

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

**(AN AUTONOMOUS INSTITUTE)**



**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: 2024-25)**

**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 Subject	Periods			Evaluation Schemes				End Semester		Total	Credit
				L	T	P	CT	TA	TOTAL	PS	TE	PE		
1	BCSBS0106	Discrete Mathematics	Mandatory	3	0	0	30	20	50		100		150	3
2	BCSBS0105	Introductory Topics in Statistics, Probability and Calculus	Mandatory	3	0	0	30	20	50		100		150	3
3	BCSBS0103	Fundamentals of Computer Science	Mandatory	3	0	0	30	20	50		100		150	3
4	BCSBS0102	Principles of Electrical Engineering	Mandatory	2	0	0	30	20	50		50		100	2
5	BCSBS0101	Physics for Computing Science	Mandatory	2	0	0	30	20	50		50		100	2
6	BCSBS0104Z	Business Communication & Value Science – I	Mandatory	1	0	0	30	20	50		50		100	1
7	BCSBS0156	Discrete Mathematics Lab	Mandatory	0	0	2				25		25	50	1
8	BCSBS0153	Fundamentals of Computer Science Lab	Mandatory	0	0	4				50		50	100	2
9	BCSBS0151	Physics for Computing Science Lab	Mandatory	0	0	2				25		25	50	1
10	BCSBS0152	Principles of Electrical Engineering Lab	Mandatory	0	0	2				25		25	50	1
11	BCSBS0154	Business Communication & Value Science – I Lab	Mandatory	0	0	2				25		25	50	1
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		<b>TOTAL</b>											<b>1050</b>	<b>20</b>

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

<b>S. No.</b>	<b>Subject Code</b>	<b>Course Name</b>	<b>University/ Industry Partner Name</b>	<b>N. of Hours</b>	<b>Credits</b>
1.	BMC0002	Next Gen Technologies	Infosys Wingspan (Infosys Springboard)	10h 14m	0.5
2.	BMC0042	Programming Fundamentals using Python - Science Graduates - Foundation Program	Infosys Wingspan (Infosys Springboard)	66h 10m	4

**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 Subject	Periods			Evaluation Schemes				End Semester		Total	Credit
				L	T	P	CT	TA	TOTAL	PS	TE	PE		
1	BCSBS0205Z	Linear Algebra		3	0	0	30	20	50		100		150	3
2	BCSBS0201	Statistical Methods & Modelling		3	0	0	30	20	50		100		150	3
3	BCSBS0203Z	Data Structures & Algorithms		3	0	0	30	20	50		100		150	3
4	BCSBS0202	Principles of Electronics		2	0	0	30	20	50		50		100	2
5	BCSBS0206	Fundamentals of Economics		2	0	0	30	20	50		50		100	2
6	BCSBS0204	Business Communication & Value Science – II		2	0	0	30	20	50		50		100	2
7	BCSBS0255	Linear Algebra Lab		0	0	2				25		25	50	1
8	BCSBS0251	Statistical Methods & Modelling Lab		0	0	2				25		25	50	1
9	BCSBS0253	Data Structures & Algorithms Lab		0	0	4				50		50	100	2
10	BCSBS0252	Principles of Electronics Lab		0	0	2				25		25	50	1
11	BNC0201	Environmental Sciences		2	0	0	30	20	50		50		100	NA
		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		<b>TOTAL</b>											<b>1000</b>	<b>20</b>

**\* 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.	BMC0004	Programming In C	Infosys Wingspan (Infosys Springboard)	17h 7m	1
2.	BMC0041	Microsoft Office 2016	Infosys Wingspan (Infosys Springboard)	31h 54m	2.5

**PLEASE NOTE: -**

- **A 3-4 weeks Internship shall be conducted during summer break after semester-II and will be assessed during semester-III**
- **Compulsory Audit (CA) Courses (Non-Credit - BNC0201)**
  - 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  
**AICTE Guidelines in Model Curriculum:**

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 to 18 =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 credits



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Computer Science in Emerging Technologies**

Subject Name: Discrete Mathematics				L-T-P [3-0-0]		
Subject Code: BCSBS0106				Applicable in Department: B.Tech. -First Semester CSBS		
Pre-requisite of Subject: Knowledge of Mathematics						
Course Objective:  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 Outcomes (CO)						
Course outcome: After completion of this course students will be able to:						Bloom’s Knowledge Level(KL)
CO1	Apply the basic principles of Boolean algebra and implementation of K Map.					K3
CO2	Define the algebraic structure of a system.					K1
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.					K4
Syllabus						
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required	Practical/ Assignment/	CO Mapping

				(L+P)	Lab Nos	
Unit 1	<b>Boolean algebra</b>	Introduction of Boolean algebra, truth table, basic logic gate, basic postulates of Boolean algebra, principle of duality,	Class room Teaching, Smart Board, PPT, M-tutor.	4	Assignment-1 : Boolean expression and Logic Circuits	<b>CO1</b>
	<b>K-map</b>	canonical form, Boolean expression reduction using Karnaugh map		4	Assignment-2: K-map	
Unit 2	<b>Abstract algebra</b>	Introduction to sets, types of sets, types of relations and functions.	Class room Teaching, Smart Board, PPT, M-tutor.	4	Assignment-3: Relation and functions	<b>CO2</b>
	<b>Advanced algebra</b>	Group, rings, field		4	Assignment-4: advanced algebra	
Unit 3	<b>Combinatorics</b>	Basic counting, balls and bins problems, probability and combination	Class room Teaching, Smart Board, PPT, M-tutor.	4	Assignment	<b>CO3</b>
	<b>Recurrence relation</b>	Solution of recurrences using generating function and characteristic equation		4	Assignment-5: Generating functions	
	<b>Proof techniques</b>	principle of mathematical induction, pigeonhole principle.		4	Assignment-6: proof techniques	
Unit 4	<b>Graph Theory</b>	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	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-7: Euler and Hamiltonian graph	<b>CO4</b>



	Trees	BFS, DFS, tree traversals		3	Assignment-8: Traversal Methods	
Unit 5	Logics	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	Class room Teaching, Smart Board, PPT, M-tutor.	7	Assignment-9: Propositional Calculas	CO5
	Predicates	Formal reducibility - natural deduction system and axiom system, Soundness and completeness.		4	Assignment	
Total				50		

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

1.	Introduction to linear algebra. Gilbert Strang.
2.	Introductory Combinatorics, R. A. Brualdi, North-Holland, New York.
3.	Graph Theory with Applications to Engineering and Computer Science, N. Deo, Prentice Hall, Englewood Cliffs.
4.	Introduction to Mathematical Logic, (Second Edition), E. Mendelsohn, Van-Nostrand, London.

**Links (Only Verified links should be pasted here)**

**Link:**

- <https://nptel.ac.in/courses/106/106/106106183/#>
- <https://www.m-tutor.com/courses.php?selectedsubject=5699&univid=330&year=1&selectedcourse=396&branch=1203&>



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

Department of Mathematics

**Subject Name: Introductory Topics in Statistics, Probability and Calculus** **L-T-P [3-0-0]**

**Subject Code: BCSBS0105**

**Applicable in Department: B.Tech. -First Semester  
CSBS**

**Pre-requisite of Subject:** Knowledge of Mathematics

## **Course Objective:**

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 Outcomes (CO)**

**Course outcome:** After completion of this course students will be able to:

**Bloom's  
Knowledge  
Level(KL)**

CO 1	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

## **Syllabus**

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Introduction to Statistics</b>	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.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment 1.1	<b>CO1</b>
Unit 2	<b>Descriptive Statistics</b>	Classification and tabulation of univariate data, graphical representation, Frequency curves. Descriptive measures - central tendency and dispersion. Bivariate data. Summarization, marginal and conditional frequency distribution.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-2.1	<b>CO2</b>
Unit 3	<b>Probability</b>	Concept of experiments, sample space, event. Definition of Combinatorial Probability. Conditional Probability, Bayes Theorem.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-3.1	<b>CO3</b>
Unit 4	<b>Probability distributions</b>	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.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-4.1	<b>CO4</b>
Unit 5	<b>Calculus</b>	Basic concepts of Differential and integral calculus, application of double and triple integral.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-5.1	<b>CO5</b>
<b>Total</b>				<b>40</b>		

**Textbooks**

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

**Reference Books**

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

**Links (Only Verified links should be pasted here)****Youtube Link:****Unit1:**



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Computer Science & Information Technology**

<b>Subject Name:</b> Fundamentals of Computer Science	<b>L-T-P [3-0-0]</b>
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<b>Subject Code:</b> BCSBS0103	<b>Applicable in Department:</b> B.Tech. -First Semester CSBS
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**Pre-requisite of Subject:** Basic knowledge of computers.

**Course Objective:**

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 Outcomes (CO)

Course outcome: After completion of this course students will be able to:		Bloom's Knowledge Level(KL)
CO 1	Acquire a broad perspective about the uses of computers in engineering industry.	K1
CO2	Understand the concept of computers, algorithm and algorithmic thinking.	K2
CO3	Apply conditional statements and looping constructs.	K3
CO4	Implement array and perform operations on it.	K3
CO5	Understand the more advanced features of the C language.	K2

### Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>General problem Solving concepts</b>	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.	Theoretical and Practical	5	Assignment 1.1	<b>CO1</b>
Unit 2	<b>Imperative languages &amp; Operators</b>	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.	Theoretical and Practical	7	Assignment-2.1	<b>CO2</b>
Unit 3	<b>Control Flow</b>	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.	Theoretical and Practical	6	Assignment-3.1	<b>CO3</b>
Unit 4	<b>Functions and Program Structure</b>	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.	Theoretical and Practical	8	Assignment-4.1	<b>CO4</b>

Unit 5	<b>Pointers and Arrays</b>	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.	Theoretical and Practical	8	Assignment-5.1	<b>CO5</b>
Unit 6	<b>Input and Output:</b>	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	Theoretical and Practical	6	Assignment-6.1	<b>CO5</b>
<b>Total</b>				<b>40</b>		

<b>Textbooks</b>	
<b>Sr No</b>	<b>Book Details</b>
1.	B. W. Kernighan and D. M. Ritchi, The C Programming Language, 1988, 2nd Edition, PHI.
2.	B. Gottfried, Programming in C, Schaum Outline Series, 1996, 2 <sup>nd</sup> Edition, McGraw Hill Companies Inc.
<b>Reference Books</b>	
<b>Sr No</b>	<b>Book Details</b>



1.	Herbert Schildt, C: The Complete Reference, 2000, 4th edition, McGraw Hill.
2.	Yashavant Kanetkar, Let Us C, 2017, 15th edition, BPB Publications.
<b>Links (Only Verified links should be pasted here)</b>	



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Electronics and Communication Engineering**

Subject Name: Principles of Electrical Engineering		L-T-P [2-0-0]
Subject Code:    BCSBS0102		Applicable in Department:   B.Tech. -First Semester CSBS
Pre-requisite of Subject: Physics and mathematics		
Course Objective- 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 Outcomes (CO)		
Course outcome: After completion of this course students 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
Syllabus		

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Introduction</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	6+6	Assignment+Lab	<b>CO1</b>
Unit 2	<b>Basic network</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+8	Assignment+Lab	<b>CO2</b>
Unit 3	<b>Concept of AC</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+4	Assignment+Lab	<b>CO3</b>
Unit 4	<b>Electrostatics and Electro-Mechanics</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	10	Assignment	<b>CO4</b>
Unit 5	<b>Measurements and Sensors</b>	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. <b>Practical considerations:</b> Electrical Wiring types and accessories, Illumination system, Basic layout of the distribution system, Types of earthing, Safety devices & systems. Battery principles and types.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	10	Assignment	<b>CO5</b>

<b>Total</b>	<b>42</b>		
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Textbooks	
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Sr No	Book Details
1.	<i>Electric Machinery</i> , (Sixth Edition) A.E. Fitzgerald, Kingsely Jr Charles, D. Umans Stephen, Tata McGraw Hill.
2	<i>A Textbook of Electrical Technology</i> , (vol. I), B. L. Theraja, Chand and Company Ltd., New Delhi.
3	<i>Basic Electrical Engineering</i> , V. K. Mehta, S. Chand and Company Ltd., New Delhi.
4	<i>Theory and problems of Basic Electrical Engineering</i> , (Second Edition), J. Nagrath and Kothari, Prentice Hall of India Pvt. Ltd.

Reference Books	
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Sr No	Book Details
1	<i>Basic of Electrical Engineering</i> , T. K. Nagsarkar and M. S. Sukhija, Oxford University Press. T. K. Nagsarkar and M. S. Sukhija, Basic of Electrical Engineering, Oxford University Press, 2011.
2	<i>Introduction to Electrodynamics</i> , D. J. Griffiths, (Fourth Edition), Cambridge University Press.
3	<i>Engineering Circuit Analysis</i> , William H. Hayt & Jack E. Kemmerly, McGraw-Hill Book Company Inc.
4	<i>Fundamentals of Electrical and Electronics Engineering</i> , Smarjith Ghosh, Prentice Hall (India) Pvt. Ltd.

Links (Only Verified links should be pasted here)
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<b>Unit 1</b> <a href="https://youtu.be/4LgSLToLSCU">https://youtu.be/4LgSLToLSCU</a> <a href="https://youtu.be/q-i2URiDV1E">https://youtu.be/q-i2URiDV1E</a> <a href="https://youtu.be/m4jzggZu-4s">https://youtu.be/m4jzggZu-4s</a> <a href="https://youtu.be/fHj2RdOnTqg">https://youtu.be/fHj2RdOnTqg</a>
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**Unit 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/dpImV7d08_8)  
<https://youtu.be/1QfNg965OyE>  
[https://youtu.be/A0E\\_A0COZ8w](https://youtu.be/A0E_A0COZ8w)  
[https://youtu.be/i\\_VHSlx-xO8](https://youtu.be/i_VHSlx-xO8)  
[https://youtu.be/w4N9CBc\\_nkA](https://youtu.be/w4N9CBc_nkA)  
<https://youtu.be/rwHgicnjJEE>  
<https://www.youtube.com/watch?v=U85eA3-suiQ>

**Unit 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>

**Unit 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](https://www.youtube.com/watch?v=vX_kd5XiEN8)  
[https://www.youtube.com/watch?v=j\\_4jvMwIla0](https://www.youtube.com/watch?v=j_4jvMwIla0)

**Unit 5**

<https://youtu.be/zxYeJW9v6OU>  
<https://youtu.be/gAhPQtLFvyU>  
<https://youtu.be/s65MmFUfcrM>  
<https://youtu.be/BIRS34UnsCo>  
<https://youtu.be/gtfl-YTDSU4>

<https://youtu.be/SQOhgYq0UL4>

<https://youtu.be/RT5rkqufdWM>

<https://youtu.be/PMxlCyYs7S4>

<https://youtu.be/62lmfPki868>

<https://youtu.be/qxqGIGjyYTU>



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**Department of Physics**

<b>Subject Name: Physics For Computing Science</b>	<b>L-T-P [2-0-0]</b>
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<b>Subject Code: BCSBS0101</b>	<b>Applicable in Department: B.Tech.- First Semester CSBS</b>
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**Pre-requisite of Subject:**

1. Newton's law of motion.
2. Scalar and vector (grad, 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 Objective:**

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 Outcomes (CO)

**Course outcome:** After completion of this course students will be able to:

		<b>Bloom's Knowledge Level(KL)</b>
CO 1	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

### Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Oscillation</b>	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.	Smartboard, PPT	9	Assignment 1.1,1.2	<b>CO1</b>
Unit 2	<b>Interference, Diffraction &amp; Polarization</b>	Interference-principle of superposition-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.	Smartboard, PPT	9	Assignment 2.1, 2.2, 2.3	<b>CO2</b>
Unit 3	<b>Basic Idea of Electromagnetisms and Semiconductor Physics</b>	Continuity equation for current densities, Maxwell's equation in vacuum and non-conducting medium.  Conductor, Semiconductor and Insulator; Basic concept of Band	Smartboard, PPT	6	Assignment 3.1, 3.2	<b>CO3</b>



		theory.				
Unit 4	<b>Thermodynamics</b>	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.	Smartboard, PPT	6	Assignment 4.1, 4.2	<b>CO4</b>
Unit 5	<b>Laser and Fiber optics</b>	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.	Smartboard, PPT	6	Assignment 5.1, 5.2	<b>CO5</b>
<b>Total</b>				<b>36</b>		

Textbooks	
Sr No	Book Details
1.	A. Beiser, Concepts of Modern Physics (McGraw Hill)
2.	David Halliday, Robert Resnick and Jearl Walker, Fundamentals of Physics, Wileyplus.
Reference Books	
Sr No	Book Details
1.	Ajoy Ghatak, Optics, (Fifth Edition), Tata McGraw Hill.
2.	Sears & Zemansky, University Physics, Addison-Wesley.
3.	Jenkins and White, Fundamentals of Optics, (Third Edition) McGraw-Hill.

**Links (Only Verified links should be pasted here)**

**UNIT1:** [https://www.youtube.com/watch?v=lzBKlY4f1XA&list=PL10WTjZXSIIHKMnU4UCxpPsH-yAf\\_n1O6&index=11](https://www.youtube.com/watch?v=lzBKlY4f1XA&list=PL10WTjZXSIIHKMnU4UCxpPsH-yAf_n1O6&index=11)

**UNIT2:** <http://nptel.ac.in/> , <http://www.mit.edu/>

**UNIT3:** <https://www.youtube.com/watch?v=bWTxf5dSUBE> , <http://ocw.mit.edu/>, <http://nptel.ac.in/>

**UNIT4:** <https://www.youtube.com/watch?v=6vyYRnLvnqI>

**UNIT5:** <https://www.youtube.com/watch?v=0GD-18Jqnro>, <https://www.youtube.com/watch?v=dQhhcgn8YZo>



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

Department of Languages

<b>Subject Name: Business Communication &amp; Value Science - I</b>		<b>L-T-P [1-0-0]</b>
<b>Subject Code: BCSBS0104Z</b>		<b>Applicable in Department: B.Tech.- First Semester CSBS</b>
<b>Pre-requisite of Subject: Comprehension of Basic English Language</b>		
<b>Course Objective(s):</b> <ul style="list-style-type: none"><li>• Understand what life skills are and their importance in leading a happy and well-adjusted life.</li><li>• Motivate students to look within and create a better version of self.</li><li>• Introduce them to key concepts of values, life skills and business communication.</li></ul>		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
CO1	Recognize the need for life skills, values, and own strengths and weaknesses.	K2
CO2	Apply the 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

## Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit-1	<b>Module 1:</b> <b>Module 2:</b> <b>Module 3:</b>	<b>Overview of LOL: Leadership Oriented Learning</b> (include activity on introducing self) <b>Overview of business communication</b> Lecture with videos <b>Self-awareness</b> – identity, body awareness, stress management <b>Quiz</b>	Video and Activity Based	10 (3+7)	<b>Self-work with immersion</b> – interview a maid, watchman, sweeper, cab driver, beggar and narrate what you think are the values that drive them.	<b>CO1</b>
Unit-2	<b>Module 1:</b> <b>Module 2:</b> <b>Module 3:</b>	<b>Understanding Life Skills:</b> Introduction to life skills What are the critical life skills <b>Life skill:</b> Stress management, working with rhythm and balance, colours, and teamwork <b>Expressing self</b> , connecting with emotions, visualizing and experiencing purpose	Video and activity based	6 (2+4)		<b>CO2</b>

Unit-3	<p><b>Module 1:</b></p> <p><b>Module 2:</b></p> <p><b>Module 3:</b></p> <p><b>Module 4:</b></p> <p><b>Module 5:</b></p> <p><b>Module 6:</b></p>	<p><b>Essential Grammar – I: Tenses:</b> Applications of tenses in Functional Grammar – Take a quiz and then discuss</p> <p><b>Sentence formation</b> (General &amp; Technical)</p> <p><b>Communication Skills:</b> Overview of Communication Skills Barriers of communication, Effective communication</p> <p><b>Types of communication-</b> verbal and non – verbal – Role-play based learning</p> <p><b>Importance of Questioning</b></p> <p><b>Listening Skills:</b> Law of nature, Importance of listening skills, Difference between listening and hearing, Types of listening.</p> <p><b>Evaluation on Listening skills</b> – listen to recording and answer questions based on them</p>	Interactive Learning	10 (5+5)		CO3
Unit-4	<p><b>Module 1:</b></p> <p><b>Module 2:</b></p> <p><b>Module 3:</b></p> <p><b>Module 4:</b></p>	<p><b>Email writing:</b> Formal and informal emails, activity <b>Verbal communication:</b> Pronunciation, clarity of speech</p> <p><b>vocabulary Enrichment:</b> 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.</p> <p><b>Written Communication:</b> Summary writing, story writing</p>	Activity based learning; flipped classroom where students will study words before coming to class	10 (2+8)		CO4

		<b>Build your CV</b> – start writing your comprehensive CV including every achievement in your life, no format, no page limit				
<b>Total</b>				<b>12 (L)</b>	<b>24 (P)</b>	<b>36 Hrs</b>

Textbooks	
Sr No	Book Details
1.	ABC Workbook, NIET Publishing House, Meerut, 2023
Reference Books	
Sr No	Book Details
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
Links (Only Verified links should be pasted here)	
<b>Links:</b> <ol style="list-style-type: none"> <li><a href="https://www.coursera.org/learn/learning-how-to-learn">https://www.coursera.org/learn/learning-how-to-learn</a></li> <li><a href="https://www.coursera.org/specializations/effective-business-communication">https://www.coursera.org/specializations/effective-business-communication</a></li> </ol>	



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

School of Computer Science in Emerging Technologies

Subject Name: Discrete Mathematics Lab		L-T-P [0-0-2]
Subject Code: BCSBS0156	Applicable in Department: B.Tech.- First Semester CSBS	

## Lab Experiments

Course Objective:

## Course Outcomes (CO)

Course outcome: After completion of this course students 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

## List of Practicals

Sr No	Program Title	CO Mapping
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
<b>Required Software and Tools</b>		





# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

School of Computer Science & Information Technology

<b>Subject Name:</b> Fundamentals of Computer Science Lab	<b>L-T-P [0-0-4]</b>
<b>Subject Code:</b> BCSBS0153	<b>Applicable in Department:</b> B.Tech.- First Semester CSBS

## Lab Experiments

### Course Objective:

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 Outcomes (CO)

**Course outcome:** After completion of this course students will be able to:

		<b>Bloom's Knowledge Level (KL)</b>
CO1	Read, understand and trace the execution of programs written in C language.	K2
CO2	Write the C code for a given algorithm.	K2
CO3	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.	K3
CO4	Write programs that perform operations using derived data types.	K2
CO5	Implement String Handling.	K3

### List of Practicals

Sr No	Topic	Program Logic Building	CO Mapping
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1.	Algorithm and flowcharts of small problems like GCD	<ol style="list-style-type: none"> <li>1. Algorithm to find the sum of two numbers</li> <li>2. Algorithm to find the smallest of two numbers</li> <li>3. Algorithm to print multiplication Table of a number</li> <li>4. Algorithm to find GCD of numbers.</li> </ol>	CO1
2.	Structured code writing with:  i. Small but tricky codes	<ol style="list-style-type: none"> <li>1. WAP in C to implement the use of all arithmetic operators.</li> <li>2. WAP in C to find the Area and Circumference of a circle, where radius r is input by user.</li> <li>3. WAP in C to swap the values of 2 variables without using third variable.</li> <li>4. WAP in C to print the digit at ones place of a number.</li> <li>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.</li> <li>6. WAP in C to Enter the marks of 5 subjects (i.e. Physics, Chemistry, Maths, Hindi &amp; English) of a student &amp; display the Total_Marks and Percentage and grade achieved. Grading Criteria: percentage &gt;= 90 then Grade A percentage &gt;=80 and &lt;90 then Grade B percentage &gt;=70 and &lt;80 then Grade C percentage &gt;=60 and &lt;70 then Grade D else Grade E</li> <li>7. WAP in C to check whether a year is Leap Year or not.</li> <li>8. WAP in C to print day of week name using switch case.</li> <li>9. WAP in C to print total number of days in a month using switch case.</li> <li>10. WAP in C to calculate the sum of first 10 numbers.</li> <li>11. WAP in C to print multiplication table of any number.</li> <li>12. WAP in C to display a Fibonacci series.</li> <li>13. WAP in C to find sum of digits of a number.</li> <li>14. WAP in C to reverse a number.</li> <li>15. Pattern Printing programs.</li> </ol>	CO1
3.	ii. Proper parameter passing	WAP in C to demonstrate call by value and call by reference.	CO1
4.	iii. Command line Arguments	WAP in C to demonstrate command line arguments.	CO1
5.	iv. Variable parameter	<ol style="list-style-type: none"> <li>1. WAP in C to add two number using user defined function add().</li> <li>2. WAP in C to find the largest of three number using user defined function largest() .</li> </ol>	CO2

		3. WAP in C to calculate the factorial of a number using recursion. 4. Program to calculate the exponent using recursion.	
6.	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
7.	vi. User defined header	1. WAP in C to create a user defined header file and use it in to some other programs.	CO3
8.	vii. Make file utility	WAP in C to implement all make file utility commands.	CO3
9.	viii. Multi file program and user defined libraries	Program to demonstrate how to use multiple c files in one program.	CO4
10.	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.	CO4
11.	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.	CO4
<b>Required Software and Tools</b>			



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

Department of Physics

Subject Name: Physics for Computing Science Lab

L-T-P [0-0-2]

Subject Code: BCSBS0151

Applicable in Department: B.Tech.- First Semester  
CSBS

## Lab Experiments

### Course Objective:

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 Outcomes (CO)

**Course outcome:** After completion of this course students will be able to:

**Bloom's  
Knowledge Level  
(KL)**

CO 1	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

**List of Practicals**

<b>Sr No</b>	<b>Program Title</b>	<b>CO Mapping</b>
<b>1</b>	To study the magnetic field along the axis of current carrying coil by Stewart and Gee method	CO1
<b>2</b>	To determine the Hall coefficient of semi-conductor	CO2
<b>3</b>	To determine the Plank constant	CO4
<b>4</b>	To determine the wave length of light by Laser diffraction method	CO3
<b>5</b>	To determine the wave length of light by Newton's Ring method	CO3
<b>6</b>	To determine laser and optical fiber parameters	CO3
<b>7</b>	To determine the Stefan's Constant.	CO4
<b>Required Software and Tools</b>		



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

School of Electronics and Communication Engineering

<b>Subject Name:</b> Principles of Electrical Engineering Lab	<b>L-T-P [0-0-2]</b>
<b>Subject Code:</b> BCSBS0152	<b>Applicable in Department:</b> B.Tech.- First Semester CSBS

## Lab Experiments

**Course Objective:** 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 Outcomes (CO)

<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
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

## List of Practicals

<b>Sr No</b>	<b>Program Title</b>	<b>CO Mapping</b>
1	Familiarization of electrical circuits: sources, measuring devices and transducers	CO1

<b>2</b>	Determination of resistance temperature coefficient	<b>CO1</b>
<b>3</b>	Verification of Network Theorem <ul style="list-style-type: none"> <li>• Superposition</li> <li>• Thevenin</li> <li>• Norton</li> <li>• Maximum Power Transfer theorem</li> </ul>	<b>CO2</b>
<b>4</b>	Simulation of R-L-C series circuits for $X_L > X_C$ , $X_L < X_C$	<b>CO3</b>
<b>5</b>	Simulation of Time response of RC circuit	<b>CO3</b>
<b>6</b>	Demonstration of measurement of electrical quantities in DC and AC systems.	<b>CO1</b>
<b>Required Software and Tools</b>		
1. Matlab		



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)  
Department of Languages

<b>Subject Name:</b>	<b>Business Communication &amp; Value Science – I Lab</b>	<b>L-T-P [0-0-2]</b>
<b>Subject Code:</b>	<b>BCSBS0154</b>	<b>Applicable in Department: B.Tech.- First Semester CSBS</b>

Lab Experiments		
<b>Course Objective: Comprehension of Basic English Language</b>		
Course Outcomes (CO)		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level (KL)</b>
<b>CO 1</b>	Recognize the need for life skills, values, and own strengths and weaknesses.	K2
<b>CO 2</b>	Apply the life skills to different situations.	K3
<b>CO 3</b>	Understand the basic tenets of communication.	K2
<b>CO 4</b>	Apply the basic communication practices in different types of communication.	K3
List of Practical		
<b>Sr No</b>	<b>Program Title</b>	<b>CO Mapping</b>
<b>1.</b>	<b>Introducing self</b> The students will be able to develop their communication skills and boost their confidence.	CO1



2.	<b>Presentation on favorite cricket captain in IPL and the skills and values they demonstrate</b> The students will understand the significance of leadership skills, through the presentations.	CO1
3.	<b>Record a conversation between a celebrity and an interviewer, followed by discussion.</b> The students will learn the importance of self-awareness and self-identity.	CO1
4.	<b>Anubhaav Activities</b> The students will discuss and identify their aspirations from the course	CO1
5.1	<b>Refresher on <u>Parts of Speech</u> – Listen to an audio clip and note down the different parts of speech followed by discussion</b> The students will understand the different parts of speech through audio-based activities.	CO2
5.2	<b>Art of Listening</b> Participants will listen to their peers reading aloud and write down the gist; and will repeat verbatim what is read.	CO2
6.	<b>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)</b> The students will be able to understand common speech errors and how to rectify them	CO2
7.	<b>Skit based on communication skills</b> The students will be able to improve their communication skills, and presentation skills through skit.	CO2
8.	<b>Group discussion followed by questions by the audience</b> 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.	CO3
9.	<b>Practice - Toastmaster style Table Topics speech with evaluation</b> The students will develop the ability to organise their thoughts quickly and respond spontaneously question.	CO3
10.1	<b>Basics of Writing</b> The students will practice basic writing skills through sentence construction by understanding the requisites of a good sentence.	CO4
10.2	<b>Listen and write</b>	CO4

	The students will practice writing exactly what they hear.	
11.	<b>Movie based learning – Pursuit of Happiness. What are the skills and values you can identify, what can you relate to?</b> The students will learn the importance of life skills.	CO4
12.	<b>Hansei Session</b> The students will learn to give feedback based on their learnings and key takeaways from the course.	CO4
<b>Required Software and Tools</b>		
1. British Council EnglishScore Mobile App		



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

Department of Mathematics

<b>Subject Name: Linear Algebra</b>		<b>L-T-P [3-0-0]</b>
<b>Subject Code: BCSBS0205Z</b>		<b>Applicable in Department: B.Tech.- Second Semester CSBS</b>
<b>Pre-requisite of Subject:</b> Knowledge of Mathematics		
<b>Course Objective:</b>  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.		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
CO 1	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

## Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Introduction</b>	Introduction to Matrices and Determinants; Solution of Linear Equations; Cramer's rule; Inverse of a Matrix.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment 1.1	<b>CO1</b>
Unit 2	<b>Vectors and linear combinations</b>	Vectors and linear combinations; Rank of a matrix; Gaussian elimination; LU Decomposition; Solving Systems of Linear Equations using the tools of Matrices.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-2.1	<b>CO2</b>
Unit 3	<b>Vector Space</b>	Vector space; Dimension; Basis; Orthogonality; Projections; Gram-Schmidt orthogonalization and QR decomposition.	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-3.1	<b>CO3</b>
Unit 4	<b>Eigen Values and Eigen Vectors</b>	Eigenvalues and Eigenvectors; Positive definite matrices; Linear transformations; Hermitian and unitary matrices;	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-4.1	<b>CO4</b>
Unit 5	<b>Principal Component Analysis</b>	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).	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-5.1	<b>CO5</b>
<b>Total</b>				<b>40</b>		

## Textbooks

Sr No	Book Details
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3.	Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers.
4.	Linear Algebra and Matrices, Hari Kishan and Manju Sharma, Ram Prasad Publication, Agra.

#### Reference Books

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

#### Links (Only Verified links should be pasted here)

#### Youtube Link:

#### Unit1:

<https://www.youtube.com/watch?v=cfn2ZUuWPd0>

<https://www.youtube.com/watch?v=vF7eyJ2g3kU>

#### Unit2:

<https://www.youtube.com/watch?v=p-OCvUJVxS8>

#### Unit3:

[https://www.youtube.com/watch?v= 6oRqxY6O5w&t=66s](https://www.youtube.com/watch?v=6oRqxY6O5w&t=66s)

<https://www.youtube.com/watch?v=PZ0AvH5VKBk>

<https://www.youtube.com/watch?v=26IIMABe9MY>

#### **Unit4:**

<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>

#### **Unit5:**

<https://www.youtube.com/watch?v=kW9R0nD69OU>

<https://yarpiz.com/622/yppca191211-principal-component-analysis-in>



**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY  
GREATER NOIDA-201306**

**(An Autonomous Institute)  
Department of Mathematics**

**Subject Name: Statistical Methods & Modelling** **L-T-P [3-0-0]**

**Subject Code: BCSBS0201**

**Applicable in Department: B.Tech.- Second Semester  
CSBS**

**Pre-requisite of Subject:** Knowledge of Mathematics

**Course Objective:**

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 Outcomes (CO)**

**Course outcome:** After completion of this course students will be able to:

**Bloom's  
Knowledge  
Level(KL)**

CO 1	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

## Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Sampling Techniques</b>	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	Class room Teaching, Smart Board, PPT, M-tutor.	10	Assignment 1.1	<b>CO1</b>
Unit 2	<b>Linear Statistical Models</b>	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)	Class room Teaching, Smart Board, PPT, M-tutor.	8	Assignment-2.1	<b>CO2</b>
Unit 3	<b>Estimation</b>	Point estimation, criteria for good estimates (un-biasedness, consistency), Methods of estimation including maximum likelihood estimation.	Class room Teaching, Smart Board, PPT, M-tutor.	9	Assignment-3.1	<b>CO3</b>
Unit 4	<b>Test of hypothesis</b>	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.	Class room Teaching, Smart Board, PPT, M-tutor.	10	Assignment-4.1	<b>CO4</b>
Unit 5	<b>Basics of Time Series Analysis &amp; Forecasting</b>	Stationary, ARIMA Models: Identification, Estimation and Forecasting.	Class room Teaching, Smart Board, PPT, M-tutor.	5	Assignment-5.1	<b>CO5</b>
<b>Total</b>						



**Textbooks**

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

**Reference Books**

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

**Links (Only Verified links should be pasted here)**

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# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Computer Science & Information Technology**

<b>Subject Name: Data Structures &amp; Algorithms</b>		<b>L-T-P [3-0-0]</b>
<b>Subject Code: BCSBS0203Z</b>		<b>Applicable in Department: B.Tech.-Second Semester CSBS</b>
<b>Pre-requisite of Subject:</b>		
<b>Course Objective:</b>  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.		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
CO 1	Analyze and implement arrays, linked lists, stacks, queues to solve complex problems.	K3, K4
CO2	Compare the computational efficiency of the sorting and searching algorithms.	K4
CO3	Assess the memory representation of tree and perform various operations on these data structure.	K1
CO4	Apply the concept of recursion to solve the real-world problems.	K3
CO5	Develop the algorithms using graph data structures.	K6
<b>Syllabus</b>		

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Basic Terminologies and Introduction to Algorithm &amp; Data Organization</b>	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	Chalk & Duster/PPT/Online Programs	8+2	Fibonacci and Factorial using Recursion	<b>CO1</b>
Unit 2	<b>Linear Data Structure: contiguous</b>	Array, Stack, Queue, its types, Various Representations, Operations & Applications of Linear Data Structures	Chalk & Duster/PPT/Online Programs	5+3	Insertion and Deletion of element in arrays, stacks and Queues.	<b>CO2</b>
	<b>Linear Data Structure: non-contiguous</b>	Linked-list and its types, Various Representations, Operations & Applications of Linear Data Structures	Chalk & Duster/PPT/Online Programs	6+3	Insertion and Deletion of element in singly linklist, doubly linklist and circular linklist.	
Unit 3	<b>Non-linear data structure: trees</b>	Binary Tree, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AVL Tree, Splay Tree	Chalk & Duster/PPT/Online Programs	7+2	Creation of Binary Tree	<b>CO3</b>
	<b>Non-linear data structure: graphs</b>	Introduction of Graphs (Directed, Undirected), Various Representations, Operations & Applications of Trees	Chalk & Duster/PPT/Online Programs	6+2	Tree traversals	
Unit 4	<b>Searching</b>	Sequential Search, Binary Search, Comparison Trees, Breadth First Search, Depth First Search	Chalk & Duster/PPT/Online	4+2	Implementation of BFS and	<b>CO4</b>

			Programs		DFS	
	<b>Sorting</b>	Insertion Sort, Selection Sort, Shell Sort, Divide and Conquer Sort, Merge Sort, Quick Sort, Heapsort, Introduction to Hashing	Chalk & Duster/PPT/Online Programs	6+6	Sorting techniques	
Unit 5	<b>File Organization</b>	File: Organization (Sequential, Direct, Indexed Sequential, Hashed) and various types of accessing schemes. Graph	Chalk & Duster/PPT/Online Programs	4		<b>CO5</b>
	<b>Graphs</b>	Basic Terminologies, Representations, Operations and Applications of Graphs, Graph search and traversal algorithms and complexity analysis.	Chalk & Duster/PPT/Online Programs	4	Graph traversals and shortest path algorithms	
	<b>Total</b>			<b>50</b>		

Textbooks	
Sr No	Book Details
5.	E. Horowitz, S. Sahni, S. A-Freed, Fundamentals of Data Structures, 2008, Universities Press.
6.	A. V. Aho, J. E. Hopperoft, J. D. Uilman, Data Structures and Algorithms, 1983, Pearson.
Reference Books	
Sr No	Book Details
9.	Donald E. Knuth, The Art of Computer Programming: Volume 1: Fundamental Algorithms, 1968, Addison-Wesley.
10.	Thomas, H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Introduction to Algorithms, 2009, 3rd Edition, The MIT Press.

11.	Pat Morin, Open Data Structures: An Introduction (Open Paths to Enriched Learning), 2013, 31st Edition, UBC Press.
<b>Links (Only Verified links should be pasted here)</b>	
<ul style="list-style-type: none"> <li>• <a href="https://nptel.ac.in/courses/106/106/106106127/">https://nptel.ac.in/courses/106/106/106106127/</a></li> <li>• <a href="https://nptel.ac.in/courses/106/106/106106145/">https://nptel.ac.in/courses/106/106/106106145/</a></li> <li>• <a href="https://www.m-tutor.com/courses.php?selectedsubject=5751&amp;univid=330&amp;year=1&amp;selectedcourse=396&amp;branch=1203&amp;">https://www.m-tutor.com/courses.php?selectedsubject=5751&amp;univid=330&amp;year=1&amp;selectedcourse=396&amp;branch=1203&amp;</a></li> </ul>	



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Electronics and Communication Engineering**

**Subject Name:** Principles of Electronics **L-T-P [2-0-0]**

**Subject Code:** BCSBS0202 **Applicable in Department:** B.Tech.- Second Semester  
CSBS

**Pre-requisite of Subject:** Physics and mathematics

**Course Objective-** 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 Outcomes (CO)

<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
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

## Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
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Unit 1	<b>Introductory idea of semiconductors</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+2	Assignment	<b>CO1</b>
Unit 2	<b>Diodes and Diode Circuits</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+4	Assignment+Lab	<b>CO2</b>
Unit 3	<b>Transistors and transistor circuits</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+4	Assignment+Lab	<b>CO3</b>
Unit 4	<b>Field Effect Transistor and Digital electronics</b>	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  <b>Basic ideas of Digital electronics:</b> Basic idea of switching circuit, Realization of Logic gates, half and full adder/subtractor, multiplexers and demultiplexers and Counters.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	10+4	Assignment+Lab	<b>CO4</b>
Unit 5	<b>Operational amplifier basics</b>	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.	Smart Digital board/ PPT/ White board/ Videos/M-Tutor	8+4	Assignment+Lab	<b>CO5</b>
<b>Total</b>				<b>42</b>		

### Textbooks

Sr No	Book Details
1.	<i>Microelectronics Circuits</i> , Adel S. Sedra and Kenneth Carless Smith, Oxford University Press.
2	<i>Millman's Integrated Electronics</i> , Jacob Millman, Christos Halkias, Chetan Parikh, McGraw Hill Education.
3	<i>Digital Logic &amp; Computer Design</i> , M. Morris Mano, Pearson

### Reference Books

Sr No	Book Details
1	<i>Electronic Devices and Circuit Theory</i> , Robert L. Boylestad, Louis Nashelsky.
2	<i>Solid State Electronic Devices</i> , 6th Edition, Ben Streetman, Sanjay Banerjee
3	<i>Electronic Principle</i> , Albert Paul Malvino.
4	<i>Electronics Circuits: Discrete &amp; Integrated</i> , D Schilling C Belove T Apelewicz R Saccardi.
5	<i>Microelectronics</i> , Jacob Millman, Arvin Grabel.
6	<i>Electronics Devices &amp; Circuits</i> , S. Salivahanan, N. Suresh Kumar, A. Vallavaraj
7	<i>Electronic Devices &amp; Circuit Theory</i> , 11 <sup>th</sup> Edition, Robert L. Boylestad, Louis Nashelsky.

### Links (Only Verified links should be pasted here)

#### Unit 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->



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## **Unit 2**

[https://www.m-tutor.com/courses-](https://www.m-tutor.com/courses-detail.php?tid=859828&topicid=199077&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing)  
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## **Unit 3**

[https://www.m-tutor.com/courses-](https://www.m-tutor.com/courses-detail.php?tid=859833&topicid=199084&viewtype=&searchtopics=&selectedcourse=396&selectedsubject=5747&selectedunit=&filter=landing)  
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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**GREATER NOIDA-201306**  
(An Autonomous Institute)  
Department of MBA

<b>Subject Name: Fundamentals of Economics</b>		<b>L-T-P [2-0-0]</b>
<b>Subject Code: BCSBS0206</b>		<b>Applicable in Department: B.Tech.- Second Semester CSBS</b>
<b>Pre-requisite of Subject:</b> Introductory Economics, Statistics, Basic Mathematics, Interest in Current Event		
<b>Course Objective:</b> - 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		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
<b>CO1</b>	Remember the concepts of microeconomics and able to understand the various micro economic principles to make effective economic decisions under conditions of risk and uncertainty.	<b>K1, K2</b>
<b>CO2</b>	Understand the law of demand & supply & their elasticities, evaluate & analyse these concepts and apply them in various changing situations in industry. Students would be able to apply various techniques to forecast. demand for better utilization of resources.	<b>K2</b>
<b>CO3</b>	Understand the production concept and how the production output changes with the change in inputs and able to analyse the effect of cost to business and their relation to analyse the volatility in the business world.	<b>K2</b>
<b>CO4</b>	Understand & evaluate the different market structure and their different equilibriums for industry as well as for consumers for the	<b>K2</b>

	survival in the industry by the application of various pricing strategic.					
CO5	Analyse the macroeconomic concepts & their relation to micro economic concept & how they affect the business & economy.					K4
Syllabus						
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	Microeconomics	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	PPT, Lecture	6	Take 5 household product and analyse its 5 year demand.	CO1
Unit 2	Consumer's Equilibrium	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	PPT, Lecture	8	Identify a firm of your choice and find its production cost both in short run and long run.	CO2
Unit 3	Macro economics	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-	PPT, Lecture	8	Discuss the methods of calculating national Income.	CO3

		Definitions				
Unit 4	<b>Demand for Money</b>	Demand for Money - Transitional 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.	PPT, Lecture	6	Discuss the working of monetary and fiscal policies.	<b>CO4</b>
<b>Total</b>				<b>28</b>		

Textbooks	
Sr No	Book Details
1.	Microeconomics, Pindyck, Robert S., and Daniel L. Rubinfeld.
2.	Macroeconomics, Dornbusch, Fischer and Startz.
Reference Books	
Sr No	Book Details
1.	Intermediate Microeconomics: A Modern Approach, Hal R, Varian.

2.	Principles of Macroeconomics, N. Gregory Mankiw
<b>Links</b>	
1) <a href="https://nios.ac.in/media/documents/SrSec318NEW/318_Economics_Eng/318_Economics_Eng_Lesson12.pdf">318_Economics_Eng_Lesson12.pdf (nios.ac.in)</a> <a href="https://www.youtube.com/watch?v=QJAv6674_Sw">https://www.youtube.com/watch?v=QJAv6674_Sw</a> 2) <a href="#">Introduction to Economics: Basic Concepts &amp; Principles - MBA Crystal Ball</a> 3) <a href="https://nios.ac.in/media/documents/SrSec318NEW/318_Economics_Eng/318_Economics_Eng_Lesson12.pdf">https://nios.ac.in/media/documents/SrSec318NEW/318_Economics_Eng/318_Economics_Eng_Lesson12.pdf</a> 4) <a href="https://www.mbacrystalball.com/blog/economics/">https://www.mbacrystalball.com/blog/economics/</a> 5) <a href="https://www.toppr.com/guides/fundamentals-of-economics-and-management/basic-concepts-of-economics/">https://www.toppr.com/guides/fundamentals-of-economics-and-management/basic-concepts-of-economics/</a> 6) <a href="https://youtu.be/8Q0PDK1ZoHA?si=-i6dz-STRRzXxVzs">https://youtu.be/8Q0PDK1ZoHA?si=-i6dz-STRRzXxVzs</a> 7) <a href="https://youtu.be/1dQE4h9COMA?si=RZgmess38iLVzxlj">https://youtu.be/1dQE4h9COMA?si=RZgmess38iLVzxlj</a> 8) <a href="https://youtu.be/NqEbXhiatCQ?si=5xBGFST2tHvN74Hv">https://youtu.be/NqEbXhiatCQ?si=5xBGFST2tHvN74Hv</a> 9) <a href="https://youtu.be/mW9PzGJgeJg?si=jMgNvFXuEbYiQVoI">https://youtu.be/mW9PzGJgeJg?si=jMgNvFXuEbYiQVoI</a>	



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)  
Department of Languages

<b>Subject Name: Business Communication &amp; Value Science - II</b>		<b>L-T-P [2-0-0]</b>
<b>Subject Code: BCSBS0204</b>		<b>Applicable in Department: B.Tech.- Second Semester CSBS</b>
<b>Pre-requisite of Subject: The students should have completed BCVS-I course in the first semester</b>		
<b>Course Objective(s):</b> <ul style="list-style-type: none"><li>• To develop effective reading, writing, presentation and group discussion skills.</li><li>• To help students identify personality traits and evolve as a better team player.</li><li>• To introduce the students to the key concepts of<ul style="list-style-type: none"><li>○ Morality</li><li>○ Behaviour and beliefs</li><li>○ Diversity &amp; Inclusion</li></ul></li></ul>		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
<b>CO1</b>	Use and understand tools of structured written communication.	K2, K3
<b>CO2</b>	Develop materials to create an identity for an organization dedicated to a social cause.	K5
<b>CO 3</b>	Understand and apply the effective techniques of presentation	K2, K3
<b>CO 4</b>	Understand and apply the basic concepts of speed reading.	K2, K3



CO 5	Identify individual personality types and role in a team.					K2
Syllabus						
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit-1	Module 1:	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.	Interactive & Flipped classroom method; discussions	4 (4+0)	Assignment 1	CO1
	Module 2:	Class discussion- Good and Bad Writing. Common errors, punctuation rules, use of words.				
	Module 3:	Lucid Writing: Encourage the students to go through the links given about Catherine Morris and Joanie McMahon’s writing techniques.				
	Module 4:	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 1:	Introduction to basic presentation skills & EnglishScore mobile app	Interactive & Flipped classroom	4 (4+0)	Assignment 2	CO2
	Module 2:	Groups to present their NGOs. Apply the learning gathered from session. Presentation to be recorded by the groups - feedback from the audience/ Professor.				
	Module 3:	Group to share their findings from the recording. Post work - individual write ups to be evaluated for the E- magazine.				

Unit-2	<p><b>Module 4:</b> Speed Reading session: Introduction to skimming and scanning with practice.</p> <p><b>Module 5:</b> SATORI – Join the dots - participants to connect their learning from Unit-2 with their existing curriculum.</p> <p>Quiz</p>	method; discussions			
3	<p><b>Module 1:</b> Ad campaign. Brain storming session - students to discuss and explore the means of articulating and amplifying the social issues their NGOs are working for.</p> <p><b>Module 2:</b> Design a skit: write the script on the message of their respective NGOs. Read out the script. (Skit time-5 minutes) – feedback.</p> <p><b>Module 3:</b> Promote the play through social media and gather an audience. Enact the play. Capture the numbers of likes and reviews.</p> <p><b>Module 4:</b> 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.</p> <p><b>Module 5:</b> 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.</p> <p><b>Module 6:</b> SATORI – participants share their personal take aways acquired from working in teams, GD, learning about presentations, &amp; presenting their NGOs.</p> <p>Quiz</p>	Discussions Activities Presentations	5 (5+0)	Assignment 3	<b>CO3</b>
4	<p><b>Module 1:</b> 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.</p>				

	<b>Module 2:</b> Touch the target (Blind man) - Film: “The fish and I” by Babak Habibifar” (1.37mins)  <b>Module 3:</b> 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.  <b>Module 4:</b> Write a review in a blog on the topics being covered in their research.  <b>Module 5:</b> Session on Diversity & Inclusion - different forms of diversity in our society.	Interactive & Flipped classroom method; discussions	6 (6+0)	Assignment 4	<b>CO4</b>
Unit-5	<b>Module 1:</b> Teams to video record interviews of people from diverse groups (Ask 5 questions). Share the recordings in FB.  <b>Module 2:</b> Debate on the topic of diversity including ethics, morality, and respect for individual (In the presence of an external moderator). Groups to be graded.  <b>Module 3:</b> Prepared speech - every student will narrate the challenges faced by a member of a diverse group in 4 minutes (speech in first person) – feedback.  <b>Module 4:</b> Discussion on Workplace values, Respect for Individual and Integrity.  <b>Module 5:</b> <b>Revisit your resume</b> - Include your recent achievements in your resume.  <b>Module 6:</b> SATORI –Participants share their learning about presentations and understanding diversity & inclusion.	Interactive sessions, activities, discussions	5 (5+0)	Assignment 5	<b>CO5</b>
<b>Total</b>					<b>24</b>

**Required Software and Tools**

1. British Council EnglishScore Mobile App

**Textbooks**

Sr No	Book Details
1.	ABC Workbook, NIET Publishing House, Meerut, 2023

  

Sr No	Book Details
1.	Cambridge English Business Benchmark (Pre-intermediate to Intermediate), 2nd edition, Norman Whitby, Cambridge University Press, 2006, UK.
2.	Guiding Souls: Dialogues on the purpose of life; Dr. A.P.J Abdul Kalam; Publishing Year-2005; Co-author--Arun Tiwari
3.	The Family and the Nation; Dr. A.P.J Abdul Kalam; Publishing year: 2015; Co-author: Acharya Mahapragya
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
5.	Forge Your Future: Candid, Forthright, Inspiring; Dr. A.P.J Abdul Kalam; Publishing year: 2014
6.	Abundance: The Future is Better Than You Think; Peter H. Diamandis and Steven Kotler; Published: 21 Feb 2012; Publisher: Free Press
7.	Start with Why: How Great Leaders Inspire Everyone to Take Action; Simon Sinek; Published: 6 October 2011; Publisher: Penguin
8.	Advertising & IMC: Principles and Practice; Sandra Moriarty, Nancy D. Mitchell, William D. Wells; Published: 15 June 2016; Publisher: Pearson Education India

**Links (Only Verified links should be pasted here)**

- Ethics Fundamentals and Approaches to Ethics  
<https://www.eolss.net/Sample-Chapters/C14/E1-37-01-00.pdf>

- A Framework for Making Ethical Decisions
  - <https://www.brown.edu/academics/science-and-technology-studies/framework-making-ethical-decisions>
- Five Basic Approaches to Ethical Decision - [http://faculty.winthrop.edu/meelerd/docs/rolos/5\\_Ethical\\_Approaches.pdf](http://faculty.winthrop.edu/meelerd/docs/rolos/5_Ethical_Approaches.pdf)<https://youtu.be/CsaTslhSDI>
- [https://m.youtube.com/watch?feature=youtu.be&v=IIKvV8\\_T95M](https://m.youtube.com/watch?feature=youtu.be&v=IIKvV8_T95M)
- <https://m.youtube.com/watch?feature=youtu.be&v=e80BbX05D7Y>
- [https://m.youtube.com/watch?v=dT\\_D68RJ5T8&feature=youtu.be](https://m.youtube.com/watch?v=dT_D68RJ5T8&feature=youtu.be)



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

Department of Mathematics

Subject Name: Linear Algebra Lab

L-T-P [0-0-2]

Subject Code: BCSBS0255

Applicable in Department: B.Tech.- Second Semester  
CSBS

## Lab Experiments

**Course Objective:** Implement Linear Algebra techniques on variety of data for solving practical problems Using R.

## Course Outcomes (CO)

**Course outcome:** After completion of this course students 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

## List of Practicals

Sr No

Topic

Program Logic Building

**CO  
Mapping**

1.	To install and configure RStudio. Introduction to R.	Students will be able to explain basic R programming concepts	CO1
2.	Functions in R, loops in R	Students will be able to explain the use of data structure and loop functions.	CO1
3.	Vectors in R	Students will be able to create vectors in R	CO1
4.	Matrices In R, Determinants,	Students will be able to create matrices and various operations on matrices in R	CO1
5.	Transpose, inverse and Trace of the matrix.	Students will be able to create matrices and various operations on matrices in R	CO1
6.	Rank of the matrix,	Students will be able to write the program to calculate rank of matrices in R	CO2
7.	solve a linear matrix equation	Students will be able to write the program to solve a simultaneous linear equation in R	CO2
8.	Nullity of a matrix	Students will be able to create a program to find the nullity of a matrix in R	CO3
9.	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
10.	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
<b>Required Software and Tools</b>			



**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY  
GREATER NOIDA-201306**

**(An Autonomous Institute)  
Department of Mathematics**

**Subject Name: Statistical Methods & Modelling Lab**

**L-T-P [0-0-2]**

**Subject Code: BCSBS0251**

**Applicable in Department: B.Tech.- Second Semester  
CSBS**

**Lab Experiments**

**Course Objective:** Implement statistical analysis techniques on variety of data for solving practical problems Using R.

**Course Outcomes (CO)**

**Course outcome:** After completion of this course students will be able to:

**Bloom's  
Knowledge Level  
(KL)**

CO 1 Explain basic R programming concepts

CO2 Demonstrate how to install and configure RStudio

CO3 Explain the use of data structure and loop functions

CO4 Analyse data and generate reports based on the data

CO5 Apply various concepts to write programs in R

**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
<b>Required Software and Tools</b>		



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

**School of Computer Science & Information Technology**

<b>Subject Name:</b>	<b>Data Structures &amp; Algorithms Lab</b>	<b>L-T-P [0-0-4]</b>
<b>Subject Code:</b>	<b>BCSBS0253</b>	<b>Applicable in Department: B.Tech.- Second Semester CSBS</b>

## Lab Experiments

### Course Objective:

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

### Course Outcomes (CO)

**Course outcome:** After completion of this course students will be able to:

		<b>Bloom's Knowledge Level (KL)</b>
CO1	Write programs for solving mathematical problems using array and linked list.	K6
CO2	Implement concept of recursion to solve complex problems.	K3
CO3	Implement various operations of stack and queue data structure.	K3
CO4	Write efficient sorting, searching programs.	K6
CO5	Implement program to solve real world problem using tree and graph data structure.	K3

### List of Practicals

<b>Sr No</b>	<b>Topic</b>	<b>Program Logic Building</b>	<b>CO Mapping</b>
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1.	Recursion	1.Program to find factorial of a number.	CO1
2.	Recursion	2.Program to print Fibonacci series	CO1
3.	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
4.	Stack	1.Program to implement Stack Operation using array.	CO2
5.	Queue	1.Program to implement Queue Operations using array	CO2
6.	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
7.	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
8.	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
9.	Stack Application	1.Program to implement Tower of Hanoi	CO2
10.	Trees	1.Program to implement binary tree using linked list a. Insertion b. Deletion c. Traversal d. Searching	CO3
11.	Graphs	1.Program to implement BFS algorithm 2. Program to implement DFS algorithm	CO3

12.	Searching	1.Program to implement linear search in an Array. 2. Program to implement binary search in an Array	CO4
13.	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.	CO4
14.	Sorting	1.Program to implement Quick sort in an Array. 2. Program to implement Merge sort in an Array.	CO4
15.	Graph Traversal	1. Program to implement the minimum cost spanning tree. 2.Program to implement the shortest path algorithm	CO5
<b>Required Software and Tools</b>			



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

School of Electronics and Communication Engineering

Subject Name:	Principles of Electronics Lab	L-T-P [0-0-2]
Subject Code:	BCSBS0252	Applicable in Department: B.Tech.- Second Semester CSBS

## Lab Experiments

**Course Objective:** Students will demonstrate the characteristics & use of different semiconductor devices.

## Course Outcomes (CO)

**Course outcome:** After completion of this course students will be able to:

		Bloom's Knowledge Level (KL)
CO 1	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

## List of Practicals

Sr No	Program Title	CO Mapping
1	To study the data sheet to understand specifications of – Diodes.	CO1

<b>2</b>	To draw the V-I Characteristics of Diode.	<b>C01</b>
<b>3</b>	To build half wave and Full wave rectifier circuits using diode.	<b>C01</b>
<b>4</b>	To study the data sheet to understand specifications of – BJT.	<b>C02</b>
<b>5</b>	To draw the V-I Characteristics of BJT in CE configuration.	<b>C02</b>
<b>6</b>	To study the data sheet to understand specifications of – FET.	<b>C03</b>
<b>7</b>	To draw the Drain and transfer Characteristics of FET in CS configuration.	<b>C03</b>
<b>8</b>	To study the data sheet to understand specifications of – OPAMP.	<b>C04</b>
<b>9</b>	To build and test OPAMP as an Adder and Subtractor.	<b>C04</b>
<b>Required Software and Tools</b>		
N/A		



# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306

(An Autonomous Institute)

School of Biotechnology

<b>Subject Name: Environmental Sciences</b>		<b>L-T-P [2-0-0]</b>
<b>Subject Code: BNC0201</b>		<b>Applicable in Department: B.Tech. -Second Semester CSBS</b>
<b>Pre-requisite of Subject:</b>		
<b>Course Objective:</b>  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		
<b>Course Outcomes (CO)</b>		
<b>Course outcome:</b> After completion of this course students will be able to:		<b>Bloom's Knowledge Level(KL)</b>
CO1	Understand the basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem, food chains and food webs. Ecological pyramids.	K1, K2
CO2	Understand the different types of natural resources like food, forest, Minerals and energy and their conservation.	K1, K2

CO3	Understand the importance of biodiversity, Threats of biodiversity and different methods of biodiversity conservation.	K1, K2
CO4	Understand the different types of pollution, pollutants, their sources, effects and their control methods.	K1, K2, K3
CO5	Understand the basic concepts of sustainable development, Environmental Impact Assessment (EIA) and different acts related to environment	K1, K2, K3

### Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
Unit 1	<b>Nature Of Environment &amp; Forest Resources, Food Resources &amp; Associated Problems</b>	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. 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, salinity.	Smart Board, PPT, M tutor	8	NA	<b>CO1</b>
Unit 2	<b>Water Resources, Land Resources &amp; Energy Resources &amp; Associated Problems</b>	Water resources: Introduction to surface and ground water; water table; vertical distribution of water; formation and properties of aquifers; techniques for ground water recharge; river structure and patterns; watershed and drainage basins; importance of watershed and watershed management; rain water harvesting in urban settings. Marine resources; commercial use of marine resources; threats to marine ecosystem. 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,	Smart Board, PPT, M tutor	8	NA	<b>CO2</b>



		uses and effects, Renewable Energy Resources: hydropower, Solar energy, geothermal, tidal and wind energy, Biomass energy, biogas and its advantages.				
Unit 3	<b>Biodiversity</b>	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. Succession: Concepts of succession, Types of Succession. Trends in succession. Climax and stability.	Smart Board, PPT, M tutor	8	NA	<b>CO3</b>
Unit 4	<b>Environmental Changes and Human Health</b>	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. Climate change, global warming, acid rain, ozone layer depletion, Chemical disasters : Bhopal gas tragedy	Smart Board, PPT, M tutor	8	NA	<b>CO4</b>
Unit 5	<b>Environmental Protection Through Assessment and Education</b>	Basic concepts of sustainable development, Women education, Role of NGOs regarding environmental protection, Bio indicators and their role, Natural disasters and disasters management, Environmental Impact Assessment (EIA), general guidelines for the preparation of environmental impact statement (EIS), important environmental protection Policy and legislations.	Smart Board, PPT, M tutor	8	NA	<b>CO5</b>
<b>Total</b>				<b>40</b>		

**Textbooks**

<b>Sr No</b>	<b>Book Details</b>
7.	Brady, N.C. 1990. The nature and properties of Soils, Tenth Edition. Mac Millan Publishing Co., NewYork.
8.	Botkin, D.B and Kodler E.A., 2000, Environmental Studies: The earth as a living planet. John Wiley and Sons Inc.
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12.	Environmental Studies- Dr. D.L. Manjunath, Pearson Education-2006.
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**Reference Books**

<b>Sr No</b>	<b>Book Details</b>
12.	Sodhi G.S. 2005, Fundamentals of Environmental Chemistry: Narosa Publishing House, New Delhi.
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16.	Principles of Environmental Sciences and Engineering -P. Venugoplan Rao, Prenitice Hall of India.
17.	Environmental Science and Engineering Meenakshi, Prentice Hall India.

**Links (Only Verified links should be pasted here)**

Links:

Unit 1

<https://www.youtube.com/watch?v=T21OO0sBBfc>,

<https://www.youtube.com/watch?v=qt8AMjKKPDo>

<https://www.youtube.com/watch?v=yAK-m9lNxrs>  
[https://www.youtube.com/watch?v=ha\\_OluOWkk](https://www.youtube.com/watch?v=ha_OluOWkk),  
<https://www.youtube.com/watch?v=brF0RWJyx9w>

#### Unit 2

<https://www.youtube.com/watch?v=mOwyPENHhbc>,  
<https://www.youtube.com/watch?v=yqev1G2iy20>,  
[https://www.youtube.com/watch?v=\\_74S3z3IO\\_I](https://www.youtube.com/watch?v=_74S3z3IO_I),  
<https://www.youtube.com/watch?v=jXVw6M6m2g0>

#### Unit 3

[https://www.youtube.com/watch?v=GK\\_vRtHJZu4](https://www.youtube.com/watch?v=GK_vRtHJZu4),  
[https://www.youtube.com/watch?v=b6Ua\\_zWDH6U](https://www.youtube.com/watch?v=b6Ua_zWDH6U),  
<https://www.youtube.com/watch?v=7tgNamjTRkk>,  
<https://www.youtube.com/watch?v=ErATB1aMiSU>,  
<https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-human-impact-onecosystems/v/conservation-and-the-race-to-save-biodiversity>

#### Unit 4

<https://www.youtube.com/watch?v=7qkaz8Chell>,  
<https://www.youtube.com/watch?v=NuQE5fKmfME>,  
<https://www.youtube.com/watch?v=9CpAjOVLHII>,  
<https://www.youtube.com/watch?v=yEci6iDkXYw>,  
<https://www.youtube.com/watch?v=yEci6iDkXYw>

#### Unit 5

<https://www.youtube.com/watch?v=ad9KhgGw5iA>,  
<https://www.youtube.com/watch?v=nW5g83NSH9M>,  
<https://www.youtube.com/watch?v=xqSZL4Ka8xo>,