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

Information Technology

First Year

(Effective from the Session: 2025-26)

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

(AN AUTONOMOUS INSTITUTE)

Bachelor of Technology

Information Technology

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	CAS0102	Semiconductor Physics & Devices	Mandatory	3	0	0	30	20	50		100		150	3
3	CCSAI0101	Fundamentals of Artificial Intelligence	Mandatory	2	0	0	30	20	50		50		100	2
4	CASCC0101	Design Thinking-I	Mandatory	2	0	0	60	40	100				100	2
5	CAS0152	Semiconductor Physics & Devices Lab	Mandatory	0	0	2				25		25	50	1
6	CCSE0151	C Programming	Mandatory	0	0	4				50		50	100	2
7	CME0151	*CAD and Digital Manufacturing Lab	Mandatory	0	0	2				25		25	50	1
8	CCSE0152	Web Designing	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
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL		**12**	**1**	**14**			**250**	**175**	**250**	**175**	**850**	**18**

*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	CMC0001	Next Gen Technologies	Infosys Wingspan (Infosys Springboard)	10h 14m	0.5
2	CMC0007	Programming In C	Infosys Wingspan (Infosys Springboard)	17h 7m	1
3	CMC0014	TechA Web Development using HTML and CSS Foundation Certification	Infosys Wingspan (Infosys Springboard)	17h 46m	1

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/CNC0102)

- 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

Information Technology

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	CAS0203A	Differential Equations and Linear Transformations	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	CCSE0201	Data Structures and Algorithm-I	Mandatory	3	0	0	30	20	50		100		150	3
4	CCSE0202	Intelligent Interaction Systems	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	CCSE0251	Data Structures and Algorithm-I Lab	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		17	1	16			400	175	350	225	**1150**	**24**

Foreign Language:

S. No.	Subject Code	Course Name	Types of Subject
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	CMC0016	ChatGPT-4 Prompt Engineering: ChatGPT, Generative AI & LLM	Infosys Wingspan (Infosys Springboard)	22h 10m	1.5
2	CMC0015	Data Structures and Algorithms using Python - Part 1	Infosys Wingspan (Infosys Springboard)	29h 27m	2
3	CMC0003	Programming Fundamentals using Python - Science Graduates - Foundation Program	Infosys Wingspan (Infosys Springboard)	66h 10m	4

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.

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

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CAS0103	**Course Name: Calculus and Linear Algebra**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/ AIML-TWIN/CYS/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT		**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.		
	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***	**TA2***	**Attendance**		
			5	**5**	**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)

Course Code: CAS0102	Course Name: Semiconductor Physics and Devices	L	T	P	C
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		3	0	0	3

Pre-requisite:

1. Basic knowledge of semiconductors.
2. Basics concept of electrostatics.
3. Basics of matter waves, uncertainty principle**.**
4. Properties of matter.
5. Basic laws of electricity and magnetism.

Course Objectives:

1. To provide the knowledge of the phenomenon of semiconductors and its uses to engineering applications.
2. To provide the knowledge of the Bipolar Junction Transistor and its engineering application.
3. To provide the knowledge of the basic concept of Field Effect Transistor.
4. To provide the knowledge of Quantum Mechanics and its application in quantum computing.
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	Describe the phenomenon of semiconductor physics.	K2
CO2	Explain the working of Bipolar Junction Transistor.	K2
CO3	Identify the basic concept of Field Effect Transistor.	K2
CO4	Implement the concept of quantum mechanics.	K3
CO5	Define the basic phenomena of superconductivity and nanotechnology.	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
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	**Introduction to Semiconductor Physics**	**8 hours**

Energy bands, Fermi Level, Direct and Indirect Band Gap Semiconductor, Diffusion and Drift Current, P-N Junction Diode and V-I Characteristics of Diode.

Special Diodes: Zener Diode, Photodiode, Solar Cell, Light Emitting Diode (LED), Organic-Light Emitting Diode (O-LED)		
Module 2	**Bipolar Junction Transistor(BJT)**	**8 hours**
Transistor (PNP & NPN), Construction & Working of Transistor, Common Base, Common Emitter and Common Collector Configurations of Transistor, V-I Characteristics of Common Emitter, Operating Point, DC load lines, Voltage Divider biasing, BJT applications: Switch and amplifier.		
Module 3	**Field Effect Transistor(FET)**	**8 hours**
Construction and Working Principle of Junction Field Effect Transistor **(**JFET), Comparison with BJT, V-I Characteristics of JFET, Pinch-off Voltage. Construction & Working Principle of MOSFET, V-I Characteristics in Enhancement and Depletion modes, CMOS (Qualitative)**.**		
Module 4	**Quantum Mechanics and Computing**	**8 hours**
Introduction to Quantum Physics, Born's Interpretation of Wave function, Operators, Schrodinger wave equation, Introduction to Quantum computing, Moore's law, Differences in classical and quantum computing, Concept of Qubits, Properties of Qubits, Bloch sphere.		
Module 5	**Superconductivity and Nanotechnology**	**8 hours**
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	Electronic Devices and Circuit Theory	Robert L.Boylestad and Louis Nashelsky

Reference Books:

S.No	Book Title	Author
1	Semiconductor Devices Physics and Technology 2ndEd	S. M. Sze
2	Optoelectronics an Introduction 3rd Edition	Wilson and Hawkes
3	Semiconductor Physics and Devices	Neamen
4	Solid State Electronics Devvices	Streetman and Banerjee
5	Engineering Physics	S.D. Jain and G.S. Sahasrabudhe
6	Nanotechnology	R. Booker and E. Boysen
7	Microelectronics Circuits	Adel S. Sedra and Kenneth Carless Smith

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=Fwj_d3uO5g8
Module 2	https://www.youtube.com/watch?v=b617gx1B-qc
Module 3	https://www.youtube.com/watch?v=Z6M3R6RjEas

Module 4	https://www.youtube.com/watch?v=PvXAUhKnToE
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***	**TA2***	**Attendance**		
			5	**5**	**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)

Course Code: CCSAI0101	**Course Name: Fundamentals of Artificial Intelligence**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		**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: 6 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*	TA2*	Attendance		
			5	5	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: CAS0152	LAB Course Name: Semiconductor Physics and Devices Lab	L	T	P	C
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		0	0	2	1
Pre-requisite: Least count, Screw gauge, Vernier calipers					

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Course Objectives:

1. To provide the practical knowledge of the phenomenon blackbody.
2. To provide the practical knowledge of the characteristics of transistors.
3. To provide the practical knowledge of the characteristics of diodes.
4. To provide the practical knowledge of the characteristics of solar cell.
5. To provide the practical knowledge of dielectric constant.

Course Outcome: After completion of the course, the student will be able to:		Bloom's Knowledge Level (KL)
CO1	Apply the practical knowledge of the phenomenon of blackbody.	K3
CO2	Understand the characteristics of transistors.	K2
CO3	Analyze the characteristics of diodes.	K4
CO4	Analyze the characteristics of solar cell.	K4
CO5	Understand the dielectric constant.	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
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 energy band gap of a given semiconductor material.
2. To determine the Planck's constant using LEDs of known wavelength.
3. To study the Hall effect and determine the Hall coefficient, Carrier density and Mobility of a given semiconductor material using Hall effect setup.
4. To determine the resistivity of given material using four probe method.
5. To determine the dielectric constant of the material by charging and discharging of capacitor.
6. To determine the characteristics of photoelectric cell.
7. To verify Stefan's Law by electrical method.
8. To Plot V-I Characteristics of PN Junction diode.
9. Plot of gain in dB Vs frequency, measurement of bandwidth, input impedance, maximum signal handling capacity (MSHC) of Single stage common source FET amplifier.
10. To draw the static current-voltage (I-V) characteristics of a Zener diode.
11. To draw input and output characteristic of common base Bipolar Junction Transistor.
12. To draw input and output characteristic of common collector Bipolar Junction Transistor.

13. To draw input and output characteristic of common emitter Bipolar Junction Transistor.
14. To study FET as a Voltage Variable Resistor (VVR).
15. To plot the V-I Characteristics of the solar cell and hence determine the fill factor.
Total Hours: 24 hrs.

Mode of Evaluation

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

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

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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**	**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**	**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 10	PS2 20	PS3 20	(If mentioned in curriculum)	
50			50	100

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LAB Course Code: CME0151	LAB Course Name: CAD & Digital Manufacturing	L	T	P	C
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		0	0	2	1

Pre-requisite: NIL

Course Objectives: The objective of this lab is to enable students to understand and apply the fundamentals of CAD and digital manufacturing, including 2D drafting, 3D modeling, and 3D printing processes. Students will gain hands-on experience with design tools, slicing software, and post-processing techniques to develop functional digital-to-physical prototypes.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the principles of 2D geometry and orthographic projection and apply them to manual and computer-aided drafting.	K3
CO2	Develop 3D models of components using CAD tools and apply appropriate dimensioning and modeling techniques.	K3
CO3	Identify the components of a 3D printer and understand the workflow from CAD file preparation to STL conversion for 3D printing.	K2
CO4	Use slicing software to generate G-code from 3D models and analyze the slicing parameters, support structures, and print previews.	K3
CO5	Perform 3D printing of parts and assemblies and demonstrate post-processing techniques to enhance surface finish, fit, and function.	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	-	-	2	1	1	1	1	1	1	2	2	3
CO2	3	1	-	1	3	2	1	1	1	1	1	2	3	3
CO3	3	2	2	1	3	3	1	1	2	1	1	2	3	2
CO4	3	1	-	-	2	3	2	1	2	1	1	2	2	2
CO5	3	2	2	1	3	3	2	1	2	1	1	2	3	3

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

1. To introduce the user interface of CAD software and its elements/tools/commands.
2. To draw the sheet layout and title block using aligned system of dimensioning.
3. To apply the Aligned Dimensioning System to precisely reproduce the given 2D drawings using CAD software.
4. To accurately create and represent the given 2D drawing in CAD, utilizing the Aligned System of dimensioning.
5. To design the given 3D Component in CAD software, utilizing the Aligned System of dimensioning.
6. To design the given 3D Component in CAD software, utilizing the Unidirectional System of dimensioning and Layer Properties.
7. Introduction to 3D printer and explore features and specifications like Machine setting (e.g., Nozzle, Print Bed, etc.) for FDM 3D printer.

8. To upload the part and set up the position and orientation of the model (use of various commands like Move, Scale, Rotate, Mirror etc.) in slicing software.

9. To use slicing software for converting a 3D CAD model into a G code on cloud based slicing software and adding the reinforcing of layers of composites within slicing software.

10. To create the G-code file for 3D printing purpose using raft, brim and skirt in the slicing software to fulfill the adaptive need of 3D printer.

11. 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**

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LAB Course Code: CCSE0152	**LAB Course Name: Web Designing**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		**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**

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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

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**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CASL0151	LAB Course Name: Acquiring Business Communication (ABC) Lab	L	T	P	C
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT		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	**PS2**	**PS3**		
10	**20**	**20**		
50			**50**	**100**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CASCC0101	**Course Name: Design Thinking-I**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)		**2**	**0**	**0**	**2**

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**

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

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CNC0103	**Course Name: Essence of Indian Traditional Knowledge**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT**		**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 Code: CNC0102	**Course Name: Constitution of India, Law And Engineering**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- First Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT**		**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* 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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
GREATER NOIDA-201306
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Course Code: CAS0203A	Course Name: Differential Equations and Linear Transformations	L	T	P	C
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN/CSE(AIML)/CYS/ AIML-TWIN/M.Tech(Integrated)/MCT**		**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, Partial Differential Equation, Laplace Transform, Vector space and Linear transformation 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	Illustrate the solution of partial differential equation and expansion of function as Fourier series.	K3
CO3	Apply the Laplace transform to solve ordinary differential equations.	K3
CO4	Explain the concept of vector space.	K2
CO5	Understand the concept of linear transformation and orthogonalization.	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
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	3	2	3	3	-	-	-	-	1	3		
CO5	3	3	2	3	3	-	-	-	-	1	3		

Course Contents / Syllabus

Module 1	**Ordinary Differential Equation of Higher Order**	**10 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	**Fourier Series and Partial Differential Equation**	**12 hours**

Fourier series, Half range Fourier sine and cosine series. Applications in Engineering.

Solution of first order Lagrange's linear partial differential equations, 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 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	**Vector Space**	**8 hours**
Vector spaces over R and C, subspace, linear independence and linear dependence of vectors, basis, dimension.		
Module 5	**Linear Transformations**	**8 hours**
linear transformations, rank and nullity theorem, inner product spaces and Orthogonalization. Gram–Schmidt Orthogonalization process.		
	Total Lecture Hours	**48 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	Fourier Series and Boundary Value Problems, 8th Edition-Tata McGraw-Hill.	James Ward Brown and Ruel V Churchill
6	Linear Algebra : A Modern Introduction, 2nd Edition, Brooks/Cole.	D. Poole
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
10	Complex Variable and Applications, 8th Edition, Tata McGraw-Hill.	James Ward Brown and Ruel V Churchill
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=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 **https://youtu.be/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://youtu.be/0gHg5X6ng_4**
Module 5:	**https://youtu.be/zvRdbPMEMUI** **https://youtu.be/ERfbtPBEYVA** **https://youtu.be/ZFQteSfxMss**

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**Attendance**		
			5	**5**	**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)

Course Code: CEC0201	**Course Name: Digital Electronics and IoT Systems**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**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.

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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:

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=ntiv1g7G_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***	**TA2***	**Attendance**		
			5	**5**	**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: CCSE0201	Course Name: Data Structures and Algorithms -I	L	T	P	C
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/M.Tech(Integrated)/MCT**		**3**	**0**	**0**	**3**

Pre-requisite: Programming Language

Course Objectives: The objective of the course is to learn the basic concepts of algorithm analysis, along with the implementation of linear data structures.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the concept of algorithm analysis and its importance for problem solving.	K2
CO2	Implement arrays for searching, sorting, and hashing to foster critical thinking.	K3
CO3	Compare and contrast linked lists with arrays and the implementation of linked lists with their applications.	K4
CO4	Understand static and dynamic implementation of stacks while mastering the principle of recursion for effective problem-solving.	K2
CO5	Implement and analyse divide & conquer algorithms and greedy approaches for efficient problem-solving across diverse contexts.	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	3	2	2	1	1	-	1	1	1	2	3	-	2	2
CO2	3	3	3	2	2	1	-	3	1	1	3	3	2	2	2
CO3	3	3	3	2	2	1	-	3	1	1	3	3	2	2	3
CO4	3	3	3	2	2	1	-	3	1	2	3	3	1	2	2
CO5	3	3	3	3	2	1	-	3	1	2	3	3	2	2	3

Course Contents / Syllabus

Module 1	**Introduction to Data Structure and Algorithms**	**10 hours**

Algorithms, Analysing Algorithms, Complexity of Algorithms, Amortized Analysis, Growth of Functions, Methods of solving Recurrences, Performance Measurements, Time and Space Complexity of an algorithm, Asymptotic notations (Big Oh, Big Theta and Big Omega), Abstract Data Types (ADT).

Data types: Primitive and non-primitive, Introduction to Data structure, Types of Data Structures- Linear & Non-Linear Data Structures.

Module 2	**Design and Analysis of Algorithms: Arrays, searching and sorting, Hashing**	**9 hours**

Arrays: Definition, Single and Multidimensional Arrays, Representation of Arrays: Row Major Order, and Column Major Order, Derivation of Index Formulae for 1-D,2-D,3-D and n-D Array Application of Arrays: Sparse Matrices and their Representations.

Searching algorithm with analysis: Linear search, Binary search. Sorting algorithm with analysis: Bubble sort, Insertion sort, Selection sort, Shell Sort, sorting in Linear Time- Counting Sort.

Hashing: The symbol table, Hashing Functions, Collision-Resolution Techniques, Hashing for direct files.

Module 3	**Design and Analysis of Algorithms: Linked lists Data Structure**	**10 hours**

Comparison of Array and Linked list, Types of linked list: Singly Linked List, Doubly Linked List, Circular Linked List Polynomial Representation and Addition of Polynomials.

Module 4	**Design and Analysis of Algorithms: Stacks Data Structure, Recursion and Queue Data Structure**	**10 hours**

Primitive Stack operations: Push & Pop, Array and Linked List Implementation of Stack, Application of stack: Infix, Prefix, Postfix Expressions and their mutual conversion, Evaluation of postfix expression.

Principles of recursion, Tail recursion, Removal of recursion, Problem solving using iteration and recursion with examples such as binary search, Fibonacci series, and Tower of Hanoi, Trade-offs between iteration and recursion.

Merge sort and Quick sort algorithms with analysis.

Array and linked List implementation of queues, Operations on Queue: Create, Insert, Delete, Full and Empty, Circular queues, Dequeue and Priority Queue algorithms with analysis.

Module 5	**Design and Analysis of Algorithms: Divide and Conquer Algorithm and Greedy Algorithms**	**9 hours**

Divide and Conquer concepts with Examples Such as Quick sort, Merge sort.

Greedy Methods with Examples Such as Activity Selection, Task Scheduling, Fractional Knapsack Problem, Huffman Encoding.

	Total Lecture Hours	**48 hours**

Textbook:

S.No	Book Title with publication agency & year	Author
1	"Data Structures and Algorithms in Python: An Indian Adaptation", 1st Edition, 2021.	Michael T. Goodrich, Roberto Tamassia
2	"Data Structures" Schaum's Outline Series, Tata McGraw-hill Education (India) Pvt. Ltd, 2nd Edition, 2017.	Lipschutz
3	"Fundamentals of Data Structures", Computer Science Press, 1st Edition, 1993.	Horowitz and Sahani

Reference Books:

S.No	Book Title with publication agency & year	Author
1	Introduction to Algorithms, 4th ed. Cambridge, MA, USA: MIT Press, 2022.	T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein
2	Data Structures and Algorithms Made Easy: Data Structure and Algorithmic Puzzles, 5th ed. Noida, India: CareerMonk Publications, 2016.	N. Karumanchi
3	Grokking Algorithms: An Illustrated Guide for Programmers and Other Curious People, 2nd ed. Shelter Island, NY, USA: Manning Publications, 2024	A. Y. Bhargava
4	Algorithms, 4th ed. Boston, MA, USA: Addison-Wesley, 2011.	R. Sedgewick and K. Wayne
5	The Algorithm Design Manual, 2nd ed. London, U.K.: Springer, 2011.	S. S. Skiena

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NPTEL/ Youtube/ Faculty Video Link:	
Module 1	https://youtu.be/u5AXxR4GnRY
Module 2	https://www.youtube.com/watch?v=LQx9E2--p5c&pp=ygUMYXJyYXlzIG5wdGVs
Module 3	https://www.youtube.com/watch?v=K7VIKlUdo20&pp=ygUPbGluayBsaXN0IG5wdGVs
Module 4	https://www.youtube.com/watch?v=g1USSZVWDsY&list=PLB3CD0BBB95C1BF09&index=2&pp=iAQB https://www.youtube.com/watch?v=THMyk2_p530&pp=ygUccXVldWUgZGF0YSBzdHJ1Y3R1cmUgICBucHRlbA%3D%3D
Module 5	https://www.youtube.com/watch?v=_VV9v41FIq0&pp=ygUZZGl2aWRlIGFuZCBjb25xdWVyICBucHRlbA%3D%3D https://www.youtube.com/watch?v=ARvQcqJ_-NY&list=PLfFeAJ-vQopt_S5XlayyvDFL_mi2pGJE3

Mode of Evaluation

CIE						ESE	Total
ST1	**ST2**	**ST3**	**TA1***	**TA2***	**Attendance**		
			5	**5**	**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: CCSE0202	**Course Name: Intelligent Interaction Systems**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**2**	**0**	**0**	**2**

Pre-requisite: Basic proficiency in C programming and familiarity with AI

Course Objectives: This course emphasizes the study and application of AI-driven technologies including prompt engineering, large language models (LLMs), generative AI tools, for engineering education, research, and industry challenges. It aims to solve real-world problem-solving scenarios while adhering to ethical and industry standards.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply principles of prompt engineering, and large language models (LLMs)	K3
CO2	Analyze GenAI tools for solving real-world problems.	K4
CO3	Analyze effectively knowledge engines and version control system for up-to-date information management.	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**	**PSO4**
CO1	3	2	3	2	3	-	-	2	2	2	2	3	1	2	2
CO2	3	3	3	3	3	1	-	2	2	2	2	3	1	2	2
CO3	3	2	3	2	3	1	1	2	3	3	2	3	1	2	2

Course Contents / Syllabus

Module 1	**Commanding Intelligence: The Magic of Prompts**	**6 hours**

Introduction to Prompt Engineering, Understanding Large Language Models (LLMs), Principles of Effective Prompt Design, Prompt Engineering Techniques Applications in Engineering and Emerging Technologies, Prompt engineering hands on exercises (using ChatGPT or similar tools)

Module 2	**Generative AI: Role in Modern Classrooms and Workplaces**	**8 hours**

Introduction to Generative AI Tools in Engineering, how GenAI works, Use cases of personal tutoring, automatic grading assistance, lecture plan, customer support automation, content creation for emails, reports, startup investor pitch using ChatGPT, coding education in terms of code generation, bug, error tracking in real-time, brainstorm design solutions, rapid prototyping of collaborative project, code generation, SQL query optimization using Copilot.

Module 3	**Integrating Conversational and Multimodal AI in Education and Research**	**8 hours**

Introduction to Conversational AI and Multimodal AI, Overview of Google Bard (conversational), and Google Gemini (multimodal), use case of conversational Al- Personalized Student Feedback (tailored feedback on essays or coding assignments), Interactive Learning Assistants (chatbots answering student queries) in real time using Bard, use case of Multimodal Al - Multimodal Assessments (Analyzing student submissions combining text, sketches, and audio).

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Module 4	Leveraging Knowledge Engine & Version Control System	10 hours

Introduction of knowledge engine, use case of Research Assistance, Lesson Planning, Critical Thinking Development (Market trends and analysis), Knowledge Retention (centralized repositories for students training), using Perplexity.

Introduction of version control engine, use case of automated assignment grading, peer review workflow, collaborating on codebases, track changes, and resolve conflicts, Version-controlled technical manuals ensure up-to-date knowledge sharing using GitHub.

Total Lecture Hours	**32 hours**

Textbook:

S.No	Book Title with publication agency & year	Author
1	Github for dummies Kindle Edition	Sarah Guthals

Reference Books:

S.No	Book Title with publication agency & year	Author
1	Chat GPT: The Evolution of AI Kindle Edition	Moksh Khatri

NPTEL/ Youtube/ Faculty Video Link:

Prompt Engineering	https://www.youtube.com/watch?v=LWiMwhDZ9as
ChatGPT	https://www.youtube.com/watch?v=mXPHrdvoI4k
Copilot	https://www.youtube.com/watch?v=bBqTdOkso2Y
Gemini	https://www.youtube.com/watch?v=DJtX3S7qx2s
Bard	https://www.youtube.com/watch?v=NqqBfW4PYlQ
Perplexity	https://www.youtube.com/watch?v=9G5Y2DiBVek
GitHub	https://www.youtube.com/watch?v=zTjRZNkhiEU

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

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CEC0251	**LAB Course Name: Digital Electronics and IoT Systems Lab**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**0**	**0**	**2**	**1**

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**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSE0251	LAB Course Name: Data Structures and Algorithms Lab -I	L	T	P	C
Course Offered in: B.Tech- Second Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/M.Tech(Integrated)/MCT		0	0	4	2

Pre-requisite: Programming Language

Course Objectives:

Learn to implement linear data structures.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply single and multi-dimensional array for implementation of matrix operations.	K3
CO2	Implement Link list, Stack and Queues with their applications.	K2
CO3	Implement and analyse various operation like searching sorting and hashing.	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	2	2	1	1	-	3	1	1	2		
CO2	3	3	3	2	2	1	-	3	1	1	2		
CO3	3	3	3	2	2	1	-	3	1	1	2		

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

1. Construct a program to compare the time complexities of selection, bubble and insertion sort by plotting the graph
2. Construct a program to compare the time complexities of various algorithms by varying size "n".
3. Construct a Code to find the maximum element in an array.
4. Construct a Code to calculate the sum of all elements in an array.
5. Construct a Code to reverse the elements of an array.
6. Construct a Code to check if an array is sorted in ascending order.
7. Construct a Code to count the occurrence of a specific element in an array.
8. Construct a Code creation and traversal of 2D Array in row major and column major order.
9. Construct a code to print the transpose of a given matrix using function
10. Program to find if a given matrix is Sparse or Not and print Sparse Matrix
11. Construct a code to represent a sparse matrix in triplet form.
12. Construct a code to Implement Linear Search
13. Construct a code to implement Binary Search
14. Construct a program to Implement Selection Sort
15. Construct a program to Implement Bubble Sort
16. Construct a program to Implement Insertion Sort
17. Construct a program to Implement Shell Sort
18. Construct a program to Implement Counting Sort

19. Create a single linked list and perform basic operations (insertion, deletion, traversal).
20. Create a double linked list and perform basic operations (insertion, deletion, traversal).
21. Create a circular linked list and perform basic operations (insertion, deletion, traversal).
22. Create a circular double linked list and perform basic operations (insertion, deletion, traversal).
23. Reverse a single linked list.
24. Check if a linked list is palindrome.
25. Reverse a double linked list.
26. Find the middle element of a single linked list.
27. Find the middle element of a double linked list.
28. Merge two sorted single linked lists.
29. Detect and remove a loop in a circular linked list.
30. Construct a code to add two polynomials using linked list
31. Construct a program to Implement stack using array
32. Construct a program to Implement stack using a linked list
33. Construct a code to Infix to postfix conversion using a stack
34. Construct a code for Balanced parentheses checker using a stack
35. Implement Reverse a string using a stack.
36. Implement Binary Search using Recursion.
37. Construct a program to print Fibonacci Series using Recursion.
38. Construct a code to implement Tower of Hanoi.
39. Construct a program to Implement queue using array.
40. Construct a code for Implementing a circular queue.
41. Construct a program to Implement queue using stack
42. Construct a program to Implement priority queue
43. Construct a program to Implement double ended queue
44. Construct a program to Implement Merge Sort with recursion
45. Construct a program to Implement Quick Sort with recursion
46. Construct a program to Implement Merge Sort using iteration
47. Construct a program to Implement Quick Sort using iteration
48. Construct a program to Implement fractional knapsack
49. Construct a program to Implement Activity selection problem
50. Construct a program to Implement Job scheduling problem
Total Hours: 48 hrs.

Mode of Evaluation

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

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

LAB Course Code: CCSE0252	LAB Course Name: Problem Solving using Python	L	T	P	C
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT**		**0**	**0**	**6**	**3**

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

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CASL0202	**Course Name: French Language**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**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

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CASL0203	**Course Name: German**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**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

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

• 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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CASL0204	**Course Name: Japanese**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**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.

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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***	**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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CASL0251	LAB Course Name: Communication for Career Enhancement	L	T	P	C
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT**		**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	PSO1	PSO2
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**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CMB0201	**Course Name: Innovation and Entrepreneurship**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/ M.Tech(Integrated)**		**2**	**0**	**0**	**2**

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:

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

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CNC0202	**Course Name: Constitution of India, Law And Engineering**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech- Second Semester **CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT**		**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* 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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Course Code: CNC0203	Course Name: Essence of Indian Traditional Knowledge	L	T	P	C
Course Offered in: B.Tech- Second Semester CSE/CSE-TWIN/CSE(R)/IT/IT-TWIN/CS/CSE(DS)/ CSE(IOT)/CSE(AI)/AI-TWIN /CSE(AIML)/CYS/ AIML-TWIN/ECE/ECE(VLSI)/ME/M.Tech(Integrated)/MCT		**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*	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