NOIDA INSTITUTE OF ENGG. & 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

Computer Science and Business Systems

First Year

(Effective from the Session: 2025-26)

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

(AN AUTONOMOUS INSTITUTE)

Bachelor of Technology

Computer Science and Business Systems

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	CCSBS0106	Discrete Mathematics	Mandatory	3	0	0	30	20	50		100		150	3
2	CCSBS0105	Introductory Topics in Statistics, Probability and Calculus	Mandatory	3	0	0	30	20	50		100		150	3
3	CCSBS0103	Fundamentals of Computer Science	Mandatory	3	0	0	30	20	50		100		150	3
4	CCSBS0102	Principles of Electrical Engineering	Mandatory	2	0	0	30	20	50		50		100	2
5	CCSBS0101	Physics for Computing Science	Mandatory	2	0	0	30	20	50		50		100	2
6	CCSBS0104	Business Communication & Value Science – I	Mandatory	1	0	0	30	20	50		50		100	1
7	CCSBS0156	Discrete Mathematics Lab	Mandatory	0	0	2				25		25	50	1
8	CCSBS0153	Fundamentals of Computer Science Lab	Mandatory	0	0	4				50		50	100	2
9	CCSBS0151	Physics for Computing Science Lab	Mandatory	0	0	2				25		25	50	1
10	CCSBS0152	Principles of Electrical Engineering Lab	Mandatory	0	0	2				25		25	50	1
11	CCSBS0154	Business Communication & Value Science – I Lab	Mandatory	0	0	2				25		25	50	1
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL											**1050**	**20**

*** List of MOOCs Based Recommended Courses for first year (Semester-I) B. Tech Students**

S. No.	Subject Code	Course Name	University/ Industry Partner Name	N. of Hours	Credits
1.	CMC0001	Next Gen Technologies	Infosys Wingspan (Infosys Springboard)	10h 14m	0.5
2.	CMC0003	Programming Fundamentals using Python - Science Graduates - Foundation Program	Infosys Wingspan (Infosys Springboard)	66h 10m	4

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 - - Subject Code)**
  - 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

Computer Science and Business Systems

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	CCSBS0205	Linear Algebra	Mandatory	3	0	0	30	20	50		100		150	3
2	CCSBS0201	Statistical Methods & Modelling	Mandatory	3	0	0	30	20	50		100		150	3
3	CCSBS0203	Data Structures & Algorithms	Mandatory	3	0	0	30	20	50		100		150	3
4	CCSBS0202	Principles of Electronics	Mandatory	2	0	0	30	20	50		50		100	2
5	CCSBS0206	Fundamentals of Economics	Mandatory	2	0	0	30	20	50		50		100	2
6	CCSBS0204	Business Communication & Value Science – II	Mandatory	2	0	0	30	20	50		50		100	2
7	CCSBS0255	Linear Algebra Lab	Mandatory	0	0	2				25		25	50	1
8	CCSBS0251	Statistical Methods & Modelling Lab	Mandatory	0	0	2				25		25	50	1
9	CCSBS0253	Data Structures & Algorithms Lab	Mandatory	0	0	4				50		50	100	2
10	CCSBS0252	Principles of Electronics Lab	Mandatory	0	0	2				25		25	50	1
11	CNC0201	Environmental Sciences	Mandatory	2	0	0	30	20	50		50		100	NA
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL											**1000**	**20**

*** List of MOOCs Based Recommended Courses for first year (Semester-II) B. Tech Students**

S. No.	Subject Code	Course Name	University/ Industry Partner Name	N. of Hours	Credits
1.	CMC0005	English Communication for Tech Professionals	Infosys Wingspan (Infosys Springboard)	73h 1m	4
2.	CMC0004	Programming Fundamentals using Python - Part 2	Infosys Wingspan (Infosys Springboard)	40h 13m	3

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 - CNC0201)

- 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: CCSBS0106	**Course Name: Discrete Mathematics**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -First Semester CSBS		**3**	**0**	**0**	**3**

Pre-requisite: Knowledge of Mathematics

Course Objectives: The course covers basic logic, set theory and core ideas in combinatorial mathematics. The course aims to enhance one's ability to develop logical thinking and ability to problem solving.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply the basic principles of Boolean algebra and implementation of K Map	K3
CO2	Apply the fundamental concepts of sets, relations, and functions, and analyze the algebraic structures	K3,K4
CO3	To solve counting problem using recursive function theory.	K3
CO4	To design and use of non-linear data structure like trees and graph for circuit and network designing.	K6
CO5	Infer the validity of statements and construct proofs using predicate logic formulas.	K5

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

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

Course Contents / Syllabus

Module 1	**Introduction to Boolean algebra**	**10 hours**

Introduction of Boolean algebra, truth table, basic logic gate, basic postulates of Boolean algebra, principle of duality, canonical form, Boolean expression reduction using Karnaugh map.

Module 2	**Abstract algebra and Advanced algebra**	**10 hours**

Introduction to sets, types of sets, types of relations and functions, Group, rings, field

Module 3	**Combinatorics and Recurrence relation**	**10 hours**

Basic counting, balls and bins problems, probability and combination, Solution of recurrences using generating function and characteristic equation, principle of mathematical induction, pigeonhole principle.

Module 4	**Graph Theory and Trees**	**10 hours**

Graphs and digraphs, complement, isomorphism, connectedness and reach-ability, adjacency matrix, Eulerian paths and circuits in graphs and digraphs, Hamiltonian paths and circuits in graphs and tournaments, Planar graphs, Euler's formula, dual of a planer graph, independence number and clique number, chromatic number, statement of Four-color theorem, BFS, DFS, tree traversals

Module 5	**Logics and Predicates**	**08 hours**

Propositional calculus - propositions and connectives, syntax, Semantics - truth assignments and truth tables, validity and satisfiability, tautology, Adequate set of connectives, Equivalence and normal forms, Compactness and resolution Formal reducibility - natural deduction system and axiom system, Soundness and completeness.

Total Lecture Hours	**48 hours**

Textbook:

S.No	Book Title	Author
1	Topics in Algebra, John Wiley and Sons.	I. N. Herstein
2	Digital Logic & Computer Design, Pearson.	M. Morris Mano
3	Elements of Discrete Mathematics, (Second Edition) McGraw Hill, New Delhi.	C. L. Liu
4	Graph Theory with Applications, Macmillan Press, London.	J. A. Bondy and U. S. R. Murty
5	Mathematical Logic for Computer Science, World Scientific, Singapore.	L. Zhongwan

Reference Books:

S.No	Book Title	Author
1	Introduction to linear algebra.	Gilbert Strang
2	Introductory Combinatorics, North-Holland, New York.	R. A. Brualdi
3	Graph Theory with Applications to Engineering and Computer Science	N. Deo, Prentice Hall, Englewood Cliffs
4	Introduction to Mathematical Logic, (Second Edition), London.	E. Mendelsohn, Van-Nostrand

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=czFn9Wg3k4o
Module 2	https://www.youtube.com/watch?v=zhKu0lQW0a8&list=PLFW6lRTa1g83LYdhDkUQfkXs7EbMBwYuF https://www.youtube.com/watch?v=ttS13KEQNyA&list=PLFW6lRTa1g83LYdhDkUQfkXs7EbMBwYuF&index=2
Module 3	https://www.youtube.com/watch?v=FfO9ZaKRyDA&list=PLEAYkSg4uSQ0ZqCkdrqWP-gy8J7f7E6HD
Module 4	https://www.youtube.com/watch?v=E40r8DWgG40&list=PLEAYkSg4uSQ2fXcfrTGZdPuTmv98bnFY5 https://www.youtube.com/watch?v=q0woiOp7sqU
Module 5	https://www.youtube.com/watch?v=xlUFkMKSB3Y

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: CCSBS0105	Course Name: Introductory Topics in Statistics, Probability and Calculus	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		3	0	0	3

Pre-requisite: Knowledge of Mathematics

Course Objectives: The objective of this course is to familiarize the engineers with concepts of Statistics, probability distribution, differential and Integral calculus, and its application. It aims to showcase the students with standard concepts and tools from B. Tech to deal with advanced levels of mathematics and applications that would be essential for their disciplines.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain types of statistical data, population, and sample.	K2
CO2	Apply the concept of measures of central tendency and dispersion to solve statistical problems.	K3
CO3	Explain the concept of combinatorial and conditional probability and Baye's theorem.	K2
CO4	Apply the concept of probability distribution and its properties to solve statistical problems.	K3
CO5	Apply the concept of differential and integral calculus to evaluate the double and triple integral.	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	2				-				
CO2	3	3	3	3	2			2	1	1			
CO3	3	3	3	3	2			2	1	1	2		
CO4	3	3	3	3	2	2		2	1	1	2		
CO5	3	3	3	3	2	3			-	1	2		

Course Contents / Syllabus

Module 1	**Introduction to Statistics**	**8 hours**

Definition of Statistics. Basic objectives. Applications in various branches of science with examples. Collection of Data: Internal and external data, Primary and secondary Data. Population and sample, Representative sample.

Module 2	**Descriptive Statistics**	**8 hours**

Classification and tabulation of univariate data, graphical representation, Frequency curves. Descriptive measures - central tendency and dispersion. Bivariate data. Summarization, marginal and conditional frequency distribution.

Module 3	**Probability**	**8 hours**

Concept of experiments, sample space, event. Definition of Combinatorial Probability. Conditional Probability, Bayes Theorem.

Module 4	**Probability distributions**	**8 hours**

discrete & continuous distributions, Binomial, Poisson and Geometric distributions, Uniform, Exponential, Normal, Chi-square, t, F distributions. Expected values and moments: mathematical expectation and its properties, Moments (including variance) and their properties, interpretation, Moment generating function.

Module 5	**Calculus**	**8 hours**

Basic concepts of Differential and integral calculus, application of double and triple integral.

	Total Lecture Hours	**40 hours**

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

Textbook:

S.No	Book Title	Author
1	Introduction of Probability Models, , Academic Press, N.Y	S. M. Ross
2	Fundamentals of Statistics, vol. I & II, World Press.	A. Goon, M. Gupta and B. Dasgupta
3	Higher Engineering Mathematics, Khanna Publication, Delhi.	B. S. Grewal

Reference Books:

S.No	Book Title	Author
1	A first course in Probability, Prentice Hall.	S. M. Ross
2	Probability and Statistics for Engineers, (Fourth Edition), PHI.	I. R. Miller, J.E. Freund and R. Johnson
3	Introduction to the Theory of Statistics, McGraw Hill Education.	A. M. Mood, F.A. Graybill and D.C. Boes
4	Advanced Engineering Mathematics, (Seventh Edition), Thomson Learning.	Peter V. O'Neil
5	Advanced Engineering Mathematics, (Second Edition) Pearson Education.	M. D. Greenberg
6	Applied Mathematics, Vol. I & II, Vidyarthi Prakashan.	P. N. Wartikar and J. N. Wartikar

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/COI0BUmNHT8?list=PLyqSpQzTE6M_JcleDbrVyPnE0PixKs2JE https://youtu.be/COI0BUmNHT8 https://youtu.be/4Fxv6xM2JxM
Module 2	https://youtu.be/COI0BUmNHT8?list=PLyqSpQzTE6M_JcleDbrVyPnE0PixKs2JE https://youtu.be/Zqnhw7oRxn8 https://youtu.be/69oJW0HkOOk https://youtu.be/WVx3MYd-Q9w
Module 3	https://www.youtube.com/watch?v=GSEu5hn2q98 https://youtu.be/9wCnvr7Xw4E https://youtu.be/hxn_QwwWZBQ https://youtu.be/otdaJPVQIgg
Module 4	https://youtu.be/J8jNoF-K8E8 https://youtu.be/BbLfV0wOeyc https://youtu.be/UaLNsZQK8fo https://youtu.be/mtbJbDwqWLE https://youtu.be/c06FZ2Yq9rk https://youtu.be/ZfbWC4rqIiE https://youtu.be/BWcQ-ZFf_TU
Module 5	https://www.youtube.com/watch?v=mIeeVrv447s https://www.youtube.com/watch?v=mIpQYY3uzT4

Mode of Evaluation

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

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

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Course Code: CCSBS0103	**Course Name: Fundamentals of Computer Science**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -First Semester CSBS		**3**	**0**	**0**	**3**

Pre-requisite: Basic knowledge of computers.

Course Objectives: The course covers various operations, conditional statements and looping constructs in C. The course aims to solve complex problems using functions and arrays in C.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Acquire a broad perspective about the uses of computers in engineering industry.	K1
CO2	Understand the concept of computers, algorithms, and algorithmic thinking.	K2
CO3	Apply conditional statements and looping constructs to solve basic programming problems.	K3
CO4	Implement arrays and perform operations such as traversal, search, and sorting.	K3
CO5	Apply more advanced features of C language like functions, pointers, 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
CO1	3	2	-	-	-	-	-	-	-	2	2	3	2	2
CO2	3	3	2	-	-	-	-	-	-	-	-	3	2	1
CO3	3	3	3	2	-	-	-	-	1	-	-	2	3	3
CO4	3	2	3	2	1	-	-	-	1	-	-	2	3	3
CO5	3	2	3	2	2	-	1	-	-	2	2	3	3	3

Course Contents / Syllabus

Module 1	**Problem Solving and Introduction to C**	**8 hours**

Algorithm, and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loops. Programming using C: 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 and Run time errors, object and executable code.

Module 2	**Data Types, Operators, and Expressions**	**8 hours**

Introduction to imperative language; syntax and constructs of a specific language (ANSI C) Types Operator and Expressions with discussion of variable naming and Hungarian Notation: Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithmetic Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, proper variable naming and Hungarian Notation.

Module 3	**Control Flow and Functions**	**8 hours**

Control Flow with discussion on structured and unstructured programming: Statements and Blocks, If-Else-If, Switch, Loops – while, do, for, break and continue, goto labels, structured and un- structured programming.

Functions and Program Structure with discussion on standard library: Basics of functions, parameter passing and returning type, C main return as integer, External, Auto, Local, Static, Register Variables, Scope Rules, Block structure, Initialization, Recursion, Pre-processor, Standard Library Functions and return types.

Module 4	**Arrays and Pointers**	**8 hours**

Pointers and address, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character Pointers and Functions, Pointer Arrays, Pointer to Pointer, Multi-dimensional array and Row/column major formats, Initialization of Pointer Arrays, Command line arguments, Pointer to functions, complicated declarations and how they are evaluated. Structures: Basic Structures, Structures and Functions, Array of structures, Pointer of structures, Self-referral structures, Table look up, typedef, unions, Bit-fields.

Module 5	**Input/Output and File Handling**	**8 hours**

Standard I/O, Formatted Output – printf, Formated Input – scanf, Variable length argument list, file access including FILE structure, fopen, stdin, stdout and stderr, Error Handling including exit, perror and error.h, Line I/O, related miscellaneous functions. Unix system Interface: File Descriptor, Low level I/O – read and write, open, create, close and unlink, Random access – seek, Discussions on Listing Directory, Storage allocator. Programming Method: Debugging, Macro, User Defined Header, User Defined Library Function, makefile utility.

	Total Lecture Hours	**40 hours**

Textbook:

S.No	**Book Title**	**Author**
1	*Programming in ANSI C*, 8th Edition, McGraw Hill Education, 2021.	E. Balagurusamy,
2	*Computer Science: A Structured Programming Approach Using C*, 3rd Edition, Cengage Learning, 2019.	Behrouz A. Forouzan & Richard F. Gilberg,

Reference Books:

S.No	**Book Title**	**Author**
1	The C Programming Language, *2nd Edition, Pearson Education, 2022 (Reprint).*	Brian W. Kernighan & Dennis M. Ritchie,
2	Programming in C, *2nd Edition, Oxford University Press, 2021.*	Reema Thareja,

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/IdXrCPzNnkU?si=-0iwaDVvMorMfZVt
Module 2	https://youtu.be/TZ_FrgbHqGk?si=Sc3fIuIvTq7aJEPl
Module 3	https://youtu.be/r0TLaa3KIvI?si=rnqbcjhdhtX3W2aB
Module 4	https://youtu.be/50kKQUQc1Qs?si=l_YzeDKn22IfQQXa
Module 5	https://youtu.be/t9WKOcRB63Q?si=jnoLxdSSAxltEXPr

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
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Course Code: CCSBS0102	Course Name: Principles of Electrical Engineering	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		**2**	**0**	**0**	**2**

Pre-requisite: Physics and mathematics

Course Objectives: The student will learn about the various electrical elements, laws and theorems used for analysis of electrical circuits along with steady state behaviour of single phase and three phase AC electrical circuits, Electrostatics, Magnetic Circuit and different types of safety devices, measuring instruments and sensors, earthing, wiring and working application of batteries.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Describe the basics of electrical parameters and apply concept of KVL/KCL in solving DC circuits.	K1, K2
CO2	Apply the concepts of theorems in solving DC circuits.	K2,K3,K5
CO3	Analyze the steady state behavior of single phase and three phase AC electrical circuits.	K4
CO4	Explain the concept of Electrostatics and Magnetic Circuit.	K2, K4
CO5	Describe concept of sensor/transducer, Components of distribution system, earthing and wiring.	K1, 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	-	1	1	2	-	-	-	2	2	2
CO2	3	2	1	-	1	2	2	-	-	-	2	2	2
CO3	3	3	2	-	2	2	2	-	-	-	2	2	2
CO4	3	3	2	-	2	3	2	-	-	-	2	2	2
CO5	3	3	2	-	3	3	2	-	-	-	2	2	2

Course Contents / Syllabus

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

Fundamental linear passive and active elements to their functional current-voltage relation, voltage source and current sources, ideal and practical sources, Kirchhoff-s laws and applications to network solutions using mesh and nodal analysis, Concept of work, power, energy, and conversion of energy.

Module 2	**Basic network**	**8 hours**

Current-voltage relations of the electric network by mathematical equations to analyze the network (Thevenin's theorem, Norton's Theorem, Maximum Power Transfer theorem) Simplifications of networks using series-parallel, Star/Delta transformation. Superposition theorem.

Module 3	**Concept of AC**	**8 hours**

AC waveform definitions, form factor, peak factor, phasor representation in polar and rectangular form, concept of impedance, admittance, complex power, power factor, Study of R-L, R-C, RLC series circuit, R-L-C parallel circuit, single phase and three phase concept.

Module 4	**Electrostatics and Electro-Mechanics**	**10 hours**

Electrostatic field, electric field strength, concept of permittivity in dielectrics, energy stored in capacitors, charging and discharging of capacitors. Electro Magnetism, magnetic field and Faraday's law, Magnetic materials and B-H curve, Self and mutual inductance, Ampere's law, Electromechanical energy conversion.

Module 5	**Measurements and Sensors**	**10 hours**

Measuring devices/sensors and transducers (Piezoelectric and thermo-couple) related to electrical signals, Elementary methods for the measurement of electrical quantities in DC and AC systems (Current & Single-phase power). Concept of indicating and integrating instruments.

Practical considerations: Electrical Wiring types and accessories, Illumination system, Basic layout of the distribution system, Types of earthing, Safety devices & systems. Battery principles and types.

Total Lecture Hours	**42 hours**

Textbook:

S.No	Book Title	Author
1	Electric Machinery,(Sixth Edition)	A.E. Fitzgerald, Kingsely Jr Charles
2	A Textbook of Electrical Technology,(vol. I)	B. L. Theraja
3	Basic Electrical Engineering	V. K. Mehta
4	Theory and problems of Basic Electrical Engineering, (SecondEdition)	J. Nagrath and Kothari

Reference Books:

S.No	Book Title	Author
1	Basic of Electrical Engineering	T. K. Nagsarkar and M. S. Sukhija
2	Introduction to Electrodynamics	D. J. Griffiths
3	Engineering Circuit Analysis	William H. Hayt& Jack E. Kemmerly

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/4LgSLToLSCU https://youtu.be/q-i2URiDV1E https://youtu.be/m4jzgqZu-4s https://youtu.be/fHj2RdOnTqg
Module 2	https://youtu.be/FjaJEo7knF4 https://youtu.be/jCchZkU7vY8 https://youtu.be/0FAktPLbXOA https://youtu.be/wWihXHCOmUc https://youtu.be/UsLbB5k9iuY https://youtu.be/dpImV7d08_8 https://youtu.be/1QfNg965OyE https://youtu.be/A0E_A0COZ8w https://youtu.be/i_VHSlx-xO8 https://youtu.be/w4N9CBc_nkA https://youtu.be/rwHgicnjJEE https://www.youtube.com/watch?v=U85eA3-suiQ
Module 3	https://www.youtube.com/watch?v=i1Nkn-Rniog https://www.youtube.com/watch?v=hSvFELXK9hE https://www.youtube.com/watch?v=U3CubKnkO4c&feature=youtu.be https://www.youtube.com/watch?v=uj-HDHEXzx8&feature=youtu.be

	https://www.youtube.com/watch?v=ZPhLi7OeRYs https://www.youtube.com/watch?v=ZjwzpoCiF8A
Module 4	https://www.youtube.com/watch?v=1Gi90JIvBGc https://www.youtube.com/watch?v=3HyORmBip-w https://www.youtube.com/watch?v=5x8kj02ar34 https://www.youtube.com/shorts/idzKsqKHXh0 https://www.youtube.com/watch?v=kc-SCAkOcO4 https://www.youtube.com/watch?v=vX_kd5XiEN8
Module 5	https://youtu.be/zxYeJW9v6OU https://youtu.be/gAhPQtLFvyU https://youtu.be/s65MmFUfcrM https://youtu.be/BIRS34UnsCo https://youtu.be/gtfl-YTDSU4

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CCSBS0101	Course Name: Physics For Computing Science	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		2	0	0	2

Pre-requisite:

1. Newton's law of motion.
2. Scalar and vector (gard, div. and curl)
3. Basic laws of optics.
4. Basic laws of electricity and magnetism.
5. Atomic structure and atomic spectra.
6. Properties of matter.
7. Basics of Heat and thermodynamics.

Course Objectives:

1.To provide the knowledge of different wave motions and their uses in engineering applications.
2. To provide the knowledge of law of optics.
3. To provide the knowledge of the basic concept of Electromagnetics and semiconductors.
4. To provide the knowledge of the basic concept of thermodynamics and its uses to engineering applications.
5. To provide the basic knowledge of Optical Fiber and Laser 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	Understand the different types of wave motions and their uses in engineering applications.	K2
CO2	Apply the laws of optics.	K3
CO3	Apply the concept of electromagnetics and semiconductors.	K3
CO4	Define the phenomenon of thermodynamics & to apply the ideas in engineering applications.	K1
CO5	Predict the working of modern engineering tools and techniques of optical fiber and laser.	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	-	2	2	-	-	-	-	2	-	-
CO2	3	2	1	-	1	2	-	-	-	-	2	-	-
CO3	3	3	1	-	2	2	-	-	-	-	2	-	-
CO4	3	2	2	-	2	3	-	-	-	-	2	-	-
CO5	3	2	2	-	2	2	-	-	-	-	2	-	-

Course Contents / Syllabus

Module 1	**Oscillation**	**9 hours**

Periodic motion-simple harmonic motion-characteristics of simple harmonic motion-vibration of simple spring mass system. Resonance-definition., damped harmonic oscillator – heavy, critical and light damping, energy decay in a damped harmonic oscillator, quality factor, forced mechanical and electrical oscillators.

Module 2	**Interference, Diffraction & Polarization**	**9 hours**

Interference-principle of super position-Young's experiment, Theory of interference fringes-types of interference-Fresnel's prism-Newton's rings, Diffraction-Two kinds of diffraction-Difference between interference and diffraction-Fresnel's half period zone and zone plate-Fraunhofer diffraction at single slit-plane diffraction grating. Temporal and Spatial Coherence.

Polarization of light: Polarization - Concept of production of polarized beam of light from two SHM acting at right angle; plane, elliptical and circularly polarized light, Brewster's law, double refraction.

Module 3	Basic Idea of Electromagnetisms and Semiconductor Physics	6 hours
Continuity equation for current densities, Maxwell's equation in vacuum and non-conducting medium. Conductor, Semiconductor and Insulator; Basic concept of Band theory.		
Module 4	**Thermodynamics**	**6 hours**
Zeroth law of thermodynamics, first law of thermodynamics, brief discussion on application of 1st law, second law of thermodynamics and concept of Engine, entropy, change in entropy in reversible and irreversible processes.		
Module 5	**Laser and Fiber optics**	**6 hours**
Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: Ruby Laser, CO2 and Neodymium lasers; Properties of laser beams: mono-chromaticity, coherence, directionality and brightness, laser speckles, applications of lasers in engineering. Fiber optics and Applications, Types of optical fibers.		
	Total Lecture Hours	**36 hours**

Textbook:

S.No	Book Title	Author
1	Concepts of Modern Physics	A. Beiser
2	Fundamentals of Physics	David Halliday, Robert Resnick and Jearl Walker

Reference Books:

S.No	Book Title	Author
1	Optics, (Fifth Edition),	Ajoy Ghatak
2	University Physics	Sears & Zemansky
3	Fundamentals of Optics	Jenkins and White

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=lzBKlY4f1XA&list=PL10WTjZXSIlHKMnU4UCxpPsH-yAf_n1O6&index=11
Module 2	http://nptel.ac.in/ , http://www.mit.edu/
Module 3	https://www.youtube.com/watch?v=bWTxf5dSUBE , http://ocw.mit.edu/, http://nptel.ac.in/
Module 4	https://www.youtube.com/watch?v=6vyYRnLvnqI
Module 5	https://www.youtube.com/watch?v=0GD-18Jqnro, https://www.youtube.com/watch?v=dQhhcgn8YZo

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)

Course Code: CCSBS0104	Course Name: Business Communication & Value Science - I	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		1	0	0	1

Pre-requisite: Comprehension of Basic English Language

Course Objectives:

- Understand what life skills are and their importance in leading a happy and well-adjusted life.
- Motivate students to look within and create a better version of self.
- Introduce them to key concepts of values, life skills and business communication.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Recognize the need for life skills, values, and own strengths and weaknesses.	K2
CO2	Apply life skills to different situations.	K3
CO3	Understand the basic tenets of communication.	K3
CO4	Apply the basic communication practices in different types of communication.	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	-	-	-	-	-	1	-	2	1	1	1		
CO2	1	-	-	-	-	1	-	2	2	1	1		
CO3	1	1	1	-	-	1	1	2	2	2	1		
CO4	1	1	1	1	1	1	1	2	1	3	1		

Course Contents / Syllabus

Module 1	**Foundations of the Business Communication**	**3 hours**

Overview of LOL: Leadership Oriented Learning (include activity on introducing self)

Overview of business communication Lecture with videos

Self-awareness – Identity, body awareness, stress management

Quiz

Module 2	**Applications of Business Communication**	**2 hours**

Understanding Life Skills: Introduction to life skills, what are the critical life skills

Life skills: Stress management, working with rhythm and balance, colors, and teamwork

Expressing self: Connecting with emotions, visualizing and experiencing purpose

Module 3	**Effective Business Communication**	**5 hours**

Essential Grammar - I: Tenses: Applications of tenses in Functional Grammar - Take a quiz and then discuss

Sentence formation (General & Technical)

Communication Skills: Overview of Communication Skills Barriers of communication, Effective communication

Types of communication: verbal and non-verbal, Role-play based learning

Importance of Questioning

Listening Skills: Law of nature, Importance of listening skills, Difference between listening and hearing, Types of listening.

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

Evaluation on Listening skills - Listen to recording and answer questions based on them		
Module 4	**Business Communication for Professional Growth**	**2 hours**
Email writing: Formal and informal emails, activity **Verbal communication**: Pronunciation, clarity of speech **Vocabulary Enrichment**: Exposure to words from General Service List (GSL) by West, Academic word list (AWL) technical specific terms related to the field of technology, phrases, idioms, significant abbreviations formal business vocabulary - Read Economic Times, Reader's Digest, National Geographic and take part in a GD, using the words you learnt/liked from the articles. **Written Communication**: Summary writing, story writing **Build your CV:** Start writing your comprehensive CV including every achievement in your life, no format, no page limit		
	Total Lecture Hours	**12 hours**

Textbook:

S. No	Book Title	Author
1	ABC Workbook, Meerut, 2023	NIET Publishing House

Reference Books:

S. No	Book Title	Author
1	English vocabulary in use	Alan McCarthy and O'Dell
2	APAART: Speak Well 1 (English language and communication)	
3	APAART: Speak Well 2 (Soft Skills)	
4	Business Communication	Dr. Saroj Hiremath

Required Software and tools

British Council English Score Mobile App

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

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

LAB Course Code: CCSBS0156	LAB Course Name: Discrete Mathematics Lab	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		**0**	**0**	**2**	**1**

Pre-requisite: The student should have basic knowledge of programming, fundamental of discrete mathematics and basic data structures and algorithms.

Course Objectives: Students are able to implement and apply fundamental concepts of discrete mathematics—such as sets, logic, combinatorics, and graphs—through programming, enhancing problem-solving skills and logical reasoning in computational contexts

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Implement programs for operations on sets and programs for logics gates with their postulates	K3
CO2	Evaluate and Implement programs for combinatorics related problems.	K5
CO3	Develop graph, sketch Euler's circuit and Euler's path and analyse propositional logics	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	PSO3
CO1	3	2	3		3				1		2	3	2	
CO2	3	3	2	2	2						3	3	2	2
CO3	3	3	3	3	2	2		2	2		3	3	3	3

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

Sr. No.	Program	CO
1.	Program to Create two sets & perform Union, intersection, and set difference operation	CO1
2.	Program to Create two sets and perform power sets Symmetric difference and cartesian product of these sets.	CO1
3.	Program to display truth table of basic logic gate (i.e. AND, OR and NOT)	CO1
4.	Program to display truth table for basic postulates of Boolean algebra (i.e. Associative, Commutative, Distributive and Demorgan's law).	CO1
5.	Program to display the total 3-digit number greater than 500, which can be formed using 3,4,5 and 7	CO2
6.	A candy shop has 10 flavours candies, write a program to find the no. of ways for preparing packets with three different flavours.	CO2
7.	Program to find shortest path using adjacency matrix	CO3
8.	Program find Euler's circuit and Euler's path of a user define graph	CO3
9.	Write a program to display truth table of a propositional logic & check whether it is a tautology or not	CO3
10.	Program to display truth table of a propositional logic and check whether it follows satisfiability or not.	CO3

Total Hours: 20 hrs.

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSBS0153	LAB Course Name: Fundamentals of Computer Science Lab	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		0	0	4	2

Pre-requisite: Basic knowledge of computers.

Course Objectives:

Lab covers various operations, conditional statements and looping constructs in C. This lab aims to solve complex problems using functions and arrays in C.

Course Outcome: After completion of this course students will be able to:		Bloom's Knowledge Level (KL)
CO1	Understand and trace the execution of C programs involving basic programming constructs.	K2
CO2	Develop and implement C programs using arrays, strings, functions, pointers, and structures.	K3
CO3	Apply problem-solving skills to implement modular programs for real-time applications in C.	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	2	1	1	-	-	-	1	2	1	3	2	1
CO2	3	3	2	2	2	-	-	-	1	2	1	3	3	1
CO3	3	3	3	2	2	-	-	-	2	2	2	3	3	2

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

Algorithm and flowcharts of small problems like GCD	1. Algorithm to find the sum of two numbers 2. Algorithm to find the smallest of two numbers 3. Algorithm to print multiplication Table of a number 4. Algorithm to find GCD of numbers.	**CO1**
Structured code writing with: **i. Small but tricky codes**	1. WAP in C to implement the use of all arithmetic operators. 2. WAP in C to find the Area and Circumference of a circle, where radius r is input by user. 3. WAP in C to swap the values of 2 variables without using third variable. 4. WAP in C to print the digit at ones place of a number. 5. WAP in C to calculate the total amount of money in the piggybank, given the coins of Rs 10, Rs 5, Rs 2 and Rs 1. 6. WAP in C to Enter the marks of 5 subjects (i.e. Physics, Chemistry, Maths, Hindi & English) of a student & display the Total Marks and Percentage and grade achieved. Grading Criteria: percentage >= 90 then Grade A percentage >=80 and <90 then Grade B percentage >=70 and <80 then Grade C	**CO1**

	percentage >=60 and <70 then Grade D else Grade E 7. WAP in C to check whether a year is Leap Year or not. 8. WAP in C to print day of week name using switch case. 9. WAP in C to print total number of days in a month using switch case. 10. WAP in C to calculate the sum of first 10 numbers. 11. WAP in C to print multiplication table of any number. 12. WAP in C to display a Fibonacci series. 13. WAP in C to find sum of digits of a number. 14. WAP in C to reverse a number. 15. Pattern Printing programs.	
ii. Proper parameter passing	WAP in C to demonstrate call by value and call by reference.	**CO2**
iii. Command line Arguments	WAP in C to demonstrate command line arguments.	**CO2**
iv. Variable parameter	1. WAP in C to add two number using user defined function add() 2. WAP in C to find the largest of three number using user defined function largest() 3. WAP in C to calculate the factorial of a number using recursion. 4. Program to calculate the exponent using recursion.	**CO2**
v. Pointer to functions	1. WAP in C that uses pointer to point address of a function. 2. WAP in C that passes function as a parameter using pointer.	**CO2**
vi. User defined header	1. WAP in C to create a user defined header file and use it in to some other programs.	**CO3**
vii. Make file utility	WAP in C to implement all make file utility commands.	**CO3**
viii. Multi file program and user defined libraries	Program to demonstrate how to use multiple c files in one program.	**CO3**
ix. Interesting substring matching / searching programs	1. C Program to Implement Knuth-Morris-Pratt Algorithm for Pattern Searching. 2. C Program to Implement KMP Pattern Searching Algorithm. 3. C Program to Implement Rabin-Karp Method for Pattern Searching.	**CO3**
x. Parsing related assignments	Create a program that takes a user input string in the form of "operand1 operator operand2" (e.g., "5 + 3" or "10 * 2") and parses it to perform the corresponding mathematical operation. Display the result to the user.	**CO3**

Total Hours: 48 hrs.

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSBS0151	LAB Course Name: Physics For Computing Science Lab	L	T	P	C
Course Offered in: B.Tech -First Semester CSBS		0	0	2	1

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

Course Objectives:

1. To provide the practical knowledge of the measurement techniques of magnetism.

2. To provide the practical knowledge of the charge mobility, carrier concentration and Hall coefficient of semiconductor.

3. To provide the practical knowledge of the phenomenon of interference, diffraction and modern optics.

4. To provide the practical knowledge of Calculate Stefan's and Plank's constant.

Course Outcome: After completion of the course, the student will be able to:		Bloom's Knowledge Level (KL)
CO1	Develop the measurement techniques of magnetism.	K6
CO2	Calculate the charge mobility, carrier concentration and Hall coefficient of semiconductor.	K2
CO3	Apply the practical knowledge of the phenomenon of interference, diffraction and modern optics.	K3
CO4	Calculate Stefan's and Plank's constant.	K2
CO5	Develop the measurement techniques of magnetism.	K6

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

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

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

1. To study the magnetic field along the axis of current carrying coil by Stewart and Gee method
2. To determine the Hall coefficient of semi-conductor
3. To determine the Plank constant
4. To determine the wave length of light by Laser diffraction method
5. To determine the wave length of light by Newton's Ring method
6. To determine laser and optical fiber parameters
7. To determine the Stefan's Constant.

Total Hours: 24 hrs.

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSBS0152	**LAB Course Name: Principles of Electrical Engineering Lab**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -First Semester CSBS		**0**	**0**	**2**	**1**

Pre-requisite: Physics and mathematics

Course Objectives:

The student will learn about the various electrical elements, measuring instruments and sensors, laws and theorems used for analysis of electrical circuits along with steady state behaviour of R-L-C series circuits.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO 1	Demonstrate the working of various electrical elements, measuring instruments and sensors.	K2
CO2	Conduct experiments illustrating the application of KVL/KCL and Network theorems to DC electrical circuits.	K3
CO3	Conduct experiments illustrating the steady state behaviour of R-L-C series circuits.	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	-	-	2	1	1	1	-	3	2	2
CO2	3	2	1	-	-	2	1	1	1	-	3	2	2
CO3	3	2	1	-	-	2	1	1	1	-	3	2	2

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

1. Familiarization of electrical circuits: sources, measuring devices and transducers.
2. Determination of resistance temperature coefficient.
3. Verification of Network Theorem
   - Superposition
   - Thevenin
   - Norton
   - Maximum Power Transfer theorem
4. Simulation of R-L-C series circuits for $X_L > X_C$, $X_L < X_C$.
5. Simulation of Time response of RC circuit.
6. Demonstration of measurement of electrical quantities in DC and AC systems.

Total Hours: 18 hrs.

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

LAB Course Code: CCSBS0154	**LAB Course Name: Business Communication & Value Science – I**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -First Semester CSBS		**0**	**0**	**2**	**1**

Pre-requisite: Understanding of basic English language.

Course Objectives:

- Understand what life skills are and their importance in leading a happy and well-adjusted life.
- Motivate students to look within and create a better version of self.
- Introduce them to key concepts of values, life skills and business communication.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Recognize the need for life skills, values, and own strengths and weaknesses.	K2
CO2	Apply life skills to different situations.	K3
CO3	Understand the basic tenets of communication.	K2
CO4	Apply the basic communication practices in different types of communication.	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**
CO1	1	1	1	1	1	1	1	2	1	1	1
CO2	1	1	1	1	1	1	1	2	2	1	1
CO3	1	1	1	1	1	1	1	2	2	2	1
CO4	1	1	1	1	1	1	1	2	1	3	1

List Of Practical's

Introducing Self

- The students will be able to develop their communication skills and boost their confidence.

Presentation on favorite cricket captain in IPL and the skills and values they demonstrate

- The students will understand the significance of leadership skills, through the presentations.

Record a conversation between a celebrity and an interviewer, followed by discussion.

- The students will learn the importance of self-awareness and self-identity.

Anubhav Activities

- The students will discuss and identify their aspirations from the course.

Refresher on Parts of Speech – Listen to an audio clip and note down the different parts of speech followed by discussion

- The students will understand the different parts of speech through audio-based activities.

Art of Listening

- Participants will listen to their peers reading aloud and write down the gist; and will repeat verbatim what is read.

Common errors: show sequence from film where a character uses wrong sentence structure

(e.g., Zindagi Na Milegi Dobara where the characters use 'the' before every word)

- The students will be able to understand common speech errors and how to rectify them.

Skits based on communication skills

- The students will be able to improve their communication skills, and presentation skills through skit.

Group discussion followed by questions by the audience

- The students will develop their critical thinking skills and communication skills through discussion in groups, and they will also improve their ability to prove their stand emphatically.

Practice - Toastmaster style Table Topics speech with evaluation

- The students will develop the ability to organise their thoughts quickly and respond spontaneously question.

Basics of Writing

- The students will practice basic writing skills through sentence construction by understanding the requisites of a good sentence.

Listen and write

- The students will practice writing exactly what they hear.

Movie based learning – The Pursuit of Happiness. What are the skills and values you can identify, what can you relate to?

- The students will learn the importance of life skills.

Hansei Session

- The students will learn to give feedback based on their learnings and key takeaways from the course.

Total Hours: 40 hrs.

Mode of Evaluation

CIE	PE (If mentioned in curriculum)	Total
PS		
25	25	50

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

Course Code: CCSBS0205	Course Name: Linear Algebra	L	T	P	C
Course Offered in: B.Tech -Second Semester CSBS		3	0	0	3

Pre-requisite: Knowledge of Mathematics

Course Objectives:

The objective of this course is to familiarize the engineers with concept of Matrices, determinants, solution of system of linear equation, vector space, linear transformation, Singular value decomposition and Principal component analysis. It aims to show case the students with standard concepts and tools from B. Tech to deal with advanced level of mathematics and applications that would be essential for 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 and determinants to solve linear system of equations.	K3
CO2	Apply the concept of rank and LU decomposition to solve linear system of equation.	K3
CO3	Explain the concept of vector space, orthogonalization and QR decomposition.	K4
CO4	Explain the concept of Eigenvalues and Eigenvectors, linear transformation and complex matrices.	K4
CO5	Apply the concept of singular value decomposition and principal component analysis in image processing and machine learning.	K3

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

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

Course Contents / Syllabus

Module 1	**Introduction**	**8 hours**

Introduction to Matrices and Determinants; Solution of Linear Equations; Cramer's rule; Inverse of a Matrix.

Module 2	**Vectors and linear combinations**	**8 hours**

Vectors and linear combinations; Rank of a matrix; Gaussian elimination; LU Decomposition; Solving Systems of Linear Equations using the tools of Matrices.

Module 3	**Vector Space**	**8 hours**

Vector space; Dimension; Basis; Orthogonality; Projections; Gram-Schmidt orthogonalization and QR decomposition.

Module 4	**Eigen Values and Eigen Vectors**	**8 hours**

Eigenvalues and Eigenvectors; Positive definite matrices; Linear transformations; Hermitian and unitary matrices;

Module 5	Principal Component Analysis	8 hours
Singular value decomposition and Principal component analysis (Non-credit and optional); Introduction to their applications in Image Processing and Machine Learning (one or two classes).		
	Total Lecture Hours	40 hours

Textbook:

S.No	Book Title	Author
1	Higher Engineering Mathematics, Khanna Publishers.	B. S. Grewal
2	Linear Algebra and Matrices, Ram Prasad Publication, Agra.	Hari Kishan and Manju Sharma

Reference Books:

S.No	Book Title	Author
1	Advanced Engineering Mathematics, (Seventh Edition), Cengage Learning.	Peter V. O'Neil
2	Advanced Engineering Mathematics, (Second Edition), Pearson.	Michael. D. Greenberg
3	Introduction to linear algebra, (Fifth Edition), Wellesley-Cambridge Press.	Gilbert Strang
4	Applied Mathematics (Vol. I & II), Pune Vidyarthi Griha Prakashan.	P. N. Wartikar & J. N. Wartikar
5	Digital Image Processing, Pearson.	R C Gonzalez and R E Woods
6	https://machinelearningmastery.com/introduction-matrices-machine-learning/	

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.youtube.com/watch?v=cfn2ZUuWPd0 https://www.youtube.com/watch?v=vF7eyJ2g3kU
Module 2	https://www.youtube.com/watch?v=p-OCvUJVxS8
Module 3	https://www.youtube.com/watch?v=_6oRqxY6O5w&t=66s https://www.youtube.com/watch?v=PZ0AvH5VKBk https://www.youtube.com/watch?v=26IIMABe9MY
Module 4	https://www.youtube.com/watch?v=G4N8vJpf7hM https://www.youtube.com/watch?v=r5dIXpssvrA https://youtu.be/ZX5YnDMzwbs https://www.youtube.com/watch?v=EL3fXu9FFII&t=1072s
Module 5	https://www.youtube.com/watch?v=kw9R0nD69OU https://yarpiz.com/622/yppca191211-principal-component-analysis-in

Mode of Evaluation

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

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CCSBS0201	**Course Name: Statistical Methods & Modelling**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**3**	**0**	**0**	**3**

Pre-requisite: Knowledge of Mathematics

Course Objectives: The objective of this course is to familiarize the engineers with basic concept of sampling techniques, linear correlation, regression, estimation theory, test of hypothesis testing, time series and forecasting. It aims to show case the students with standard concepts and tools from B. Tech to deal with advanced level of mathematics and applications that would be essential for their disciplines.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain the concept of sampling and sampling distribution.	K1
CO2	Apply the concept of correlation, regression and ANOVA to statistical data.	K3
CO3	Apply the concept of estimation theory to evaluate statistical parameters.	K4
CO4	Apply the concept of hypothesis testing to statistical problems.	K4
CO5	Explain the concept of time series and forecasting.	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	3	3	2	2	1			1	1	1	1		
CO2	3	3	3	3	2	1		1	1	1	2		
CO3	3	3	2	2	1			1	1	1	1		
CO4	3	3	2	3	2	2		2	1	1	2		
CO5	3	2	2	3	1			1	1	1	2		

Course Contents / Syllabus

Module 1	**Sampling Techniques**	**10 hours**

Random sampling. Sampling from finite and infinite populations. Estimates and standard error (sampling with replacement and sampling without replacement), Sampling distribution of sample mean, stratified random sampling

Module 2	**Linear Statistical Models**	**8 hours**

Scatter diagram. Linear regression and correlation. Least squares method. Rank correlation. Standard multiple regression models with emphasis on detection of collinearity, outliers, non-normality and autocorrelation, Validation of model assumptions. Multiple correlation, Analysis of variance (one way, two way with as well as without interaction).

Module 3	**Estimation**	**9 hours**

Point estimation, criteria for good estimates (un-biasedness, consistency), Methods of estimation including maximum likelihood estimation.

Module 4	**Test of hypothesis**	**10 hours**

Concept & formulation, Type I and Type II errors, Neyman Pearson lemma, Procedures of testing

Non-parametric Inference: Comparison with parametric inference, Use of order statistics. Sign test, Wilcoxon signed rank test, Mann-Whitney test, Run test, Kolmogorov-Smirnov test. Spearman's and Kendall's test.

Module 5	**Basics of Time Series Analysis & Forecasting**	**5 hours**
Stationary, ARIMA Models: Identification, Estimation and Forecasting.		
	Total Lecture Hours	**42 hours**

Textbook:

S.No	Book Title	Author
1	Probability and Statistics for Engineers (Fourth Edition), Prentice Hall India Learning Private Limited.	I.R. Miller, J.E. Freund and R. Johnson
2	Fundamentals of Statistics (vol. I & vol. II), World Press.	A. Goon, M. Gupta and B. Dasgupta
3	The Analysis of Time Series: An Introduction, Chapman & Hall/CRC	Chris Chatfield

Reference Books:

S.No	Book Title	Author
1	Introduction to Linear Regression Analysis, Wiley-Interscience.	D.C. Montgomery and E. Peck
2	Introduction to the Theory of Statistics, McGraw Hill.	A.M. Mood, F. A. Graybill and D.C. Boes
3	Applied Regression Analysis, Wiley-Interscience.	N. Draper and H. Smith
4	Hands-on Programming with R, O'Reilly.	Garrett Grolemund
5	R for Everyone: Advanced Analytics and Graphics, Addison-Wesley Professional.	Jared P. Lander

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/_VFnFX29m60 https://youtu.be/rk6jtkpad_E https://youtu.be/qNqrHO3woyE https://youtu.be/bAXvLFVuGLw https://youtu.be/laPRdSP9KE0 https://youtu.be/lk05TcnY5Co
Module 2	https://youtu.be/D2S2ulkz8Yo https://youtu.be/DE58QuNKA-c https://youtu.be/yMgFHbjbAW8 https://youtu.be/fEZ9RjGZtSw
Module 3	https://youtu.be/4v41z3HwLaM https://youtu.be/7C3sGj4Uqpo https://youtu.be/30ETB2MlV9c https://youtu.be/6KCF8krj168
Module 4	https://youtu.be/qqVWgxWn2d4 https://youtu.be/k80pME7mWRM
Module 5	https://youtu.be/24aUI4RUElo https://youtu.be/SEr0vtEPn90

	https://youtu.be/k9dhcfIyOFc https://youtu.be/e1yUVLKhcko https://youtu.be/k9dhcfIyOFc?list=RDCMUC640y4UvDAlya_WOj5U4pfA

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: CCSBS0203	Course Name: Data Structures & Algorithms	L	T	P	C
Course Offered in: B.Tech -Second Semester CSBS		3	0	0	3

Pre-requisite: Basic knowledge of computers.

Course Objectives:

The course covers basic data structure, algorithm, efficiency of algorithms, introduction to arrays, stack, queues, link list and their implementation. The course aims to give understanding of various searching and sorting algorithms and implementation of tree data structure.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Analyze arrays, linked lists, stacks, queues to solve complex problems.	K4
CO2	Compare the computational efficiency of the sorting and searching algorithms.	K4
CO3	Assess memory representation and perform operations on various tree data structures	K5
CO4	Apply recursion techniques to solve real-world computational problems.	K3
CO5	Design and implement algorithms using graph data structures.	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	PSO3
CO1	3	3	2	2	2	-	-	1	1	-	2	3	2	1
CO2	3	3	2	2	2	-	-	-	1	-	2	3	1	2
CO3	3	2	2	2	2	-	-	-	-	-	2	2	2	1
CO4	3	3	2	2	2	-	-	1	1	-	2	3	1	2
CO5	3	3	3	2	2	1		2	2	2	3	3	3	3

Course Contents / Syllabus

Module 1	**Basic Terminologies and Introduction to Algorithm & Data Organization**	**10 hours**

Algorithm specification, Recursion, Performance analysis, Asymptotic Notation - The Big-O, Omega and Theta notation, Programming Style, Refinement of Coding - Time-Space Trade Off, Testing, Data Abstraction

Module 2	**Linear Data Structure**	**8 hours**

Contiguous: Array, Stack, Queue, its types, Various Representations, Operations & Applications of Linear Data Structures

Non-Contiguous: Linked-list and its types, Various Representations, Operations & Applications of Linear Data Structures

Module 3	**Non-linear data structure: Trees**	**9 hours**

Binary Tree, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AVL Tree, Splay Tree

Module 3	**Non-linear data structure: Graphs**	**8 hours**

Introduction of Graphs (Directed, Undirected), Various Representations, Operations & Applications of Trees

Module 4	**Searching & Sorting**	**6 hours**

Searching: Sequential Search, Binary Search, Comparison Trees, Breadth First Search, Depth First Search

Sorting: Insertion Sort, Selection Sort, Shell Sort, Divide and Conquer Sort, Merge Sort, Quick Sort, Heapsort, Introduction to Hashing

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Module 5	File Organization and Graphs	7 hours

File: Organization (Sequential, Direct, Indexed Sequential, Hashed) and various types of accessing schemes.

Graphs: Basic Terminologies, Representations, Operations and Applications of Graphs, Graph search and traversal algorithms and complexity analysis.

Total Lecture Hours	**48 hours**

Textbook:

S.No	Book Title	Author
1	The Art of Computer Programming: Volume 1: Fundamental Algorithms, 1968	Donald E. Knuth, , Addison-Wesley.

Reference Books:

S.No	Book Title	Author
1	Introduction to Algorithms, 2009, 3rd Edition, The MIT Press.	Thomas, H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://youtu.be/zWg7U0OEAoE?si=tamDGEjqAcSYbdi7
Module 2	https://youtu.be/g1USSZVWDsY?si=1_KugnfTC4FmJcHN
Module 3	https://youtu.be/tORLeHHtazM?si=Ut05GzuMV633cdz4
Module 4	https://youtu.be/ZwFkaGTt4Xw?si=Mu-Ets0nOmUKVcBr
Module 5	https://youtu.be/15BPjdIV2jI?si=6Lt5k-cThEcRUWan

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CCSBS0202	**Course Name: Principles of Electronics**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**2**	**0**	**0**	**2**

Pre-requisite: Physics and mathematics

Course Objectives: The student will learn about semiconductors diodes applications, analysis of BJT and FET including fundamentals of digital electronics with applications and operational amplifiers circuits.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain and analyze the energy band theory, semiconductor, Formation of P-N junction with V-I characteristics.	K2, K4
CO2	Analyze the diodes and their applications.	K4
CO3	Explain the characteristics of BJT.	K2, K4
CO4	Explain the operation and characteristics of FET and fundamental of digital electronics.	K2, K4
CO5	Explain and analyze the types op-amp circuits.	K2, 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	2	3	1	2	3	2	-	-	-	-	-	2	2
CO2	3	2	2	3	1	2	-	-	-	-	-	2	2
CO3	2	3	3	2	3	3	-	-	-	-	-	2	2
CO4	3	2	2	3	2	3	-	-	-	-	-	2	2
CO5	3	1	1	2	3	3	-	-	-	-	-	2	2

Course Contents / Syllabus

Module 1	**Introductory idea of semiconductors**	**8 hours**

Energy band theory, classifications of solids with their electrical properties, types of semiconductors and concept of diffusion and drift, Formation of P-N junction, energy band diagram, built-in-potential, formation of depletion zone, forward and reverse biased P-N junction, V-I characteristics.

Module 2	**Diodes and Diode Circuits**	**8 hours**

Zener breakdown, Avalanche breakdown and its reverse characteristics; Junction capacitance and Varactor diode. Simple diode circuits, load line, linear piecewise model; Rectifier circuits: half wave, full wave, PIV, DC voltage and current, ripple factor, efficiency, idea of regulation.

Module 3	**Transistors and transistor circuits**	**8 hours**

Transistor mechanism and principle of transistors, Formation of PNP / NPN junctions, energy band diagram, Transistor Action, CE, CB, CC configuration, transistor characteristics: cut-off active and saturation mode.

Module 4	**Field Effect Transistor and Digital electronics**	**10 hours**

Concept of Field Effect Transistors (channel width modulation), Gate isolation types, JFET Structure and characteristics, MOSFET Structure and characteristics, depletion and enhancement type, CMOS: Basic Principles

Basic ideas of Digital electronics: Basic idea of switching circuit, Realization of Logic gates, half and full adder/subtractor, multiplexers and demultiplexers and Counters.

Module 5	**Operational amplifier basics**	**8 hours**

Introduction to integrated circuits, operational amplifier and its terminal properties; Application of operational amplifier; inverting and non-inverting mode of operation, Proportional, Adder, subtractor, Integral, Derivative circuits.

Total Lecture Hours	**42 hours**

Textbook:

S.No	**Book Title**	**Author**
1	Microelectronics Circuits	Adel S. Sedra and Kenneth Carless Smith
2	Millman's Integrated Electronics	Jacob Millman, Christos Halkias, Chetan Parikh
3	Digital Logic & Computer Design	M. Morris Mano

Reference Books:

S.No	**Book Title**	**Author**
1	Electronic Devices and Circuit Theory	Robert L. Boylestad, Louis Nashelsky
2	Solid State Electronic Devices,6th Edition	Ben Streetman, Sanjay Banerjee
3	Electronic Principle	Albert Paul Malvino.
4	Electronics Circuits:Discrete& Integrated	D Schillin, C Belove, TA pelewicz, R Saccardi
5	Microelectronics	Jacob Millman, Arvin Grabel.

NPTEL/ Youtube/ Faculty Video Link:

Module 1	https://www.m-tutor.com/courses-detail.php?tid=859826&topicid=199075&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859827&topicid=199076&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859822&topicid=199071&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859823&topicid=199072&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859824&topicid=199073&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landinghttps://www.m-tutor.com/courses-detail.php?tid=859825&topicid=199074&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing
Module 2	https://www.m-tutor.com/courses-detail.php?tid=859828&topicid=199077&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing

	https://www.m-tutor.com/courses-detail.php?tid=859829&topicid=199078&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859830&topicid=199080&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859831&topicid=199082&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859832&topicid=199083&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landig
Module 3	https://www.m-tutor.com/courses-detail.php?tid=859833&topicid=199084&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859834&topicid=199085&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859835&topicid=199086&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859836&topicid=199087&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859837&topicid=199088&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859838&topicid=199089&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing
Module 4	https://www.m-tutor.com/courses-detail.php?tid=859842&topicid=199093&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859843&topicid=199095&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859844&topicid=199096&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing

	https://www.m-tutor.com/courses-detail.php?tid=859845&topicid=199097&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859846&topicid=199098&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859847&topicid=199099&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859848&topicid=199100&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859849&topicid=199101&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859850&topicid=199102&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859851&topicid=199103&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859852&topicid=199104&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859853&topicid=199105&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859854&topicid=199106&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859855&topicid=199107&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859856&topicid=199108&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landin
Module 5	https://www.m-tutor.com/courses-detail.php?tid=859862&topicid=199114&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing

	https://www.m-tutor.com/courses-detail.php?tid=859863&topicid=199115&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859864&topicid=199116&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859860&topicid=199112&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing https://www.m-tutor.com/courses-detail.php?tid=859861&topicid=199113&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CCSBS0206	**Course Name: Fundamentals of Economics**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**2**	**0**	**0**	**2**

Pre-requisite: Introductory Economics, Statistics, Basic Mathematics, Interest in Current Event

Course Objectives: This course will help the student in understand the relative importance of Economics. It also supports in knowing the application of the principles of managerial economics that can aid in achievement of business objectives. Student can understand the modern managerial decision rules and optimization techniques and can be equipped with the tools necessary in analysis of consumer behaviour as well as in forecasting product demand. It also helps in understanding, how to apply latest pricing strategies and analyse the macro environment affecting the business decision making

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Students will be able to understand the factors affecting demand and supply.	K2
CO2	The students would be able to understand and evaluate the production function and different cost affecting the operations of a business organization.	K5
CO3	The students would be able to apply various macro economics concepts in various business situations.	K3
CO4	The students would be able to analyse various economic policies and their impact on economy.	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	2	2	1	1	2	2	1	1	1	2	2		
CO2	2	3	2	2	2	2	2	1	1	2	3		
CO3	2	3	2	2	2	2	2	1	1	2	3		
CO4	2	3	2	1	2	3	2	2	1	3	3		
CO5	2	2	2	1	1	3	2	2	1	2	2		

Course Contents / Syllabus

Module 1	**Microeconomics**	**8 hours**

Principles of Demand and Supply – Supply Curves of Firms - Elasticity of Supply; Demand Curves of Households -Elasticity of Demand; Equilibrium and Comparative Statics (Shift of a Curve and Movement along the Curve); Welfare Analysis -Consumers' and Producers' Surplus – Price Ceilings and Price Floors; Consumer Behaviour - Axioms of Choice - Budget Constraints and Indifference Curves

Module 2	**Consumer's Equilibrium**	**8 hours**

Consumer's Equilibrium - Effects of a Price Change, Income and Substitution Effects - Derivation of a Demand Curve; Applications - Tax and Subsidies - Intertemporal Consumption - Suppliers' Income Effect; Theory of Production - Production Function and Iso-quants - Cost Minimization; Cost Curves - Total, Average and Marginal Costs - Long Run and Short Run Costs; Equilibrium of a Firm Under Perfect Competition; Monopoly and Monopolistic Competition.

Module 3	Macro economics	8 hours
National Income and its Components - GNP, NNP, GDP, NDP; Consumption Function; Investment; Simple Keynesian Model of Income Determination and the Keynesian Multiplier; Government Sector - Taxes and Subsidies; External Sector - Exports and imports; Money-Definitions		
Module 4	**Demand for Money**	**8 hours**
Demand for Money - Transitionary and Speculative Demand; Supply of Money - Bank's Credit Creation Multiplier; Integrating Money and Commodity Markets - IS, LM Model; Business Cycles and Stabilization - Monetary and Fiscal Policy - Central Bank and the Government; The Classical Paradigm - Price and Wage Rigidities - Voluntary and Involuntary Unemployment.		
	Total Lecture Hours	**32 hours**

Textbook:

S.No	Book Title	Author
1	Microeconomics	Pindyck, Robert S., and Daniel L. Rubinfeld.

Reference Books:

S.No	Book Title	Author
1	Intermediate Microeconomics:A Modern Approach	Hal R, Varian.

NPTEL/ Youtube/ Faculty Video Link:

Module 1	318_Economics_Eng_Lesson12.pdf (nios.ac.in) https://www.youtube.com/watch?v=QJAv6674_Sw
Module 2	Introduction to Economics: Basic Concepts & Principles - MBA Crystal Ball
Module 3	https://www.youtube.com/watch?v=45ijJXd2YYE
Module 4	https://www.youtube.com/watch?v=Oe8XTXrTdkk

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

(An Autonomous Institute)

Course Code: CCSBS0204	**Course Name: Business Communication and Value Science-II**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**2**	**0**	**0**	**2**

Pre-requisite: The students should have completed BCVS-I course in the first semester

Course Objectives:

- To develop effective reading, writing, presentation and group discussion skills.
- To help students identify personality traits and evolve as a better team player.
- To introduce the students to the key concepts of
  - Morality
  - Behaviour and beliefs
  - Diversity & Inclusion

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Use and understand tools of structured written communication.	K3
CO2	Develop materials to create an identity for an organization dedicated to a social cause.	K5
CO3	Understand and apply the effective techniques of presentation	K3
CO4	Understand and apply the basic concepts of speed reading.	K3
CO5	Identify individual personality types and role in a team.	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	PO11	PSO1	PSO2
CO1	1	2	1	1	1	3	1	1	2	3	2	1		
CO2	1	1	1	1	1	1	1	3	1	1	1	1		
CO3	1	1	1	1	1	1	1	1	3	3	1	1		
CO4	2	2	2	2	2	1	1	1	1	3	2	1		
CO5	1	1	1	1	1	1	1	1	3	2	1	2		

Course Contents / Syllabus

Module 1	**Social Responsibility and Teamwork**	**4 hours**

Icebreaker. 1) Participate in 'Join Hands Movement'. Individual identification of social issues. 2) Each Individual chooses one particular social issue which they would like to address. 3) Class to be divided in teams for the entire semester. All activities to be done in teams and the grades, credit points will be captured in the leader board in the classroom.4) Slam book to be used for capturing individual learning points and observations.

Class discussion- Good and Bad Writing. Common errors, punctuation rules, use of words.

Lucid Writing: Encourage the students to go through the links given about Catherine Morris and Joanie Mcmahon's writing techniques.

SATORI – Participants share their personal take aways acquired from GD, writing, and reading activities captured in their handbook. They discuss the most important learning points from the activities done so far and how that learning has brought a change.

Quiz

Module 2	Presentation and Teamwork	4 hours

Introduction to basic presentation skills & EnglishScore mobile app, Groups to present their NGOs. Apply the learning gathered from session. Presentation to be recorded by the groups - feedback from the audience/ Professor. Group to share their findings from the recording. Post work - individual write ups to be evaluated for the E- magazine.

Speed Reading session: Introduction to skimming and scanning with practice.

SATORI – Join the dots - participants to connect their learning from Unit-2 with their existing curriculum.

Quiz

Module 3	Enhancing Workplace Communication	5 hours

Ad campaign. Brain storming session - students to discuss and explore the means of articulating and amplifying the social issues their NGOs are working for.

Design a skit: write the script on the message of their respective NGOs. Read out the script. (Skit time-5 minutes) – feedback.,

Promote the play through social media and gather an audience. Enact the play. Capture the numbers of likes and reviews.

1) Participants discuss their views, observations, and experiences of working in a team. 2) Introduction of Dr Meredith Belbin and his research on teamwork and how individuals contribute.

3) Belbin's 8 Team Roles and Lindgren's Big 5 personality traits.

4) Belbin's 8 team player styles.

1) Team Falcon practical to identify individual personality traits with Belbin's 8 team player styles. 2) Similar personality types to form groups. 3) Groups present their traits.

SATORI – participants share their personal take aways acquired from working in teams, GD, learning about presentations, & presenting their NGOs.

Quiz

Module 4	Diversity and Inclusion	6 hours

1) Ten minutes of your time – a short film on diversity.

2) Discuss key take aways of the film. Link the key take aways of the film to the concept of empathy.

Touch the target (Blind man) - Film: “The fish and I’’ by Babak Habibifar” (1.37mins)

Groups to create a story – ten minutes of a person's life affected by the social issues that the groups are working on. Narrate the story in first person. Feedback to be shared with the other groups.

Write a review in a blog on the topics being covered in their research.

Session on Diversity & Inclusion - different forms of diversity in our society.

Module 5	Public speaking and Personal Growth	5 Hours

Teams to video record interviews of people from diverse groups (Ask 5 questions). Share the recordings in FB.

Debate on the topic of diversity including ethics, morality, and respect for individual (In the presence of an external moderator). Groups to be graded.

Prepared speech - every student will narrate the challenges faced by a member of a diverse group in 4 minutes (speech in first person) – feedback.

Discussion on Workplace values, Respect for Individual and Integrity.

Revisit your resume - Include your recent achievements in your resume.

SATORI –Participants share their learning about presentations and understanding diversity & inclusion.

	Total Lecture Hours	24 hours

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

Textbook:

S. No	Book Title	Author
1	"English for Everyone"	Express Publishing
2	"Communicative English"	Macmillan
3	"English for Communication"	Cambridge University Press
4	ABC Workbook, Meerut, 2023	NIET Publishing House

Reference Books:

S. No	Book Title	Author
1	Cambridge English Business Benchmark (Pre-intermediate to Intermediate), 2nd edition, Norman Whitby, Cambridge University Press, 2013, UK.	Norman Whitby
2	Guiding Souls: Dialogues on the purpose of life; Dr. A.P.J Abdul Kalam; Publishing Year-2005; Co-author--Arun Tiwari	Arun Tiwari
3	The Family and the Nation; Dr. A.P.J Abdul Kalam; Publishing year: 2015; Co-author: Acharya Mahapragya	Dr. A.P.J Abdul Kalam
4	The Scientific India: A twenty First Century Guide to the World around Us; Dr. A.P. J Abdul Kalam; Publishing year: 2011; Co-author- Y.S.Rajan	Y.S.Rajan
5	Forge Your Future: Candid, Forthright, Inspiring; Dr. A.P.J Abdul Kalam; Publishing year: 2014	Dr. A.P.J Abdul Kalam
6	Abundance: The Future is Better Than You Think; Peter H. Diamandis and Steven Kotler; Published: 21 Feb 2012; Publisher: Free Press	Peter H. Diamandis and Steven Kotler
7	Start with Why: How Great Leaders Inspire Everyone to Take Action; Simon Sinek; Published: 6 October 2011; Publisher: Penguin	Simon Sinek

NPTEL/ YouTube/ Faculty Video Link:

Module 1	https://www.eolss.net/Sample-Chapters/C14/E1-37-01-00.pdf
Module 2	https://m.youtube.com/watch?v=dT_D68RJ5T8&feature=youtu.be
Module 3	https://youtu.be/CsaTslhSDI
Module 4	https://m.youtube.com/watch?feature=youtu.be&v=IIKvV8_T95M
Module 5	https://m.youtube.com/watch?feature=youtu.be&v=e80BbX05D7Y

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

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

LAB Course Code: CCSBS0255	LAB Course Name: Linear Algebra Lab	L	T	P	C
Course Offered in: B.Tech -Second Semester CSBS		0	0	2	1

Pre-requisite:

Course Objectives:

Implement Linear Algebra techniques on variety of data for solving practical problems Using R.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Apply the concept of matrices and determinants to solve linear system of equations.	K3
CO2	Apply the concept of rank and LU decomposition to solve linear system of equation.	K3
CO3	Explain the concept of vector space, orthogonalization and QR decomposition.	K4
CO4	Explain the concept of Eigenvalues and Eigenvectors, linear transformation and complex matrices.	K4
CO5	Apply the concept of singular value decomposition and principal component analysis in image processing and machine learning.	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				2			
CO2	1		1										
CO3			2		1			2		2			
CO4													
CO5		2		2		2		2	2				

List of Practicals

Topic	Program Logic Building	CO Mapping
To install and configure RStudio. Introduction to R.	Students will be able to explain basic R programming concepts	CO1
Functions in R, loops in R	Students will be able to explain the use of data structure and loop functions.	CO1
Vectors in R	Students will be able to create vectors in R	CO1
Matrices In R, Determinants,	Students will be able to create matrices and various operations on matrices in R	CO1
Transpose, inverse and Trace of the matrix.	Students will be able to create matrices and various operations on matrices in R	CO1
Rank of the matrix,	Students will be able to write the program to calculate rank of matrices in R	CO2
solve a linear matrix equation	Students will be able to write the program to solve a simultaneous linear equation in R	CO2

Nullity of a matrix	Students will be able to create a program to find the nullity of a matrix in R	CO3
Eigenvalues and eigenvectors of matrices	Students will be able to create a program to find eigen values and eigen vectors of a matrix in R	CO4
Easy Image Processing in R using the Magick Package.	Students will be able to apply the magick package to understand image processing in R	CO5

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: CCSBS0251	LAB Course Name: Statistical Methods & Modelling Lab	L	T	P	C
Course Offered in: B.Tech -Second Semester CSBS		0	0	2	1

Pre-requisite:

Course Objectives:

Implement statistical analysis techniques on variety of data for solving practical problems Using R.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Explain basic R programming concepts	K2
CO2	Demonstrate how to install and configure RStudio	K3
CO3	Explain the use of data structure and loop functions	K2
CO4	Analyse data and generate reports based on the data	K4
CO5	Apply various concepts to write programs in R	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	2	1					1	1		
CO2	2	2	1	3	1					1	1		
CO3	3	3	2	3	2			1	1	2	2		
CO4	3	3	2	3	2	1		2	1	2	2		
CO5	3	3	2	3	2	1		2	1	2	2		

List of Practicals

Sr No	Program Title	CO Mapping
1.	Introduction to R	CO1
2.	To install and configure RStudio	CO2
3.	Functions in R	CO3
4.	Loops in R	CO3
5.	Vectors in R	CO3
6.	Matrices In R	CO3
7.	Reading Data In R	CO4
8.	Writing Data in R	CO4
9.	Data Manipulation in R	CO4
10.	Simulation In R	CO5

11.	Linear Model in R	CO5
12.	Data Frame in R	CO5
13.	Graphics in R	CO5

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
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LAB Course Code: CCSBS0253	LAB Course Name: Data Structures & Algorithms Lab	L	T	P	C
Course Offered in: B.Tech -Second Semester CSBS		**0**	**0**	**4**	**2**

Pre-requisite: Basic knowledge of computers.

Course Objectives: The objective of this course is to implement various data structures according to their applications to solve real world problems.

Course Outcome: After completion of this course students will be able to:		Bloom's Knowledge Level (KL)
CO1	Apply recursion, arrays, and linked lists to develop solutions for basic computational problems.	K3
CO2	Implement and apply stack, queue, and tree structures to design efficient solutions and traverse hierarchical data.	K3
CO3	Analyze and apply graph algorithms, sorting, and searching techniques to solve real-world problems with optimal performance.	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	1	1	-	-	-	-	-	-	3	1	1
CO2	3	3	2	1	2	-	-	-	1	-	-	3	1	2
CO3	3	3	3	2	3	1	1	-	1	1	1	3	3	3

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

Recursion	1.Program to find factorial of a number	CO1
	2.Program to print Fibonacci series	CO1
Arrays	1.Program to create and display linear array 2. Program to insert a data item at any location in a linear array 3. Program to delete a data item from a linear array	CO1
Stack	1.Program to implement Stack Operation using array.	CO2
Queue	1.Program to implement Queue Operations using array	CO2
Singly Link List	1.Program to implement the Single Linked List operations: a. Insertion b. Deletion c. Traversal d. Reversal e. Searching f. Updation g. Sorting h. Merging	CO2
Double Link List	1.Program to implement the Double Linked List operations: a. Insertion b. Deletion c. Traversal d. Reversal e. Searching f. Updation g. Sorting h. Merging	CO2
Circular Link List	1.Program to implement the Circular Linked List operations: a. Insertion b. Deletion c. Traversal d. Reversal e. Searching f. Updation g. Sorting h. Merging	CO2
Stack Application	1.Program to implement Tower of Hanoi	CO2
Trees	1.Program to implement binary tree using linked list a. Insertion b. Deletion c. Traversal d. Searching	CO2
Graphs	1.Program to implement BFS algorithm 2. Program to implement DFS algorithm	CO3

Searching	1.Program to implement linear search in an Array. 2. Program to implement binary search in an Array	CO3
Sorting	1.Program to implement Bubble sort in an Array. 2. Program to implement Selection sort in an Array. 3. Program to implement Insertion sort in an Array.	CO3
	1.Program to implement Quick sort in an Array. 2. Program to implement Merge sort in an Array.	CO3
Graph Traversal	1. Program to implement the minimum cost spanning tree. 2.Program to implement the shortest path algorithm	CO3
		Total Hours: 48 hrs.

Mode of Evaluation

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

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GREATER NOIDA-201306

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LAB Course Code: CCSBS0252	**LAB Course Name: Principles of Electronics Lab**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**0**	**0**	**2**	**1**

Pre-requisite: Physics and mathematics

Course Objectives:

Students will demonstrate the characteristics & use of different semiconductor devices.

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Demonstrate the diode V-I characteristics and input/output waveforms of rectifier circuits.	K2
CO2	Demonstrate the input and output characteristics of BJT.	K2
CO3	Draw the transfer and drain characteristics of FET.	K1
CO4	Explain the operational amplifier and demonstrate op-amp as adder and subtractor.	K2, 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	3	2	1	-	-	2	1	1	1	-	3	2	2
CO2	3	2	1	-	-	2	1	1	1	-	3	2	2
CO3	3	2	1	-	-	2	1	1	1	-	3	2	2
CO4	3	2	1			2	1	1	1		3	2	2

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

1. To study the data sheet to understand specifications of – Diodes.
2. To draw the V-I Characteristics of Diode.
3. To build half wave and Full wave rectifier circuits using diode.
4. To study the data sheet to understand specifications of – BJT.
5. To draw the V-I Characteristics of BJT in CE configuration.
6. To study the data sheet to understand specifications of – FET.
7. To draw the Drain and transfer Characteristics of FET in CS configuration.
8. To study the data sheet to understand specifications of – OPAMP.
9. To build and test OPAMP as an Adder and Subtractor.

Total Hours: 18 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)

Course Code: CNC0201	**Course Name: Environmental Sciences**	**L**	**T**	**P**	**C**
Course Offered in: B.Tech -Second Semester CSBS		**2**	**0**	**0**	**NC**

Pre-requisite: Basic knowledge of biology, chemistry, ecology, geology, mathematics, and understanding of human impacts on natural systems.

Course Objectives:

1. To help the students in realizing the inter-relationship between man and environment and help the students in acquiring basic knowledge about environment.
2. To develop the sense of awareness among the students about the environment and its various problems.
3. To create a positive attitude about the environment among the students.
4. To develop proper skill required for the fulfillment of the aims of environmental education and educational evaluations
5. To develop the capability of using skills to fulfill the required aims, to realize and solve environmental problems through social, political, cultural and educational processes

Course Outcome: After completion of the course, the student will be able to		Bloom's Knowledge Level (KL)
CO1	Understand the basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem, food chains and food webs. Ecological pyramids, biodiversity.	K1,K2
CO2	Understand the different types of natural recourses like food, forest, Minerals and energy and their conservation.	K1,K2
CO3	Understand the different types of pollution, pollutants, their sources, effects and their control methods.	K1,K2
CO4	Understand the basic concepts of sustainable development, Environmental Impact Assessment (EIA) and different acts related to environment.	K1,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	2	2		3	3	2	2		2		
CO2	3	3	2	2		3	3	2	2		2		
CO3	3	3	2	2		3	3	2	2		2		
CO4	3	3	2	2		3	3	3	2		2		

Course Contents / Syllabus

Module 1	**Basic Principle of Ecology and Biodiversity**	**5 hours**

Definition, Scope and basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem. Food chains and food. Webs. Ecological pyramids, Energy flow in ecological systems, Characteristics of different ecosystems. Biogeochemical Cycles: Importance, gaseous and sedimentary cycles. Carbon, Nitrogen, Phosphorus and Sulphur Cycles. Biodiversity and their importance, Threats to biodiversity, major causes, extinction's, vulnerability of species to extinction, IUCN threat categories, Red data book. Strategies for biodiversity conservation, principles of biodiversity conservation in-situ and ex-situ conservation strategies Mega diversity zones and Hot spots, concepts, distribution and importance.

Module 2	Natural Resources and Ecological succession	5 hours

Natural resources and associated problems. Forest resources: Use and over- exploitation, deforestation. Timber extraction, mining, dams and their effects on forest and tribal people. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food resources: World food problems, changes caused by agriculture and over- grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, and salinity. Land resources: Land as a resource, land degradation, man induced landslides. Equitable use of resources for sustainable lifestyles.

Non-Renewable Energy Resources: Fossil fuels and their reserves, Nuclear energy, types, uses and effects, Renewable Energy Resources: hydropower, Solar energy, geothermal, tidal and wind energy, Biomass energy, biogas and its advantages. Ecological succession-Types, stages, examples of ecological succession.

Module 3	Pollution and Waste Management	5 hours

Air pollution: sources of air pollution, Primary and secondary air pollutants. Origin and effects of SOX, NOX, Cox,CFC, Hydrocarbon, control of air pollution. Water pollution: sources and types of water pollution, Effects of water pollution, Eutrophication, Soil pollution: Causes of soil pollution, Effects of soil pollution, Major sources of and effects of noise pollution on health, Radioactive and thermal pollution sources and their effects on surrounding environment. Solid waste disposal and its effects on surrounding environment, Introduction to E- Waste, Types and classification of E- Waste, Impacts of E- Waste on environment and human health,E-Waste management and recycling., Climate change, global warming, acid rain, ozone layer depletion.

Module 4	Environmental Assessment and Legislation	5 hours

Women education, Role of NGOs regarding environmental protection, Bio indicators and their role, Natural disasters and disasters management, Aims and objectives of Environmental Impact Assessment (EIA). Salient features of following Acts: Environmental Protection Act, 1986, Wildlife (Protection) Act, 1972.Water (Prevention and control of pollution) Act, 1974. Forest (Conserving) Act, 1980.

Definition and concept of sustainability, impacted areas of sustainable development, Global initiative and issues on sustainable development UNSDsGs, System Thinking and Sustainability.

	Total Lecture Hours	48 hours

Textbook:

S.No	Book Title	Author
1	Brady, N.C. 1990. The nature and properties of Soils, Tenth Edition. Mac Millan Publishing Co., New York	Brady, N.C
2	Sodhi G.S. 2005, Fundamentals of Environmental Chemistry: Narosa Publishing House, New Delhi.	Sodhi G.S
3	Dash, M.C. (1994), Fundamentals of Ecology, Tata Mc Graw Hill, New Delhi.	Dash, M.C

Reference Books:

S.No	Book Title	Author
1	Rao M.N. and H.V.N. Rao, 1989 : Air Pollution, Tata McGraw Hill Publishing Co. Ltd., New Delhi	Rao M.N. and H.V.N. Rao
2	A Text Book of environmental Science By Shashi Chawla	Shashi Chawla

NPTEL/ Youtube/ Faculty Video Link:

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

Module 1	https://www.youtube.com/watch?v=T21OO0sBBfc, https://www.youtube.com/watch?v=qt8AMjKKPDo
Module 2	https://www.youtube.com/watch?v=mOwyPENHhbc, https://www.youtube.com/watch?v=yqev1G2iy2 https://www.youtube.com/watch?v=_74S3z3IO_I, https://www.youtube.com/watch?v=jXVw6M6m2
Module 3	https://www.youtube.com/watch?v=7qkaz8ChelI, https://www.youtube.com/watch?v=NuQE5fKmfME https://www.youtube.com/watch?v=9CpAjOVLHII, ttps://www.youtube.com/watch?v=yEci6iDkXYw
Module 4	https://www.youtube.com/watch?v=ad9KhgGw5iA, https://www.youtube.com/watch?v=nW5g83NSH9 M, https://www.youtube.com/watch?v=xqSZL4Ka8xo

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