SEMESTER I									
Course Code	**Course Name**	**L**	**T**	**P**	**C**	**Maximum Marks**			**Category**
						CA	**ES**	**Total**	
Theory Course									
1901MA104	Engineering Mathematics –I (Linear Algebra, Calculus and Partial differentiation)	3	1	0	4	40	60	100	BSC
1901CH103	Chemistry for Biomedical Engineering	3	0	0	3	40	60	100	BSC
1901GEX03	Programming for Problem Solving	3	0	0	3	40	60	100	ESC
1901ENX01	English for Engineers	2	0	0	2	40	60	100	HSSC
Laboratory Course									
1901GEX52	Computer Programming Laboratory	0	0	2	1	50	50	100	BSC
1901GE151	Engineering Intelligence I	0	0	2	1	100	0	100	HSSC
1901CHX51	Engineering Chemistry Laboratory	0	0	2	1	50	50	100	BSC
1901HSX51	Communication Skill Laboratory	0	0	2	1	50	50	100	HSSC
Total		**11**	**1**	**8**	**16**	**410**	**390**	**800**	

Batch: 2019-2023 (Admitted from 2019 onwards)

SEMESTER II									
Course Code	**Course Name**	**L**	**T**	**P**	**C**	**Maximum Marks**			**Category**
						CA	**ES**	**Total**	
Theory Course									
1901MA204	Engineering Mathematics–II (Calculus, Ordinary Differential Equations and Complex Variable)	3	2	0	4	40	60	100	BSC
1901PH202	Semiconductor Physics and Optoelectronics	3	0	0	3	40	60	100	ESC
1901GEX01	Basic Electrical and Electronics Engineering	3	0	0	3	40	60	100	ESC
1901GEX02	Engineering Graphics	2	0	2	3	50	50	100	ESC
1901GE201	Engineering Exploration	2	0	0	2	100	0	100	ESC
Laboratory Course									
1901GE254	Computer Hardware and IT Essentials Laboratory	0	0	2	1	50	50	100	ESC
1901GE252	Engineering Intelligence - II	0	0	2	1	100	0	100	HSSC
1901GEX51	CAD Laboratory	0	0	2	1	50	50	100	ESC
1901GEX53	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1	50	50	100	ESC
1901PHX51	Engineering Physics Laboratory	0	0	2	1	50	50	100	ESC
Total		13	2	12	20	570	430	1000	

SEMESTER III									
Course Code	**Course Name**	**L**	**T**	**P**	**C**	**Maximum Marks**			**Category**
						CIA	**ES**	**Total**	
Theory Course									
1901MA301	Engineering Mathematics III (Linear Algebra and Vector Calculus)	3	2	0	4	40	60	100	BSC
1902CS306	Object Oriented Programming and Data Structure	3	0	0	3	40	60	100	ESC
1902BM301	Fundamentals of Biochemistry	3	0	0	3	40	60	100	PC
1902BM302	Bio medical Circuits and Networks	3	2	0	4	40	60	100	PC
1902BM303	Biosensors and Measurements	3	0	0	3	40	60	100	PC
1902BM304	Human Anatomy and Physiology	3	0	0	3	40	60	100	PC
Laboratory Course									
1902BM351	Devices and Circuits Laboratory	0	0	2	1	50	50	100	PC
1902BM352	Biochemistry and Human Physiology Laboratory	0	0	2	1	50	50	100	PC
1902CS351	C++ and Data Structures Laboratory	0	0	2	1	50	50	100	ESC
1904GE351	Life Skills: Verbal Ability	0	0	2	1	100	-	100	EEC
Audit Course									
1901MCX02	Constitution of India	2	0	0	0	100	0	100	MC
Total		**20**	**4**	**8**	**24**	**590**	**510**	**1100**	

SEMESTER IV									
Course Code	**Course Name**	**L**	**T**	**P**	**C**	**Maximum Marks**			**Category**
						CIA	**ES**	**Total**	
Theory Course									
1901MA401	Probability Theory and Stochastic Processes	3	2	0	4	40	60	100	BSC
1902BM401	Biomechanics	3	0	0	3	40	60	100	PC
1902BM402	Basics of Pathology and Microbiology	3	0	0	3	40	60	100	PC
1902BM403	Control Systems	3	0	0	3	40	60	100	PC
1902BM404	Biomedical Instrumentation	3	0	0	3	40	60	100	PC
1902BM405	Digital Electronics and Integrated Circuits	3	0	0	3	40	60	100	PC
Laboratory Course									
1902BM451	Pathology and Microbiology Laboratory	0	0	2	1	50	50	100	PC
1902BM452	Biomedical Instrumentation Laboratory	0	0	2	1	50	50	100	PC
1902BM453	Analog and Digital Integrated Circuits Laboratory	0	0	2	1	50	50	100	PC
1904GE451	Life Skills: Verbal Reasoning	0	0	2	1	100	-	100	EEC

Audit Course									
1901MCX01	Environmental Science	2	0	0	0	100	0	100	MC
Total		**20**	**2**	**8**	**23**	**490**	**510**	**1100**	

Humanities and Social Science(HSS)

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 - Resumewriting- 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.

Engineering Science(ES)

1901GEX01	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (Common for all UG programmes, except BE- EEE)	L	T	P	C
		3	0	0	3

Aim of the course: To study about the fundamentals of Electrical, Electronics and Communication Engineering

PREREQUISITES:

COURSE CONTENTS

Introduction to DC and AC circuits: Ohms law - Kirchhoff's laws - Mesh analysis - Nodal analysis - Generation of AC waveforms - Analysis of R-L, R-C, R-L-C circuits - Introduction to three phase systems - Types of connections.

Electrical Machines: DC Generator, DC Motor, Transformer, Induction Motor: Working principle, construction and applications.

Measuring instruments: Classification of instruments; Voltmeter, Ammeter, Wattmeter, Energy meter, Multimeter, CRO: Principles and operation.

Semiconductor devices: V-I characteristics of PN junction diode and Zener diode; Rectifiers - Half wave and full wave rectifiers; BJT - configurations; Amplifiers & Oscillators: classification, operation and applications; SCR: Construction and V-I characteristics; Basic power converters (Block diagram approach only).

Digital systems: Boolean algebra - Reduction of Boolean expressions - De-Morgan's theorem - Logic gates - Implementation of Boolean expressions.

Communication Systems: Model of communication system - Analog and digital, Wired and wireless channel - Block diagram of various communication systems - Microwave, satellite, optical fiber and cellular mobile system.

Electrical safety and wiring: Safety measures in electrical system - Safety devices - types of wiring - Wiring accessories- staircase, fluorescent lamps and corridor wiring - Basic principles of earthing - Types of earthing - layout of generation,
transmission and distribution of power (Single line diagram).

COURSE OUTCOMES

Upon completion of this course, students will be
able to1.Solve very simple problems in DC and
AC circuits
2.Explain the construction and principle of operation of DC and AC machines
3.Describe the operation of simple electrical measuring instruments
4.Elucidate the characteristics of diode, Zener diode, BJT, SCR and their
applications5.Implement Boolean expressions using logic gates
6.Explain the operation of functional blocks of various communication systems
7.Summarize the electrical safety systems and electrical wiring procedures

REFERENCES (BOOKS):

1. Smarajit Ghosh, "Fundamentals of Electrical and Electronics Engineering", 2nd Edition, PHI Learning, 2010.
2. R. Muthusubramaniam, S. Salaivahanan and K.A. Mureleedharan, "Basic Electrical Electronics and Computer Engineering", Tata McGraw Hill, 2004.
3. D.P. Kothari and I.J. Nagrath, "Theory and Problems of Basic Electrical Engineering", PHI learning, New Delhi, 2004.
4. J.B. Gupta, "Fundamentals of Electrical Engineering and Electronics", S.K. Kataria and Sons, Reprint 2012 Edition.
5. R.L. Boylestad and L. Nashelsky, "Electronic Devices and Circuit Theory", Pearson, 11th Edition, 2013.
6. George Kennedy and Bernard Davis, "Kennedy's Electronic communication Systems", McGraw Hill Education, 5th Edition, 2011.
7. Donald P. Leach, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications", McGraw-Hill Education, 8th Edition, 2014.

REFERENCES (WEBSITES):

1. https://nptel.ac.in/courses/108108076/
2. https://nptel.ac.in/downloads/108105053/
3. https://nptel.ac.in/courses/117103063/
4. https://nptel.ac.in/courses/117102059/

Engineering Science(ES)

1902CS306	OOPs & Data Structures (Common to B.E / B.Tech-All branches)	L	T	P	C
		3	0	0	3

Course Objectives:

1. To comprehend the fundamentals of object oriented programming, particularly in C++.
2. To use object oriented programming to implement data structures.
3. To introduce linear, non-linear data structures and their applications.

Unit I	**OBJECT ORIENTED PROGRAMMING**	9Hours

Evolution of Programming methodologies - Introduction to OOP -Basic features - Structure of C++ Program- Compiling and Executing C++ Program - Data types - Operators - Expressions - Control statements & Iteration statements in C++ - Arrays-Structures-Pointers

Unit II	**FUNCTIONS & CONSTRUCTORS**	9Hours

Functions - Passing Data to Functions - Scope and Visibility of variables in Functions - Dynamic Binding - data members - member functions - this Pointer - Friend Functions - Friend Classes - Constructors and Destructors.

Unit III	**LINEAR DATA STRUCTURES**	9 Hours

Abstract Data Types (ADTs) – List ADT – array-based implementation – linked list implementation — singly linked lists –Polynomial Manipulation - Stack ADT – Queue ADT - Evaluating arithmetic expressions

Unit IV	**NON-LINEAR DATA STRUCTURES**	9 Hours

Trees – Binary Tree-Binary search trees -Tree traversal -Expression manipulation -Symbol table construction - AVL trees: Rotation, Insertion, Deletion,–Red black tree – Graph and its representations – Graph Traversals – Representation of Graphs – Breadth-first search – Depth-first search - Connected components.

Unit V	**SORTING and SEARCHING**	9 Hours

Sorting Techniques-Selection, Bubble, Insertion, Merge, Heap, Quick, and Radix sort -Address calculation - Linear search -Binary search -Hash table methods.

	Total:	**45 Hours**

Further Reading:

JAVA Program

Advanced Sorting Algorithms.

Course Outcomes:

After completion of the course, Student will be able to

1. Understand the various programming methodologies and OOPs Concepts.
2. Understand the scope of Functions in Real time Problems.
3. Design algorithms to solve real life problems using data structures
4. Recognize the usage of Non-Linear Data structures such as Binary Search tree, AVL search tree and Heap tree in applications
5. Analyze various sorting and searching algorithms

References:

1. Deitel and Deitel, —C++, How To Program‖, Seventh Edition, Pearson Education, 2013.
2. Mark Allen Weiss, –Data Structures and Algorithm Analysis in C++‖, Fourth Edition, Addison-Wesley, 2013.
3. Bhushan Trivedi, –Programming with ANSI C++, A Step-By-Step approach‖, Oxford University Press, 2010.
4. Goodrich, Michael T., Roberto Tamassia, David Mount, –Data Structures and Algorithms in C++‖, 7th Edition, Wiley. 2016.
5. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Third Edition, Mc Graw Hill, 2009.
6. Bjarne Stroustrup, —The C++ Programming Language‖, 3rd Edition, Pearson Education, 2007.
7. Ellis Horowitz, Sartaj Sahni and Dinesh Mehta, —Fundamentals of Data Structures in C++‖, Galgotia Publications, 2007.

Employability Enhanced Course Project Seminar Internship (EEE / PSI)

1904GE351	LIFE SKILLS: SOFT SKILLS	L	T	P	C
		0	0	2	1
Unit I	**INTRODUCTION TO SOFT SKILLS**				**6 Hours**
Soft Skills an Overview - Basics of Communication – Body Language – Positive attitude –Improving Perception and forming values – Communicating with others.					
Unit II	**TEAM VS TRUST**				**6 Hours**
Interpersonal skills – Understanding others – Art of Listening - Group Dynamics – Networking - Individual and group presentations - Group interactions – Improved work Relationship.					
Unit III	**SELLING ONESELF**				**6 Hours**
How to brand oneself – social media – job hunting – Resume writing – Group Discussion – Mock G.D - .Interview skills – Mock Interview					
Unit IV	**CORPORATE ETIQUETTES**				**6 Hours**
What is Etiquette – Key Factors – Greetings – Meeting etiquettes – Telephone etiquettes – email etiquettes – Dining etiquettes – Dressing etiquettes – Rest room etiquettes – Life etiquettes					
Unit V	**LEARNING BY PRACTICE**				**6 Hours**
1. My family. Myself. 2. Meeting people. Making Contacts.3. A city. Getting about town. 4. Our flat. Home life.5Travelling. Going abroad.6. Going through Customs.7. At a hotel.8. Shopping. 9. Eating out.10. Making a phone call.11A modern office.12 Discussing business.					
		TOTAL			**30 Hours**

REFERENCES:

1 Dr.k.Alex, "soft skills "Third Edition, S.Chand& Publishing Pvt Limited, 2015

2. Arunakoneru, „Professional Communication" Second Edition, Tata McGraw-Hill Education, 2012

3. D.K.Sarma,"You & Your Career „First Edition Wheeler Publishing & Co Ltd, 2010

4. Shiv Khera „You Can Win" Third Edition Mac Millan Publisher India Pvt Limited, 2011

ASSESSMENT PATTERN:

1. Two assignments will be conducted (25 * 2) - 50 marks
2. Pragmatic Assessment - 50 Marks