

I B.TECH II SEMESTER SYLLABUS

INTEGRAL CALCULUS AND NUMERICAL TECHNIQUES

II Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5BS03	BSC	L	T	P	C	CIA	SEE	Total
		3	1	-	4	30	70	100
Contact Classes: 44		Tutorial Classes: 08		Practical Classes: Nil		Total Classes: 52		
<p>COURSE OBJECTIVES</p> <p>To learn</p> <ol style="list-style-type: none"> 1. The concepts of finite differences, operators and relations between them. 2. Evaluation of integrals by using numerical methods. 3. Evaluation of the multiple integrals. 4. Fourier series for periodic functions. 5. Fourier transform and inverse transform of common functions. 								
UNIT-I	INTERPOLATION AND CURVE FITTING						Classes: 11	
<p>INTERPOLATION: Finite differences: Forward, Backward and Central differences - Other difference operators and relations between them - Difference of a polynomial – Missing terms - Newton's forward interpolation, Newton's backward interpolation, Gauss's forward and backward interpolation formulae. Interpolation with unequal intervals – Lagrange's interpolation.</p> <p>CURVE FITTING: Method of least squares - Fitting a straight line, second degree parabola and non-linear curves of the form $y = a e^{bx}$, $y = a x^b$, $y = a b^x$ by the method of least squares.</p>								
UNIT-II	NUMERICAL TECHNIQUES						Classes: 11	
<p>ROOT FINDING TECHNIQUES :</p> <p>Bisection method-RegulaFalsi method and Newton Raphson method.</p> <p>NUMERICAL INTEGRATION :</p> <p>Trapezoidal rule - Simpson's one-third rule - Simpson's three-eighth rule.</p> <p>NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: Taylor's series method – Euler's - modified Euler's Method – Runge-Kutta method.</p>								
UNIT-III	MULTIPLE INTEGRALS						Classes: 10	
<p>Double and triple integrals (Cartesian and polar), Change of order of integration in double integrals, Change of variables (Cartesian to polar) in double integrals. Finding the area and volume of a region using double and triple integral.</p>								
UNIT-IV	FOURIER SERIES						Classes:10	

<p>Periodic function-Determination of Fourier Coefficients-Fourier Series-Even and Odd functions-Fourier series in arbitrary interval-Even Odd periodic continuation-Half range Fourier sine and cosine expansions.</p>		
UNIT-V	FOURIER TRANSFORMS	Classes: 10
<p>Fourier integral theorem (statement)-Fourier sine and cosine integrals –Fourier transforms –Fourier sine and cosine transforms-properties- Inverse transforms-Finite Fourier transforms.</p>		
Text Books:		
<ol style="list-style-type: none"> 1. Ervin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006. 2. B.S.Grewal, Higher Engineering Mathematics, Khanna publishers, 36th Edition, 2010. 		
Reference Books:		
<ol style="list-style-type: none"> 1. G.B.Thomas, calculus and analytical geometry,9th Edition, Pearson Reprint 2006. 2. N.P Bali and Manish Goyal ,A Text of Engineering Mathematics,Laxmi publications,2008. 3. E.L.Ince, Ordinary differential Equations,Dover publications,1958. 		
Web references:		
<ol style="list-style-type: none"> 1. https://www.efunda.com/math/math_home/math.cfm 2. https://www.ocw.mit.edu/resources/#Mathematics 3. https://www.sosmath.com/ 		
E -Text Book:		
<ol style="list-style-type: none"> 1. https://www.e-booksdirectory.com/details.php?ebook=10166 		
MOOCS Course:		
<ol style="list-style-type: none"> 1. https://swayam.gov.in/ 2. https://onlinecourses.nptel.ac.in/ 		

COURSE OUTCOMES

At the end of the course, student will be able to:

1. Find Interpolating polynomial for the given tabular data.
2. Solve the first order ordinary differential equations using numerical techniques.
3. Evaluate multiple integrals.
4. Find the Fourier series of the given functions.
5. Find the Fourier transforms of the given functions.

ENGINEERING CHEMISTRY

II Semester								
Course Code:	Category	Hours / Week			Credits	Maximum Marks		
A5BS13	BSC	L	T	P	C	CIA	SEE	Total
		4	0	0	4	30	70	100
Contact Classes: 45	Tutorial Classes: 00	Practical Classes: -00			Total Classes: 45			
Course Objectives								
<p>To learn</p> <ol style="list-style-type: none"> 1. Identifying the electrodes, electrolyte and cell reactions to measure the single electrode potential and pH by using calomel electrode and glass electrode. 2. Analyzing the type of corrosion, factors influencing rate of corrosion on metals and identify suitable corrosion control method. 3. Distinguishing the three types of fuels based on calorific value for selected applications 4. Identify the properties and application of lubricants used in aircraft 5. Analyze the type of adhesive, properties and application of adhesive in aircraft 								
UNIT-I	ELECTROCHEMISTRY						Classes: 10	
Introduction - Electrode potential: Standard electrode potential - Electrochemical series and its importance -Types of electrodes - Calomel electrode - Determination of single electrode potential – Glass electrode (Measurement of pH using glass electrode)								
UNIT-II	CORROSION SCIENCE						Classes: 12	
Corrosion - Chemical: Types of oxide layer - Pilling- Bed worth rule - Electrochemical corrosion: Mechanism (oxygen absorption and hydrogen evolution) - Types of electrochemical corrosion: Galvanic corrosion - Differential aeration corrosion (pitting). Corrosion control: Sacrificial anode – Impressed current method. Protective coatings - Electroplating and Electroless plating								
UNIT-III	HYDROCARBON FUELS						Classes: 08	
Classification of fuels - Manufacturing of synthetic petrol - Calorific value - Measurement of calorific value - Octane number - Calculation of air qualities. Bio-fuel: Composition and Applications. Aviation Fuels								
UNIT-IV	LUBRICANTS						Classes: 07	
Lubricant: Classification: Solid and semisolid lubricants - Liquid lubricants - Lubricant Additives - Functions - Properties - Greases (calcium based, sodium based and lithium based). Grading of lubricants								
UNIT-V	ADHESIVES						Classes: 08	
Introduction - Physical and chemical factors influencing adhesive action - Adhesive Selection - Types of adhesion: Hot-melt adhesives, contact adhesives, solvent type adhesives, dispersed adhesives and pressure-sensitive adhesives - Resin based adhesive (Epoxy and phenolic) - Application in aircraft .								
TEXT BOOKS:								
1. P. C. Jain and Monica Jain, Engineering Chemistry, 16th Edition, Dhanpat Rai Publisher, New								

Delhi, 2013.

2. Dr. Y. Bharathi Kumari, A Text Book of Engineering Chemistry, Revised Edition, 2010.

REFERENCE BOOKS:

1. P. C. Jain and Monica Jain, Engineering Chemistry, 16th Edition, Dhanpat Rai Publisher, New Delhi, 2013.
2. B.R. Puri, L. R. Sharma, M.S. Pathania, "Principles of Physical Chemistry", 41st Edition, Vishal Publishing Co., (2004)
3. R. Mukhopadhy and S. Datta, Engineering Chemistry, New Age International Pvt. Ltd, New Delhi, 2010.

WEB REFERENCES:

1. <https://www.scribd.com/document/23180395/Engineering-Chemistry-Unit-I-Water-Treatment>
2. <https://chem.pg.edu.pl/documents/175289/4235721/Electrochemistry-supplement%20text.pdf>

E -Text Books:

1. <http://www.freebookcentre.net/Chemistry/Chemistry-Books-Online.html>
2. <http://www.freebookcentre.net/Chemistry/ElectroChemistry-Books-Download.html>
3. <http://www.freebookcentre.net/Chemistry/Materials-Chemistry-Books.html>
4. <http://www.freebookcentre.net/Chemistry/Polymer-Chemistry-Books.html>
5. <http://www.freebookcentre.net/chemistry-books-download/Engineering-Chemistry-by-Bharath-Institute-of-Science-and-Technology.html>

MOOCS Course:

1. <https://swayam.gov.in/>
2. <https://onlinecourses.nptel.ac.in/>

COURSE OUTCOMES

at the end of the course, student will be able to:

1. Identify the electrodes, electrolyte and cell reactions to measure the single electrode potential and pH by using calomel electrode and glass electrode
2. Analyze the type of corrosion, factors influencing rate of corrosion on metals and identify suitable corrosion control method
3. Distinguish the three types of fuels based on calorific value for selected applications
4. Identify the properties and application of lubricants used in aircraft
5. Analyze the type of adhesive, properties and application of adhesive in aircraft

PROGRAMMING FOR PROBLEM SOLVING

II Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5CS01	ESC	L	T	P	C	CIA	SEE	Total
		3	-	-	3	30	70	100
Contact Classes: 64		Tutorial Classes: Nil		Practical Classes: Nil		Total Classes: 64		
Course Objectives								
<ul style="list-style-type: none"> • To impart basic knowledge about simple algorithms for arithmetic and logical problems. • To understand how to write a program, syntax and logical errors. • To enable them how to implement conditional branching, iteration and recursion. • To understand how to decompose a problem into functions and synthesize a complete program. • To enable them to use arrays, pointers, strings and structures in solving problems. • To understand how to solve problems related to matrices, Searching and sorting. • To make them to understand the use files to perform read and write operations. 								
UNIT-I	INTRODUCTION						Classes: 12	
<p>Introduction to Programming: Computer system, computer languages, creating and running programs, Algorithms, flowcharts.</p> <p>Introduction to C language: History of C, basic structure of C programs, C tokens, keywords, identifiers, constants, strings, special symbols, variables, data types, I/O statements.</p>								
UNIT-II	OPERATORS, EXPRESSIONS AND CONTROL STRUCTURES						Classes: 15	
<p>Operators and expressions: Operators, arithmetic, relational and logical, assignment operators, increment and decrement operators, bitwise and conditional operators, special operators, operator precedence and associativity, evaluation of expressions, type conversions in expressions.</p> <p>Control structures: Decision statements; if and switch statement; Loop control statements: while, for and do while loops, jump statements, break, continue, goto statements.</p>								
UNIT-III	ARRAYS AND FUNCTIONS						Classes: 17	
<p>Arrays: Concepts, One dimensional array, declaration and initialization of one dimensional arrays, two dimensional arrays, initialization and accessing, multi dimensional arrays, Basic Searching Algorithms: Linear and Binary search</p> <p>Functions: User defined and built-in Functions, storage classes, Parameter passing in functions, call by value, call by reference, Passing arrays to functions, Recursion as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Towers of Hanoi etc.</p>								
UNIT-IV	STRINGS AND POINTERS						Classes: 10	
<p>Strings: Arrays of characters, variable length character strings, inputting character strings, character library functions, string handling functions.</p> <p>Pointers: Pointer basics, pointer arithmetic, pointers to pointers, generic pointers, array of pointers, functions returning pointers, Dynamic memory allocation.</p>								

UNIT-V	STRUCTURES AND FILE HANDLING	Classes: 10
<p>Structures and unions: Structure definition, initialization, accessing structures, nested structures, arrays of structures, structures and functions, self-referential structures, unions, typedef, enumerations.</p> <p>File handling: command line arguments, File modes, basic file operations read, write and append, example programs</p>		
<p>Text Books:</p>		
<ol style="list-style-type: none"> 2. Byron Gottfried, "Programming with C", Schaum's Outlines Series, McGraw Hill Education, 3rd edition, 2017. 2. E. Balagurusamy, "Programming in ANSI C", McGraw Hill Education, 6th Edition, 2012. 		
<p>Reference Books:</p>		
<ol style="list-style-type: none"> 4. W. Kernighan Brian, Dennis M. Ritchie, "The C Programming Language", PHI Learning, 2nd Edition, 1988. 5. Yashavant Kanetkar, "Exploring C", BPB Publishers, 2nd Edition, 2003. 6. Schildt Herbert, "C: The Complete Reference", Tata McGraw Hill Education, 4th Edition, 2014. 7. R. S. Bichkar, "Programming with C", Universities Press, 2nd Edition, 2012. 8. Dey Pradeep, Manas Ghosh, "Computer Fundamentals and Programming in C", Oxford University Press, 2nd Edition, 2006. 9. Stephen G. Kochan, "Programming in C", Addison-Wesley Professional, 4th Edition, 2014. 		
<p>Web References:</p>		
<ol style="list-style-type: none"> 1. https://www.bfoit.org/itp/Programming.html 2. https://www.khanacademy.org/computing/computer-programming 3. https://www.edx.org/course/programming-basics-iitbombayx-cs101-1x-0 4. https://www.edx.org/course/introduction-computer-science-harvardx-cs50x 		
<p>E-Text Books:</p>		
<ol style="list-style-type: none"> 1. http://www.freebookcentre.net/Language/Free-C-Programming-Books-Download.htm 2. http://www.imada.sdu.dk/~svalle/courses/dm14-2005/mirror/c/ 3. http://www.enggnotebook.weebly.com/uploads/2/2/7/1/22718186/ge6151-notes.pdf 		
<p>MOOC Course</p>		
<ol style="list-style-type: none"> 1. https://onlinecourses.nptel.ac.in/noc18_cs33/preview 2. https://www.alison.com/courses/Introduction-to-Programming-in-c 3. http://www.ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s096-effective-programming-in-c-and-c-january-iap-2014/index.htm 		

COURSE OUTCOMES

At the end of the course, student will be able to:

- Formulate simple algorithms for arithmetic and logical problems.
- Test and execute the programs and correct syntax and logical errors.
- Implement conditional branching, iteration and recursion.
- Decompose a problem into functions and synthesize a complete program.
- Use arrays, pointers, strings and structures to formulate algorithms and programs.
- Apply programming to solve problems related to matrices, Searching and sorting.
- Use files to perform read and write operations.

COMMUNICATIVE ENGLISH

II Semester									
Course Code	Category	Hours / Week			Credits	Maximum Marks			
A5HS01	HSMC	L	T	P	C	CIE	SEE	Total	
		2	0	0	2	30	70	100	
Contact Classes: 48	Tutorial Classes: 12	Practical Classes: 00			Total Classes: 60				
OBJECTIVES:									
Student will be able to:									
1- Develop language proficiency with emphasis on Vocabulary, Grammar, Reading and Writing skills.									
2- Apply the theoretical and practical components of English syllabus to study academic subjects more effectively and critically.									
3- Analyze a variety of texts and interpret them to demonstrate in writing or speech.									
4- Write/ compose clearly and creatively, and adjust writing style appropriately to the content, the context, and nature of the subject. L5									
5- Develop language components to communicate effectively in formal and informal situations.									
UNIT-I								Classes: 12	
Reading Skills: "Of Studies" by Francis Bacon- Reading for comprehension Writing Skills: Punctuation, Writing Paragraphs Grammar: Word Families- Nouns, Verbs, Adjectives, Adverbs Vocabulary: The concept of Word Formation, Prefixes and Suffixes									
UNIT-II								Classes: 12	
Reading Skills: "Scientist in Training: The Oxford Years" Stephen Hawking's Biography- Making Inferences Writing Skills: Letter Writing- Letters of Request, Apology and Complaint- Letter of Application with Resume Grammar: Sentence Structures, Tenses Vocabulary: Synonyms and Antonyms, Standard Abbreviations									
UNIT-III								Classes: 12	
Reading Skills: "The Teenage Years' by Sarah Gray- Reading Techniques Writing Skills: Essay writing and Describing Objects, Places and Events Grammar: Preposition, Conjunctions, Articles Vocabulary: Idioms and Phrasal verbs, Technical Vocabulary									
UNIT-IV								Classes: 12	
Reading Skills: "Unlock Your Own Creativity" by Robert Von Oech- Skimming and Scanning of the Text. Writing Skills: Technical Report Writing, E-mail writing, Picture Essay Grammar: Direct and Indirect Speech, Active and passive Voice Vocabulary: One word Substitutes, Words often confused									
UNIT-V								Classes: 12	
Reading Skills: "A Talk on Advertising" by Herman Wouk- Intensive and Extensive Reading Writing Skills: Memo, Précis and Resume Writing Grammar: Common Errors in English, Subject Verb Agreement (Concord) Vocabulary: Misplaced Modifiers, Redundancies									
Text Books:									

1. Michael Swan. Practical English Usage. Oxford University Press. 2017.
2. Wren & Martin. High School English Grammar and Composition Book. S Chand Publishing. 2017

Reference Books:

1. Murphy, R. (2015). Essential Grammar in Use. Cambridge University Press.
2. Wood, F.T. (2007). Remedial English Grammar. Macmillan.
3. Kumar, S and Lata, P. (2018). Communication Skills. Oxford University Press.
4. Zisser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006). Study Writing. Cambridge University Press.

Web References:

1. <http://www.bbc.co.uk/learningenglish>
2. <http://learnenglish.britishcouncil.org>
3. <https://www.cambridgeenglish.org/learning-english/>
4. <https://study.com/academy/subj/english.html>
- 5.

E-Text Books:

1. <https://www.pdfdrive.com/advanced-english-books.html>

MOOC Course

1. <http://nptel.ac.in/courses/109/106/109106067>
2. <https://www.britishcouncil.org/tr/en/english/mooc>

COURSE OUTCOMES:

By the end of this course, students will be able to:

- 1- Construct sentences by using appropriate parts of speech.
- 2- Write letters/paragraphs/reports etc for meaningful professional communication.
- 3- Make use of appropriate vocabulary in both written and spoken contexts.
- 4- Comprehend and analyze different levels of written documents.
- 5- Analyze and correct common errors in spoken and written forms.

PROGRAMMING FOR PROBLEM SOLVING LABORATORY

II Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5CS02	ESC	L	T	P	C	CIA	SEE	Total
		-	-	4	2	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes:36			
COURSE OBJECTIVES:								
<ul style="list-style-type: none"> • To understand how to formulate the algorithms for simple problems • To be able to translate given algorithms to a working and correct program • To make them understand how to correct syntax errors as reported by the compilers • To be able to identify and correct logical errors encountered at run time • To understand how to write iterative as well as recursive programs • To enable them to represent data in arrays, strings and structures • To impart the knowledge of declare pointers of different types and their usage. • To understand how to create, read and write to and from simple text files. 								
LIST OF EXPERIMENTS								
Week-1	INTRODUCTION TO LINUX COMMANDS							
	<ol style="list-style-type: none"> Basic Linux commands Write a C program to use printf() and scanf() functions Write C programs to implement basic arithmetic operations – sum, average, product, difference, quotient and remainder of given numbers etc. 							
Week-2	OPERATORS AND EVALUATION OF EXPRESSIONS							
	<ol style="list-style-type: none"> Write a C program to check whether a number is even or odd using ternary operator. Write a C program to perform the addition of two numbers without using +operator. Write a C program to evaluate the arithmetic expression $((a + b / c * d - e) * (f - g))$. Read the values a, b, c, d, e, f, g from the standard input device. Write a C program to find the sum of individual digits of a 3 digit number. Write a C program to read the values of x and y and print the results of the following expressions in one line: <ol style="list-style-type: none"> $(x + y) / (x - y)$ $(x + y)(x - y)$ 							
Week-3	CONDITIONAL STATEMENTS							
	<ol style="list-style-type: none"> Write a C program to find largest and smallest of given numbers. Write a C program to find roots of a quadratic equation. Write a C program which takes two integer operands and one operator form the user(+,-,*,/,% use switch) 							
Week-4	LOOPING STATEMENTS							
	<ol style="list-style-type: none"> Write a C program to find Sum of individual digits of given integer Write a C program to generate first n terms of Fibonacci series Write a C program to generate prime numbers between 1 and n 							

Week-5	LOOPING STATEMENTS
	<p>a. Write a C Program to find the Sum of Series $SUM=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$</p> <p>b. Write a C program to generate Pascal's triangle.</p> <p>c. Write a C program to generate pyramid of numbers.</p> <pre> 1 1 3 1 1 3 5 3 1 </pre>
Week-6	ARRAYS
	<p>a. Write a C Program to implement following searching methods</p> <ol style="list-style-type: none"> Binary Search Linear Search <p>b. Write a C program to find largest and smallest number in a list of integers</p>
Week-7	ARRAYS
	<p>a. Write a C program</p> <ol style="list-style-type: none"> To add two matrices To multiply two matrices <p>b. Write a C program to find Transpose of a given matrix</p>
Week-8	FUNCTIONS
	<p>a. Write a C program to find the factorial of a given integer using functions</p> <p>b. Write a C program to find GCD of given integers using functions</p> <p>c. Write a C Program to find the power of a given number using functions</p>
Week-9	RECURSION
	<p>a. Write a C Program to find binary equivalent of a given decimal number using recursive functions.</p> <p>b. Write a C Program to print Fibonacci sequence using recursive functions.</p> <p>c. Write a C Program to find LCM of 3 given numbers using recursive functions</p>
Week-10	STRINGS
	<p>a. Write a C program using functions to</p> <ol style="list-style-type: none"> Insert a sub string into a given main string from a given position Delete n characters from a given position in a string <p>b. Write a C program to determine if given string is palindrome or not</p>
Week-11	POINTERS AND STRUCTURES

	<ol style="list-style-type: none"> a. Write a C program to print 2-D array using pointers b. Write a C program to allocate memory dynamically using memory allocation functions (malloc, calloc, realloc, free) c. Write a C Program using functions to <ol style="list-style-type: none"> a. Reading a complex number b. Writing a complex number c. Add two complex numbers d. Multiply two complex numbers d. Note: represent complex number using structure.
Week-12	FILES
	<ol style="list-style-type: none"> a. Write a C program to copy one file to other b. Write a C program to copy one file to other c. Write a C Program to merge two files into a third file
Text Books:	
<ol style="list-style-type: none"> 1. Yashavant Kanetkar, "Let Us C", BPB Publications, New Delhi, 13th Edition, 2012. 2. Oualline Steve, "Practical C Programming", O'Reilly Media, 3rd Edition, 1997. 	
Reference Books:	
<ol style="list-style-type: none"> 1. King KN, "C Programming: A Modern Approach", Atlantic Publishers, 2nd Edition, 2015. 2. Kochan Stephen G, "Programming in C: A Complete Introduction to the C Programming Language", Sam's Publishers, 3rd Edition, 2004. 3. Linden Peter V, "Expert C Programming: Deep C Secrets", Pearson India, 1st Edition, 1994. 	
Web References:	
<ol style="list-style-type: none"> 1. http://www.sanfoundry.com/c-programming-examples 2. http://www.geeksforgeeks.org/c 3. http://www.cprogramming.com/tutorial/c 4. http://www.cs.princeton.edu 	
<p>COURSE OUTCOMES: At the end of the course, student will be able to</p> <ul style="list-style-type: none"> • Formulate the algorithms for simple problems • Translate given algorithms to a working and correct program • Correct syntax errors as reported by the compilers • Identify and correct logical errors encountered at run time • Write iterative as well as recursive programs • Represent data in arrays, strings and structures and manipulate them through a program • Declare pointers of different types and use them in defining self-referential structures. • Create, read and write to and from simple text files. 	

ENGINEERING CHEMISTRY LABORATORY

II Semester								
Course Code:	Category	Hours / Week			Credits	Maximum Marks		
A5BS14	BSC	L	T	P	C	CIA	SEE	Total
		0	0	3	2	30	70	100
Contact Classes: 00	Tutorial Classes: 00	Practical Classes: 39			Total Classes: 39			
Course Objectives								
<p>The course should enable the students to:</p> <p>I. Estimation of hardness, alkalinity and chloride content in water to check its suitability for drinking and industrial purposes.</p> <p>II. Estimation of metal oxide in construction material.</p> <p>III. The measurement of physical properties like adsorption and viscosity.</p> <p>IV. To demonstrate the digital and instrumental methods of analysis.</p>								
LIST OF EXPERIMENTS								
WEEK -1	DETERMINATION OF TOTAL HARDNESS OF WATER BY COMPLEXOMETRIC METHOD USING EDTA							
WEEK-2	DETERMINATION OF ALKALINITY OF GIVEN WATER SAMPLE							
WEEK-3	DETERMINATION OF CHLORIDE CONTENT OF WATER USING ARGENTOMETRIC METHOD							
WEEK-4	ESTIMATION OF AN HCL BY CONDUCTOMETRIC TITRATIONS							
WEEK-5	ESTIMATION OF ACETIC ACID BY CONDUCTOMETRIC TITRATIONS							
WEEK-6	REDOX TITRATIONS BY POTENTIOMETRY							

WEEK-7	DETERMINATION OF VISCOSITY OF A GIVEN LIQUID USING OSTWALD'S VISCOMETER
WEEK-8	DETERMINATION OF SURFACE TENSION OF A GIVEN LIQUID USING STALAGMOMETER
WEEK-9	SYNTHESIS OF THIOKOL RUBBER
WEEK-10	THIN LAYER CHROMATOGRAPHY CALCULATION OF R F VALUES. EG ORTHO AND PARA NITRO PHENOLS
WEEK-11	DETERMINATION OF PERCENTAGE OF CALCIUM OXIDE IN CEMENT
WEEK-12	ESTIMATION OF MANGANESE DIOXIDE IN PYROLUSITE
Reference Books:	
<ol style="list-style-type: none">1. Senior practical physical chemistry, B.D. Khosla, A. Gulati and V. Garg (R. Chand & Co., Delhi).2. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma (Vikas publishing, N. Delhi).3. Vogel's text book of practical organic chemistry 5th edition.4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.	
Web References:	
<ol style="list-style-type: none">1. http://amrita.olabs.edu.in/?sub=73&brch=8&sim=153&cnt=22. https://chem.libretexts.org/Textbook_Maps/Analytical_Chemistry_Textbook_Maps/Map%3A_Analytical_Chemistry_2.0_(Harvey)/11_Electrochemical_Methods/11.2%3A_Potentiometric_Methods	

3. http://fch.upol.cz/skripta/fcc_and_zvem_english/FCH/Adsorption%20of%20oxalic%20acid%20on%20activated%20charcoal.htm

4. <https://www.askiitians.com/iit-jee-chemistry/physical-chemistry/electrolytic-conductance-molar-conductance-and-specific-conductance.aspx>

5. <https://owlcation.com/stem/tlc-thin-layer-chromatography-Principle-Procedure>

COURSE OUTCOMES:

The course should enable the students to:

- I. Determination of parameters like hardness, alkalinity and chloride content in water.
- II. Estimation of metal oxide in construction material.
- III. Determination of physical properties of organic liquids.
- IV. To develop the concept of using instrumental method of analysis.

ENGLISH LANGUAGE AND COMMUNICATION SKILLS LABORATORY

II Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5HS02	HSMC	L	T	P	C	CIE	SEE	Total
		0	0	3	2	30	70	100
Contact Classes: 00	Tutorial Classes: 00	Practical Classes: 39			Total Classes:39			
<p style="color: blue;">COURSE OBJECTIVES:</p> <p>The course should enable the students to:</p> <ol style="list-style-type: none"> 1. Facilitate computer-assisted multi-media instruction enabling individualized and independent language learning. 2. Enhance English language skills, communication skills and to practice soft skills. 3. Improve fluency and pronunciation intelligibility by providing an opportunity for practice in speaking. 4. Get trained in different interview and public speaking skills such as JAM, debate, role play, group discussion etc. 5. Instill confidence and make them competent enough to express fluently and neutralize their mother tongue influence. 								
LIST OF ACTIVITIES								
Week-1	GENERAL INTRODUCTIONS AND FORMAL GREETINGS							
<ol style="list-style-type: none"> a. Introductions and greetings in formal and informal situations b. Worksheets to extract information c. Questionnaires to enquire about the expressions used during formal introductions d. Ice Breaking activity by preparing and asking five questions each e. Creation of dialogues using greetings, leave- taking and introductions 								
Week-2	JAM- JUST A MINUTE							
<ol style="list-style-type: none"> a. Strengthen the ability to analyze a topic and logical organization of thoughts. b. Logically starting with introductory sentence, points of discussion and closing sentence. c. Practicing to speak within one minute d. Activity based on JAM on a familiar topic e. Planning and executing JAM considering the parameters 								
Week-3	LISTENING SKILLS							
<ol style="list-style-type: none"> a. Developing good listening skills for effective communication b. Enhancing listening skills through audio tracks and oral conversation c. Empathizing others point of view while they speak d. Incorporating non verbal communications while listening e. Improving overall performance listening to the audio tracks 								
Week-4	PHONETICS							
<ol style="list-style-type: none"> a. Speech sounds and their prominence in pronunciation b. Understanding and practicing word stress c. Neutralizing the accent and practicing the right intonation d. Knowing the differences between different accents e. Increase fluency with the help of Phonetics 								

Week-5	SITUATIONAL DIALOGUES AND GIVING DIRECTIONS
<ul style="list-style-type: none"> a. Creating dialogues in any given situations b. Framing and choosing appropriate words to frame the dialogues in any situation c. Guiding and giving directions using appropriate expressions d. Activities on how to make polite requests, offers, rejections etc e. Practicing to speak confidently in different situations 	
Week-6	ROLE PLAY
<ul style="list-style-type: none"> a. Understanding a Role play and its procedure b. Planning and Executing a Role Play accordingly c. Practicing to get into the role and perform within stipulated time d. Activities based on Role Play with different situations e. Performing a Role Play considering the parameters 	
Week-7	GROUP DISCUSSIONS
<ul style="list-style-type: none"> a. Understanding a Group Discussion (GD) and its procedure b. Following the rules of a GD c. Planning and Executing a GD within the stipulated time d. Activities based on GD e. Performing a GD considering the parameters 	
Week-8	DEBATE
<ul style="list-style-type: none"> a. Understanding the procedure of a Debate b. Planning and executing a Debate following its rules c. Strengthen the ability to analyze a topic and logical organization of thoughts. d. Logically arranging the arguments e. Performing a Debate considering the parameters 	
Week-9	TELEPHONIC ETIQUETTES
<ul style="list-style-type: none"> a. Understanding basic Telephonic Etiquettes b. The approach one needs to follow while making and answering a call c. Making a formal telephonic conversation d. Activities based on modulating voice and tone e. Interpersonal skills required to overcome rude and hostile behavior 	
Week-10	PRESENTATION SKILLS
<ul style="list-style-type: none"> a. Planning a Presentation b. Enhancing skills required for making effective presentations c. Usage of different tools that help us to give effective presentations d. Executing a presentation effectively e. Activities based on presentations 	
Week-11	ORAL PRESENTATIONS AND EXTEMPORE
<ul style="list-style-type: none"> a. Planning an oral presentation or an Extempore b. Preparing good PPT c. Using appropriate body language in public speaking domain d. Planning and Executing oral presentation e. Activities based on oral presentations and extempore 	

Week-12	INTERVIEW SKILLS
<ul style="list-style-type: none"> a. Preparing to succeed in Interviews b. Preparing a strong Resume for interviews c. Practicing different techniques to overcome nervousness in interviews d. Using appropriate body language in interviews e. Activities based on Interviews skills 	
Week-13	INFORMATION TRANSFER
<ul style="list-style-type: none"> a. Extracting Information Transfer from different kinds of representation b. Reading and decoding the information given in various types c. Representing the information in charts or graphs in a written document d. Developing writing skills from these aspects e. Activity on transferring given data into graphs or charts for presentation skills 	
Reference Books:	
<ol style="list-style-type: none"> 1. Whitby, N. Business Benchmark. Cambridge University Press (with CD) 2nd Edition. 2. Kumar, S. & Lata, P. (2011). Communication Skills. Oxford University Press. 3. Balasubramanian, T. (2008). A Text book of English Phonetics for Indian Students, Macmillan. 4. Thorpe, E. (2006). Winning at Interviews, Pearson Education. 5. Sethi, J. et al. (2005). A Practical Course in English Pronunciation (with CD), Prentice Hall of India. 	
Websites:	
<p> https://www.britishcouncil.org https://www.bbc.co.uk https://www.grammarly.com https://www.fluentu.com https://www.cambridgeenglish.org/exams-and-tests/business-preliminary https://www.cambridgeenglish.org/exams-and-tests/business-vantage </p>	
COURSE OUTCOMES:	
<p>By the end of the course students will be able to</p> <ul style="list-style-type: none"> a) Develop better perception of nuances of English language through audio- visual experience. b) Acquire Neutralization of accent for intelligibility. c) Participate in group activities. d) Employ speaking skills with clarity and confidence which in turn enhances their employability. 	