

# 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)

NAGAPATTINAM – 611 002



## B.E. COMPUTER SCIENCE AND ENGINEERING

First Year – First Semester

Course Code	Course Name	L	T	P	C	Maximum Marks		
						CA	ES	Total
<b>Theory Course</b>								
1901MA102	Engineering Mathematics –I (Calculus and Linear Algebra)	3	2	0	4	40	60	100
1901CH104	Applied Chemistry in Informatics	3	0	0	3	40	60	100
1901GEX03	Programming for Problem Solving	3	2	0	4	40	60	100
1901ENX01	English for Engineers	3	0	0	3	40	60	100
<b>Laboratory Course</b>								
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	100	-	100
1901HSX51	Communication Skills Lab	0	0	2	1	50	50	100
		<b>11</b>	<b>1</b>	<b>8</b>	<b>16</b>	<b>470</b>	<b>330</b>	<b>800</b>

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

<b>1901MA102</b>	<b>ENGINEERING MATHEMATICS –I</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>(CALCULUS AND LINEAR ALGEBRA)</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>
	<b>(Common for CSE &amp; IT Programme)</b>				

**MODULE I DIFFERENTIAL CALCULUS 9 Hours**

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

**MODULE II INTEGRAL CALCULUS 9 Hours**

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 III LINEAR ALGEBRA 9 Hours**

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 elimination.

**MODULE IV VECTOR SPACES 9 Hours**

Vector Space, linear dependence of vectors, basis, dimension; 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 V MATRICES 9 Hours**

System of linear equations - Symmetric, skew-symmetric and orthogonal matrices - Eigen values and Eigen vectors - Diagonalization of matrices - Orthogonal transformation.

**TOTAL: 45 HOURS**

**REFERENCES:**

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, 11<sup>th</sup> 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.

<b>1901CH104</b>	<b>APPLIED CHEMISTRY IN INFORMATICS</b> (Common for CSE & IT Programme)	<b>L</b> <b>3</b>	<b>T</b> <b>0</b>	<b>P</b> <b>0</b>	<b>C</b> <b>3</b>
------------------	--	----------------------	----------------------	----------------------	----------------------

**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**

Metrics : Metrics in process and project domains - Software measurement - Metrics for software Quality - Integrating metrics in a software engineering process - Estimation , Scheduling – Risk Management – Review Techniques - Software quality assurance.

**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**

**REFERENCES:**

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. Gowariker V.R., Viswanathan N.V. and JayadevSreedhar, “Polymer Science”, New Age
5. Kannan P. and Ravikrishnan A., “Engineering Chemistry”, Sri Krishna Hi-tech Publishing Company Pvt. Ltd. Chennai, 2009
6. Peter Atkins and Julio de Paula, “Physical Chemistry”, VII Edition, Oxford University Press, New York, 2002
7. <https://www.electrical4u.com/classification-of-electrical-conducting-material>
8. [https://en.wikipedia.org/wiki/Ramachandran\\_plot](https://en.wikipedia.org/wiki/Ramachandran_plot)
9. **Wiki online sources**

<b>1901GEX03</b>	<b>PROGRAMMING FOR PROBLEM SOLVING</b> (Common for all B.E./B.Tech Programme)	<b>L</b> <b>3</b>	<b>T</b> <b>0</b>	<b>P</b> <b>3</b>	<b>C</b> <b>4</b>
------------------	--	----------------------	----------------------	----------------------	----------------------

**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**

**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.

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

**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) - Sentence pattern- types of sentences -Active voice –passive voice and Impersonal passive voice - Wh- Questions.

**MODULE II LISTENING SKILLS 9 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 SPEAKING SKILLS 9 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 READING SKILLS 9 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 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)-instructions – recommendations –checklist

**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.

<b>1901GEX52</b>	<b>COMPUTER PROGRAMMING LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>(Common for all B.E./B.Tech. Programme)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**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.

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

**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**

**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.

<b>1901CHX51</b>	<b>ENGINEERING CHEMISTRY LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>(Common for all B.E./B.Tech. Programme)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**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.



<b>1901HSX51</b>	<b>COMMUNICATION SKILLS LAB</b> <b>(Common to all B.E./B.Tech. Programme)</b>	<b>L</b> <b>0</b>	<b>T</b> <b>0</b>	<b>P</b> <b>2</b>	<b>C</b> <b>1</b>
------------------	--	----------------------	----------------------	----------------------	----------------------

**List of Experiments:**

**1. Activities on Fundamentals of Inter-personal Communication**

Starting a conversation - responding appropriately and relevantly - using the right body language - Role Play in different situations & Discourse Skills- using visuals.

**2. Activities on Reading Comprehension**

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

**3. Activities on Writing Skills**

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**

Oral presentations (individual and group) through JAM sessions / seminars / PPTs and written presentations through posters/ projects/ reports/ e-mails/ assignments etc.- creative and critical thinking.

**5. Activities on Soft Skills**

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:**

**45 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.