Faculty of Technology & Engineering

Chandubhai S. Patel Institute of Technology (CSPIT)
/
Devang Patel Institute of Technology and Research (DEPSTAR)

ACADEMIC REGULATIONS & SYLLABUS

(Choice Based Credit System)

Bachelor of Technology Programme

(First Year B. Tech Programme **CE/CSE/IT/EC**)

Education Campus – Changa, (ECC), hitherto a conglomerate of institutes of professional education in Engineering, Pharmacy, Computer Applications, Management, Applied Sciences, Physiotherapy and Nursing, is one of the choicest destinations by students. It has been transformed into **Charotar University of Science and Technology (CHARUSAT)** through an Act by Government of Gujarat. CHARUSAT is permitted to grant degrees under Section-22 of UGC- Govt. of India.

The journey of CHARUSAT started in the year 2000, with only 240 Students, 4 Programmes, one Institute and an investment of about Rs. 3 Crores (INR 30 million). At present there are seven different institutes falling under ambit of six different faculties. The programmes offered by these faculties range from undergraduate (UG) to Ph.D degrees including M.Phil. These faculties, in all offer 23 different programmes. A quick glimpse in as under:

Faculty	Institute	Programmes Offered
Faculty of Technology & Engineering	Charotar Institute of Technology	B. Tech M. Tech Ph. D
	Devang Patel Institute of Technology and Research	B.Tech (CE/IT) CSE
Faculty of Pharmacy	Ramanbhai Patel College of Pharmacy	B. Pharm M. Pharm Ph. D PGDCT/ PGDPT
Faculty of Management Studies	Indukaka Ipcowala Institute of Management	M.B.A PGDM Ph.D Dual Degree BBA+MBA
Faculty of Computer Applications	Smt. Chandaben Mohanbhai Patel Institute of Computer Applications	M.C.A/MCA (Lateral) M.Sc IT Ph. D

		Dual Degree BCA+MCA
Faculty of Applied Sciences	P.D.Patel Institute of Applied Sciences	M.Sc M.Phil Ph.D Dual Degree B.Sc+M.Sc
Faculty of Medical Sciences	Ashok and Rita Institute of Physiotherapy Manikaka Topawala Institute of Nursing Charotar Institute of Paramedical Sciences	B.PT M.PT Ph.D B.Sc (Nursing) M.Sc GNM Ph.D PGDHA

The development and growth of the institutes have already led to an investment of over Rs.63 Crores (INR 630 Million). The future outlay is planned with an estimate of Rs. 250 Crores (INR 2500 Million).

The University is characterized by state-of-the-art infrastructural facilities, innovative teaching methods and highly learned faculty members. The University Campus sprawls over 100 acres of land and is Wi-Fi enabled. It is also recognized as the Greenest Campus of Gujarat.

CHARUSAT is privileged to have 350 core faculty members, educated and trained in Stanford, IITs, IIMs and leading Indian Universities, and with long exposure to industry. It is also proud of its past students who are employed in prestigious national and multinational corporations.

From one college to the level of a forward-looking University, CHARUSAT has the vision of entering the club of premier Universities initially in the country and then globally. High Moral Values like Honesty, Integrity and Transparency which has been the foundation of ECC continues to anchor the functioning of CHARUSAT. Banking on the world class infrastructure and highly qualified and competent faculty, the University is expected to be catapulted into top 20 Universities in the coming five years. In order to align with the global requirements, the University has collaborated with internationally reputed organizations

like Pennsylvania State University – USA, University at Alabama at Birmingham – USA, Northwick Park Institute –UK, ISRO, BARC, etc.

CHARUSAT has designed curricula for all its programmes in line with the current international practices and emerging requirements. Industrial Visits, Study Tours, Expert Lectures and Interactive IT enabled Teaching Practice form an integral part of the unique CHARUSAT pedagogy.

The programmes are credit-based and have continuous evaluation as an important feature. The pedagogy is student-centred, augurs well for self-learning and motivation for enquiry and research, and contains innumerable unique features like:

- Participatory and interactive discussion-based classes.
- Sessions by visiting faculty members drawn from leading academic institutions and industry.
- Regular weekly seminars.
- Distinguished lecture series.
- Practical, field-based projects and assignments.
- Summer training in leading organizations under faculty supervision in relevant programmes.
- Industrial tours and visits.
- Extensive use of technology for learning.
- Final Placement through campus interviews.

Exploration in the field of knowledge through research and development and comprehensive industrial linkages will be a hallmark of the University, which will mould the students for global assignments through technology-based knowledge and critical skills.

The evaluation of the student is based on grading system. A student has to pursue his/her programme with diligence for scoring a good Cumulative Grade Point Average (CGPA) and for succeeding in the chosen profession and life.

CHARUSAT welcomes you for a Bright Future

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

Faculty of Technology and Engineering

ACADEMIC REGULATIONS
Bachelor of Technology (CE/CSE/IT/EC) Programme

(Choice Based Credit System)

Charotar University of Science and Technology (CHARUSAT)
CHARUSAT Campus, At Post: Changa – 388421, Taluka: Petlad, District: Anand
Phone: 02697-247500, Fax: 02697-247100, Email: info@charusat.ac.in
www.charusat.ac.in

Year – 2017-2018

FACULTY OF TECHNOLOGY AND ENGINEERING
ACADEMIC REGULATIONS
Bachelor of Technology Programmes
Choice Based Credit System

To ensure uniform system of education, duration of undergraduate and post graduate programmes, eligibility criteria for and mode of admission, credit load requirement and its distribution between course and system of examination and other related aspects, following academic rules and regulations are recommended.

1. *System of Education*

Choice based Credit System with Semester pattern of education shall be followed across The Charotar University of Science and Technology (CHARUSAT) both at Undergraduate and Master's levels. Each semester will be at least 90 working day duration. Every enrolled student will be required to take a course works in the chosen subject of specialization and also complete a project/dissertation if any. Apart from the Programme Core courses, provision for choosing University level electives and Programme/Institutional level electives are available under the Choice based credit system.

2. *Duration of Programme*

    (i)   Undergraduate programme (B.Tech)
            Minimum   8 semesters (4 academic years)
            Maximum   16 semesters (8 academic years)

3. *Eligibility for admissions*

    As enacted by Govt. of Gujarat from time to time.

4. *Mode of admissions*

    As enacted by Govt. of Gujarat from time to time.

5. *Attendance*

5.1 All activities prescribed under these regulations and listed by the course faculty members in their respective course outlines are compulsory for all students pursuing the courses. No exemption will be given to any student from attendance except on account of serious personal illness or accident or family calamity that may genuinely prevent a student from attending a particular session or a few sessions. However, such

unexpected absence from classes and other activities will be required to be condoned by the Dean/Principal.

5.2   Student attendance in a course should be 80%.

6   Course Evaluation

6.1 The performance of every student in each course will be evaluated as follows:
6.1.1   Internal evaluation by the course faculty member(s) based on continuous assessment, for 30% of the marks for the course; and
6.1.2   Final examination by the University through written paper or practical test or oral test or presentation by the student or a combination of any two or more of these, for 70% of the marks for the course.

6.2   Internal Evaluation

6.2.1   A student shall be evaluated through Continuous Evaluation and Semester End Examination.
6.2.2   The weight of continuous assessment and End-semester examination shall be varying from UG to PG and from Faculty to Faculty as approved by Academic Council.
6.2.3   During the semester, a student shall be going through continuous assessment. The continuous assessment will be conducted by the respective Department / Institute. At the end of semester a student shall be evaluated through semester end examination comprising of theory and/or practical, viva-voce, term work components as decided by Academic Council.
6.2.4   The performance of candidate in continuous assessment and in end-semester examination together shall be considered for deciding the final grade in a course.

6.3   University Examination

6.3.1   The final examination by the University for 70% of the evaluation for the course will be through written paper and 100% for practical test or oral test or presentation by the student or a combination of any two or more of these.
6.3.2   **In order to earn the credit in a course a student has to obtain grade other than FF.**

6.4 Performance at Internal & University Examination

6.4.1   Minimum performance with respect to internal marks as well as university examination will be an important consideration for passing a course. Details of minimum percentage of marks to be obtained in the examinations (internal/external) are as follows

Minimum marks in University Exam per subject	Minimum marks Overall per subject
30%	35%

6.4.2   A student failing to score 35% of the final examination will get a FF grade.

6.4.3   If a candidate obtains minimum required marks per subject but fails to obtain minimum required overall marks, he/she has to repeat the university examination till the minimum required overall marks are obtained.

7   Grading

7.1   Performance of the student in all the components shall be graded using relative grading system

7.1.1   At the end of a semester, a histogram shall be prepared for results of each course. A committee mentioned hereunder shall finalize the histogram based on which results will be   prepared.

7.1.2   Result Preparation committee: A committee chaired by Provost and comprising of Dean of Faculty, One Dean other than the faculty and one teacher having expertise of relative grading shall deliberate upon different scenarios of results based on histograms of all the courses. Thereafter, the committee shall finalize the results.

7.1.3   The histogram shall be prepared for each course. After the finalization by the committee, the results shall be declared within 3 weeks duration.

7.1.4   Post Result Mechanism: The Dean shall discuss the result of each course with the convener and the teacher who has taught the course along with the statistical distribution evident from histogram so as to bring out any anomalies, skewness, left-out topics etc. Its only after this discussion is over the results shall be declared.

7.2   A grade point system, as given in the following table, shall be followed for evaluating a candidate in every course:

Table: Grading Scheme (UG)

Letter Grade	AA	AB	BB	BC	CC	CD	DD	FF
Grade Point	10	9	8	7	6	5	4	0

7.3   As a general guideline, a class average of around 6.50 for theory component & around 8.00 for practical component may be maintained while applying relative grading.

7.4   The student's performance in any semester will be assessed by the Semester Grade Point Average (SGPA). Similarly, his performance at the end of two or more consecutive semesters will be denoted by the Cumulative Grade Point Average (CGPA). The SGPA and CGPA are calculated as follows:

(i)   SGPA   = $\Sigma C_i G_i / \Sigma C_i$ where C_i is the number of credits of course i
G_i is the Grade Point for the course i
and i = 1 to n, n = number of courses in the semester

(ii)   CGPA   = $\Sigma C_i G_i / \Sigma C_i$ where C_i is the number of credits of course i
G_i is the Grade Point for the course i
and i = 1 to n, n = number of courses of all semesters up to which CGPA is computed.

(iii)   No student will be allowed to move further if CGPA is less than 3 at the end of every academic year.

(iv)   A student will not be allowed to move to third year if he/she has not cleared all the courses of first year.

(v)   A student will not be allowed to move to fourth year if he/she has not cleared all the courses of second year.

9. Awards of Degree

9.1 Every student of the programme who fulfils the following criteria will be eligible for the award of the   degree:

9.1.1   He should have earned at least minimum required credits as prescribed in course structure; and

9.1.2   He should have cleared all internal and external evaluation components in every course; and

9.1.3   He should have secured a minimum CGPA of 5.0 at the end of the programme;

9.1.4   **In addition to above, the student has to complete the required formalities as per the regulatory bodies, if any.**

9.2 The student who fails to satisfy minimum requirement of CGPA at the end of program will be allowed to improve the grades so as to secure a minimum CGPA for award of degree. Only latest grade will be considered.

10. Award of Class

The class awarded to a student in the programme is decided by the final CGPA as per the following scheme:

Distinction: CGPA ≥ 7.5
First class: 7.50›CGPA≥ 6.0
Second Class: 6.50›CGPA≥ 5.5
Pass Class: 5.50›CGPA≥ 4.0

Indicative percentage of marks equivalent to Cumulative Grade Point Average (CGPA) shall be calculated as (CGPA – 0.5) X 10.

11. Transcript

The transcript issued to the student at the time of leaving the University will contain a consolidated record of all the courses taken, credits earned, grades obtained, SGPA,CGPA, class obtained, etc.

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY (CHARUSAT)

FACULTY OF TECHNOLOGY & ENGINEERING (FTE)

CHOICE BASED CREDIT SYSTEM

FOR

BACHELOR OF TECHNOLOGY & ENGINEERING

A. **Choice Based Credit System:**

With the aim of incorporating the various guidelines initiated by the University Grants Commission (UGC) to bring equality, efficiency and excellence in the Higher Education System, Choice Based Credit System (CBCS) has been adopted. CBCS offers wide range of choices to students in all semesters to choose the courses based on their aptitude and career objectives. It accelerates the teaching-learning process and provides flexibility to students to opt for the courses of their choice and / or undergo additional courses to strengthen their Knowledge, Skills and Attitude.

1. **CBCS – Conceptual Definitions / Key Terms (Terminologies)**

    1.1. **Core Courses**
    1.1.1 **University Core (UC)**
    University Core Courses are those courses which all students of the University of a Particular Level (PG/UG) will study irrespective of their Programme/specialisation.

    1.1.2 **Programme Core (PC)**
    A 'Core Course' is a course which acts as a fundamental or conceptual base for Chosen Specialisation of Engineering. It is mandatory for all students of a particular Programme and will not have any other choice for the same.

    1.2 **Elective Course (EC)**

    An 'Elective Course' is a course in which options / choices for course will be offered. It can either be for a Functional Course / Area or Streams of Specialization / Concentration which is / are offered or decided or declared by the University/Institute/Department (as the case may be) from time to time.

    1.2.1 **Institute Elective Course (IE)**

    Institute Courses are those courses which any students of the University/Institute of a Particular Level (PG/UG) will choose as offered or decided by the University/Institute from time-to-time irrespective of their Programme /Specialisation

    1.2.2 **Programme Elective Course (PE):**

    A 'Programme Elective Course' is a course for the specific programme in which students will opt for specific course(s) from the given set of functional course/ Area or Streams of Specialization options as offered or decided by the department from time-to-time

    1.2.3 **Cluster Elective Course (CE):**

    An 'Elective Course' is a course which students can choose from the given set of functional course/ Area or Streams of Specialization options (eg.

Common Courses to EC/CE/IT/EE) as offered or decided by the Institute from time-to-time.

1.3 Non Credit Course (NC) - AUDIT Course

A 'Non Credit Course' is a course where students will receive Participation or Course Completion certificate. This will not be reflected in Student's Grade Sheet. Attendance and Course Assessment is compulsory for Non Credit Courses

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

TEACHING & EXAMINATION SCHEME FOR B TECH PROGRAMME IN CE/CSE/IT/EC ENGINEERING

CHOICE BASED CREDIT SYSTEM

Sem	Course Code	Course Title	Teaching Scheme					Examination Scheme				Total
			Contact Hours				Credit	Theory		Practical		
			Theory	Practical	Tutorial	Total		Internal	External	Internal	External	
'First Year Sem 1	MA141	Engineering Mathematics-I	4	0	1	5	4	30	70	0	0	100
	CE141	Computer Concepts & Programming	4	4	0	8	6	30	70	50	50	200
	EE141	Basics of Electronics & Electrical Engineering	4	2	0	6	5	30	70	25	25	150
	CL142	Environmental Sciences	2	0	0	2	2	30	70	0	0	100
	HS101 A-HS106 A	A Course from Liberal Arts		2		2	2	0	0	50	50	100
	IT142	ICT Workshop	0	4	0	4	2	0	0	50	50	100
		Assignment Practices /Student counselling /Remedial classes / Library/ Sports/ Extracurricular &co-curricular					9					
			14	12	1	36	21	120	280	175	175	750
First Year Sem 2	MA142	Engineering Mathematics-II	4	0	1	5	4	30	70	0	0	100
	CE142	Object Oriented Programming with C++	4	4	0	8	6	30	70	50	50	200
	ME144	Elements of Engineering	4	2	1	7	5	30	70	25	25	150
	PY141	Engineering Physics	3	2	0	5	4	30	70	25	25	150
	HS121 A	Study of English Language & Literature		2		2	2	25	25	25	25	100
		Assignment Practices /Student counselling /Remedial classes / Library/ Sports/ Extracurricular &co-curricular					9					
			16	9	2	36	21	145	305	125	125	700

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B. Tech. (CE/CSE/IT/EC) Programme

SYLLABI
(Semester – 1)

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES

MA141: ENGINEERING MATHEMATICS – I

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	0	1	5	4
Marks	100	0	-	100	

A. Objective of the Course:

A good Engineer has to have an excellent background of Mathematics. Engineering Mathematics is one of the essential tools for learning Technology, Engineering and Sciences. This course lays the foundation for engineering Mathematics in subsequent semesters, so that students get a sound knowledge and important aspects of the course. The objectives of the course are to:

1. Understand applications of differentiation in respective Engineering Branch
2. Understand basics of Matrix Algebra and methods to solve problems
3. Understand complex numbers, their properties and applications to Engineering problems
4. Understand solution to algebraic equations
5. Understand the sequence and series, conditions for convergence and divergence

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1.	Higher order derivatives and applications	09
2.	Partial differentiation	10
3.	Applications of Partial differentiation	09
4.	Matrix Algebra -I	10
5.	Algebra of Complex numbers and Roots of polynomial Equations	12
6.	Infinite Series	10

<div align="right">
Total hours (Theory): 60

Total hours (Lab): 00

Total hours (Tutorial): 15

Total hours: 75
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C. Detailed Syllabus:

1	**Higher order derivatives and applications**	09 Hours	15%

1.1 Set theory and Function

1.2 Limit, Continuity, Differentiability for function of single variable and its uses.

1.3 Successive differentiation: n^{th} derivative of elementary functions viz., rational, logarithmic, trigonometric, exponential and hyperbolic etc.

1.4 Leibnitz rule for the nth order derivatives of product of two functions

1.5 Expansion of Functions: Maclaurin's & Taylor's series expansion

1.6 L'Hospital's rule and related applications, Indeterminate forms.

2	**Partial differentiation**	10 Hours	17%

2.1 Partial derivative and geometrical interpretation

2.2 Euler's theorem with corollaries and their applications

2.3 Chain rule

2.4 Implicit differentiation

2.5 Total differentials.

3.	**Applications of Partial differentiation**	09 Hours	15%

3.1 Tangent plane and normal line to a surface

3.2 Maxima and Minima

3.3 Langrage's method of multiplier

3.4 Jacobian

3.5 Errors and approximations

4.	**Matrix Algebra- I:**	10 Hours	17%

4.1 Definition of Matrix, types of matrices and their properties

4.2 Determinant and their properties

4.3 Rank and nullity of a matrix

4.4	Determination of rank
4.5	Gauss Jordan method for computing inverse, Triangularization of Matrices by Gauss Elimination Process
4.6	Solution of system of linear equations

5	**Algebra of Complex numbers and Roots of polynomial Equations**	**12 Hours**	**19%**
5.1	Complex numbers & their geometric representation		
5.2	Complex numbers in polar and exponential forms		
5.3	Demoirve's theorem and its applications		
5.4	Exponential, Logarithmic, Trigonometric and hyperbolic functions.		
5.5	Statement of fundamental theorem of Algebra, Analytical solution of cubic equation by Cardan's method		
5.6	Analytic solution of Biquadratic equations by Ferrari's method with their applications.		

6.	**Infinite Series**	**10 Hours**	**17%**
6.1	Introduction to sequence and series		
6.2	convergence and divergence of infinite series		
6.3	necessary condition for convergence		
6.4	Geometric series		
6.5	Tests of convergence viz., comparison test, p-series test, ratio test, n^{th} root test, Leibnitz test, integral test and power series.		
6.6	Convergence of Taylor's and Maclaurian Series		

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures/laboratory which carries a 5% component of the overall evaluation.
- Minimum two internal exams will be conducted and average of two will be considered as a part of 15% overall evaluation.

- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weighting of 5%.
- Two Quizzes (surprise test) will be conducted which carries 5% component of the overall evaluation.

E. Student Learning Outcomes:

1. At the end of the course the students will be able to understand the basic concepts of Engineering Mathematics.
2. Student will be able apply concepts of these course to learn MA 142: Engineering Mathematics-II and may be some courses other then Mathematics.
3. Students will be able to apply the mathematical concepts in other engineering courses.

F. Recommended Study Material:

❖ **Text Books:**

1. Erwin Kreyszig, Advanced Engineering Mathematics, 8th Ed., Jhon Wiley & Sons, India, 1999

❖ **Reference Books:**

1. M.D. Wier, et. al., Thomas' Calculus, 11th Ed., Pearson Education, 2008
2. Stewart James, Calculus Early Transcendental, 5th Ed., Thomson India, 2007
3. Wylie & Barrett, Advanced Engineering Mathematics, Mc graw Hill pub.
4. Greenberg, M.D., Advanced Engineering Mathematics, 2nd ed., Pearson

❖ **Web Materials:**

1. http://mathworld.wolfram.com/
2. http://en.wikipedia.org/wiki/Math

FACULTY OF TECHNOLOGY & ENGINEERING
U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING

CE141: COMPUTER CONCEPTS & PROGRAMMING

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	4	-	8	6
Marks	100	100	-	200	

A. Objective of the Course:

The main objectives for offering the course computer concepts and programming are:

1. To create students' interest for programming related subjects and to make them aware of how to communicate with computers by writing a program.

2. To foster the ability of solving various analytical and mathematical problems with algorithms within students.

3. To make them learn regarding different data structures and memory management in the programming language.

4. To promote skills like Development of logic and implementation of basic mathematical and other problems at individual level.

5. To make them learn and understand coding standards, norms, variable naming conventions, commenting adequately and how to form layout of efficient program.

6. To explain them concepts of pointer & file management concepts.

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1.	Introduction to Computation	03
2.	Algorithms and Flowcharts	03
3.	Introduction to Programming	01
4.	Introduction to 'C'	01
5.	Constants, Variables & Data Types in 'C'	03
6.	Operators and Expression in 'C'	03
7.	Managing Input & Output Operations	03
8.	Conditional Statements & Branching	04
9	Looping	05

10	Arrays	04
11.	Character Arrays	05
12.	User-Defined Function in 'C'	06
13.	Structures	05
14.	Pointers	06
15.	File Management in 'C'	05
16.	Dynamic Memory Allocation	03

Total hours (Theory): 60

Total hours (Lab): 60

Total hours: 120

C. Detailed Syllabus:

1.	**Introduction to Computation**	03Hours	05%

1.1   Program, Software, Instruction, data, debug, test, file, directory, linking, loading, libraries, compilation, execution.

1.2   Introduction, and Block diagram and functions of various components of computer, Concepts of Hardware and Software, Types of software.

2.	**Algorithms and Flowcharts**	03 Hours	05%

2.1   Algorithms, Flow-charts

3	**Introduction to Programming**	01 Hours	02%

3.1   Program & Programming, Programming Languages, Types of Languages, Compiler and Interpreter.

3.2   Procedure Oriented Language and Object Oriented Language.

4.	**Introduction to 'C' language**	01 Hours	02%

4.1   History of C, Characteristics of C, Basic structure, Compiling process of C Program.

5.	**Constants, Variables & Data Types in 'C'**	03 Hours	05%

5.1   Character set, C tokens.

5.2   Data types – classes of data type, declaration & initialization, User-defined type declaration - typedef, enum, Basic input-output operations, Symbolic constant (#define).

6.	**Operators and Expression in 'C'**	03 Hours	05%

6.1   Classification of operators: Arithmetic, Relational, Logical,

Assignment, Increment / Decrement, Bitwise, Special Operators. Unary, Binary and Ternary Operators, Shorthand Operators.

6.2 Arithmetic expression, Evaluation, Type conversion: Implicit &Explicit, Precedence and Associativity.

7	**Managing Input & Output Operations**	**03 Hours**	**05%**

7.1 Input a character, Introduction to ASCII code, Various library functions from ctype.h.

7.2 Formatted input using scanf ( ), Formatted output of integer and real data using printf ( ).

8	**Conditional Statements & Branching**	**04 Hours**	**07%**

8.1 Decision making using if, if...else statement, nesting of if...else, else...if Ladder.

8.2 Switch, use of if...else instead of conditional operator, goto statement.

9	**Looping**	**05 Hours**	**08%**

9.1 Need of looping, (pre-test) entry-controlled loop: while, for, (post-test) exit-controlled loop: do...while, difference, Use of sentinel values.

9.2 Nesting of looping statements, use of break & continue, use of if...else in loop, infinite loop.

10	**Arrays**	**04 Hours**	**07%**

10.1 Need of array, Declaration & Initialization 1D array, Programs of 1D.

10.2 2D array, Memory allocation of 1D and 2D array, 2D array basic programs.

11	**Character Arrays**	**05 Hours**	**08%**

11.1 Difference of character array with numeric array and importance of NULL character.

11.2 Declaration, Initialization and various input and output methods of string, formatted output of string, arithmetic operations on characters.

11.3 Various functions of string.h: strlen, strcat, strcmp, strcpy, strrev, strstr, etc.

11.4 Two dimensional character array (table of strings).

12	**User-Defined Function in 'C'**	**06 Hours**	**10%**

12.1	Need of modularization, advantages, Introduction to user-defined function, Function Prototype, Function Call, Function Body.		
12.2	Call by value, Actual &Formal Arguments, return value, Categories of functions, Nesting of Functions, Recursion.		
12.3	Array as Function arguments, Storage Classes: Scope, Life of a variable in 'C'.		
13	**Structures**	**05 Hours**	**07%**
13.1	Need of user-defined data type, Structure definition, Declaration and Initialization of variables, Array as member, Array of structure variables.		
13.2	Structure within structure, Structure as function arguments, Union, Bit fields.		
14	**Pointers**	**06 Hour**	**11%**
14.1	Introduction to pointer, declaration & initialization, access value using pointer, indirection (*) operator.		
14.2	Pointers in expressions, scale factor, 1D-array and pointer, pointer with strings, Array of pointers.		
14.3	Pointer as arguments in function, Call by address, Functions returning pointers, Pointers with structures, Pointer to pointer.		
15	**File Management in 'C'**	**05 Hours**	**08%**
15.1	Introduction, need, create and close file, modes of file, read &7 write single character and integer to file, use of fprintf and fscanf functions.		
15.2	Error handling functions, random access of files using ftell, rewind, fseek, command line argument.		
16	**Dynamic Memory Allocation**	**03 Hours**	**05%**
16.1	Introduction, memory allocation process		
16.2	Usle of functions: malloc ( ), calloc ( ), realloc ( ) and free ( ).		
16.3	Allocation of memory for array & structure.		

D. Instructional Method and Pedagogy:

- At the beginning, the course delivery pattern, prerequisite of the subject will be discussed.

- Lectures will be conducted with the aids like multi-media projector, black board, OHP etc.

- Attendance is compulsory in lectures and laboratory

- The course includes a laboratory, where students have the opportunity to build appreciation for the concepts being taught in lectures.

- Experiments/Tutorials related to course content will be carried out in the laboratory.

E. Student Learning Outcomes:

After completing this course, the student should demonstrate the knowledge and ability to:

1. Implementation of code for numerical calculations
2. Efficient programming related to scientific simulation in their projects.
3. Demonstrate a range of basic programming and IT skills
4. Design programs involving decision structures, loops and functions.
5. Gain the complete knowledge on arrays, structure, functions, union, pointers and files.

F. Recommended Study Material:

❖ **Text Books:**

1. Programming in ANSI C, 6th Edition by E Balagurusamy, MGrawHill
2. Let us C, 13th Edition by Yashwant Kanetkar, BPB Publication
3. C Programming Language (ANSI C Version), 2/e by Brian Kernighan, Dennis Ritchie

❖ **Reference Books:**

1. Head First C by David Griffiths & Dawn Griffiths.
2. C How to program, 7/E by Deitel&Deitel, Prentice Hall
3. C: The Complete Reference by Herbert Schildt
4. Practical C Programming (Third Edition) by Steve Oualline

❖ **Web Materials:**

1. www.tutorials4u.com/c/
2. www.cprogramming.com/tutorial.html
3. www.howstuffworks.com/c.htm
4. http://www.programmingtutorials.com/c.aspx
5. http://www.physics.drexel.edu/courses/Comp_Phys/General/C_basics/

FACULTY OF TECHNOLOGY & ENGINEERING
M & V PATEL DEPARTMENT OF ELECTRICAL ENGINEERING

EE141: BASICS OF ELECTRONICS & ELECTRICAL ENGINEERING

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	2	0	6	5
Marks	100	50	0	150	

A. Objective of the Course:

This course covers the basic principles and laws of electrical and electronics engineering with emphasis on the analysis and application to simple practical engineering problems.

The course objectives (CO) are to:

1. Introduce basic terms and units related to electrical engineering
2. Understand the basic concepts in the field of electrical and electronics engineering
3. Focus on the fundamentals of electrostatic and electromagnetism
4. Analyze the series and parallel AC systems
5. Solve single phase and polyphase circuits
6. Comprehend electronic devices, digital numbers, logic gates and communication systems.

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Basic Electrical Terms and Units	06
2	Electrical Circuit Analysis	08
3	Electrostatic	08
4	Electromagnetism	08
5	AC and DC Fundamentals	06
6	Single Phase AC Series and Parallel Circuits	07
7	Polyphase Circuits	05
8	Basics of Electronics	12

Total hours (Theory): 60

C. Detailed Syllabus:

| 1 | **Basic Electrical Terms and Units** | 06 Hours | 10% |

1.1 Basic terms related to electrical engineering, their definition, units and symbols, equations

1.2 Ohm's law, resistor and its coding, properties, temperature co-efficient of resistance, resistance variation with temperature, examples

| 2 | **Electrical Circuit Analysis** | 08 Hours | 13% |

2.1 Kirchoff's current and voltage law, mesh and nodal analysis, Examples

2.2 Series-parallel network, Star-Delta transformations, potential divider

| 3 | **Electrostatic** | 08 Hours | 13% |

3.1 Capacitors, charge and voltage, capacitance, electric fields, electric field strength and electric flux density, relative permittivity, dielectric strength, Examples

3.2 Capacitors in parallel and series, Calculation of capacitance of parallel plate and multi plate capacitor, examples

3.3 Energy stored in capacitors, types of capacitor, charging and discharging of capacitors on DC, examples

| 4 | **Electromagnetism** | 08 Hours | 13% |

4.1 Magnetic field, its direction and characteristics, magnetic flux and flux density, magneto motive force and magnetic field strength, examples

4.2 Faraday's law of electromagnetic induction, Fleming's left hand and right hand rule, Lenz law, force on a current carrying conductor, examples

4.3 Self and mutual inductance, coefficient of coupling, series and parallel combination of inductances, rise and decay of current in an inductive circuit in DC, examples

4.4 Comparison between electrical & magnetic circuits

| 5 | **AC and DC Fundamentals** | 06 Hours | 10% |

5.1	Generation of AC and DC voltage, Waveform and definition of its terms, relation between speed, frequency and pole		
5.2	Average and RMS value and its determination for sinusoidal and non-sinusoidal wave shapes, examples		
5.3	Phasor representation of alternating quantities		
6	**Single Phase AC Series and Parallel Circuits**	**07 Hours**	**13%**
6.1	R –L and R-C series circuit, power in ac circuits, examples		
6.2	R-L-C series circuit, resonance in R-L-C series and parallel circuit, Q – factor and bandwidth, examples		
6.3	Solution of series and parallel circuits, phasor method, admittance method, complex algebra method, examples.		
7	**Polyphase Circuits**	**05 Hours**	**08%**
7.1	Generation of three phase emf, phase sequence, Definitions		
7.2	Star and delta connection of three phase system, voltage and current relations in star and delta connected system, Examples		
8	**Basics of Electronics**	**12 Hours**	**20%**
8.1	Electronic Systems: Basic amplifier, voltage, current and power gain, Basic attenuators, CRO		
8.2	Transmission and Signals: Analog and digital signals, bandwidth, modulation and demodulation, Filters		
8.3	Forward and reverse bias of PN junction diode, zener diode, Rectifiers: Half wave, full wave – bridge and centre tap, L and C filters for smoothing		
8.4	Transistor: Bipolar junction transistor, construction and biasing, configuration, transistor as a switch and amplifier		

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and laboratory which carries 5 Marks weightage.

- Two internal exams will be conducted and average of the same will be converted to equivalent of 15 Marks as a part of internal theory evaluation.

- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weightage of 5 Marks as a part of internal theory evaluation.

- Surprise tests/Quizzes/Seminar will be conducted which carries 5 Marks as a part of internal theory evaluation.

- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.

- Experiments/Tutorials related to course content will be carried out in the laboratory.

E. Student Learning Outcomes:

On the completion of the course one should be able to:

1. Identify resistors, capacitors and inductors reading.
2. Understand the basic electrical laws and apply these laws to solve electrical network
3. Identify the property of magnetic materials and understand the laws of emf generation
4. Solve the series and parallel AC and DC circuits for single and polyphase networks.
5. Define different terms of alternating quantities
6. Design AC-DC rectification circuits, operate basic electrical and electronics instruments
7. Operate the circuits with logical gates and transistors

F. Recommended Study Material:

❖ Text Books:

1. Elements of Electrical Engineering and Electronics by U.A. Patel and R.P. Ajwalia
2. A Text Book of Electrical Technology by B. L. Thareja, S. Chand
3. Principles of Electrical Engineering and Electronics by V.K. Mehta, S. Chand

❖ Reference Books:

1. Hughes, Electrical Technology, Pearson Education
2. Electrical Engineering by Del Toro

❖ Web Materials:

1. Exploring Electrical Engineering

http://www.facstaff.bucknell.edu/mastascu/eLessonsHTML/EEIndex.html

2. Video lectures by Prof. Umanand, IISc Banglore on Basic Electrical Technology

http://nptel.iitm.ac.in/syllabus/syllabus.php?subjectId=108105053

FACULTY OF TECHNOLOGY & ENGINEERING
MANUBHAI SHIVABHAI PATEL DEPARTMENT OF CIVIL ENGINEERING

CL142: ENVERIONMENTAL SCIENCES

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	2	0	-	2	2
Marks	100	0	-	100	

A. Objective of the Course:

1. To impart basic knowledge about environment and thereby developing an attitude of concern towards environment.
2. To inculcate alertness towards environment.
3. To make awareness on delineating on various environmental pollution and their effects on environment.
4. To deliver a comprehensive insight into natural resources, ecosystem and biodiversity.
5. To develop the curiosity and visionary of student in relation to environment.

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Introduction	05
2	Environmental Pollution	12
3	Ecology & Ecosystems	10
4	Natural Resources	03

Total hours (Theory): 30

Total hours (Lab): 00

Total hours: 30

C. Detailed Syllabus:

1	**Introduction**	05 Hours	24%

1.1 Basic definitions

1.2 Objectives and guiding principles of environmental studies

1.3 Components of environment

1.4 Structures of atmosphere

1.5 Man-Environment relationship

1.6 Impact of technology on the environment

2	**Environmental Pollution**	12 Hours	33%

2.1 Environmental degradation

2.2 Pollution, sources of pollution, types of environmental pollution

2.3 Air pollution: Definition, sources of air pollution, pollutants, classifications of air pollutants (common like SO_X & NO_X), sources & effects of common air pollutants

2.4 Water pollution: Definition, sources water pollution, pollutants & classification of water pollutants, effects of water pollution, eutrophication

2.5 Noise pollution: Sources of noise pollution, effects of noise pollution

2.6 Ill Effects of Fireworks: Severity of toxicity, environmental effects and health hazards.

2.7 Current environmental global issues, global warming & green houses, effects, acid rain, depletion of Ozone layer

3	**Ecology & Ecosystems**	10 Hours	33%

3.1 Ecology: Objectives and classification

3.2 Concept of an ecosystem: Structure & function

3.3 Components of ecosystem: Producers, consumers, decomposers

3.4 Bio-Geo-Chemical cycles & its environmental significance

3.5 Energy flow in ecosystem

3.6 Food Chains: Types & food webs

3.7 Ecological pyramids

3.8 Major ecosystems

4	**Natural Resources**	03 Hours	10%

4.1 Natural ressources: Renewable resources, non-renewable resources, destruction versus conservation

4.2 Energy resources: Conventional energy sources & its problems, non-conventional energy sources-advantages & its limitations, problems due to overexploitation of energy resources

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures which carries 10 Marks weightage.
- Two internal exams will be conducted and average of the same will be converted to equivalent of 15 Marks as a part of internal theory evaluation.
- Assignment/Surprise tests/Quizzes/Seminar will be conducted which carries 5 Marks as a part of internal theory evaluation.

E. Student Learning Outcomes:

On the successful completion of the course the students will be able

1. To perceive the elementary knowledge about natural environment and its relation with science.
2. To identify and analyze human impacts on the environment.
3. To understand the facts and concepts of natural and energy resources thereby applying them to lessen the environmental degradation.
4. To communicate on recent environmental problems thereby creating awareness among society

F. Recommended Study Material:

- ❖ Text Books:
    1. Varandani, N.S., Basics of Environmental Studies
    2. Sharma, J. P., Basics of Environmental Studies
- ❖ Reference Books:
    1. Shah Shefali & Goyal Rupali, Basics of Environmental Studies

2. Agrawal, K.C., Environmental Pollution : Causes, Effects & Control

3. Dameja, S. K., Environmental Engineering & Management

4. Rajagopalan, R., Environmental Studies, Oxford University Press

5. Wright Richard T. & Nebel Bernard J., Environmental Science

6. Botkin Daniel B. & Edward A. Keller, Environmental Science

7. Shah, S.G., Shah, S.G. & Shah, G. N., Basics of Environmental Studies, Superior Publications, Vadodara

❖ **Reference Books:**

1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-Delhi/Environmental%20Air%20Pollution/index.htm

2. http://nptel.iitm.ac.in/video.php?subjectId=105104099

3. http://apollo.lsc.vsc.edu/classes/met130/notes/chapter1/vert_temp_all.html

4. http://www.epa.gov

5. http://www.globalwarming.org.in

6. http://nopr.niscair.res.in

7. http://www.indiaenvironmentportal.org.in

FACULTY OF MANAGEMENT STUDIES
DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

HS101A - HS106A: A COURSE FROM LIBERAL ARTS

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	-	**2**	-	2	2
Marks	-	100	-	100	

A. Objective of the Course:

To help learners to

1. Recognize the nature of aesthetic values and explore elements of arts and aesthetics with reference to personal, cultural and civic sphere

2. Connect art and aesthetics with Science and Technology to understand and extend research and innovation for a society

B. Courses:

Students may select any one course from the following:

Sr. No.	Title of the unit	Credits
1	Painting	
2	Photography	
3	Sculpting	
4	Music	
5	Drama and Dramatics	02
6	Yoga	
7	Dance	
8	Pottery and Ceramic Art	
9	Media and Graphics Design	

Total hours (Theory): 00

Total hours (Lab): 30

Total hours: 30

C. Instructional Method and Pedagogy:

- Teaching will be practical based on the hands on experiences, live and interactive Participation sessions. It may also run in the workshop mode.

D. Evaluation:

- The students will be evaluated continuously in the form of their consistent performance throughout the semester. There is no theoretical evaluation. There is just practical evaluation. The evaluation (practical) is schemed as 50 marks for internal evaluation and 50 marks for external evaluation.

Internal Evaluation

- Students' performance in the course will be evaluated on a continuous basis through the following components:

Sr No.	Component	Number	Marks Per Incidence	Total Marks
1		-	10	10
2	Performance/ Activities	-	10	10
3	Project	-	25	25
4	Attendance	-	05	05
			Total	50

External Evaluation

- University Practical examination will be for 50 marks and will test the performance, activities and creative presentations of the students with reference to the course selected:

Sr. No.	Component	Number	Marks Per Incidence	Total Marks
1	Viva/Practical	-	50	50
			Total	50

E. Student Learning Outcomes:

At the end of the course, students will have developed the ability to enjoy, interact with and perform arts and aesthetics; and will have developed the ability and creativity to transfer sense of design and innovation in science and technology.

FACULTY OF TECHNOLOGY & ENGINEERING
DEPARTMENT OF INFORMATION TECHNOLOGY

IT142: ICT WORKSHOP

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	0	4	-	4	2
Marks	0	100	-	100	

A. Objective of the Course:

The main objectives for offering the course ICT Workshop are:

1. To explain the fundamentals of computers and peripherals.
2. To introduce hardware and software computers basics.
3. To deliver concept and methodology of different parts of computer and their assembling.
4. To brief the students regarding various operating systems installation, commands and scripting in OS.
5. To introduce the basic concepts of batch file programming and its uses.

B. Outline of the Course

Sr. No.	Title of the Unit	Minimum Number of Hours
1	Introduction to computer hardware	4
2	PC troubleshooting	4
3	Display unit, Keyboard , Mouse and Touch Pad, Printer	4
4	Power supply & Storage Devices, Assembling the computer system	8
5	Installation of various Operating Systems, DOS Commands	8
6	LINUX commands and scripting	12
7	Professional Document writing using Word Processing Tool, Data Processing using Spread Sheet, Creating Dynamic and Informative Slide Show using Presentation Software	12
8	Batch File Commands & Programming in Windows	8

C. Detailed Syllabus:

Following contents will be delivered to the students during laboratory sessions.

1.	**Introduction to computer hardware**	4 Hours

Definition of computer, Computer hardware, software and firmware, history of computer, classification of computer, basic parts of digital computer

2.	**PC troubleshooting**	4 Hours

Hardware troubleshooting and repairing, Software troubleshooting and repairing

3.	**Display unit**	4 Hours

Types of monitor: CRT, LCD, LED, Plasma, OLED, Faults of monitor, Display card

Keyboard , Mouse and Touch Pad (Track Pad)

Types of keyboard: Wired and Wireless

Wired: Din type, PS/2, USB, Wireless: Bluetooth, Infrared(IR), RF

Types of mouse: Wired and Wireless

Wired: Serial port, PS/2, USB, Wireless: Bluetooth, Infrared(IR), RF

Types of Track pad and Touch pad

Printer

General features of printer, Classification of printer, Impact printer: Dot matrix, Line printer, Non-impact: Thermal

4.	**Power supply& Storage Devices**	8 Hours

SMPS: Working, output connectors, UPS, Stabilizer

Types of Memory: Primary storage: Registers, Cache, RAM

Other Storage Devices: Floppy, Hard Disk, CD, DVD, Flash

Motherboard

Types of motherboard, Functional block diagram of motherboard, CPU and supporting chips, introduction of CPU architectures, BIOS, CMOS setup, Faults of motherboard

Assembling the computer system

Study of configuration of computer system, introduction of computer

assembling, Different types of cables, Assembling and Disassembling

5.	**Installation of various Operating Systems**	8 Hours

Different types of Operating System, Installation of OS on a single machine (Dual Boot)

DOS Commands:

<u>Internal Commands:</u> CLS, DATE, VER, VOL, DIR, COPY CON, TYPE, MKDIR, CHDIR (CD), RMDIR, RENAME, DEL, MOVE, COPY, PROMPT, DOSKEY, PATH<u>External Commands:</u> ATTRIB, FORMAT, CHKDSK, SCANDISK, TREE, XCOPY. Use of commands with Wild Card Characters:? (Question Mark) and ***** (Asterisk)

6.	**LINUX Commands and scripting:**	12 Hours

Introduction to basics of Linux OS and its variants, what is shell, Commands:clear, man, who, date, who am i, cal, echo, ls, mkdir, cd, cd.., rmdir, pwd, cat, rm, cp, mv, chmod, umask, grep, ps

Prepare scripts using control structures and loops for various actions to perform.

7.	**Professional Document writing using Word Processing Tool**	12 Hours

Microsoft Word: Basic menu introduction, Page layout-Margin-Header Footer, Page break, Insert symbols and Equations, Mail Merge, Preparation of Index, Automatic Index generation, Two columns research paper format-Footnote-Cross reference.

Data Processing using Spread Sheet

Microsoft Excel: Cell Address, Row, Column, Header and Footer, Fill handle and drag-&-drop, Format cells, Conditional formatting, Formulas and Functions, Validation, Chart with various options, Filter, Sort.

Creating Dynamic and Informative Slide Show using Presentation Software

Microsoft PowerPoint: Slide layout, Slide design (Proper selection based on audience), Header and Footer in slides, Slide transition, Slide Master, Insert Picture-Smart Art, Insert animations to different objects, Hide Slide, Rehearse Timings, Record slide show. How to prepare professional presentation

8.	**Batch File Commands & Programming in Windows**	8 Hours

Batch file commands: CLS, %1, ECHO, SET, CALL, :LABEL, EXIT, GOTO, IF, FOR, REM, etc.

Create batch files for various purposes and execute it, study of AUTOEXEC.BAT file

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.

- Laboratories will be conducted with the aid of multi-media projector, white board, computers, OHP etc.

- Attendance is compulsory in laboratory. This, including assignments/tests/quizzes carries 10 marks in overall evaluation.

E. Student Learning Outcomes:

By taking this course,

1. A student will be having the basic knowledge of computer architecture, peripherals and all the hardware and software basics.

2. A student will be able to understand hardware requirement for operating system and able to install it on a machine.

3. A student will become familiar with command line interface of Windows and Linux. A student will be able to use different word processing and data processing tools for analysis and presentation.

F. Recommended Study Material:

- ❖ Reference Books:
    1. The Complete PC Upgrade and Maintenance Guide, 16th Edition, Mark Minasi, Quentin Docter, Faithe Wempen, SYBEX publication
    2. IBMPC And Clones Govindarajulu, Tata McGraw Hill
- ❖ Web Materials:
    1. http://www.technologystudent.com/elec1/resist1.htm
    2. http://www.electronics-tutorials.ws/capacitor/cap_1.html
    3. http://en.wikipedia.org/wiki/Inductor

4. http://www.radio-electronics.com/info/formulae/inductance/inductor-inductive-reactance-formulae-calculations.php

5. http://alternatezone.com/electronics/files/PCBDesignTutorialRevA.pdf

6. http://www.scribd.com/doc/39508404/CRO-Manual

7. http://www.computerhope.com/issues/ch001676.htm

B. Tech. (CE/CSE/IT/EC) Programme

SYLLABI
(Semester – 2)

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES

MA142: ENGINEERING MATHEMATICS –II

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	-	1	5	4
Marks	100	-	-	100	

A. Objective of the Course:

To study the fundamental concepts of Engineering Mathematics, so that students get a sound knowledge and important aspects of the subject. The objectives of the course are to:

1. Understand differential equations, partial differential equations and its solutions
2. Understand Multiple Integration and solution techniques.
3. Understand different types of Special Functions and its use in Engineering problems

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Ordinary Differential Equations	09
2	Linear Differential Equations	10
3	Partial Differential Equations	11
4	Applications of Ordinary Differential Equations and Partial Differential Equations	10
5	Multiple Integrals	10
6	Special Functions	10

Total hours (Theory): 60

Total hours (Lab): 00

Total hours (Tutorial): 15

Total hours: 75

C. Detailed Syllabus:

1.	**First order and First degree Ordinary Differential Equations**	09 Hours	14%
1.1	Modelling of real world problems in terms of first order ODE		
1.2	Initial Value problems		
1.3	Concept of general and particular solutions		
1.4	Existence and Uniqueness solutions by illustrations		
1.5	linear, Bernoulli and Exact differential equations		
1.6	Solutions of First order First degree Differential Equations		
2.	**Higher Order Ordinary Linear Differential Equations**	11 Hours	18%
2.1	Model of real world problems of higher order LDE		
2.2	General Solution of Higher Order Ordinary Linear Differential Equations with Constant coefficients		
2.3	Methods for finding particular integrals viz. variation of parameters and undetermined coefficients		
2.4	LDE of higher order with variable coefficients viz Cauchy-Euler and Legendre's Equations		
2.5	System of Simultaneous first order linear differential equations		
3	**Partial Differential Equations**	10 Hours	17%
3.1	Modeling of real world problem in terms of first order PDE		
3.2	Initial and Boundary valued conditions		
3.3	Methods of solutions of first order PDE viz.		
3.4	Langrange's Linear Partial Differential Equations		
3.5	Special types of Nonlinear PDE of the first order		
4	**Applications of Differential Equations**	10 Hours	17%
4.1	Applications of ODE: Orthogonal Trajectories, Mechanical vibration system, Electrical circuit system, deflection of beams.		
4.2	Application of PDE: Heat, wave, Laplace equations and their solution by method of separation of variables and Fourier series.		
5	**Multiple Integrals**	10 Hours	17%
5.1	Evaluation of double and triple integrals		
5.2	Change of order of integration		
5.3	Transformation to polar, spherical and cylindrical coordinates		

5.4 applications of double and triple integrals: area, volume and mass

6. **Special Functions** 10 Hours 17%

6.1 Improper integrals and their convergence

6.2 Definitions, properties and examples of Beta, Gamma and error functions

6.3 Bessel functions and their Properties

6.4 Legendre's polynomials and their Properties

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures/laboratory which carries a 5% component of the overall evaluation.
- Minimum two internal exams will be conducted and average of two will be considered as a part of 15% overall evaluation.
- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weighting of 5%.
- Two Quizzes (surprise test) will be conducted which carries 5% component of the overall evaluation.

E. Student Learning Outcomes:

1. At the end of the course the students will be able to understand the fundamental concepts of Engineering Mathematics. Students will be able to apply these concepts to Mathematics for higher semesters in courses other than Mathematics.

F. Recommended Study Material:

- ❖ **Text Books:**
  1. Erwin Kreyszig, Advanced Engineering Mathematics, 8th Ed., Jhon Wiley & Sons, India, 1999.
- ❖ **Reference Books:**
  1. M.D. Weir, et. al., Thomas' Calculus, 11th Ed., Pearson Education, 2008

2. Stewart James, Calculus Early Transcendental, 5th Ed., Thomson India, 2007

3. Wylie & Barrett, Advanced Engineering Mathematics, Mc graw Hill pub.

4. Greenberg, M. D., Advanced Engineering Mathematics, 2nd ed., Pearson

❖ **Web Materials:**

1. http://mathworld.wolfram.com/

2. http://en.wikipedia.org/wiki/Math

FACULTY OF TECHNOLOGY & ENGINEERING
U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING

CE142: OBJECT ORIENTED PROGRAMMING WITH C++

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	4	-	8	6
Marks	100	100	-	200	

A. Objective of the Course:

The main objectives for offering the course Object Oriented programming with C++ are:

1. To introduce students with object-oriented programming in C++ language.
2. To display how the object oriented approach differs from procedural approach.
3. To promote skills like Development of logic and implementation of basic mathematical and other problems by using Object oriented concepts.
4. To explain them concepts of encapsulation, class, objects, Operator Overloading, function overloading and inheritance.
5. Take a problem and develop the structure to represent objects and the algorithms to perform operations.

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Introduction to Object Oriented concepts and Design	3
2	Principles of object-oriented Programming	3
3	Introduction of C++	3
4	Tokens and Expressions & Control Structure	4
5	Functions	5
6	Classes and objects'	8
7	Constructor and Destructors	5
8	Operator Overloading	5
9	Inheritance	8
10	Pointers and Virtual Functions	6
11	Managing Console I/O Operations	4
12	Working with Files	6

C. Detailed Syllabus:

1	**Introduction to Object Oriented concepts and Design**	03 Hours	5%
1.1	What is object oriented (OO), history, Object Concepts, OO methodology, OO themes, Introductions to OO Models.		
2	**Principles of object-oriented Programming**	03 Hours	5%
2.1	Basic concept of object-oriented Programming , Benefits of OOP		
2.2	Difference between object oriented language and procedure oriented language		
3	**Introduction of C++**	03 Hours	3%
3.1	What is C++, Simple C++ Program, Applications of C++		
3.2	Introduction to class, object and creating simple program using class, Structure of C++ program		
4	**Tokens and Expressions & Control Structure**	04 Hours	4%
4.1	Tokens, Keywords, identifiers and constants, Basic Data Types and user defined data types and derived data types, symbolic constants		
4.2	Type compatibility, Declaration of variables, Dynamic initialization,		
4.3	Reference variables Scope Resolution Operator, Memory Management Operator,		
4.4	Manipulators, Type cast operator Expressions and their types, implicit Conversion Operator Precedence and Control Structure		
5	**Functions**	05 Hours	8%
5.1	The main function, simple functions, call by reference, return by reference, inline functions, overloaded functions, default arguments		
6	**Classes and objects**	08 Hours	15%
6.1	Limitation of C structure, Declaring class and defining member function, making outside function inline , Nesting member function, Private member function arrays within a class, memory allocation of		

objects, Static data members and Member functions.

6.2	Arrays of Objects, Object as a function argument, Friend functions, Returning objects, const Member functions.		
7	**Constructor and Destructors**	**05 Hours**	**8%**
7.1	Introduction to Constructors, Parameterized Constructors, Multiple Constructors in class, Constructors with default argument, Dynamic initialization of Constructors, Dynamic Initialization of objects, Copy Constructor, Dynamic Constructor		
7.2	Destructors		
8	**Operator Overloading**	**05 Hours**	**10%**
8.1	Introduction, Defining Operator overloading, overloading unary and binary operators, overloading binary operator using friend function, rules for overloading operators		
8.2	Type Conversion		
9	**Inheritance**	**08 Hours**	**12%**
9.1	Introduction, Defining a derived class, Example of Single Inheritance,		
9.2	Public and private inheritance.		
9.3	Multilevel, multiple and hierarchical Inheritance, Hybrid Inheritance Virtual Base Class, abstract class nesting of classes, constructors in derived classes		
10	**Pointers and Virtual Functions**	**06 Hours**	**15%**
10.1	Introduction, pointer to object, this pointer, pointer to derived class		
10.2	Virtual functions, pure virtual functions		
11	**Managing Console I/O Operations**	**04 Hours**	**5%**
11.1	Introduction, C++ stream, C++ stream classes		
11.2	Unformatted and for matted console I/O Operations		
12	**Working with Files**	**06 Hours**	**10%**
12.1	Introduction, Classes for file stream operations, Opening and closing a file, Detecting End of File		
12.2	File modes, file pointers and their manipulations, Sequential I/O operations		
12.3	Error Handling during File operations, Command-line arguments		

D. Instructional Method and Pedagogy:

- At the beginning, the course delivery pattern, prerequisite of the subject will be discussed.

- Lectures will be conducted with the aids like multi-media projector, black board, OHP etc.

- Attendance is compulsory in lectures and laboratory which carries 5 Marks weightage respectively.

- Two internal exams will be conducted and average of the same will be converted to equivalent of 15 Marks as a part of internal theory evaluation.

- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weightage of 5 Marks as a part of internal theory evaluation.

- Surprise tests/Quizzes/Seminar will be conducted which carries 5 Marks as a part of internal theory evaluation.

- The course includes a laboratory, where students have the opportunity to build appreciation for the concepts being taught in lectures.

- Experiments/Tutorials related to course content will be carried out in the laboratory.

E. Student Learning Outcomes:

After completing this course, the student should demonstrate the knowledge and ability to:

1. Understand object-oriented approach with C++ language.
2. Able to differentiate object oriented approach and procedural approach.
3. Understand the concepts of encapsulation, class, objects, Operator Overloading, function overloading and inheritance.
4. Explain the benefits of object oriented design and understand when it is an appropriate methodology to use.
5. Design object oriented solutions for small systems involving multiple objects.

F. Recommended Study Material:

❖ Text Books:
1. Programming with C++ by E.Balagurusami(TMH-)
2. Object Oriented Programming in Turbo C++ by Robert Lafore (Galgotia-)

❖ **Reference Books:**

1. Let us C++, 3rd Edition by Yashwant Kanetkar, BPB Publication
2. C++ How to program, 8/E by Deitel & Deitel, Prentice Hall
3. C++ Programming Bible, 1st Edition by Al Stevens and Clayton Walnum, Prentice Hall
4. The Complete Reference, 4th Edition by Herbert Schildt, Tata McGraw Hill

❖ **Web Materials:**

1. http://www.cplusplus.com/doc/tutorial/
2. http://www.learncpp.com/
3. http://www.cprogramming.com/tutorial/c++-tutorial.html
4. http://www.tutorialspoint.com/cplusplus/index.htm
5. http://www.dre.vanderbilt.edu/-schmidt/C++/

FACULTY OF TECHNOLOGY & ENGINEERING
CHAMOS MATRUSANSTHA DEPARTMENT OF MECHANICAL ENGINEERING

ME144: ELEMENTS OF ENGINEERING

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	4	2	1	7	5
Marks	100	50	0	150	

A. Objective of the Course:

This course covers the basics of mechanical and civil engineering. The principles and application of the two core branches of engineering is covered along with the fundamentals of engineering drawing. The objectives of the course are to:

1. Introduce the universal language and tool of communication for engineers and understand the concepts, elements & grammar of engineering drawing.

2. Introduce the important aspects and applications of mechanical engineering and explain the working of different mechanical systems.

3. Understand the scope and basic elements of civil engineering.

B. Outline of the course:

Sr. No.	Title of the Unit	Minimum number of hours
Part: A		
1.	Fundamentals of Engineering Graphics	08
2.	Projections & Section of Solid	06
3.	Orthographic Projection	06
4.	Isometric Projections	06
5.	Computer Aided Drafting & Modeling	04
Part: B		
6.	Introduction of Mechanical Engineering	05
7.	Steam and Steam Generator	04
8.	Internal Combustion Engines	03
9.	Refrigeration and Air Conditioning Systems	03

Part: C		
10.	Scope of Civil Engineering	02
11.	Introduction to Surveying	06
12.	Elements of building Construction	07

Total hours (Theory): 60

Total hours (Lab): 30

Total hours (Tutorial): 15

Total hours: 105

C. Detailed Syllabus:

Part: A

1	**Fundamentals of Engineering Drawing**	**08 Hours**	**12%**

1.1 Importance of engineering drawing, drawing instruments and materials, BIS and ISO

1.2 Different types of lines used in engineering practice, methods of projections as per SP 46-1988.

1.3 Engineering Scale.

1.4 Engineering Curve.

2	**Projections & Section of Solid**	**06 Hours**	**10%**

2.1 Projection of solids

2.2 Sectional view

2.3 True shape of Sections

2.4 Auxiliary Inclined Plane (AIP), Auxiliary Vertical Plane (AVP)

3	**Orthographic Projection**	**06 Hours**	**10%**

3.1 Principle projection

3.2 Methods of first and third angle projection with examples / problems

4	**Isometric Projections**	**06 Hours**	**10%**

4.1 Terminology, Isometric scale

4.2 Isometric view and Isometric projection with examples / problems

5	**Computer Aided Drafting & Modeling**	**04 Hours**	**08%**

5.1 Introduction to 2D drafting facilities in CAD software

Part: B

6	**Introduction of Mechanical Engineering**	05 Hours	08%

6.1 Prime movers and its types, Sources of energy

6.2 Basic terminology: Force and mass, Pressure, Work, Power, Energy, Heat, Temperature, Units of heat, Specific heat capacity, Interchange of heat, Change of state, Internal energy, Enthalpy, Entropy, Efficiency

6.3 Zeroth Law and First Law of Thermodynamic, Boyle's law, Charle's law and Combined gas law, Relation between Cp and Cv

7	**Steam and Steam Generator**	04 Hours	07%

7.1 Introduction to steam formation and its types

7.2 Introduction to steam table

7.3 Boiler definition and its classification

7.4 Cochran boiler.

8	**Internal Combustion Engines**	03 Hours	05%

8.1 Introduction

8.2 Basic terminology of I.C. engine

8.3 Types of I. C. Engines

9.	**Refrigeration and Air Conditioning Systems**	03 Hours	05%

9.1 Introduction to refrigeration and air conditioning

9.2 Basic terminology, Principal and application of refrigeration

9.3 Vapour compression refrigeration system,

9.4 Window and split air conditioning systems

Part: C

10.	**Scope of Civil Engineering**	02 Hours	04%

10.1 Scope of Civil Engineering,

10.2 Branches of civil engineering,

10.3 Role of civil engineer

11.	**Introduction to Surveying**	06 Hours	10%

11.1 Definition of surveying,

11.2 Objects of surveying, Uses of surveying,

11.3 Primary divisions of surveying, Principles of surveying,

11.4 List of classification of surveying, Definition: Plan and Map, Scales : Plain scale and Diagonal scale, Conventional Symbols

11.5 Introduction to linear and angular measurements, Concepts of land

profiling

| 12. | Elements of building Construction | 07 Hours | 11% |

12.1   Types of building, Design loads,

12.2   Building components (super structure and substructure),

12.3   Principles of Planning,

12.4   Basics Requirements of a building Planning,

12.5   Types of Residential Building,

D. Instructional Method and Pedagogy:

- At the starting of the course, delivery pattern, prerequisite of the subject will be discussed.

- Lectures will be conducted with the aid of Multi-Media projector, Black Board, OHP etc.

- Attendance is compulsory in lectures and laboratory.

- Internal exams/Unit tests/Surprise tests/Quizzes/Seminar/Assignments etc. will be conducted as a part of continuous internal theory evaluation.

- The course includes a laboratory, where students will get opportunities to build appreciation for the concepts being taught in lectures.

- Experiments/Tutorials related to course content will be carried out in the laboratory.

- In the lectures and laboratory discipline and behavior will be observed strictly.

E. Student Learning Outcomes:

On the completion of the course one should be able to:

1. Understand and interpret various engineering drawing.

2. Learn the concepts and be able to draw engineering scale, engineering curve, projection & section of solid, orthographic and isometric drawing.

3. Understand the overview of computer aided drafting.

4. Understand fundamental principles, theory and applications of mechanical engineering which plays an important role in industries.

5. Learn the formation of different types of steam and utilize it for the boiler.

6. Understand the basics of internal combustion engine, refrigeration and air conditioning system.

7. Understand importance and application of civil engineering.

8. Understand the fundamentals of surveying and be able to carry out simple survey exercise.

9. Learn about different building components, building planning and design of residential building.

F. Recommended Study Material:

❖ **Text Books:**

1. N. D. Bhatt & V. M. Panchal, "Engineering Drawing", Charotar Publishing House Pvt. Ltd.

2. P. J. Shah, "Engineering Graphics", S. Chand Publishing & Co.

3. P.S.Desai, S.B.Soni, "Elements of Mechanical Engineering", Atul Prakashan, Ahmedabad

4. S.M.Bhatt, H.G.Katariya, J.P.Hadiya, "Elements of Mechanical Engineering", Books India Publication, Ahmedabad.

5. Khasia R.B. and Shukla R.N., "Elements of Civil Engineering", Mahajan Publication.

6. Punamia B.C., "Surveying", Vol. I & II.

❖ **Reference Books:**

1. P.B. Patel & P.D. Patel, "Engineering Graphics", Mahajan Publishing House.

2. Arunoday Kumar, "Engineering Graphics", Tech-Max Publication.

3. M.L. Agrawal & R.K. Garg, "Engineering Drawing", Vol. I, Dhanpatrai & Co.

4. Dr. Sadhu Singh, "Elements of Mechanical Engineering", S.CHAND Publication, New Delhi

5. V.K.Manglik, "Elements of Mechanical Engineering", PHI Learning, Delhi.

6. Kandya Anurag, "Elements of Civil Engineering", Charotar Publishing House Pvt. Ltd.

7. Kanetkar T.P. & Kulkarni S.V., "Surveying and Levelling", Vol. I & II.

❖ **Web Materials:**

1. http://nptel.ac.in/courses/112103019/

2. http://www.slideshare.net/search/slideshow?searchfrom=header&q=engineering+drawing

3. http://www.engineering108.com/pages/Engineering_graphics/Engineering_graphics_tutorials_

4. free_download.html

5. https://law.resource.org/pub/in/bis/S01/is.sp.46.2003.pdf

6. http://nptel.ac.in/downloads/112105125/

7. http://www.slideshare.net/allsaintsscience/7th-grade-ch-2-sec-3-behavior-of-gases?qid=75b08741-fb53-4413-b434-5982afe602bf&v=&b=&from_search=12

8. http://www.slideshare.net/Arjun_Dedaniya/properties-of-steam-62226458?qid=fa8777fd-b543-4128-813c-cf3af3b86579&v=&b=&from_search=2

9. http://www.slideshare.net/shanus1/i-c-engines-a-study?qid=69826356-b9ed-4618-9c77-b2d5a3eac2e3&v=&b=&from_search=8

10. http://nptel.ac.in/syllabus/syllabus.php?subjectId=105104101

11. http://nptel.ac.in/courses/105107122/

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FACULTY OF APPLIED SCIENCES
DEPARTMENT OF PHYSICS

PY141: ENGINEERING PHYSICS

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Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	3	2	0	5	4
Marks	100	50	0	150	

A. Objective of the Course:

The main objectives of the subject are

1. To study the basic concepts of physics and engineering applications of physics.
2. To develop physical intuition, mathematical reasoning, and problem solving skills.
3. To prepare students for the necessarily rigorous sequence in physics and engineering.
4. To develop an ability to identify, formulate and solve physics and engineering problems through numerical analysis and laboratory methods.

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Error Analysis	04
2	Wave Motion and Sound	08
3	Modern Optics	09
4	Solid State Physics	10
5	Structure of Materials	07
6	Nano science	07

Total hours (Theory): 45

Total hours (Lab): 30

Total hours: 75

C. Detailed Syllabus:

1	**Error Analysis**	04 Hours	09%

1.1 Introduction and Basic definitions

1.2 Average error, r.m.s. error, probable error and error propagation

1.3 Significant digit and figures

1.4 Numericals

2	**Wave Motion and Sound**	08 Hours	18%

2.1 Propagation of waves, longitudinal and transverse waves, mechanical and non-mechanical waves

2.2 Sound waves, architectural acoustics, classification of sound

2.3 Loudness, Weber-Fechner law, Bel and Decibel

2.4 Absorption coefficient, reverberation, Sabine's formula

2.5 Factors affecting acoustics of buildings and their remedies

2.6 Ultrasonic properties, Production, piezoelectric and magnetostriction method, applications

2.7 Numericals

3	**Modern Optics**	09 Hours	20%

3.1 Lasers and its properties, spontaneous and stimulated emission, population Inversion

3.2 Einstein coefficients

3.3 Gas laser (CO_2 Laser), Solid (Nd – YaG) Laser

3.4 Hologram- Introduction, construction and reconstruction process

3.5 Applications of Lasers

3.6 General ides of optical fibre

3.7 NA of fibre, step index and graded index fibre

3.8 multi-mode and single mode fibre – applications of optical fibre

4	**Solid State Physics**	10 Hours	22%

4.1 Introduction: Conductors and Semiconductors: Band theory of solids

4.2 Energy gap, Fermi energy, electrical conductivity and mobility

4.3 Hall effect

4.4 X-Ray: Properties

4.5	Applications of X-Rays		
4.6	Super conducting materials: Properties		
4.7	Types of super conductors		
4.8	Josephson effects		
4.9	Applications of Super conductors		
4.10	Numericals		
5	**Structure of Material**	**07 Hours**	**16%**
5.1	Introduction: Atomic and molecular structure		
5.2	Crystal structure, crystalline and non-crystalline materials		
5.3	Space lattices and Miller indices		
5.4	Relation between interplanner distance and cubic edge		
5.5	Numericals		
6	**Nano science**	**07 Hours**	**15%**
6.1	Introduction		
6.2	Structure of nanomaterials, examples of nanomaterials		
6.3	Synthesis (qualitative idea only)		
6.4	Properties and applications nanostructured materials		

D. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and laboratory which carries 10 Marks weightage.
- Two internal exams will be conducted and average of the same will be converted to equivalent of 15 Marks as a part of internal theory evaluation.
- Assignment/Surprise tests/Quizzes/Seminar will be conducted which carries 5 Marks as a part of internal theory evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments/Tutorials related to course content will be carried out in the laboratory.

E. Student Learning Outcomes:

On the successful completion of the course:

1. The student would be able to apply the concepts of physics in various branches of engineering.

2. An ability to identify, formulate and solve engineering problems.

3. An ability to use the techniques, skills and modern tools of physics necessary for engineering applications.

4. An ability to design and conduct experiments, analyze and interpret data.

F. Recommended Study Material:

❖ **Text Books:**

1. Vijayakumari, G., Engg. Physics, Vikas Publishing house Pvt. Ltd.

2. Rajagopal, K., Engg. Physics, Prentice Hall of India Pvt. Ltd.

3. Avadhalula, M. N. & Kshirsagar, P. G., A text book of Engg. Physics, S. Chand Pub.

❖ **Reference Books:**

1. Nayak Abhijit, Engg. Physics, S. K. Kataria and Sons Pub.

2. Topping, J., Errors of Observations and their Treatment, 3rd Ed. Chapman and Hall ltd. London

3. Kittle, C., Solid State Physics

4. Resnick and Haliday, Physics Part-I & II, Wiley Eastern publication

5. Beiser Arthur, Concept of Modern Physics

6. Ghatak, Optics, Tata McGraw Hill, 3rd Edition

7. Pillai, S.O., Solid State Physics, Wiley Eastern Ltd.

❖ **Web Materials:**

1. http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Guwahati/engg_physics/index_cont.htm

2. http://ncert.nic.in/html/learning_basket.htm

3. http://science.howstuffworks.com/laser1.htm

4. http://physics-animations.com/Physics/English/optics.htm

5. http://physics-animations.com/Physics/English/waves.htm

6. http://www.epsrc.ac.uk

7. http://www.pitt.edu/~poole/physics.html#light

8. http://de.physnet.net/PhysNet/optics.html

FACULTY OF MANAGEMENT STUDIES
DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

HS121 A: STUDY OF ENGLISH LANGUAGE & LITERATURE

Credits and Hours:

Teaching Scheme	Theory	Practical	Total	Credit
Hours/week	2		2	2
Marks	50	50	100	

A. Objective of the Course:

To help learners to

1. Develop familiarity with and proficiency in English language

2. Learn the use of language at personal, academic and professional fronts

3. Become accomplished, active readers who appreciate ambiguity and complexity, and who can articulate their own interpretations with an awareness and curiosity for other perspectives.

4. Gain a knowledge of the major traditions of literatures, and an appreciation for the diversity of literary, cultural and social voices within

B. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Communicative English • Introduction to Communicative Grammar and Usage • Parts of Speech • Tenses and Moods • Reading Literature for English Language	08
2	Functional English • Introduction to Functional English • English for Personal and Social Use • English for Career and Professional Use	08
3	Literature Text and Appreciation • Introduction to Literature and Appreciation • Appreciation of Prose or Fiction	08

		Appreciation of Poetry	
4	Language, Literature and Contemporary Issues • Language, Culture and Society • Literature and contemporary issues		06

Total hours: 30

C. Instructional Method and Pedagogy:

Teaching will be facilitated by reading material, discussion, task-based learning, projects, assignments and various interpersonal activities like case studies, critical reading, group work, independent and collaborative research, presentations, etc.

- Out of 100 marks, 50 marks are for internal evaluation and 50 marks would be external evaluation.

D. Evaluation:

Internal Evaluation

The students' performance in the course will be evaluated (25 marks for theory and 25 marks for practical) on a continuous basis through the following components:

Theory

Sr. No.	Component	Number	Marks per Incidence	Total Marks
1	Assignment	02	10	20
2			Attendance	5
			Total	25

Practical

Sr. No.	Component	Number	Marks per Incidence	Total Marks
1	Project	01	10	20
2	Term-work	-	10	10
			Attendance	5
			Total	25

External Evaluation

The University examination will be for 50 marks (25 marks for theory and 25 marks for practical). The examination will avoid, as far as possible, direct questions on usage, grammar, errors, etc. and will focus on applications.

Theory

Sr. No.	Component	Number	Marks per Incidence	Total Marks
1	Theory Paper	01	25	25
			Total	25

Practical

Sr. No.	Component	Number	Marks per Incidence	Total Marks
1	Viva	01	25	25
			Total	25

E. Student Learning Outcomes:

At the end of the course, the students should have developed the ability to communicate effectively, they should be able to communicate message accurately, handle intercultural situation that require thoughtful communication, to use appropriate words and tones and so on. They should be able to understand and demonstrate communicative and functional use of English language. They should be able to appreciate literature and understand socio-cultural context.

F. Recommended Study Material:

❖ **Reference Books:**

1. Hurd Stella (2005), Success with Languages , Routledge
2. John Eastwood (2002) Oxford Practice Grammar, Oxford
3. Loiuse Mullany & Peter Stockwell (2010),Introduction to English Language, Routledge
4. Peter Brooker, Raman Saledan& Peter Widowson (2005), Reader's Guide to Contemporary literary theory, Pearson

❖ **Web Materials:**

1. http://www.ocr.org.uk/Images/72885-level-2-functional-skills-english-underpinning-skills-support-material-for-learners.pd