NIRMA UNIVERSITY
Integrated B. Tech. (CSE)-MBA programme
Term - II

L	T	P	C
3	1	0	4

Course Code	CSI0201
Course Title	Calculus

Course Outcomes:

At the end of the course, students will be able to-

1. apply differential and integral calculus to solve engineering problems
2. apply convergence of infinite series in engineering filed
3. deal with functions of several variables that are essential in engineering

Syllabus:

Teaching hours: 30

Unit I **16**

Integral Calculus: Evaluation of definite and improper integrals, Beta and Gamma functions and their properties, Applications of definite integrals to evaluate surface areas and volumes of revolutions, Multiple Integration: double and triple integrals (Cartesian and polar), change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications: areas and volumes by (double integration) Center of mass and Gravity (constant and variable densities).

Unit II **7**

Differential Calculus: Limit, continuity and partial derivatives, total derivative and chain rule, Euler's theorem, Taylor's series in two variables, Tangent plane and normal line, Maxima, minima and saddle points Method of Lagrange multipliers.

Unit III **7**

Infinite Series: Convergence of series, tests for convergence, power series, Taylor's and Maclaurin's series. Series for exponential, trigonometric and logarithmic functions.

Tutorials:

This shall consist 10 tutorials based on the syllabus.

Self-Study:

Self-study contents will be declared at the commencement of the semester. Around 10% of the questions will be asked from the self-study contents.

Suggested Readings^:

1. G B Thomas and R L Finney, Calculus and Analytic geometry; Pearson.
2. T Veerarajan, Engineering Mathematics; McGraw-Hill.
3. B V Ramana, Higher Engineering Mathematics; McGraw-Hill.
4. N P Bali and M Goyal, A text book of Engineering Mathematics; Laxmi Publications.
5. B S Grewal, Higher Engineering Mathematics; Khanna Publishers.
6. E Kreyszig, Advanced Engineering Mathematics; John Wiley & Sons.

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^this is not an exhaustive list

NIRMA UNIVERSITY
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L	T	P	C
2	0	4	4

Course Code	CSI0202
Course Title	Engineering Graphics

Course Outcomes:

At the end of the course, students will be able to-

1. interpret the fundamental principles of engineering graphics and related drawing standards,
2. construct profiles of various engineering curves,
3. apply the principles of orthographic and isometric projection for various solid geometries,
4. construct engineering drawing using computer aided drafting tools.

Syllabus:

Teaching hours: 20

Unit I **1**

Introduction to Engineering Drawing: Importance and applications of engineering drawing for various branches of engineering, drawing instruments, BIS Code of Practice, Lines, Lettering and Dimensioning, Scales, basic geometrical construction, Sheet Layout.

Unit II **4**

Engineering Curves: Construction of Conics by different methods, construction of cycloid, epicycloids and hypocycloid, construction of involutes, constructions of archimedean spiral and helix.

Unit III **7**

Solid Geometry: Principle of Orthographic Projections, projections of points, projections of straight lines, projections of planes.

Unit IV **4**

Orthographic Projections and Isometric Projections: Conversion of pictorial views into orthographic projections including sectional orthographic projection. Conversion of orthographic views into isometric projections / views.

Unit V **4**

Computer Aided Drafting: Understanding of GUI (Graphical User Interface) of drafting software, demonstration of use of available Drawing Commands, Modifying / Editing commands, Annotation and Dimensioning Commands, Concepts of Layers, demonstration of various line styles and construction of drawings in soft form using drafting software.

Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

Laboratory work will be based on the above syllabus with minimum 8 experiments.

Suggested Readings^:

1. Bhatt, N. D., Engineering Drawing, Charotar publication.
2. John, K. C. Engineering Graphics, PHI Publication.
3. Luzzader, W. J. and Duff, J. M. Fundamentals of Engineering Drawing, PHI publication.
4. Bethune, J. D. Engineering Graphics with AutoCAD®, PHI Publication.
5. 5. IS SP 46: 2003. Engineering Drawing Practices for Schools and Colleges.

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NIRMA UNIVERSITY
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Term – II

L	T	P	C
2	0	2	3

Course Code	CSI0203
Course Title	English II

Course Outcomes:

At the end of the course, students will be able to-

1. appraise written business communication and evaluate its relevance
2. create, examine, and structure project reports, business proposals, recommendations, and evaluation reports etc. employing effective strategies of persuasion
3. construct effective and persuasive written communication for diverse business and audiences
4. practice business communication for effectively

Syllabus:

Teaching hours: 20

Unit I **4**

Introduction and Paragraph Writing: Introduction to business writing, Structuring a paragraph, Construction of a paragraph and types of content, Techniques of paragraph writing.

Unit II **3**

Essay Writing: Introduction and types of essays, Characteristic features of an essay, Components of an essay, Essay writing and editing, Guiding principles.

Unit III **4**

Business Letters and Email Writing: Business letters- structure and layout, Business letters- elements of style, Types of business letters, Email writing basics, Email writing etiquette.

Unit IV **2**

Business Report Writing: Features of a business report, Types of business report Preparing a business report, Styles of reports.

Unit V **1**

Proposal Writing: Purpose of proposal writing, Types of proposals, Structure of

proposals, Developing a proposal

Unit VI **2**

Creative Writing: Types of creative writing, Writing for advertising, Writing reviews.

Unit VII **2**

Cover Letter and Resume Writing: Application and cover letters, Types of resumes, Features of a resume, Preparing a resume.

Unit VIII **2**

Other Types of Business Writing: Inter-office memos, Circulars, Notice, agenda and minutes.

Laboratory Work:

The Term work and exercises will be based on the topics covered in the syllabus. Minimum 8 exercises should carried out.

Self-Study:

Self-study contents will be declared at the commencement of the semester. Around 10% of the questions will be asked from the self-study contents.

Suggested Readings^:

1. Kaul, A. Business Communication. New Delhi: Prentice Hall of India Private Limited.
2. Lesikar, R. V. and Flately, M. E. Basic Business Communication: Skills for Empowering the Internet Generation. New Delhi: Tata McGraw Hill.
3. Mehra, P. Business Communication for Managers. Pearson.

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L	T	P	C
2	0	2	3

Course Code	CSI0204
Course Title	Basic Electronics

Course Outcomes:

At the end of the course, students will be able to –

1. recognize the functions of electronic devices and basic circuits
2. design circuits based on operational amplifier
3. apply the concepts of number system conversion and Boolean algebra for digital logic design

Syllabus:

Teaching hours: 20

Unit I **6**

Analog Electronics: Physics of semiconductors, half and full wave rectifiers, special purpose diodes, clipping and clamping circuits, BJT and its biasing circuits, FET and its biasing circuits, applications such as amplifiers and oscillators, overview of opto-electronics devices.

Unit II **7**

Operational Amplifier and its Applications: Operational amplifier, comparator, timer IC and multi-vibrators.

Unit III **7**

Digital Electronics: Overview of number systems and its arithmetic, binary codes, Boolean-algebra & simplification of Boolean expression; logic gates, concept of universal logic; implementation of Boolean expressions using logic gates, application of digital circuits (e.g. adder, subtractor, multiplexer, de-multiplexer, etc.)

Self-Study:

The self-study contents will be decided at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

This shall consist of at least 8 experiments based on the above syllabus.

Suggested Readings^:

1. V. K. Mehta, Rohit Mehta, Principles of Electronics, S. Chand and Co. Ltd.
2. R. Boylestad and L. Nashelsky, Textbook of Electronics Devices & Circuit Theory, PHI Publication.
3. R. Gayakwad, Textbook of Operational Amplifiers and Linear Integrated Circuits, PHI Publication.
4. Sergio Franko, Textbook of Designing with Operational Amplifiers and Analog Integrated Circuits, McGraw Hill.
5. R. Coughlin and Driscoll, Textbook of OpAmp & Linear Integrated Circuits, PHI Publications.
6. Anandkumar, Fundamentals of Digital Circuits, PHI publication.
7. Malvino A.P., Digital Computer Electronics, TMH publication.

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L	T	P	C
2	0	2	3

Course Code	CSI0205
Course Title	Structured Programming

Course Outcomes:

After successful completion of the course, a student will be able to –

1. explain the importance of modular programming
2. apply pointers and structures to solve programming problems
3. create files and apply memory management techniques in programming language

Syllabus:

Teaching hours: 20

Unit I **5**

Introduction to Structural programming: Understanding Structural Programming and its Importance.
Functions: Introduction to modular programming, User defined functions, formal parameters, actual parameters Passing Arguments by Value and By Reference, Scope Rules, Recursion, Recursion vs. Iteration, Math Library Functions, Passing Arrays to Functions.

Unit II **5**

Pointers: Pointer Variable Definitions and Initialization, Pointer Operators, Passing Arguments to Functions by Reference, Pointer Expressions and Pointer Arithmetic, Relationship between Pointers and Arrays, Arrays of Pointers, Pointers to Functions.

Unit III **5**

Structure and Union: Structure Definition, Declaring Variables of Structure, Initializing Structures, Accessing Structure Members, Using Structures with Functions and Pointers, Union.

Unit IV **5**

File Handling and memory management: Files and Streams, Creating a File, Reading and writing Data from a File and to a File,File handling functions, dynamic memory allocation using malloc, calloc and realloc.

Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

Laboratory work will be based on above syllabus with minimum 8 experiments to be incorporated.

Suggested Readings^:

1. Deitel and Deitel, 'C How to program', Pearson.
2. E Balagurusamy, 'Programming in ANSI C', McGraw Hill.
3. Yashwant Kanitkar, 'Let Us C', BPB Publications.
4. Kernighan., Ritchie, 'ANSI C Language', Prentice Hall of India.
5. V Rajaraman, 'Fundamentals of Computers', Prentice Hall of India.

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