

E.G.S. PILLAY ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai Accredited by NAAC with 'A' Grade | Accredited by NBA (CSE, EEE, MECH,IT, ECE, CIVIL)

NAGAPATTINAM – 611 002



B.Tech. INFORMATION TECHNOLOGY

First Year – First Semester

Course Code	Course Name	L	T	P	C	Maximum Marks		
						CA	ES	Total
Theory Course								
1901MA102	Engineering Mathematics –I (Calculus and Linear Algebra)	3	2	0	4	40	60	100
1901CH101	Applied Chemistry in Informatics	3	0	0	3	40	60	100
1901GEX03	Programming for Problem Solving	3	0	0	3	40	60	100
1901ENX01	English for Engineers	2	0	0	2	40	60	100
Laboratory Course								
1901GEX52	Computer Programming Lab	0	0	2	1	50	50	100
1901GE151	Engineering Intelligence I	0	0	2	1	100	0	100
1901CHX51	Engineering Chemistry Lab	0	0	2	1	50	50	100
1901HSX51	Communication Skill Lab	0	0	2	1	50	50	100
		11	2	8	16	410	390	800

L – Lecture | T – Tutorial | P – Practical | CA – Continuous Assessment | ES – End Semester

1901MA102

MATHEMATICS – I
(Calculus and Linear Algebra)
(CSE, IT)

L	T	P	C
3	2	0	4

Aim of the course:

- To familiarize the students with differential calculus.
- To develop the use of integration techniques that is needed by engineers for practical applications.
- To familiarize the student with concepts of matrices. This is needed in many branches of engineering.
- To make the students understand the idea of vector spaces and linear transformations.
- To acquaint the student appreciate the purpose of using transforms to create a new domain of the matrix.

PREREQUISITES: BASIC MATHEMATICS

Module 1: Differential Calculus

Curvature in Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature- Evolutes and involutes.

Module 2: Integral Calculus

Double integration – Cartesian and polar coordinates – Change the order of Integration – Applications: Area of a curved surface using double integral – Triple integration in Cartesian co-ordinates – Volume as triple integral.

Module 3: Linear Algebra

Matrices, Vectors: addition and Scalar multiplication, matrix multiplication; Linear systems of equations, linear independence, rank of a matrix, determinants, Cramer's rule, inverse of a matrix, Gauss elimination and Gauss-Jordan methods.

Module 4: Vector Spaces

Vector Space, Linear Independence of Vectors, basis, dimensions; Linear Transformations (maps) range and kernel of a linear map, rank and nullity, Inverse of a linear transformation, rank nullity theorem, composition of linear maps, Matrix associated with a linear map.

Module 5: Matrices

System of Linear Equations; Symmetric, Skew-symmetric and orthogonal matrices - Eigen values and Eigen Vectors ; Diagonalization of Matrices - Reduction of a quadratic form to a canonical form by orthogonal transformation .

Total Hours: 60

COURSE OUTCOMES

After completion of the course, the student will be able to

CO1: Develop the evolutes and envelopes of given curves by means of radius and centre of curvature

CO2: Determine the area and volume of a curve using double and triple integration

CO3: Calculate the inverse and rank of a square matrix and Make use of Matrix Operations to solve the systems of linear equations

CO4: Determine Vector spaces and subspaces using linear independence and span of a set of vectors, basis and dimension.

CO5: Determine the nature of the matrix using Orthogonal Transformation.

REFERENCES BOOKS:

1. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2018.
2. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
3. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
5. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.
6. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
7. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.

1901CH104 APPLIED CHEMISTRY IN INFORMATICS **L T P C**
(for CSE&IT) **3 0 0 3**

Aim of the course: Applied Chemistry in informatics course is designed to provide chemistry and its application to the Computer science and engineering students. The course is a combination of the theoretical concepts and application of the theoretical concepts of chemistry. It includes the study of applications of cell chemistry, material for computers, nano materials, polymers and chem informatics as well as their theoretical parts. The course is designed very efficiently, specifically to support the computer science programme through chemistry .

PREREQUISITES: BASIC CHEMISTRY

MODULE I CELL CHEMISTRY **9 hours**

Cell terminology Cell reactions - Conductors, insulators-Daniel cell-Difference between electrolytic cells and electrochemical cells. Reversible cells and irreversible cells -types- EMF and its applications - Nernst equation (derivation).Single electrode potential - Hydrogen electrode - Calomel electrode - Glass electrode - pH measurement using glass electrode

MODULE II MATERIALS FOR COMPUTERS **9 hours**

Materials for computers and communications - crystalline semiconductors; metalized film conductors; dielectric films; solders; ceramics and polymers. Electronic materials, Semiconductor crystals - Silicon, III-V compounds, Photoresist films, Packaging materials, Photonic materials, Crystalline materials - Epitaxial layers, Optical switching, Optical transmission. NLO and OLED Materials.

MODULE III NANOTECHNOLOGY **9 Hours**

Nanotechnology - Basics - distinction between molecules, nanoparticles and bulk materials; size-dependent properties.Nanoparticles: nano cluster, nano rod, nanotube(CNT) and nanowire. Synthesis: precipitation, chemical vapour deposition, laser ablation; Properties and applications.

MODULE IV POLYMERS **9 Hours**

Introduction: Classification of polymers — Natural and synthetic; Thermoplastic and Thermosetting. Functionality — Degree of polymerization. Addition (Free Radical Mechanism) condensation and copolymerization. Conductive polymers- Fabrication of Plastics. Preparation properties and uses of Nylon66, Teflon, Epoxy resin.

MODULE V CHEMINFORMATICS **9 Hours**

Cheminformatics-Definition — types of Bonds - Bond length- Bond angles - Torsional angles - Ramachandran plot for poly peptides with dihedral angles. Coordinates of atom in a molecule - Conformation - Cambridge structural database - Application— Linear format - SMILEYS notation — MOL format. Similarity search — Sub structure search - Structural keys — Finger print —structure based drug design — protein data bank- Application.

Total: 45 Hours

COURSE OUTCOMES

After completion of the course, the student will be able to

CO1: Describe electrode potential concepts using electro chemical principles

CO2: Illustrate the semiconductor materials and its importance

CO3: Classify the nano materials used for different purposes

CO4: Describe the various polymer materials and its formation

CO5: Discuss the different chemoinformatics tools used

REFERENCE:

1. Jain and Jain, "Engineering Chemistry", Sixteenth edition, Dhanpatrai publications, 2012.
2. Dara S.S, Umare S.S, "Engineering Chemistry", S. Chand & Company Ltd., New Delhi 2010.
3. Sivasankar B., "Engineering Chemistry", Tata McGraw-Hill Publishing Company, Ltd., New 2015.
4. Kannan P. and Ravikrishnan A., "Engineering Chemistry", Sri Krishna Hi-tech Publishing Company Pvt. Ltd.Chennai, 2009
5. Peter Atkins and Julio de Paula, "Physical Chemistry", VII Edition, Oxford University Press, New York, 2002
6. <https://www.electrical4u.com/classification-of-electrical-conducting-material>
7. [https://en.wikipedia.org/wiki/Ramachandran lot](https://en.wikipedia.org/wiki/Ramachandran_lot)
8. Wiki online sources

PROGRAMMING FOR PROBLEM SOLVING (Common for all B.E./B.Tech Programme)	L 3	T 0	P 0	C 3
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1901GEX03

COURSE OBJECTIVES:

- 1.To prepare students to comprehend the fundamental concepts
- 2.To demonstrate fine grained operations in number system
- 3.To gain exposure in programming language using C
- 4.To develop programming skills using the fundamentals and basics of C Language

MODULE I INTRODUCTION TO PROGRAMMING 9 Hours

Components of Computers and its Classifications- Problem Solving Techniques – Algorithm- Flowchart– Pseudo code – Program-Compilation -Execution

MODULE II BASICS OF C PROGRAMMING 9 Hours

Structure of C program - C programming: Data Types – Storage classes - Constants – Enumeration Constants - Keywords – Operators: Precedence and Associativity - Expressions - Input/output statements – Decision making statements - Switch statement - Looping statements – Pre-processor directives.

MODULE III ARRAYS AND STRINGS 9 Hours

Introduction to Arrays: Declaration, Initialization – One dimensional array – Two dimensional arrays – Example Program: Matrix Operations - String operations

MODULE IV FUNCTIONS AND POINTERS 9 Hours

Introduction to functions: Function prototype, function definition, function call, Built-in functions – Recursion – Example Program – Pointers – Pointer operators – Pointer arithmetic – Arrays and pointers – Array of pointers – Example Program: Sorting of names – Parameter passing: Pass by value, Pass by reference – Example Program: Swapping of two numbers and changing the value of a variable using pass by reference

MODULE V STRUCTURES & FILE PROCESSING 9 Hours

Structure - Nested structures – Pointer and Structures – Array of structures – Example Program using structures and pointers – Dynamic memory allocation -Files – Types - File processing: Sequential access, Random access -Command line arguments

TOTAL: 45 HOURS

FURTHER READING:

Object Oriented Programming Approach.

COURSE OUTCOMES:

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

CO1: Describe basic concepts of computers

CO2: Paraphrase the operations of number system

CO3: Describe about basic concepts of C-Language

CO4: Understand the code reusability with the help of user defined functions

CO5: Analyze the structure concept, union, file management and preprocessor in C language

REFERENCES:

1. Paul Deitel and Harvey Deitel, —C How to Programl, Seventh edition, Pearson Publication
2. Juneja, B. L and Anita Seth, —Programming in Cll, CENGAGE Learning India pvt. Ltd., 2011
3. Pradip Dey, Manas Ghosh, —Fundamentals of Computing and Programming in Cl, First Edition, Oxford University Press, 2009.
4. Anita Goel and Ajay Mittal, —Computer Fundamentals and Programming in Cl, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
5. Byron S. Gottfried, "Schaum's Outline of Theory and Problems of Programming with C",McGraw-Hill Education, 1996.

1901ENX01	ENGLISH FOR ENGINEERS	L	T	P	C
	(Common for all B.E./B.Tech. Programme)	3	0	0	3

MODULE I FOCUS ON LANGUAGE (Vocabulary and Grammar) 9 Hours

Vocabulary -The Concept of Word Formation - Prefixes- Suffixes- Synonyms – Antonyms - Grammar - Articles- Preposition- Adjective-Adverb-Connectives -Tenses (present, past & future) - Conditional Clauses - Active voice –passive voice and Impersonal passive voice - Wh- Questions.

MODULE II LISTENING SKILLS 9 Hours

Listening-Types of Listening -listening to short or longer texts- listening and Note taking- -formal and informal conversations- telephonic etiquettes- narratives from different sources. - Correlative verbal and nonverbal communication - listening to panel members (how to response to panel members after listening panel members) – listening to facing online interviews (or) interviews on video conferencing mode - listening webinars.

MODULE III SPEAKING SKILL 9 Hours

Speaking - Stress and intonation –Communication skills- Role of ICT in Communication, -Process of communication- oral presentation skills- verbal and non verbal communication-individual and group presentations- impromptu presentation- public speaking- Group discussion- speaking to the panel members (online interviews , video conferencing, online meeting and webinars.

MODULE IV READING SKILLS 9 Hours

Reading– Intensive Reading –Predicting the content -Comprehending general and technical articles -Cloze reading - Inductive reading- Short narrative and descriptions from newspapers – Skimming and scanning-reading and interpretation-critical reading interpreting and transferring graphical information- sequencing of sentences- analytical reading on various Projects.

MODULE V WRITING SKILLS 9 Hours

Writing- Precise writing –Summarizing- Interpreting visual texts (pie chart, bar chart, picture, advertisements etc., - Proposal writing (launching new units or department in a institution or industry & to get loan from bank) -Report writing (accident, progress, project, survey, Industrial visit)- job application- e- mail drafting- letter writing (permission, accepting and decaling)- e.mail drafting instructions – recommendations –checklist- uses of Print and electronic media (internet, fax, mobile, interactive video and teleconferencing, computer) e-governance.

TOTAL: 45 HOURS

REFERENCES:

1. Raman, Meenakshi and Sangeetha Sharma, “Technical Communication: Principles and Practice”, Oxford University Press, New Delhi, 2011.
2. Rizvi and Ashraf M., “Effective Technical Communication”, Tata McGraw-Hill, New Delhi, 2005.
3. G. Radhakrishna Pillai, “English for Success”, Central Institute of English and Foreign Languages”, Emerald Publishers ,Hyderabad, 2003
4. Jones, D, “The Pronunciation of English”, CUP, . Cambridge,2002.

1901GEX52	COMPUTER PROGRAMMING LAB (Common for all B.E./B.Tech. Programme)	L 0	T 0	P 2	C 1
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List of Experiments:

1. Working with word and style sheets
2. Write a C program to implement basic concepts
3. Write a C program to implement Decision Making and Branching statements
4. Write a C program to implement looping statements
5. Write a C program to implement Arrays
6. Write a C program to implement Strings
7. Write a C program to implement pointers
8. Write a C program to implement Structures
9. Write a C program to work with files in C

Total: 45 Hours

References:

1. Paul Deitel and Harvey Deitel, —C How to Program, Seventh edition, Pearson Publication
2. Juneja, B. L and Anita Seth, —Programming in C, CENGAGE Learning India Pvt. Ltd., 2011
3. Pradip Dey, Manas Ghosh, —Fundamentals of Computing and Programming in C, First Edition, Oxford University Press, 2009.
4. Anita Goel and Ajay Mittal, —Computer Fundamentals and Programming in C, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
5. Byron S. Gottfried, "Schaum's Outline of Theory and Problems of Programming with C", McGraw-Hill Education, 1996.

1901GE151	ENGINEERING INTELLIGENCE I	L	T	P	C
	(Common for all B.E./B.Tech. Programme)	0	0	2	1

MODULE I BEHAVIORAL CHANGES – TRANSITION OF SCHOOL TO COLLEGE 6 Hours

Vocabulary -The Concept of Word Formation - prefixes- suffixes- Synonyms – Antonyms - Grammar - Articles-Preposition- Adjective-Adverb-connectives -Tenses (present, past & future) - Sentence pattern-types of sentences -Active voice –passive voice and Impersonal passive voice - Wh- Questions.

MODULE II EXPOSURE TO INDIVIDUAL COMPETANCE 6 Hours

Listening- listening intently-arousing and sustaining interest-listening to short or longer texts- formal and informal conversations- telephonic etiquettes- narratives from different sources. -listening and Note taking- correlative verbal and nonverbal communication-listening to TOEFL & IELTS programs-listening to Project presentation- listening to technical seminar and conferences.

MODULE III CAREER PLANNING 6 Hours

Speaking - stress and intonation –persuasive speaking -Describing person, place and thing - sharing personal information — greetings –taking leave -Individual and Group Presentation-impromptu Presentation-public speaking-Group Discussion- project planning-facing viva voce and delivering project.

MODULE IV INTRODUCTION TO COMMUNICATION SKILLS 6 Hours

Reading– comprehending general and technical articles -cloze reading - inductive reading- short narrative and descriptions from newspapers – Skimming and scanning-reading and interpretation-critical reading interpreting and transferring graphical information- sequencing of sentences-analytical reading on various Projects.

MODULE V COMMUNICATION EXERCISE-1 6 Hours

Writing- Precise writing –Summarizing- interpreting visual texts (pie chart, bar chart, picture - advertisements etc., - Proposal writing (launching new units or department in a institution or industry & to get loan from bank) -report writing (accident, progress, project, survey, Industrial visit)- job application-e-mail drafting- letter writing (permission, accepting and decaling)-instructions – recommendations –checklist

TOTAL: 30 HOURS

Course Outcomes:

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

CO1: Apply their knowledge and skill to engineering field

CO2: Understand the value of individual competence

CO3: Apply their skill to career planning and team work

CO4: Illustrate verbal and non verbal skills

CO5: Use various communication skill exercise to write and interpret the contents

REFERENCES:

1. Dr.P.Prasad(2012) “The Functional Aspects of COMMUNICATION SKILLS”;fifth Edition;S.K Kataria & Sons Publication
2. Kalyana; (2015) “Soft Skill for Managers”; First Edition; Wiley Publishing Ltd.
3. Aruna Koneru (2008) “Professional Communication”; Second edition; Tata McGraw-Hill Publishing Ltd.

1901CHX51

ENGINEERING CHEMISTRY LAB
(Common for all B.E./B.Tech. Programme)

L	T	P	C
0	0	2	1

List of Experiments:

1. Determination of total, temporary & permanent hardness of water by EDTA method
2. Determination of strength of given hydrochloric acid using pH meter
3. Estimation of iron content of the given solution using potentiometer
4. Estimation of sodium present in water using flame photometer
5. Corrosion experiment – weight loss method
6. Determination of molecular weight of a polymer by viscometer method
7. Conductometric titration of strong acid Vs strong Base
8. Estimation of dissolved oxygen in a water sample/sewage by Winkler's method.
9. Comparison of alkalinities of the given water samples
10. Determination of concentration of unknown colored solution using spectrophotometer
11. Determination of percentage of copper in alloy
12. Determination of ferrous iron in cement by spectrophotometry method
13. Adsorption of acetic acid on charcoal
14. Determination the flash point and fire point of a given oil using pen skyMartine closed cup apparatus
15. Determination the calorific value of solid fuels
16. Determination the structural of the compound using chemo software.

Total: 45 Hours

References:

1. Furniss B.S. Hannaford A.J, Smith P.W.G and Tatchel A.R., "Vogel's Textbook of practical organic chemistry", LBS Singapore (1994).
2. Jeffery G.H., Bassett J., Mendham J. and Denny vogel's R.C, "Text book of quantitative analysis chemical analysis", ELBS 5th Edn. Longman, Singapore publishers, Singapore, 1996.
3. Daniel R. Palleros, "Experimental organic chemistry" John Wiley & Sons, Inc., New Yor (2001).
4. Kolthoff I.M., Sandell E.B. et al. "Quantitative chemical analysis", Mcmillan, Madras 1980.

1901HSX51

COMMUNICATION SKILLS LAB
(Common to all B.E./B.Tech. Programme)

L	T	P	C
0	0	2	1

List of Experiments:

1. Activities on Fundamentals of Listening and Inter-personal Communication (6)

Listening to conversation, listening to technical presentation- listening to online video conferencing ,interviews and webinars -starting a conversation - responding appropriately and relevantly - using appropriate body language - Role Play in different situations & Discourse Skills- using visuals.

2. Activities on Reading Comprehension (6)

General Vs Local comprehension- reading for facts- guessing meanings from context- Scanning- skimming and inferring meaning- critical reading & effective googling- TOFEL,IELTS-reading online journals.

3. Activities on Writing Skills (6)

Structure and presentation of different types of writing - letter writing - Resume writing-e- correspondence - Proposal writing - Technical report writing - Portfolio writing - planning for writing - improving one's writing.

4. Activities on Presentation Skills (6)

Oral presentations (individual and group) through JAM sessions – presentation on online platform (webinars, online meeting) - seminars -PPTs and written presentations through posters- projects- report- e-mails- assignments etc.- creative and critical thinking.

5. Activities on Soft Skills (6)

Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre- interview planning, opening strategies, answering strategies, interview through tele-conference & video-conferencing and Mock Interviews-Time management-stress management –paralinguistic features- Multiple intelligences – emotional intelligence – spiritual quotient (ethics) – intercultural communication – creative and critical.

Total: 30 Hours

References:

1. Raman, Meenakshi and Sangeetha Sharma, “Technical Communication: Principles and Practice”, Oxford University Press, New Delhi, 2011.
2. Sudha Rani, D , “Advanced Communication Skills Laboratory Manual” , Pearson Education 2011.
3. Paul V. Anderson ,“Technical Communication”,. Cengage Learning pvt. Ltd. New Delhi, 2007.
4. “English Vocabulary in Use series”, Cambridge University Press 2008.
5. “Management Shapers Series” ,Universities Press (India) Pvt Ltd., Himayatnagar, Hyderabad 2008.
6. Rizvi and Ashraf M., “Effective Technical Communication”, Tata McGrawHill, New Delhi, 2005.
7. Jones, D, “The Pronunciation of English”, CUP, . Cambridge,2002.

