

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

Employability

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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.

Emp Skill development.

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1901GEX52

COMPUTER PROGRAMMING LAB

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(Common for all B.E./B.Tech. Programme)

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

Employability.

References

Total: 45 Hours

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

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1901HSX51

COMMUNICATION SKILLS LAB L T P C
0 0 2 1
(Common to all B.E./B.Tech. Programme)

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. *Skill development*
- 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.

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1901MA204	ENGINEERING MATHEMATICS – II (Calculus, Ordinary Differential Equations and Complex Variable)	L	T	P	C
		3	2	0	4
<p>Aim of the course: This course focuses on acquiring sound knowledge of techniques involved in application of differentiation, form through Laplace transforms acquaint with the concepts of multiple integrals, needed for problems in all engineering disciplines, develop an understanding of the standard techniques of Analytic functions by satisfying CR equations so as to enable the student to apply them with confidence, in application areas such as Computer Graphics, Robotic Automations, Computer Vision Problems, Simulations and also make the student appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated.</p>					
<p>PREREQUISITES: Laplace Transforms, solving differential equations</p>					
<p>MODULE I LAPLACE TRANSFORM</p>		<p>12Hours</p>			
<p>Laplace Transform – Conditions for existence – Transform of Elementary Functions – Basic Properties – Transform of Unit step function and Impulse function – Transform of Periodic function – Inverse Laplace Transform – Convolution Theorem (excluding Proof) – Initial and Final value Theorems – Solution of Linear ODE of Second order with constant coefficient using Laplace Transform techniques.</p>					
<p>MODULE II VECTOR CALCULAS</p>		<p>12 Hours</p>			
<p>Gradient, Divergence and Curl – Directional derivative – Irrotational and solenoidal vector fields – Vector integration: Green’s theorem in a plane, Gauss divergence theorem and Stokes’ theorem (excluding proofs) –Applications of the above theorems to find surface area of a closed region and volume of cube and parallel piped.</p>					
<p>MODULE III ORDINARY DIFFERENTIAL EQUATIONS</p>		<p>12 Hours</p>			
<p>Second order linear differential equations with variable coefficients, method of variation of parameters.</p>					
<p>MODULE IV COMPLEX VARIABLE – DIFFERENTIATION</p>		<p>12 Hours</p>			
<p>Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; Conformal mappings, Mobius transformations.</p>					
<p>MODULE V COMPLEX VARIABLE– INTEGRATION</p>		<p>12 Hours</p>			
<p>Contour integrals, Cauchy Integral formula (without proof), Taylor’s series, zeros of analytic functions, singularities, Laurent’s series; Residues, Cauchy Residue theorem (without proof), Evaluation of definite integral involving sine and cosine, Evaluation of certain improper integrals using the Bromwich contour.</p>					
<p>TOTAL: 60 HOURS</p>					
<p>COURSE OUTCOMES</p>					
<p>CO1 : Apply Laplace Transform in solving Boundary value problems of second order ODE(K3)</p>					
<p>CO2 :Compute surface and volume integral in vector field (K3)</p>					
<p>CO3 : Solve the higher order differential equations (K3)</p>					
<p>CO4 : Construct Analytic functions and trace the image of a region using transformation (K3)</p>					
<p>CO5 : Solve complex integrals (K3)</p>					
<p><i>employability.</i></p>					
<p>TEXT BOOKS:</p>					
<p>1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.</p>					
<p>2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.</p>					
<p>3. W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edn., Wiley India, 2009.</p>					
<p>4. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.</p>					
<p>5. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., McGraw Hill, 2004.</p>					
<p>6. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.</p>					
<p>7. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.</p>					

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1901PH202	SEMICONDUCTOR PHYSICS AND OPTOELECTRONICS (for ECE and BME)	L	T	P	C
		3	0	0	3
Aim of the course: To make students understand the importance of semiconductor physics and optoelectronics in engineering applications					
PREREQUISITES:					
<p>Electronic materials Free electron theory, Density of states and energy band diagrams, Energy bands in solids, E-k diagram, Direct and indirect bandgaps, Types of electronic materials: metals, semiconductors and insulators, Occupation probability, Fermi level</p> <p>Semiconductors Intrinsic and extrinsic semiconductors, Dependence of Fermi level on carrier- concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction, Metal- semiconductor junction (Ohmic and Schottky)</p> <p>Semiconductor lasers Optical transitions in bulk semiconductors: absorption, spontaneous emission, and stimulated emission; Density of states for photons, Transition rates (Fermi's golden rule), Optical loss and gain. Semiconductor laser (GaAs): materials, device characteristics, figures of merit and Vertical-Cavity Surface-Emitting Lasers (VECSEL), Tunable semiconductor lasers.</p> <p>Semiconductor Photodetectors Types of semiconductor photodetectors -p-n junction, PIN, and Avalanche and their structure, working principle, and characteristics, Noise limits on performance; Solar cells.</p> <p>Nano- optoelectronic devices Quantum well, quantum wire, and -dot based LEDs, white light LED lasers, and photodetectors.</p>					
COURSE OUTCOMES					
<p>Upon completion of this course, students will be able to</p> <p>CO1: apply the conditions of energy states of electrons and energy band of materials and its Fermi level</p> <p>CO2: determine the type of semiconducting material, its energy gap and carrier concentration</p> <p>CO3: apply the conditions for semiconductor lasers in GaAs and other tunable lasers</p> <p>CO4: experiment with PN junctions and its applications in solar cells</p> <p>CO5: apply quantum confinement concepts to QD based LEDs and Lasers</p>					
REFERENCES (BOOKS):					
<ol style="list-style-type: none"> 1. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc. (1995). 2. B. E. A. Saleh and M. C. Teich, Fundamentals of Photonics, John Wiley & Sons, Inc., (2007). 3. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008). 4. A. Yariv and P. Yeh, Photonics: Optical Electronics in Modern Communications, Oxford University Press, New York (2007). 5. P. Bhattacharya, Semiconductor Optoelectronic Devices, Prentice Hall of India (1997). 6. Online course: "Semiconductor Optoelectronics" by M R Shenoy on NPTEL 7. Online course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta on NPTEL 					
REFERENCES (WEBSITES):					
<ol style="list-style-type: none"> 1. https://www.daenotes.com/electronics/microwave-radar/semiconductor-laser 2. https://iopscience.iop.org/article/10.1088/0957-0233/12/5/703 3. https://www.elprocus.com/photodiode-working-principle-applications/ 4. https://www.azoquantum.com/Article.aspx?ArticleID=31 5. https://www.understandingnano.com/quantum-dots-applications.html 					

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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 - Kirchoff'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 to

1. 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 applications
5. 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

skill development

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/>

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1901GEX02	ENGINEERING GRAPHICS	L	T	P	C
		2	0	2	3
COURSE OBJECTIVES:					
1. To develop in students, graphic skills for communication of concepts, ideas and design of Engineering products.					
2. To expose them to existing national standards related to technical drawings					
MODULE I	CONCEPTS AND CONVENTIONS (Not for Examination)				5 Hours
Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.					
MODULE II	PLANE CURVES AND FREE HAND SKETCHING				9 Hours
Basic Geometrical constructions, Curves used in engineering practices: Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square and circle – Drawing of tangents and normal to the above curves. Visualization concepts and Free Hand sketching: Visualization principles –Representation of Three-Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of Objects.					
MODULE III	PROJECTION OF POINTS, LINES AND PLANE SURFACES				9 Hours
Orthographic projection- principles-Principal Planes-First angle projection-projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and traces. Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.					
MODULE IV	PROJECTION OF SOLIDS				9 Hours
Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one of the principal planes by rotating object method.					
MODULE V	PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES				9 Hours
Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones.					
MODULE VI	ISOMETRIC AND PERSPECTIVE PROJECTIONS				9 Hours
Principles of isometric projection – isometric scale –Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions and miscellaneous problems. Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method.					
TOTAL: 45+5 HOURS					
COURSE OUTCOMES:					
On the successful completion of the course, students will be able to					
CO1: Perform free hand sketching of basic geometrical constructions and multiple views of objects.					
CO2: Do orthographic projection of lines and plane surfaces.					
CO3: Draw projections and solids and development of surfaces.					
CO4: Prepare isometric and perspective sections of simple solids.					
CO5: Demonstrate computer aided drafting					
REFERENCES:					
1. Gopalakrishna K.R., “Engineering Drawing” (Vol. I&II combined), Subhas Stores, Bangalore,2016.					

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1901GE201	ENGINEERING EXPLORATION	L	T	P	C
		2	0	0	2

COURSE OBJECTIVES:

1. Build mindsets & foundations essential for designers
2. Learn about the Human-Centered Design methodology and understand their real-world applications
3. Use Design Thinking for problem solving methodology for investigating ill-defined problems.
4. Undergo several design challenges and work towards the final design challenge
5. Apply Design Thinking on the following Streams to
Project Stream 1: Electronics, Robotics, IOT and Sensors
Project Stream 2: Computer Science and IT Applications
Project Stream 3: Mechanical and Electrical tools
Project Stream 4: Eco-friendly solutions for waste management, infrastructure, safety, alternative energy sources, Agriculture, Environmental science and other fields of engineering.

HOW TO PURSUE THE PROJECT WORK?

- a. The first part will be learning-based - asking students to embrace the methodology by exploring all the phases of design thinking through the wallet/ bag challenge and podcasts.
- b. The second part will be more discussion-based and will focus on building some necessary skills as designers and learning about complementary material for human-centered design.
- c. The class will then divide into teams and they will be working with one another for about 23 weeks. These teams and design challenges will be the basis for the final project and final presentation to be presented.
- d. The teams start with **Design Challenge** and go through all the phases more in depth from coming up with the right question to empathizing to ideating to prototyping and to testing.
- e. Outside of class, students will also be gathering the requirements, identifying the challenges, usability, importance etc
- f. At the end, Students are required to submit the final reports, and will be evaluated by the faculty.

TASKS TO BE DONE:

Task 1: Everyone is a Designer

- g. Understand class objectives & harness the designer mindset

Task 2: The Wallet/Bag Challenge and Podcast

- h. Gain a quick introduction to the design thinking methodology
- i. Go through all stages of the methodology through a simple design challenge
- j. Podcast: Observe, Listen and Engage with the surrounding environment and identify a design challenge.

Task 3: Teams & Problems

- Start Design Challenge and learn about teams & problems through this
- Foster team collaboration, find inspiration from the environment and learn how to identify problems


Task 4: Empathizing

*Employability
Entrepreneurship*

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1901GE254	COMPUTER HARDWARE AND IT ESSENTIALS LAB	L	T	P	C
		0	0	2	1
List of Experiment					
1. Study of hardware components (such as storage devices, I/O devices, CPU, Motherboard, other peripherals). 2. Installation of operating systems (Windows and Linux). 3. Other software installation. 4. Study of network components. 5. Network establishment (configuring IP address, Domain name system) 6. Study of Internet. 7. Introduction to Web. 8. Usage of internet services- Email, File Sharing, Social Media etc. 9. Study of firewalls and Antivirus. 10. Troubleshooting various problems.					
<i>Employability/ Entrepreneurship/ net services.</i>					
TOTAL: 30 HOURS					
REFERENCES:					
1. Craig Zacker & John Rourke, "The complete reference: PC hardware", Tata McGrawHill, New Delhi, 2001.					
2. Mike Meyers, "Introduction to PC Hardware and Troubleshooting", Tata McGrawHill, New Delhi, 2003.					
3. B.Govindarajulu, "IBM PC and Clones hardware trouble shooting and maintenance",					
4. Tata McGraw-Hill, New Delhi, 2002					
5. R. Kelly Rainer, Casey G. Cegielski, Brad Prince, Introduction to Information Systems, Fifth Edition, Wiley Publication, 2014.					
6. James F. Kurose, —Computer networking: A Top-Down Approach, Sixth Edition, Pearson, 2012.					
7. R. Kelly Rainer, Casey G. Cegielski, Brad Prince, Introduction to Information Systems, Fifth Edition, Wiley Publication, 2014					
8. Craig Zacker & John Rourke, "The complete reference: PC hardware", Tata McGrawHill, New Delhi, 2001.					

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1901GE252	ENGINEERING INTELLIGENCE II	L	T	P	C
		0	0	2	1
Prerequisite: Engineering Intelligence - I					
MODULE I	VOCABULARY BUILDING	6 Hours			
Parts of Grammar- SVA- Art of Writing- word building activities					
MODULE II	COMMUNICATION WORKSHOP	6 Hours			
Story Telling- Newspaper Reading-Extempore.					
MODULE III	INTERPERSONAL SKILLS	6 Hours			
Personality Development - Creativity and innovation –Critical Thinking and Problem Solving – Work Ethics-Technical Skill Vs Interpersonal Skills					
MODULE IV	LEADERSHIP & EMPLOYABILITY SKILLS	6 Hours			
Levels of Leadership-Making of leader-Types of leadership-Transactions Vs Transformational Leadership – Exercises - Industry Expectations & Career Opportunities- Recruitment patterns.					
MODULE V	RESUME BUILDING	6 Hours			
Importance of Resume- Resume Preparation - introducing oneself					
TOTAL: 30 HOURS					
Course Outcomes:					
On the successful completion of the course, students will be able to					
CO1: Understand various vocabulary building activities					
CO2: Use various communication skill workshop for reading and writing.					
CO3: Apply interpersonal skill to motivate creating and innovating skills					
CO4: Apply various leadership and employability skill to get career opportunities					
CO5: Prepare resume with necessary components					
<i>} Skill development.</i>					
REFERENCES:					
1. Barun K. Mitra; (2011), “Personality Development & Soft Skills”, First Edition; Oxford Publishers.					
2. Raymond Murphy, Essential English Grammar in Use, Cambridge University press, New Delhi, Third Edition, 2007.					
3. Arun Sharma and Meenakshi Upadhyay, How to Prepare for Verbal Ability and Reading Comprehension for CAT, McGrawHill Publication, Seventh Edition 2017.					

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1901GEX51	CAD (COMPUTER AIDED DRAFTING) LAB	L	T	P	C
		0	0	2	1

List of Experiments:

Basics commands of a CAD software- two-dimensional drawing, editing, layering and dimensioning -coordinate Systems-Drawing practice - orthographic views of simple solids using CAD software.

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative,polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using B-spline or cubic spline.
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. V-block,Base of a mixie, Simple stool, Objects with hole and curves).
6. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
7. Drawing isometric projection of simple objects.
8. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.

skill development

Total: 30 Hours

References:

1. N.D. Bhatt, Machine Drawing, Charotar Publishing House Pvt. Ltd., 2014.
2. P.S. Gill, A Textbook of Machine Drawing, Katson books, 2013.
3. R.K. Dhawan, A Textbook of Machine Drawing, S. Chand,2012.
4. K.C. John, Textbook of Machine Drawing, PHI Learning Pvt. Ltd.,2009.

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