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers.	Allen B. Downey,
4.	Introduction to Programming in Python: An Inter- disciplinary Approach, Pearson India Education Services Pvt. Ltd.,2016.	Robert Sedgewick, Kevin Wayne, Robert Dondero:
5.	An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd.	Guido van Rossum and Fred L. Drake Jr,

NPTEL/ Youtube/ Faculty Video Link:

Module 1	**https://nptel.ac.in/courses/106/106/106106182/**
Module 2	**https://nptel.ac.in/courses/106/106/106106212/** **https://www.youtube.com/watch?v=PqFKRqpHrjw**
Module 3	**https://nptel.ac.in/courses/106/106/106106145/** **https://www.youtube.com/watch?v=m9n2f9lhtrw** **https://www.youtube.com/watch?v=oSPMmeaiQ68**
Module 4	**nptel.ac.in/courses/106/106/106106145/** **www.youtube.com/watch?v=ixEeeNjjOJ0&t=4s**
Module 5	**https://nptel.ac.in/courses/106/106/106106145/** **https://www.youtube.com/watch?v=NMTEjQ8-AJM**

Mode of Evaluation

CIE	**PE**	**Total**
PS		
50	**100**	**150**

List of Practical’s

Sr. No	**Program Title**	**CO Mapping**
1	Print “Hello, World!” and perform basic arithmetic operations.	CO1
2	Display Python keywords and identifiers.	CO1
3	Program to demonstrate variable declaration and type conversion.	CO1
4	Demonstrate indexing and slicing on a list and string.	CO1
5	Use arithmetic, relational, and logical operators in a program.	CO1
6	Show operator precedence and associativity with example expressions.	CO1
7	Write a program using `if` and `if-else` conditions.	CO1
8	Implement nested `if` and `elif` statements to categorize age groups.	CO1

9	Write a program using a `while` loop to generate Fibonacci series.	CO1
10	Use a `for` loop to print the multiplication table of a number.	CO1
11	Create and call a user-defined function for factorial.	CO2
12	Write a function to compute GCD of two numbers using recursion.	CO2
13	Program with all types of function arguments (default, keyword, variable-length).	CO2
14	Use lambda function to sort a list of tuples by second element.	CO2
15	Implement higher-order functions: `map`, `filter`, and `reduce`.	CO2
16	Create a closure that captures the outer function's variable.	CO2
17	Write and use a simple decorator to log function execution.	CO2
18	Import and use built-in module `math` and `datetime`.	CO2
19	Create and import a user-defined module.	CO2
20	Create a package with multiple modules and use them in a script.	CO2
21	Perform basic operations on strings and demonstrate built-in string methods.	CO3
22	Compare strings and demonstrate different string formatting styles.	CO3
23	Create a list and demonstrate slicing, appending, and sorting.	CO3
24	Implement tuple packing and unpacking with basic operations.	CO3
25	Create a set, add/remove items, and perform set operations.	CO3
26	Create and manipulate a dictionary with nested structures.	CO3
27	Demonstrate list comprehension to generate a square number list.	CO3
28	Handle exceptions using `try-except-finally` blocks.	CO3
29	Raise custom exceptions with `raise` and validate input with `assert`.	CO3
30	Read a file line by line and count the frequency of each word.	CO3
31	Create a class with instance variables and methods.	CO4
32	Implement constructor and parameterized constructor in a class.	CO4
33	Show encapsulation using private attributes and getter/setter.	CO4
34	Demonstrate class method, static method, and property decorator.	CO4
35	Override `__str__` and `__len__` magic methods for a custom class.	CO4
36	Create and return class instances from another class.	CO4
37	Demonstrate single and multiple inheritance with method overriding.	CO4
38	Use `super()` to invoke parent methods from a subclass.	CO4
39	Create an abstract class and implement it in a derived class.	CO4
40	Show polymorphism with method overloading (via default args) and overriding.	CO4
41	Reuse inheritance examples and show hierarchical/multilevel inheritance.	CO5
42	Create a basic GUI window using Tkinter.	CO5
43	Add Labels, Buttons, and Entry fields to a GUI form.	CO5

44	Implement Radio buttons and Check buttons with event handling.	CO5
45	**Personal Expense Tracker:** A Python app to record and categorize daily expenses for better budgeting.	CO5
46	**Library Management System:** A GUI-based tool to manage book issue, return, and inventory for small libraries.	CO5
47	**Weather Forecast App:** A real-time weather dashboard using API to display city-wise conditions.	CO5
48	**Quiz Application:** An interactive Python quiz system with scoring and question randomization.	CO5
49	**File Organizer:** A desktop utility to auto-sort files into folders based on their extensions.	CO5
50	**Personal Expense Tracker:** A Python app to record and categorize daily expenses for better budgeting.	CO5

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Course Offered in: B.Tech- Second Semester **ME**	**2**	**0**	**0**	**2**

Pre-requisite: Basic understanding of the English language.

Course Objectives: 1. To help the students learn to articulate in French language in day-to-day real-life situations.
2. To enable the students acquire the four basic skills LSRW (Listening, Speaking, Reading, and Writing) of language learning.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Recognize the basic sounds, letters, numbers, words, and phrases of French.	K1
CO2	Develop basic French vocabulary.	K2
CO3	Use simple vocabulary and sentences in day-to-day life.	K3
CO4	Introduce a third person	K3
CO5	Develop basic skills in writing and speaking	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	-	1	1	-	-	-	1	1	2	3	1		
CO2	-	1	1	-	-	-	1	1	2	3	2		
CO3	-	2	2	1	-	1	1	1	3	3	2		
CO4	-	2	2	1	-	1	1	1	3	3	2		
CO5	0	2	2	1	0	1	1	1	3	3	2		

Course Contents / Syllabus

Module 1	**Introduction to French**	**5 hours**

- Basic greetings
- French letters, sounds and accents
- Numbers
- The subject pronouns
- Verbs- être, avoir
- Basic adjectives (How to change into feminine form)
- Introductory questions and Self introduction

Module 2	**Vocabulary Building**	**6 hours**

- Days of the week, months of the year and date
- Colors
- Basic vocabulary
- Articles (indefinite and definite)
- How to make nouns plural
- Use of C'est and Ce sont
- Vocabulary of nationality and professions
- Introduction of a friend

Module 3	**Everyday Common Simple Sentences**	**7 hours**

- Contracted articles with à and de
- Vocabulary of transports
- Use of prepositions à and en
- Time
- Negation 3 ways to frame questions and how to reply accordingly

Module 4	**Reading & Writing**	**3 hours**

- Vocabulary of family members
- Introduction of a family member
- "ER" verbs with exceptions

Module 5	**Skilled writing**	**3 hours**

- How to fill a basic form
- How to write a brief post card in French

Total Lecture Hours	**24 hours**

Reference Books :

S.No	Book Title	Author
1.	Edito 1 (Méthode de français/Cahiers d'exercices)	
2.	Echo A1 (Méthode de français/Cahier d'exercices)	
3.	Saison A1 (Méthode de français/Cahier d'exercices)	

Youtube/ Faculty Video Link:

Module 1	Learn French | French for Beginners |French Alphabet | L' alphabet français | Pronunciation. https://youtu.be/-7woR4auqso?si=HprcsXXS5SJCG-HF
Module 2	French numbers 1-100 (with free PDF) | French grammar for beginners (https://youtu.be/ZfSxfqCM7Hw?si=Q-FZGetSpeCPhPX2)
Module 3	French verbs (avoir; être; faire; aller) en chanson (https://youtu.be/-1RvCib-0Zg?si=KVMxpD_RWikxTbWr)
Module 4	**Les articles définis le, la les, l'** https://youtu.be/oeqs_Qbgt8Q?si=sPYnGVdqd74vUY8L
Module 5	**les articles indéfinis un, une, des** https://youtu.be/oeqs_Qbgt8Q?si=0fNCazC8okbluHgf

Mode of Evaluation

CIE							ESE	Total
ST1	ST2	ST3	TA1* 10	TA2* 10	TA3* 10	Attendance 10		
60			40					100

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Offered in B.Tech- Second Semester **ME**	**2**	**0**	**0**	**2**

Pre-requisite: Basic understanding of English Language

Course Objectives:

- To help the students learn to articulate in German language in day-to-day real-life situations.
- To enable the students acquire the four basic skills LSRW (Listening, Speaking, Reading, and Writing) of language learning.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand and be familiar with basic German Language concepts and the culture	K1
CO2	Recognise the fundamental vocabulary	K1
CO3	Use simple vocabulary and sentences in everyday conversations	K3
CO4	Read and write simple sentences	K2
CO5	Use complex sentences and develop basic writing skills	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	1	1	-	-	-	1	1	2	3	1		
CO2	-	1	1	-	-	-	1	1	2	3	2		
CO3	-	2	2	1	-	1	1	1	3	3	2		
CO4	-	2	2	1	-	1	1	1	3	3	2		
CO5	-	2	2	1	-	1	1	1	3	3	2		

Course Contents / Syllabus

Module 1	**Introduction to German**	**4 hours**

- Letters and Numbers
- German Greetings and Self Introduction
- Personal Pronouns and Verb Conjugations (Regular and Irregular Verbs)
- W-Question
- Simple Sentences

Module 2	**Vocabulary building**	**4 hours**

- The concept of German Articles (Definite and Indefinite)
- Nouns and Articles
- Days, Months, & Seasons
- Adjectives
- Negation

Module 3	**Everyday common simple sentences**	**4 hours**

- Basic directions
- Imperativ
- Date and Time
- Modal Verben ¬ (Basic everyday life conversations and making appointments)

Module 4	**Reading and Writing**	**6 hours**

- Separable Verbs
- Possessive Pronouns
- Sentences - Nomminativ, Akkusativ, Dativ ¬ Translations (English to German, German to English)
- Short Text and Form Filling

Module 5	**Skilled Writing**	**6 hours**

- Changeable Prepositions
- Present Perfect Tense
- Past Tense of – To have and To Be
- Health and Body, Vacations
- Leisure Activities, Celebrations ¬

- E-mail Writing

Total Lecture Hours	**24 hours**

Textbook:

S.No	Book Title	Author

Reference Books:

1. Netzwerk A1 (Goyal Saab Publications)
2. Studio D A1 (Goyal Saab Publications)
3. Langescheidt Dictionary

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=nd0Y_iIaJns https://www.youtube.com/watch?v=LLTX3k1gJ0A https://www.youtube.com/watch?v=1dBD8P9cCrA https://www.youtube.com/watch?v= CyME2ZobD60
Module 2	https://www.youtube.com/watch?v=8Smh9MRp2vc https://www.youtube.com/watch?v=t0uLiNMvY6o
Module 3	https://www.youtube.com/watch?v=bD4vSw6AWps
Module 4	https://www.youtube.com/watch?v=Kj_L8uAffG8 https://www.youtube.com/watch?v=nf1rzqG3nvA
Module 5	https://www.youtube.com/watch?v=Dmv2BzXv_7U https://www.youtube.com/watch?v=lN-5Z4puA6U

Mode of Evaluation

CIE							ESE	Total
ST1	ST2	ST3	TA1* 10	TA2* 10	TA3* 10	Attendance 10		
60			40					100

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NIET Greater Noida Autonomous Institute	**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY** **GREATER NOIDA-201306** **(An Autonomous Institute)**

Course Offered in: B.Tech- Second Semester **ME**	**2**	**0**	**0**	**2**

Pre-requisite: NA

Course Objectives:

1. To help the students learn to articulate in Japanese language in day-to-day real-life situations.
2. To enable the students acquire the four basic skills LSRW (Listening, Speaking, Reading, and Writing) of language learning.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand and be familiar with basic Japanese Language concepts and the culture.	K1
CO2	Recognise the fundamental vocabulary.	K1
CO3	Use simple vocabulary and sentences in everyday conversations.	K3
CO4	Read and write simple sentences.	K2
CO5	Use complex sentences and develop basic writing skills.	K3

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	1	1	-	-	-	1	1	2	3	1	-	-
CO2	-	1	1	-	-	-	1	1	2	3	2	-	-
CO3	-	2	2	1	-	1	1	1	2	3	2	-	-
CO4	-	2	2	1	-	1	1	1	3	3	2	-	-
CO5	-	2	2	1	-	1	1	1	3	3	2	-	-

Course Contents / Syllabus

Module 1	**Introduction to Japanese**	**5 hours**

General features of Japanese, Japanese scripts, Pronunciation of Japanese words, Classroom instructions, Daily greetings and expressions, Numerals, Months name Days of the week, Time & Calendar, Family members, Vocabulary lessons 1&2, Sentence pattern & Example sentences, Self-introduction (jikoshokai)

Module 2	**Vocabulary building**	**5 hours**

Country, language, and people, Basic conversations, Vocabulary lessons 3&4, Use of patterns (KO, SO, AA, and DO), Conversations between guests and hosts, Conversations between customers and shopkeepers

Module 3	**Everyday common simple sentences**	**5 hours**

Vocabulary lessons 5&6, Grammar explanation, Colour & taste, Conversations in post office, Conversations with friends, Making a request, Making an enquiry – Railway Station, Buying Fruits & Vegetables, Names of the Animals, Question formation.

Module 4	**Reading and Writing**	**4 hours**

Scanning based Newspaper reading, Transportation, KANJI Form of Writing – 40 Characters, Shopping Counters, Basic Japanese grammar rules – particles: か (ka), は (wa),, の (no), と (to), を (o), に (ni), も(mo), が (ga), や (ya)., Kara, Soshite, Grammar - Present, Past, Future, Adjectives, Vocabulary Lessons 7&8

Module 5	**Skilled Writing**	**5 hours**

Write short text on oneself., Grammar: Pronouns – subject, object, possessive, Modal verbs

Total Lecture Hours	**24 Hours**

Textbook:

S.No	Book Title	Author
1.	Minna no nihongo – N5	3A Corporation

S.No	Book Title	Author

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/@NihonGoal/community
Module 2	https://www.youtube.com/watch?v=wDpsF90DoeI&list=PLag_mhJfCJ-1-EZcPapMFPTlzVzwjz33M
Module 3	https://www.youtube.com/watch?v=z4qh8BVrb3w

Module 4	https://www.youtube.com/watch?v=W_qW904Gn3M&list=PL_Sdfd1Q7hZrDFwVYpsrxWqsridvP6kTK

Mode of Evaluation

CIE							ESE	Total
ST1	**ST2**	**ST3**	**TA1* 10**	**TA2* 10**	**TA3* 10**	**Attendance 10**		
60			**40**					**100**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Course Offered in: B.Tech- Second Semester **ME**	**0**	**0**	**4**	**2**

Pre-requisite: The students should have completed ABC course in semester I

Course Objectives:

1. To improve proficiency in Business English to the upper-intermediate level of CEFR (Common European Framework of Reference).
2. To improve professional communication skills.

Course Outcome: After completion of the course, the students will be able to

S. No	Course Outcome	Bloom's Knowledge Level (KL)
CO1	Apply key concepts of soft skills in real life scenarios.	K3
CO2	Understand conversations and discussions on a variety of topics.	K2
CO3	Express ideas clearly and effectively through oral communication.	K3
CO4	Understand and analyse main ideas of complex texts.	K4
CO5	Construct clear and detailed texts on a wide range of topics.	K6

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	1	1	1	1	1	1	1	2	3	1
CO2	1	1	1	1	1	1	1	1	2	3	1
CO3	1	1	1	1	1	1	1	1	2	3	1
CO4	1	2	2	2	2	2	1	1	2	3	1
CO5	1	1	2	2	2	2	1	1	2	3	1

List of Practical

1. **Introduction**
   - To the course

   ***Anubhav* Activity**

   On score improvement

2. **Listening to a variety of accents in English**
   - The students will develop their ability to comprehend English conversations with diverse speakers.

3. **Vocabulary Games**
   - The students will enhance their vocabulary through various interesting exercises and word-games.

4. **Role Play**
   - The students will practice how to meet, greet, and converse in miscellaneous professional scenarios.

5. **Deciphering the main points and summarizing**
   - The students will develop the ability to grasp the main point and summarize lengthy documents

6.. **Writing professional emails**
   - The students will practice and develop ability to write clear and concise emails.

7. **Critiquing Films/Videos**
   - The students will improve their listening and critical thinking skills, and will revise rules of reported speech.

8. **News Reports**
   - The students will practice speaking with correct pronunciation and intonation.

9. **Time Bound Case Study Analysis**
   - The students will learn to focus and analyze assigned content

10. **Essay Writing**
    - The students will practice writing essays on the domain specific topics with emphasis on corrective grammar (as per the

need).

11. **Presentations based on the Essay**

- The students will learn to organize the content logically and present their ideas coherently.

12. **Vocabulary Enhancement Exercise**

- The students will acquire domain specific terms.

13. **Listen and Repeat (**Emphasis on accepted Accent, Rhythm, Intonation)

Read out loud (Emphasis on pauses)

14. **Passage Writing Based on Pictures**

The students will write passages on pictures and will discuss correct grammatical structures based on the passages.

15. **Peer Talk on specific topics of general interest**

- The students will develop conversational skills by discussing topics in pairs and will record their response to general questions asked by their peers.

16. **Responding to general questions (**Ref: ES Test)

- The students will develop the ability to respond spontaneously to general questions.

17. **Identifying Errors**

- The students will learn to identify & rectify structural errors.

18. **Solving Para-Jumbles**

- The students will learn to organize ideas in a passage

19. **Language Toolbox**

- The students will do exercises on Active & Passive Voices and cloze tests.

20. **Goal setting & Self discovery**

- The students will set their short-term & long-term goals and will explore adjectives that best describe themselves.

21. **Extempore speeches**

- The students will hone their spontaneous public speaking skills.

22. **Group Discussions**

- The students will improve their ability to express their views clearly while discussing a topic in a group.

23. **Role Play Activity**

- The students will perform role plays on campus behaviour, language, and dress sense of students.

24. ***Anubhav* Activity**

The students will reflect on the semester and the road map ahead.

Total Hours: 48 hrs.

Mode of Evaluation

CIE			PE	Total
PS1 **10**	**PS2** **20**	**PS3** **20**		
50			**50**	**100**

Course Code: CMB0201	**Course Name: Innovation and Entrepreneurship**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester		**2**	**0**	**0**	**2**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

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ME					

Pre-requisite:

Course Objectives: This course is designed to ignite the innovative and entrepreneurial spirit within students by providing them with a foundational understanding of how ideas are transformed into impactful ventures. Students will learn to identify and define different types of innovation, employ creative problem-solving techniques, and grasp the core principles of entrepreneurship and the entrepreneurial mindset.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain the core concepts of innovation, the innovation process, and the fundamentals of entrepreneurship.	K2
CO2	Apply techniques for idea generation, opportunity recognition, and validation for potential tech-driven ventures.	K3
CO3	Develop a basic business model and value proposition for an innovative idea, and understand the principles of MVP development.	K6
CO4	Describe the basics of Intellectual Property Rights relevant to technology and the foundational elements of startup finance and team building.	K2
CO5	Formulate and present a concise pitch for a startup concept and describe the components of the entrepreneurial ecosystem.	K6

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	2	2	-	1	1	1	1	-	2	1	2		
CO2	2	2	2	2	2	2	2	1	1	2	2		
CO3	3	1	2	3	2	2	1	1	1	1	1		
CO4	1	2	1	2	1	-	1	-	-	1	2		
CO5	2	1	1	1	1	1	-	1	2	2	1		

Course Contents / Syllabus

Module 1	**Introduction to Innovation**	**8 hours**

Defining Innovation, Types (Product, Process, Service, Business Model), Importance in Technology, Disruptive vs. Sustaining vs. Incremental Innovation. Idea Generation Techniques (Brainstorming, SCAMPER), Design Thinking Overview, Problem Identification & Definition, Creative Problem Solving.

Module 2	**Entrepreneurship Development**	**8 hours**

Defining Entrepreneurship, Entrepreneurial Mindset & Traits, Types of Entrepreneurs (Tech, Social), Myths, Role in Economic Development. Identifying Market Needs & Gaps, Sources of Ideas, Evaluating Ideas (SWOT, PESTLE basics), Basic Market Research, Customer Discovery Introduction.

Module 3	**Developing a Minimum Viable Product (MVP)**	**8 hours**

Business Model Canvas (BMC) / Lean Canvas, Defining a Compelling Value Proposition, Understanding Target Customers, Basic Competitive Analysis. Concept of MVP for tech products/services, Prototyping (Lo-fi, Hi-fi), Importance of User Feedback, Lean Startup Principles (Briefly).

Module 4	**Intellectual Property Rights (IPR)**	**8 hours**

Basics of Patents (for inventions), Copyrights (for software/content), Trademarks (for brands), Trade Secrets. Importance for tech startups. Building a Founding Team, Bootstrapping, Sources of Early-Stage Funding (Angels, VCs - Conceptual), Basic Financial Terms (Revenue, Cost, Profit).

Module 5	**The Entrepreneurial Ecosystem**	**8 hours**

Go-to-Market Strategies (Basics), Elements of a Good Pitch, developing a Pitch Deck, Practicing the Elevator Pitch. Role of Incubators, Accelerators, Government Support Schemes, Networking. Challenges & Opportunities. Future of Tech Entrepreneurship.

	Total Lecture Hours	**40 hours**

Textbook:

S.No	**Book Title with publication agency & year**	**Author**
1.	Entrepreneurship and Innovation: Theory, Practice and Context	Tim Mazzaro, Sophie Reboud
2.	Innovation and Entrepreneurship	Peter F. Drucker

Reference Books:

S.No	Book Title with publication agency & year	Author
1.	Entrepreneurship - New Venture Creation, Pearson Publications	David H Holt

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=UEngvxZ11sw
Module 2	https://www.youtube.com/playlist?list=PLLy_2iUCG87CUSdZ0z0ihunS1QSrNqXFN

Mode of Evaluation

CIE							ESE	Total
ST1	ST2	ST3	TA1* 10	TA2* 10	TA2* 10	Attendance 10		
60			40					100

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Offered in: B.Tech- Second Semester **ME**	**2**	**0**	**0**	**NC**

Pre-requisite: Basic understanding of political science

Course Objectives: Acquaint the students with legacies of constitutional development in India and help those to understand the most diversified legal document of India and philosophy behind it.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Identify and explore the basic features and modalities about Indian constitution.	K1
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level	K2
CO3	Differentiate different aspects of Indian Legal System and its related bodies.	K4
CO4	Discover and apply different laws and regulations related to engineering practices.	K4
CO5	Correlate role of engineers with different organizations and governance models.	K4

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	**1**	**1**	**2**	**1**	**1**	**3**	**2**	**2**	**1**	**2**	**1**		
CO2	**1**	**2**	**2**	**1**	**1**	**3**	**2**	**2**	**2**	**2**	**1**		
CO3	**1**	**2**	**2**	**1**	**1**	**3**	**2**	**3**	**1**	**2**	**1**		
CO4	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**2**		
CO5	**2**	**2**	**3**	**2**	**1**	**3**	**2**	**3**	**2**	**3**	**2**		

Course Contents / Syllabus

Module 1	**Introduction and Basic Information about Indian Constitution**	**8 hours**

Meaning of the constitution law and constitutionalism, Historical Background of the Constituent Assembly, Government of India Act of 1935 and Indian Independence Act of 1947,Enforcement of the Constitution, Indian Constitution and its Salient Features, The Preamble of the Constitution, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy, Parliamentary System, Federal System, Centre-State Relations, Amendment of the Constitutional Powers and Procedure, The historical perspectives of the constitutional amendments in India, Emergency Provisions: National Emergency, President Rule, Financial Emergency, and Local Self Government – Constitutional Scheme in India.

Module 2	**Union Executive and State Executive**	**8 hours**

Powers of Indian Parliament Functions of Rajya Sabha, Functions of Lok Sabha, Powers and Functions of the President, Comparison of powers of Indian President with the United States, Powers and Functions of Vice-President, Powers and Functions of the Prime Minister, Judiciary – The Independence of the Supreme Court, Appointment of Judges, Judicial Review, Public Interest Litigation, Judicial Activism, LokPal, Lok Ayukta, The Lokpal and Lok ayuktas Act 2013, State Executives – Powers and Functions of the Governor, Powers and Functions of the Chief Minister, Functions of State Cabinet, Functions of State Legislature, Functions of High Court and Subordinate Courts.

Module 3	**Introduction and Basic Information about Legal System**	**8 hours**

The Legal System: Sources of Law and the Court Structure: Enacted law -Acts of Parliament are of primary legislation, Common Law or Case law, Principles taken from decisions of judges constitute binding legal rules. The Court System in India and Foreign Courtiers (District Court, District Consumer Forum, Tribunals, High Courts, Supreme Court). Arbitration: As an alternative to resolving disputes in the normal courts, parties who are in dispute can agree that this will instead be referred to arbitration. Contract law, Tort, Law at workplace.

Module 4	**Intellectual Property Laws and Regulation to Information**	**8 hours**

Intellectual Property Laws: Introduction, Legal Aspects of Patents, Filing of Patent Applications, Rights from Patents, Infringement of Patents, Copyright and its Ownership, Infringement of Copyright, Civil Remedies for Infringement, Regulation to Information, Introduction, Right to Information Act, 2005, Information Technology Act, 2000, Electronic Governance, Secure Electronic Records and Digital Signatures, Digital Signature Certificates, Cyber Regulations Appellate Tribunal, Offences, Limitations of the Information Technology Act.

Module 5	**Business Organizations and E-Governance**	**8 hours**

Sole Traders, Partnerships: Companies: The Company's Act: Introduction, Formation of a Company, Memorandum of Association, Articles of Association, Prospectus, Shares, Directors, General Meetings and Proceedings, Auditor, Winding up. E-Governance and

role of engineers in E-Governance, Need for reformed engineering serving at the Union and State level, Role of I.T. professionals in Judiciary, Problem of Alienation and Secessionism in few states creating hurdles in Industrial development.

Total Lecture Hours	**40 hours**

Textbook:

S.No	Book Title	Author
1.	Introduction to the Indian Constitution	Brij Kishore Sharma

Reference Books:

S.No	Book Title	Author
1.	The Indian Constitution	Madhav Khosla

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=nTlEN7K8aAU
Module 2	https://www.youtube.com/watch?v=UrnObUbUSUc
Module 3	https://www.youtube.com/watch?v=RyxvZWEJBos
Module 4	https://www.youtube.com/watch?v=uGmYOelffrI
Module 5	https://www.youtube.com/watch?v=BBMD2YLbb_c

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**Attendance**		
			5	**5**	**10**		
30			**20**				**50**

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
(An Autonomous Institute)

Course Code: CNC0203	Course Name: Essence of Indian Traditional Knowledge	L	T	P	C
Course Offered in: B.Tech- Second Semester ME		2	0	0	NC

Pre-requisite: Philosophical Systems, Spiritual Practices, Cultural Heritage, Ayurveda and Traditional Medicine, Architecture

Course Objectives: To enable the students to understand the importance of our surroundings and encourage them to contribute towards sustainable development.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the basics of past Indian politics and state polity.	K2
CO2	Understand the Vedas, Upanishads, languages & literature of Indian society.	K2
CO3	Know the different religions and religious movements in India.	K4
CO4	Identify and explore the basic knowledge about the ancient history of Indian agriculture, science & technology, and ayurveda.	K4
CO5	Identify Indian dances, fairs & festivals, and cinema.	K1

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1	2	2	1	1	3	2	2	2	1	2		
CO2	1	1	2	1	1	3	2	2	2	1	2		
CO3	1	1	2	1	1	3	2	3	3	2	2		
CO4	2	2	3	2	2	3	3	2	2	1	2		
CO5	1	1	2	1	1	3	2	2	2	2	3		

Course Contents / Syllabus

Module 1	**Society State and Polity in India**	**8 hours**

State in Ancient India: Evolutionary Theory, Force Theory, Mystical Theory Contract Theory, Stages of State Formation in Ancient India, Kingship , Council of Ministers Administration Political Ideals in Ancient India Conditions' of the Welfare of Societies, The Seven Limbs of the State, Society in Ancient India, Purusārtha, Varnāshrama System, Āshrama or the Stages of Life, Marriage, Understanding Gender as a social category, The representation of Women in Historical traditions, Challenges faced by Women.

Module 2	**Indian Literature, Culture, Tradition, and Practice**	**8 hours**

Evolution of script and languages in India: Harappan Script and Brahmi Script. The Vedas, the Upanishads, the Ramayana and the Mahabharata, Puranas, Buddhist And Jain Literature in Pali,Prakrit And Sanskrit, **Sikh Literature**, Kautilya's Arthashastra, Famous Sanskrit Authors, Telugu Literature, Kannada Literature,Malayalam Literature ,Sangama Literature Northern Indian Languages & Literature, Persian And Urdu ,Hindi Literature

Module 3	**Indian Religion, Philosophy, and Practices**	**8 hours**

Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy, Shankaracharya, Various Philosophical Doctrines , Other Heterodox Sects, Bhakti Movement, Sufi movement, Socio religious reform movement of 19th century, Modern religious practices.

Module 4	**Science, Management and Indian Knowledge System**	**8 hours**

Astronomy in India, Chemistry in India, Mathematics in India, Physics in India, Agriculture in India, Medicine in India , Metallurgy in India, Geography, Biology, Harappan Technologies, Water Management in India, Textile Technology in India ,Writing Technology in India Pyrotechnics in India Trade in Ancient India/,India's Dominance up to Pre-colonial Times.

Module 5	Cultural Heritage and Performing Arts	8 hours

Indian Architect, Engineering and Architecture in Ancient India, Sculptures, Pottery, Painting, Indian Handicraft, UNESCO'S List of World Heritage sites in India, Seals, coins, Puppetry, Dance, Music, Theatre, drama, Martial Arts Traditions, Fairs and Festivals, UNESCO'S List of Intangible Cultural Heritage, Calenders, Current developments in Arts and Cultural, Indian's Cultural Contribution to the World. Indian Cinema

	Total Lecture Hours	40 hours

Textbook:

S.No	Book Title	Author
1.	Indian Art and Culture: for civil services and other competitive Examinations	Nitin Singhania

Reference Books:

S.No	Book Title	Author
1.	The Wonder that was India (34th impression)	B. L. Basham

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=cjh7vCAvKhc
Module 2	https://www.youtube.com/watch?v=fCiOPDZW-30
Module 3	https://www.youtube.com/watch?v=JnFeKp0T3AQ
Module 4	https://www.youtube.com/watch?v=_d8N2hKMpw8
Module 5	https://www.youtube.com/watch?v=8D6UyaVj1tY

Mode of Evaluation

CIE						ESE	Total
ST1	ST2	ST3	TA1* 5	TA2* 5	Attendance 10		
30			20				50

TA* - Teacher Assessment marks on the basis of defined Teaching Methodologies like Quiz, Assignment, Video Assignment, Seminar, Group discussion, PBL or any other defined by respective faculty members and may vary to subject-wise and faculty-wise