Government College of Engineering, Karad		
First Year (Sem – I) B. Tech. Information Technology		
IT3101: Applied Chemistry		

Teaching Scheme			Examination Scheme	
Lectures	03 Hrs/Week		MSE	20
Tutorials	00 Hrs/Week		ISE	20
Total Credits	03		ESE	60
			Duration of ESE	02:30 Hrs

Prerequisite : Basics of Chemistry

Course Outcomes (CO): Students will be able to

CO1	Interpret the construction, working and applications of battery.
CO2	Equipped with basic knowledge of polymer reinforced composites, applications of semiconductor conducting polymers in energy harnessing.
CO3	Acquire Basic knowledge of Nanochemistry to appreciate its applications in the field of Medicine, data storage devices and electronics.
CO4	Apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.
CO5	

	Course Contents	CO	Hours
Unit 1	**Battery Science:** Battery Technology Introduction - Galvanic cell, electrode potential, EMF of the cell and cell representation. Batteries and their importance, Classification of batteries- primary, secondary and reserve batteries with examples. Electrical Vehicle Battery Construction, working advantages and disadvantages of EV Car. Construction, working and applications of Ni-Cd, Lithium based batteries – Li-ion & Li-poly, Metal Air Battery, Zinc Chloride battery– chemical reaction during charging and discharging of lead acid cell – applications – charging of Batteries – precautions during charging and discharging – trickle charging – indications of full charged battery – capacity of a battery – factors affecting the capacity of the battery – Ampere-Hour efficiency – Watt- Hour efficiency– flat plate battery – tubular battery – applications.	CO1 CO2	(07)
Unit 2	**Electrochemistry:** Introduction , Galvanic cell , Electrode potential, Single electrode potential, Standard electrode potential, Factor affecting electrode potential Nature of electrode, Concentration of ionic solution, Temperature, Electrochemical series, Application of electrochemical series, Electromotive force (EMF), Nernst equation, Fuel cells – Hydrogen – Oxygen fuel cell; Advantages and Applications. Electrochemistry Nernst Equation and application.	CO1 CO2	(07)
Unit 3	**Engineering Advanced Materials:** **Conducting Polymers:** Synthesis & Mechanism of conduction in poly acetylene. Biodegradable polymers: Introduction and their requirements. Synthesis and properties of Poly lactic acid. Applications of biodegradable polymers in medical industry. **Semiconducting material: -** n- type & p-type semiconductors, Preparations, properties and applications of semiconductors, Magnetic Properties. Properties of Poly lactic acid. Applications of biodegradable polymers in medical industry.	CO3	(07)
Unit 4	**Environmental & Green Chemistry:** Introduction, definition, Major environmental pollutants, Air, water and noise pollution. Optimum levels of pollution. Significance and determination of COD and BOD. Solid waste treatment of collection of NKP. Greenhouse effect and	CO4	(07)

	global Warming. eWaste. Radioactive pollution. Basic principles of green chemistry. Various green chemical approaches – Microwave synthesis, Bio catalyzed reactions, Phase transfer catalysis.		
Unit 5	**Storage Device Science:** Fuel Cells- Differences between battery and a fuel cell, Classification of fuel cells - based on type of fuel, Construction, working and applications of solid oxide fuel cell. Hydrogen cells, Photo conductive cells, Photo voltaic cells, characterization– super capacitor – applications rechargeable battery – applications – maintenance free battery – applications	CO4	(07)
Unit 6	**Nanomaterials:** Introduction, Nanomaterials- preparation of CNT by different methods, CNT properties and applications, size dependent properties (Surface area, Electrical, Optical, Catalytic and Thermal properties). Synthesis of nano materials: Top down and bottom up approaches, Carbon nano tubes and graphenes – properties and applications. Characterization method for Nano materials, SEM (Scanning Electron Microscope), AFM (Atomic Force Microscopy), STM ('Scanning Tunnelling Microscopy), Chemical process required for PCB & IC.	CO1 CO4	(07)

Text Books

1.	F. W. Billmeyer, Text Book of Polymer Science, John Wiley & Sons, 15th Edition, 2020.
2.	B. K. Sharma- A text book of Industrial Chemistry. 15th Edition, 2020. G.A. Ozin & A.C. Arsenault, "Nanotechnology A Chemical Approach to Nanomaterials".RSC Publishing, 5th Edition, 2020.

Reference Books

1.	Uppal M.M, Jain and Jain, "Engineering Chemistry", Khanna Publishers, 45th Edition, 2020.
2.	P.C. Jain and Monica Jain, "A test Book of Engineering Chemistry, Dhanpat Rai Publications", New Delhi, 20th Edition, 2020.
3.	S SDara, "A Text book of Engineering Chemistry", S Chand & Company Ltd., 15th Edition, 2020.
4.	B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & PushpaIyengar, "Chemistry for Engineering Students", Subash Publications, Bangalore. 10th Edition, 2020.
5.	"Modern Electrochemistry 2A: Fundamentals of Electrodics" by J O'M Bockeris and M G-Aldeco
6.	Handbook of Carbon Nanotubes Jiji Abraham, Sabu Thomas, Nandkumar Kalarikkal

Useful Links

1.	https://www.youtube.com/watch?v=3O6OfCaVadI&list=PLm_MSClsnwm9p_yaZ8zIW1LxkK7_n98gD
2.	https://www.youtube.com/watch?v=kID3n_-kees
3.	https://www.youtube.com/watch?v=EvoN6vmiCfI&list=PLKSeO-scpOo33zdDN0i2uw1Xh3zh_UfGO
4.	https://www.youtube.com/watch?v=YFd0kb9Nwt0

Mapping of COs and Pos

PO ╲ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	-	-	-	2	2	-	-	-	-	1	-	-
CO 2	3	2	-	-	-	2	2	-	-	-	-	1	-	-
CO 3	3	2	-	-	-	2	2	-	-	-	-	1	-	-
CO 4	3	2	-	-	-	2	2	-	-	-	-	1	-	-
CO 5	3	2	-	-	-	2	2	-	-	-	-	1	-	-

Assessment Pattern: (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	8	20
Understand	5	4	10
Apply	5	4	10
Analyse	5	4	20
Evaluate	-	-	-
Create	-	-	-
Total	20	20	60

	MSE	ISE	ESE
Remember			

Government College of Engineering, Karad				
First Year (Sem – I) B. Tech. Information Technology				
IT3102: Matrix Algebra and Differential Calculus				
Teaching Scheme			**Examination Scheme**	
Lectures	03 Hrs/week		MSE	20
Tutorials	01 Hrs/week		ISE	20
Total Credits	04		ESE	60
			Duration of ESE	02 Hrs 30 Min

Prerequisite : Mathematics

Course Outcomes (CO): Students will be able to

CO1	Utilize concept of linear algebra for implementing Engineering domain problems.
CO2	Expand the function of real variables. Evaluate Indeterminate Forms
CO3	Deal with functions of several variables and their applications.
CO4	Apply advanced integral tools and vector calculus and in Engineering applications.

Course Contents		CO	Hours
Unit 1	**Solution of System of simultaneous linear equations:** Rank of a matrix, Rank using normal & Echelon form, System of linear equations; consistency of homogeneous & nonhomogeneous systems, Linear dependence and independence of vectors.	CO1	(07)
Unit 2	**Eigen Values and Eigen Vectors:** Eigen values and Eigen vectors and their properties, Cayley-Hamilton Theorem (without proof), powers of matrix, diagonalization of matrices.	CO1	(07)
Unit 3	**Expansion of Functions and Indeterminate Forms:** Taylor's Series, Maclaurin's series, expansion using standard expansions, Indeterminate forms, L-Hospital rule, Evalution of limits and applications.	CO2	(07)
Unit 4	**Partial Differentiation:** Partial derivatives, Homogeneous functions and Euler's theorem, Composite function, total derivative, Maxima/Minima of functions of two variables.	CO3	(07)
Unit 5	**Vector Differentiation:** Scalar and vector point functions, Gradient of scalar point function, Directional Derivatives, Curl and Divergence of vector point functions. Solenoidal and irrotational force fields.	CO4	(07)
Unit 6	**Differential and Integral Calculus:** Gamma function, Beta function and its properties, Differentiation under integral sign, Leibnitz rule.	CO4	(07)
Tutorials Following is tentative list of tutorials to be conducted in the tutorial class 1. Rank, consistency of system of equations. 2. Linear dependence, independence of vectors. 3. Eigen values and Eigen vectors. 4. Powers of matrix and Diagonalization of matrices. 5. Expansion of functions and Indeterminate Forms. 6. Direct differentiation and Euler's theorem. 7. Composite function and total derivative. 8. Maxima/Minima of functions of two variables. 9. Directional Derivatives, Curl and Divergence of vector point function. 10. Beta, Gamma functions and DUIS.			(10)

Text Books

1.	Advanced Engineering Mathematics by H.K.Das, S. Chand and sons,22nd edition, 2018.
2.	Textbook of Engineering Mathematics by Debashis Datta New Age International Publication,6th edition 2006.

3.	Engineering Mathematics A Tutorial Approach, Ravish R..Singh, Mukul Bhatt.Tata, McGraw Hill 2010.
Reference Books	
1.	G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2.	Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006.
3.	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008
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.	Higher Engineering Mathematics, B. S. Grewal, 43th edition, Khanna publication, New Delhi 2013.
7.	Textbook of Engineering Mathematics by N P Bali and Dr.Manish Goyal, Laxmi publication 12th edition 2020.
Useful Links	
1.	http://www.nptel.iitm.ac.in
2.	www.ocw.mit.edu

Mapping of COs and POs:

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	2	2	1	2	-	-	-	-	-	-	-	-	-	-	-
CO 2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 4	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	4	10
Understand	-	4	10
Apply	5	4	15
Analyse	5	4	10
Evaluate	5	4	15
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad					
First Year (Sem – I) B. Tech. Information Technology					
IT3103: Basic Electronics Engineering					
Teaching Scheme			**Examination Scheme**		
Lectures	03 Hrs/week		MSE	20	
Tutorials	00 Hrs/week		ISE	20	
Total Credits	03		ESE	60	
			Duration of ESE	02 Hrs 30 Min	

Prerequisite : Mathematics, Computer Fundamentals

Course Outcomes (CO): Students will be able to

CO1	Outline the different number systems.
CO2	Analyze the different logic gates Boolean Algebra functions.
CO3	Design and analyze modular combinational circuits with MUX/DEMUX, Decoder and Encoder.
CO4	Analyze different types of Sensors

	Course Contents	**CO**	**Hours**
Unit 1	**Introduction to Electronics:** Evolution of Electronics, Impact of Electronics in industry and in society, Introduction to active and passive components, The Atom, Materials Used in Electronics- Insulators, Conductors, Current in Semiconductors, N-Type and P-Type Semiconductors, The PN Junction.	CO1	**(08)**
Unit 2	**Diode and Transistors:** Diode- Diode Operation, Voltage-Current (V-I) Characteristics of a Diode, Diode Models, Half-Wave Rectifiers, Full-Wave Rectifiers, Power Supply Filters and Regulators. Transistors-Bipolar Junction Transistor (BJT) structure, Operations, Characteristics and Parameters.	CO1	**(07)**
Unit 3	**Number Systems:** Binary numbers, Number-Base Conversion, Octal and Hexadecimal number system, Complements of numbers, Signed binary number system, BCD. Binary codes.	CO2	**(05)**
Unit 4	**Boolean Algebra:** Introduction, Digital logic gate, Basic theorems and Properties of Boolean Algebra, Boolean functions, Four-Variable K-Map, Product of Sum simplification, Don't-Care Conditions, NAND and NOR implementation.	CO2	**(07)**
Unit 5	**Combinational and Sequential Logic:** Introduction, Combinational circuits, Binary adder and subtractor, Binary multiplier, Decoders, Encoders, Multiplexers, Sequential circuits, Memory element latch, Flip- flops: Design, Truth table, Excitation table of Master Slave SR, JK level triggered, D, T flip flops.	CO2, CO3	**(06)**
Unit 6	**Sensors:** Classification of a sensors, Active /Passive Sensors, Analog/Digital Sensors, Motion Sensors (LVDT), Temperature Sensors (Thermistor), Semiconductor Sensors(Gas Sensors), Optical Sensors (LDR), Mechanical Sensors (Load Cell, Pressure sensors).	CO4	**(07)**

Text Books

1.	Thomas. L. Floyd, "Electronics Devices", 9th Edition, Pearson, 2021. (Unit 1,2)
2.	M Morris Mano, "Digital Design", Prentice Hall, 3rd Edition, 2001.(Unit: 3, 4, 5)
3.	D. Patrnabis ,"Sensors and Transducers" by, 2nd Edition, PHI,2011.(Unit 6)

Reference Books

1.	Wakerly Pearon, "Digital Design: Principles and Practices", Pearson Education, 3rd edition, 2004.
2.	Anand Kumar, "Fundamentals of digital circuits", PHI publication, 1st edition, 2001.
3.	R.P. Jain, "Modern Digital Electronics", Tata McGraw-Hill, 3rd Edition, 2003.

Useful Links

1.	http://nptel.ac.in/courses/117105080/Prof. D. Roychoudhury IIT Kharagpur.

| 2. | http://nptel.ac.in/courses/117106086/Prof. S. Srinivasan IIT Madras. |
| 3. | https://onlinecourses.nptel.ac.in/noc21_ee32/preview Prof. Hardik Jeetendra Pandya IISc Bangalore. |

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	1	-	3	-	2	-	-	-	-	-	-	-	-	2
CO 2	-	3	1	-	-	-	-	-	-	-	-	-	1	-
CO 3	-	-	3	-	-	-	-	-	-	-	-	-	2	-
CO 4	-	1	2	-	-	-	-	-	-	-	-	-	2	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	5	10
Understand	5	5	20
Apply	5	5	10
Analyse	5	5	20
Evaluate	-	-	-
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad				
First Year (Sem – I) B. Tech. Information Technology				
IT3104: Programming for Problem Solving				
Teaching Scheme			**Examination Scheme**	
Lectures	03 Hrs/week		MSE	20
Tutorials	00 Hrs/week		ISE	20
Total Credits	03		ESE	60
			Duration of ESE	02 Hrs 30 Min
Prerequisite : Computer Fundamentals				
Course Outcomes (CO): Students will be able to				
CO1	Outline Computer fundamentals and algorithm.			
CO2	Develop ability to analyze problems using Control Statements and Functions.			
CO3	Learn advanced features like Array, String and Structure.			
CO4	Apply concept of Pointer and File Handling.			

		CO	**Hours**
Unit 1	**Introduction to Programming** Introduction to components of a computer system. Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples	CO1	(05)
Unit 2	**Introduction to C language** Importance of C Language, Structure of C Program, Constants, variables and data types. Operators and expressions, managing input / output operations, Decision making, branching and loop statements, Storage classes, Functions, elements of User defined functions, return values and their types, methods of parameter passing, recursive functions.	CO1, CO2	(07)
Unit 3	**Arrays and String** Declaration and initialization of arrays, one dimensional and two-dimensional arrays, operations on array, multidimensional arrays, Declaring and initializing string variables, string handling functions, passing array and string to function.	CO3	(07)
Unit 4	**Structure** Defining and declaring structure, accessing structure members, structure initialization, array of structures, nesting of structure structures and functions, union and enumeration.	CO3	(07)
Unit 5	**Pointer** Defining and declaring pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer, pointer as a function argument, pointer expressions, pointers to arrays, strings and structure, Dynamic memory allocation.	CO3, CO4	(07)
Unit 6	**File Handling** File Operations, Character I/O, String I/O, Formatted I/O, Block I/O, Random File Operations.	CO4	(07)

Text Books				
1.	E. Balguruswami, "Programming in ANSI C", 6th edition– Tata McGraw Hill, 2012. (Unit 1,2,3,4,5,6)			
2.	Yashvant Kanetkar, "Let us C", BPB publications, 2004. (Unit 1,2,3,4,5,6)			
Reference Books				
1.	B.W. Kernigghan and D. M. Ritchie, "The C Programming Language", 2nd Edition By, Pearson Education,1988.			
2.	McGraw-Hill Publications, ISRD Group, "Programming And Problem Solving Using C Language", 1st Edition, 2017.			
3.	Schaum's, "Outline of Programming with C", Byron Gottfried, McGraw-Hill,2nd Edition, 1996.			

Useful Links				

1.	http://cse02-iiith.vlabs.ac.in/
2.	https://www.digimat.in/nptel/courses/video/106105171/L01.html Prof. Anupam Basu,
3.	https://archive.nptel.ac.in/courses/106/104/106104128/ Satyadev Nandkumar

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	1	2	-	1	-	1	1	-	-	-	-	-	1	-
CO 2	-	1	3	2	1	1	-	-	-	-	-	-	2	-
CO 3	-	1	2	3	-	1	1	-	-	-	-	-	2	-
CO 4	2	1	1	2		1	-	-	-	-	-	-	-	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	6	10
Understand	5	4	20
Apply	5	4	10
Analyse	5	6	20
Evaluate	-	-	-
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad					
First Year (Sem – I) B. Tech. Information Technology					
IT3105: Design Thinking					
Teaching Scheme			**Examination Scheme**		
Lectures	01 Hrs/week		MSE	--	
Practical	02 Hrs/week		ISE	50	
Total Credits	02		ESE	--	
Prerequisite : Professional Skills					
Course Outcomes (CO): Students will be able to					
CO1	Compare and classify the various learning styles and apply them in their engineering education.				
CO2	Develop new ways of creative thinking and learn the innovation cycle of Design Thinking process for developing innovative products.				
CO3	Prepare empathy map and journey map for problem.				
CO4	Possess skills necessary to communicate design engineering ideas and design and apply innovative ideas using prototypes.				
Course Contents				**CO**	**Hours**
Unit 1	**Overview of Design Thinking Process:** Understanding the Learning Process, Kolb's Learning Styles, Assessing and Interpreting, Design Thinking Process: Business context of innovation for applying design thinking, two models of design thinking, phases of design thinking.			CO1, CO2	(04)
Unit 2	**Introduction to design thinking and its approaches:** Definition of Design Thinking, Need for Design Thinking, Objective of Design Thinking, Origin of design thinking, understanding design thinking and its process model, Human-Centered Design (HCD) process - Empathize, Define, Ideate, Prototype and Test and Iterate or Empathize, Analyze, Solve and Test.			CO1	(05)
Unit 3	**Empathize** How to emphasize, Role of empathy in design thinking, purpose of empathy maps, Things to be done prior to empathy mapping, creation of user personas, customer journey mapping.			CO2, CO3	(04)
Unit 4	**Analyze or Define** Root cause analysis, conflict of interest, perspective analysis, big picture thinking through system operator, big picture thinking through function modelling Silent brainstorming, metaphors for ideation, CREATE and What-If tool for ideation, introduction to TRIZ, Inventive principles and their applications			CO1, CO2	(05)
Unit 5	**Test (Prototyping and Validation)** What is Prototype? Why Prototype? Rapid Prototype Development process, Testing, Sample Example, Test Group Marketing Prototyping, Assumptions during the design thinking process, Validation in the market, best practices of presentation.			CO2, CO4	(05)
Unit 6	**Design Innovation** Benefits of iteration in the design thinking process, taking the idea to the market, introduction to innovation management in a company.			CO4	(05)
Laboratory Content					
Experiment 1	Understanding of Design Thinking and its process model, Principles, and tools. (Activity: Design a mind map for processes of design thinking).			**CO1, CO2**	
Experiment 2	How to Empathize, Role of Empathy in design thinking, Empathy Maps Design. (Activity: Construct empathy maps to provide right solution to any challenges through interviews, GD, observations, and other sources).			**CO3**	

Experiment 3	Methods for Empathetic Design, Creation of User Personas. (Activity: Construct Persona profile which includes user information).	CO2, CO3
Experiment 4	Customer Journey Mapping (Activity: Develop customer journey map to provide a roadmap visual of customers experience).	CO3
Experiment 5	Problem clarification, Understanding of the problem. (Activity: Construct worksheet for customer journey map to select best route).	CO1
Experiment 6	Problem analysis and Reformulation of the problem. (Activity: Generate summarised report for customer journey map).	CO2
Experiment 7	Case Study - students can pick one idea from their brainstorm list and use the "Sketch Prototype Worksheet" to sketch out their solution for their classmate.	CO2
Experiment 8	Root Causes Analysis, Conflict of Interest, Description of customer need.	CO4
Experiment 9	Design Cash Flow Diagram and Value Chain Analysis Diagram for weekly expenditure of person.	CO2
Experiment 10	Study the iterations in design thinking process.	CO2, CO4

Textbooks

1.	Bala Ramadurai, "Karmic Design Thinking", First Edition, 2020. (Unit:1,2,3,4,5,6)
2.	E. Balaguruswamy, "Developing Thinking Skills (The way to Success)", Khanna Book Publishing Company, 2022. (Unit:1,2,3,4,5,6)

Reference Books

1.	Vijay Kumar,"101 "Design Methods: A Structured Approach for Driving Innovation in Your Organization".
2.	IDEO ,"Human-Centered Design Toolkit: An Open-Source Toolkit to Inspire New Solutions in the Developing World", IDEO 2011.
3.	Marc Stickdorn and Jakob Schneider," This is Service Design Thinking: Basics, Tools, Cases", BIS Publishers,2014.
4.	Ulrich, Karl T. Design: Creation of artifacts in society, 2011.
5.	Tim Brown "Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation", Harper Collins, 2009.

Useful Links

1.	https://onlinecourses.nptel.ac.in/noc22_mg32/preview By Prof. Bala Ramadurai/ IIT Madras
2.	https://youtu.be/4nTh3AP6knM by Simplilearn
3.	https://www.tutorialspoint.com/design_thinking/design_thinking_introduction.htm

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	1	2	1	1	-	1	-	-	-	-	-	-	1	1
CO 2	1	1	2	2	-	-	-	1	-	-	-	-	2	1
CO 3	1	1	3	2	2	-	-	-	2	2	-	-	1	1
CO 4	1	2	2	1	1	1	-	-	-	-	-	-	2	1

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad			
First Year (Sem – I) B. Tech. Information Technology			
IT3106 : Applied Chemistry Lab			

Laboratory Scheme:			**Examination Scheme:**	
Practical	02 Hrs/week		ISE	50
Total Credits	01		ESE	--

Prerequisite : Basics of Chemistry

Course Outcomes (CO): Students will be able to

CO1	Analyze & generate experimental skills.
CO2	Learn and apply basic techniques used in chemistry laboratory for preparation, purification and identification.
CO3	Employ the basic techniques used in chemistry laboratory for analyses such as PH Metry, IR spectroscopy, volumetric titrations.
CO4	Learn safety rules in the practice of laboratory investigations

Course Contents		**CO**
Experiment 1	Determine the total hardness of water.	**CO1,CO3,CO4**
Experiment 2	Determine calorific value of coal sample.	**CO1,CO3,CO4**
Experiment 3	Determine the chloride content from water	**CO1,CO3,CO4**
Experiment 4	Preparation of urea formaldehyde	**CO1,CO2,CO3,CO4**
Experiment 5	Preparation of phenol formaldehyde	**CO1,CO2,CO3,CO4**
Experiment 6	Determine the amount of dissolved oxygen in water	**CO1,CO2,CO3,CO4**
Experiment 7	Preparation of Paracetamol as antipyretic drug.	**CO1,CO2,CO3,CO4**
Experiment 8	Determination of % of Zinc in brass using standard EDTA Solution.	**CO1,CO3,CO4**
	Demonstration Experiment	
Experiment 09	Verification of Lambert's-Beer's law.	**CO1,CO2,CO3,CO4**
Experiment 10	Determination of pH of solution	**CO1,CO2,CO3,CO4**
Experiment 11	Determination of functional group in organic compound by IR spectroscopy.	**CO1,CO2,CO3,CO4**

List of Submission:

1.	Minimum number of Experiments : 10

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	2	-	-	-	2	2	-	1	-	-	1	-	-
CO 2	3	2	-	-	-	2	2	-	1	-	-	1	-	-
CO 3	3	2	-	-	-	2	2	-	1	-	-	1	-	-
CO 4	3	2	-	-	-	2	2	-	1	-	-	1	-	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Exp 11	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad
First Year (Sem – I) B. Tech. Information Technology
IT3107 : Programming for problem solving Lab

Laboratory Scheme:			Examination Scheme:	
Practical	02 Hrs/week		ISE	50
Total Credits	01		ESE	25

Prerequisite : Computer fundamentals

Course Outcomes (CO): Students will be able to

CO1	Outline the basics of C programming language, including syntax, data types.
CO2	Demonstrate the ability to write and execute C programs using control statements.
CO3	Solve the real world problems using function, array, strings, and structure.
CO4	Develop debugging and testing skills to identify and resolve errors in C programs file handling and graphics.

Course Contents		CO
Implementation of following concepts		
Experiment 1	Introduction to various components of programming environment	**CO1**
Experiment 2	Decision making statements	**CO2**
Experiment 3	Loop statements	**CO2**
Experiment 4	Passing argument to functions	**CO3**
Experiment 5	1-D and 2-D array and operations on array	**CO3**
Experiment 6	String using string handling functions	**CO3**
Experiment 7	Array of structure	**CO3**
Experiment 8	Call by value and call by reference	**CO3**
Experiment 9	Dynamic memory allocation using various functions	**CO4**
Experiment 10	File handling operations	**CO4**
Experiment 11	C graphics to draw different objects	**CO4**
Experiment 12	C graphics to demonstrate animation	**CO4**
List of Submission:		
	Minimum number of Experiments : 10	

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	-	-	1	-	1	1	-	-	-	-	-	-	2
CO 2	1	2	-	1	-	1	1	-	-	-	-	-	1	-
CO 3	-	1	3	2	1	1	-	-	-	-	-	-	2	-
CO 4	-	1	2	3	-	1	1	-	-	-	-	-	2	-

1: Slight (Low)   2: Moderate (Medium)   3: Substantial (High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad				
First Year (Sem – I) B. Tech. Information Technology				
IT3108: Professional Communication Skills				
Laboratory Scheme			**Examination Scheme**	
Lecture	01Hrs/week		ISE	50
Practical	02Hrs/week		ESE	25
Total Credits	02			

Course Outcomes (CO): Students will be able to

CO1	Provide a learning environment to practice listening, speaking, reading and writing skills.
CO2	Assist the students to carry on the tasks and activities through guided instructions and materials
CO3	Effectively integrate English language learning with employability skills and training.
CO4	Provide hands-on experience through case-studies, mini-projects, group and individual presentations.

List of Experiments		CO
Experiment 1	**Newspaper Reading**, finding difficult English words to enhance the glossary. Write down the summary of News and Present it effectively.	CO1
Experiment 2	**Reading Skills**- Reading Book (Any book) finding difficult English words to enhance the glossary. Write down the summary of book/any Topic and Present it effectively. Self-Introduction Activity	CO1
Experiment 3	**Reading Sills**- Watching English Movies Write down the same to Summaries. Strategies for Creating & Editing Effective Writing -Email Writing Activity	CO2
Experiment 4	**Reading Skills**- Listening English podcast, (seen and the unseen) Write down the same to Summaries. Extempore Activity	CO3
Experiment 5	**Reading Skills**- Reading Readers Digest/India Today/Autocar/EFY. Write down the same to Summaries. Strategies for Creating & Editing Effective Writing=Blog Writing (specific/suggest topics/give topics)	CO1
Experiment 6	**Watching Ted Talk and summarize it.** Strategies for Creating & Editing Effective Writing -Story writing and Narration	CO3
Experiment 7	**Develop a Welcome speech** on the given Theme/situation /Formulate a speech for introducing a guest in the given situation. **Group Discussion**- Group Discussion Rules	CO3
Experiment 8	**Just a Minute (JAM) -**Prepare for 1 min on spontaneous topic and deliver public talk on same.Solving MNC (Company 1) Verbal Ability questions	CO4
Experiment 9	**Debate:** International Topic and summarize the opinion as a Country. Strategies for Creating & Editing Effective Writing -Email Writing Activity2	CO4
Experiment 10	**Writing effective resumes and Cover Letters** Mock Interviews (Personal HR)	CO3

Text Books

1.	AICTE's Prescribed Textbook: English (with Lab Manual), Khanna Book Publishing Co.
2.	Kul Bhushan Kumar, Effective Communication Skills. Khanna Book Publishing, 2022.
3.	Practical English Usage. Michael Swan. OUP. 1995. 4. Remedial English Grammar. F.T. Wood. Macmillan.2007 5. On Writing Well. William Zinsser. Harper Resource Book. 2001 6. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006. https://www.coursera.org/specializations/improve-english

List of Submission

1	Total number of Experiments: Minimum 10
2	Total number of sheets: NA

3	Project/Dissertation Report: NA
4	Seminar report: NA
5	Field Visit Report: NA

Mapping of COs and Pos

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	2	2	1	2	-	-	-	-	-	-	-	-	-	-	-
CO 2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 4	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-

1: Slight (Low)   2: Moderate (Medium)   3: Substantial (High)

Assessment Pattern(with revised Bloom's Taxonomy)

Knowledge Level	ISE	ESE
Remember	-	-
Understand	10	05
Apply	15	05
Analyse	15	10
Evaluate	10	05
Create	-	-
TOTAL	50	25

Government College of Engineering, Karad						
First Year (Sem – I) B. Tech. Information Technology						
IT3109: Computer Workshop						
Laboratory Scheme:				**Examination Scheme:**		
Practical	04Hrs/week			ISE	50	
Total Credits	02			ESE	50	
Prerequisite : Computer Fundamentals						
Course Outcomes (CO): Students will be able to						
CO1	Identify different components of computer.					
CO2	Apply basic knowledge of computer fundamentals to solve common problems related to operating systems					
CO3	Design the network for computers					
CO4	Utilize various applications useful in day-to-day life.					
Course Contents						**CO**
Experiment 1	Familiarize a computer system layout: SMPS, Motherboard, FDD, HDD, CD / DVD drive and add on cards.					**CO1**
Experiment 2	Assemble a system with add on cards and check the working condition of the system					**CO1**
Experiment 3	Study of various types of the Memories.					**CO1**
Experiment 4	Study and Installation of Windows Operating System					**CO2**
Experiment 5	Study and Installation of Linux Operating System					**CO2**
Experiment 6	Study of Linux Commands and Utilities					**CO2**
Experiment 7	Build a dual boot machine by installing different operating systems on it and install software on various operating systems including GNU/Linux and Microsoft Windows using Virtual Machine.					**CO2**
Experiment 8	Introduction to Network Devices - Router, Hub, Switch and access points					**CO3**
Experiment 9	Prepare a working LAN cable by using crimping tools.					**CO3**
Experiment 10	Create basic networking setup using 2-4 PCs and networking hardware.					**CO3**
Experiment 11	Study of basic network command and Network configuration commands (IPconfig, Ping, Tracert and Netstat).					**CO3**
Experiment 12	Troubleshoot day to day life problems on personal computers, including issues related to: Network connection, display, power-on, software configuration, software network setup.					**CO3**
Experiment 13	Study of popular Web browsing tools.					**CO4**
Experiment 14	Configuration of Web Server (GlassFish, IIS)					**CO4**
Experiment 15	Case Study on Google Services – IT Support, IT Automation.					**CO4**
Experiment 16	Perform basic analytics using Microsoft Excel.					**CO4**
Experiment 17	Design and build tables, forms, reports, controls and queries in Microsoft Access.					**CO4**
Experiment 18	Develop a Mini Project based on concepts studied. Demonstrate and participate mini project in Science day exhibition.					**CO4**
List of Submission:						
	1.	Minimum number of Experiments: 16				

Mapping of COs and POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1	-	3	-	-	-	-	2	-	1	-	-	-	2	2
CO2	3	-	-	-	-	-	2	-	1	-	-	-	2	2
CO3	-	-	3	-	-	-	2	-	1	-	-	-	2	2
CO4	-	-	-	-	3	-	2	-	1	-	-	-	2	2

1: Slight(Low) 2: Moderate(Medium) 3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad				
First Year (Sem–I) B. Tech. Information Technology				
IT3110: Yoga				
Laboratory Scheme:			**Examination Scheme:**	
Practical	02 Hrs/Week		ISE	50
Total Credits	01		ESE	-
Prerequisite: Basics of Yoga				
Course Outcomes (CO): Students will be able to				
CO1	Outline basic skills associated with yoga which builds up physical, mental strength, flexibility, balance and coordination.			
CO2	Learn breathing exercises and healthy fitness activities.			
CO3	Learn techniques for increasing concentration and decreasing anxiety which leads to stronger academic performance.			
CO4	Develop understanding of psychological problems associated with the age and lifestyle. Also apply injury prevention principles related to yoga.			

Course Contents	CO

Following list of topics and practical's are only the guidelines to the instructor:
 	
• योगाचा इतिहास: योगसूत्र ग्रंथ, पतंजली मुनी.
• अष्टांग योग:
  १. यम: अहिंसा,सत्य,अस्तेय,ब्रम्हचर्य,अपरिग्रह
  २. नियम:शौच,संतोष,तपास,स्वाध्याय,ईश्वरप्रणिधान
  ३. आसन: विविध स्थितीतील आसने
  ४. प्राणायाम : विविध प्रकार
  ५. प्रार्थना
  ६. धारणा: एकाग्र चित्त
  ७. ध्यान
  ८. समाधी
वरील अष्टांग योगाचे थोडक्यात महत्व
 	
• सूर्यनमस्कार: महत्व व फायदे
 	
प्रात्यक्षिक : प्रार्थना,सूर्यनमस्कार,आसने,प्राणायाम व ध्यान याचा सराव
	CO1
	CO2
	CO3
	CO4

Reference Books	
1.	Nagendra, H. R. & Nagarathna, R. "Samagra Yoga Chikitse", Bengaluru Swami Vivekananda Yoga Prakasana,2002.
2.	Kumar, Ajith, "Yoga Pravesha" Bengaluru: Rashtrothanna Prakashana,1984.
3.	D.M Jyoti, " Yoga and Physical Activities", lulu.com3101, Hills borough, NC27609, United States, 2015.
4.	Uppal, A.K., "Physical Fitness. New Delhi : Friends Publication, 1992.

Mapping of COs and POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1	-	-	-	-	-	2	2	2	3	2	-	2	-	-
CO2	-	-	-	-	-	2	2	2	3	2	-	2	-	-
CO3	-	-	-	-	-	2	2	2	3	2	-	2	-	-
CO4	-	-	-	-	-	2	1	2	1	1	-	2	-	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

The evaluation will be done on the basis of participation and performance of students in practical hours. The consistency and accuracy in yoga, intrinsic goodness, right attitude, happiness and joyous way of doing things will be observed by yoga teacher.

<table>
<tr><td colspan="6" align="center">Government College of Engineering, Karad</td></tr>
<tr><td colspan="6" align="center">First Year (Sem – I) B. Tech. Information Technology</td></tr>
<tr><td colspan="6" align="center">IT3201: Applied Physics</td></tr>
</table>

Teaching Scheme			Examination Scheme		
Lectures	03 Hrs/Week		MSE	20	
Tutorials	00 Hrs/Week		ISE	20	
Total Credits	03		ESE	60	
			Duration of ESE	02:30 Hrs	

Prerequisite : Mathematics

Course Outcomes (CO): Students will be able to

CO1	State and Explain concepts of electrostatics, magneto statics, optics, magnetic and electric materials.
CO2	Understand physical significance of terms in electrostatics, magneto static and fundamental properties of light, sound and advanced materials.
CO3	Demonstrate applications of different physical phenomena in engineering and technology.
CO4	Compute required physical quantity from given data.

	Course Contents	CO	Hours
Unit 1	**Electrostatics:** Coulomb's law, Vector form of Coulomb's law, its Examples. Electric field, Electrostatic potential, Electrostatic potential due to charged sphere and electric dipole, Examples. Equipotential surface and their properties. Flux, Gauss's law and its applications. Gauss's law electrostatics in a dielectric medium.	CO1, CO2	(07)
Unit 2	**Magnetostatics:** Biot - Savart law, Ampere's law and its applications. Faradays law of induction, Lenz's law, Integral and Differential form of Faradays law. Equation of continuity, Displacement Current. Maxwell equations. Physical significance of Maxwell equations	CO1, CO2	(07)
Unit 3	**Magnetic materials and Ultrasonic:** Origin of magnetic moment, types of of Magnetic material: Dia, Para, ferro, anti-ferro and Ferrimagnetic materials, magnetic exchange interactions. Curie-Weiss law. Hysteresis, Soft and Hard Magnetic Materials, Ferrites, their Applications. Magnetic Devices. Ultrasonic waves: Ultrasonic waves, Characteristics of Ultrasonic waves, Magnetostriction oscillator and Piezoelectric, Oscillator, Applications. Problems	CO1, CO2 CO3	(07)
Unit 4	**Semiconductors and Dielectrics** Classification of solids on the basis of band theory, Introduction of Semiconductors and it's types, Fermi level in intrinsic and extrinsic semiconductors, Band diagrams for intrinsic and extrinsic semiconductors, electrical conductivity of conductors & semiconductors. Hall effect carrier life time and mobility and Examples. Applications Dielectrics: Introduction of dielectrics, dielectric constant, dielectric polarization, dielectric susceptibility, three field vector, polar, Non polar, Applications.	CO1, CO2 CO3	(07)
Unit 5	**Superconductor and Nuclear Energy:** Introduction, Property of superconductor, Meissner Effect, Type I and Type II superconductor, Concept of Cooper pair, BCS Theory, AC DC Josephson's Effect. Applications. Nuclear Energy: Introduction , Fission and Fusion reaction, Energy released in Fission Reaction, chain Reaction, Nuclear Reactor, P-P and C-N Reactions (Thermonuclear Reaction), Examples.	CO2, CO3, CO4	(07)
Unit 6	**LASER and Fibre Optics:** Introduction, Characteristics of LASER beam, Absorption, Spontaneous Emission, Stimulated Emission, Population Inversion, Types of pumping agent, Components of LASER, Lasing action, Solid-state lasers (ruby), Diode Laser, Applications of LASER in	CO2, CO3, CO4	(07)

	science and engineering, Holography Techniques.				

Text Books

1.	Avadhanulu and Kshirsagar, "Engineering Physics", S Chand publishing, 2010. (Unit: 3,4)
2.	V. Rajendran , "Engineering Physics", Tata McGraw-Hill Publishing Company limited, 2010 (Unit:5,6)
3.	Donald A. Neamen "Semiconductor Physics and Devices: Basic Principles", the McGraw-Hill Companies, Inc, Fourth Edition, 2021.(Unit: 1,2)

Reference Books

1.	S. O. Pillai, "Solid State Physics: Structure & Electron Related Properties", Eastern Ltd, New Age International Ltd, 1994.
2.	Charles Kittle,"Introduction to Solid State Physics", Wiley India Pvt. Ltd, 8th Edition, 2005.
3.	Alan Giambattista and others, "Fundamentals of physics", Tata Mc. Graw Hills, 2007.
4.	B. L. Theraja "Modern Physics" S. Chand & Company Ltd., Delhi, 2002.
5.	R. K. Gaur & Gupta S. L, "Engineering Physics" Dhanapat Rai Publication, 2012.
6.	Arthur Beiser , "Modern Physics" Tata Mc. Graw Hills, 1981.
7.	K. Thyagarajan, A. K. Ghatak ,"LASERS Theory and Applications", Macmillan India Limited,1981.
8.	L. J. Schiff, "Quantum Mechanics" Mc-Graw Hill International Edition, 1955.
9.	N. Subramanyam & Brijlal, "Text Book of Optics", Vikas Publishing House Pvt.Ltd), 2012.

Useful Links

1.	en.wikipedia.org/wiki/ Fundamentals of_Physics
2.	www.hyperphysics.com
3.	physics.info/magnetism, NPTEL video

Mapping of COs and POs

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO 2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO 3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO 4	3	2	-	-	-	-	-	-	-	-	-	1	-	-

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern: (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	4	20
Understand	5	4	-
Apply	5	4	10
Analyse	-	4	20
Evaluate	5	4	10
Create	-	-	-
Total	20	20	60

Government College of Engineering, Karad				
First Year (Sem–II) B. Tech. Information Technology				
IT3202: Differential and Integral Calculus				
Teaching Scheme			**Examination Scheme**	
Lectures	03 Hrs/week		MSE	20
Tutorials	01 Hrs/week		ISE	20
Total Credits	04		ESE	60
			Duration of ESE	02 Hrs 30 Min

Prerequisite: Mathematics

Course Outcomes (CO): Students will be able to

CO1	Solve ODEs and LDE with constant coefficient arising in Engineering domain using analytic approach.
CO2	Apply advance vector integral functions and techniques in evaluating complex problems.
CO3	Express any periodic function in terms of series expansion.
CO4	Calculate area enclosed by simple curves and volume of solid with the knowledge of higher order integrals.

	Course Contents	**CO**	**Hours**
Unit 1	**First Order Ordinary Differential Equations:** Exact differential equations, Integrating Factor, Equations reducible to Exact, Linear and reducible to linear differential equations, Application to Simple Electrical circuits.	CO1	(07)
Unit 2	**Linear Differential Equations with Constant Coefficients:** Linear differential equations with constant coefficients, Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation, Legendre's Equations.	CO1	(07)
Unit 3	**Fourier series:** Dirichlet's conditions, Fourier series in the range $(0,2\pi)$ and $(-\pi,\pi)$, Change of interval, Fourier series in the range $(0, 2l)$ and $(-l, l)$ where l is arbitrary, Even and odd function, Half range sine and cosine series in the range $(0, l)$ where l is arbitrary.	CO3	(07)
Unit 4	**Surface Integral and its Applications:** Evaluation of double integration in cartesian and polar coordinates, Change of order of integration, change of variable, Area enclosed by plane curves.	CO3	(07)
Unit 5	**Volume Integral and its Applications:** Evaluation of Triple integration in Cartesian, spherical polar and cylindrical polar coordinates, Volume of solid by triple integral.	CO4	(07)
Unit 6	**Vector Integration:** Line integral, Surface integral, Green's theorem in the plane, Stoke's theorem, Volume integral, Gauss Divergence theorem	CO2	(07)
Tutorials: Following is tentative list of tutorials to be conducted in the tutorial class 1. Exact, reducible to exact, linear and reducible to linear differential equations. 2. Applications to differential equations. 3. LDE with constant coefficient. 4. Variation of parameters. 5. Beta and Gamma function. 6. Differentiation under integral sign. 7. Fourier series. 8. Half range Fourier series. 9. Surface integration and its applications. 10. Volume integration and its applications.			(10)

Text Books

1.	H.K.Das, S. Chand and sons, "Advanced Engineering Mathematics",22nd edition, 2018.
2.	Debashis Datta ,"Textbook of Engineering Mathematics New Age International Publication",6th edition 2006.
3.	Ravish R..Singh, Mukul Bhatt, "Engineering Mathematics A Tutorial Approach," Tata, McGraw Hill 2010.

	Reference Books
1.	G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2.	Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
3.	W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edn., Wiley India, 2009.
4.	S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
5.	E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India, 1995.
6.	J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., McGrawHill, 2004.
7.	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010

	Useful Links
1.	http://www.nptel.iitm.ac.in
2.	www.ocw.mit.edu

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO 4	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	4	10
Understand	-	4	10
Apply	5	4	15
Analyse	5	4	10
Evaluate	5	4	15
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad		
First Year (Sem – II) B. Tech. Information Technology		
IT3203: Object Oriented Programming		

Teaching Scheme			**Examination Scheme**	
Lectures	03 Hrs/week		MSE	20
Tutorials	00 Hrs/week		ISE	20
Total Credits	03		ESE	60
			Duration of ESE	02 Hrs 30 Min

Prerequisite : C Programming

Course Outcomes (CO): Students will be able to

CO1	Test and execute the programs and correct syntax and logical errors.
CO2	Develop and execute program by using multiple concepts.
CO3	Implement basic C++ programming concepts like inheritance, polymorphism.
CO4	Analyze errors and program behaviour for different set of inputs.

	Course Contents	**CO**	**Hours**
Unit 1	**Object Oriented Programming:** Object Oriented Programming, Concepts of object-oriented programming. Applications of OOP. Beginning with C++: simple program and its structure, functions, inline function, Defining Class & its structure.	**CO1**	**(07)**
Unit 2	**Constructor:** Constructor, Copy Constructor, Constructor overloading, Parameterized Constructor, Destructor. Array of objects, friend function, friend class.	**CO1**	**(06)**
Unit 3	**Inheritance:** Need of inheritance, Concept, public, private, protected inheritance, Single inheritance, Multiple and multilevel inheritance, Hierarchical inheritance, Hybrid inheritance, Virtual base class, Overriding of member functions, static variable, static function, Abstract class.	**CO3**	**(09)**
Unit 4	**Memory Management in CPP:** Pointers, basics of memory management, New and delete operators, Pointer to object, Pointer to data members, this pointer	**CO2, CO4**	**(05)**
Unit 5	**Polymorphism:** Need of Polymorphism, concept, Compile time polymorphism or early binding: Function over loading and operator overloading: Unary, Binary, Arithmetic operators, Relational and Logical operators, Overloading new and delete operators, Insertion and extraction operators, Run time polymorphism or late binding using virtual function, Pure virtual function.	**CO3**	**(09)**
Unit 6	**Files and Streams:** Concept of streams, Concept of file, Opening and closing a file, Detecting end-of-file, File modes, File pointer, Reading and writing characters, Strings and objects to the file.	**CO4**	**(06)**

Text Books				
1.	R. Lafore, "Object Oriented Programming in C++", Galgotia Publications, 3rd Edition,2003 (Unit:1,2,3,4,5,6)			
2.	E. Balguruswamy, "Object Oriented Programming with C++", McGraw-Hill publication, 5th Edition, 2011 (Unit: 1, 2, 3, 4, 5, 6).			

Reference Books				
1.	Bjarne Stroustrup, "C++ Programming with language", AT & T, 2013.			
2.	Herbert Schildt, "C++: The Complete Reference", McGraw-Hill, 4th Edition, 1995.			
3.	Cay Horstmann, Timothy Budd, "BIG C++", Wiley India, 2006.			

Useful Links				
1.	http://nptel.ac.in/courses/106106127/41 Prof. Shankar Balachandran, IITMadras			
2.	http://www.spoken-tutorial.org NMEICT Project of Govt. Of India.			

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	1	2	3	-	-	-	-	-	-	-	-	-	1	1
CO 2	-	3	2	-	-	-	-	-	-	-	-	-	2	1
CO 3	1	2	3	-	-	-	-	-	-	-	-	-	2	2
CO4	-	2	1	-	-	-	-	-	-	-	-	-	3	1

1: Slight (Low)   2: Moderate (Medium)   3: Substantial (High)

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	-	-	-
Understand	5	6	20
Apply	5	6	20
Analyse	5	4	10
Evaluate	5	4	10
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad				
First Year (Sem – II) B. Tech. Information Technology				
IT3204: Data Structures				

Teaching Scheme			Examination Scheme	
Lectures	03 Hrs/week		MSE	20
Tutorials	00 Hrs/week		ISE	20
Total Credits	03		ESE	60
			Duration of ESE	02 Hrs 30 Min

Prerequisite : C Programming, Computer Fundamental

Course Outcomes (CO): Students will be able to

CO1	Write algorithms, its Pseudo code representation and analysis.
CO2	Implement linear and non-linear data structures.
CO3	Perform various operations on data structures like searching, sorting and their complexities.
CO4	Analyse problem techniques, select appropriate data structure and design the algorithms for the problem.

Course Contents		CO	Hours
Unit 1	**Algorithm Basics and Recursion:** Algorithms, Pseudo code representation, Algorithm efficiency, Recursion, Conversion-Infix to Prefix , Infix to Postfix, Prefix to Infix, Prefix to Postfix, Postfix to Infix and Postfix to Prefix.	CO1	(08)
Unit 2	**Sequential Representation of Linear Data Structures:** Stack, Operations on stack, Applications of stack, Queue, Operations on queue, Priority queues, and Circular queue.	CO2	(07)
Unit 3	**Linked Representation of Linear Data Structures:** Dynamic memory allocation, Singly, doubly and circular linked list, Stack using linked list, Queue using linked list.	CO2	(06)
Unit 4	**Non Linear Data Structures (Trees):** Basic concept and terminology, Data structure for binary trees. Algorithms for tree traversals, Binary search trees (BST).	CO2, CO3	(06)
Unit 5	**Non Linear Data Structures (Graphs):** Concepts and terminology of graph, Representation of graph using adjacency matrix and adjacency list, Graph traversal techniques.	CO2, CO4	(07)
Unit 6	**Searching and Sorting Techniques:** Need of sorting and searching, Sequential search, Binary search, Bubble sort, Insertion sort, Selection sort, Heap sort, Merge sort, Quick sort.	CO3, CO4	(08)

Text Books

1.	Richard Gilberg and Behrouz Forouzan, "Data structures A Pseudo code Approach with C", Cengage Learning, 2nd Edition, 2005(Unit:1,2,3,4,5)
2.	Semour Lipschutz, "Data structures with C", Schaum Series (TMH) ,1st Edition, 2017(Unit:6)

Reference Books

1.	E. Horowitz, S.Sahani, S. Anderson- Freed, "Fundamentals of Data Structures in C", SP publication, 2nd Edition, 2008.
2.	Yashwant Kanetkar, "Data Structures through C", BPB Publication, 2003.
3.	Aaron Tenenbaum, Yedidyah Langsam, "Data structure using C", LPE, Pearson Education, 2014.

Useful Links

1.	http://nptel.ac.in/courses/106106130/ , IIT Madras.
2.	http://nptel.ac.in/courses/106103069/ , IIT Guwahati.
3.	http://nptel.ac.in/courses/106106127/ , Prof. Shankar Balachandran, IIT Madras.

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	2	1	-	-	-	-	-	-	-	-	-	1	1
CO 2	1	3	3	2	-	-	-	-	-	-	-	-	1	1
CO 3	1	3	2	2	-	-	-	-	-	-	-	-	1	1
CO 4	1	2	3	2	1	-	-	-	-	-	-	-	1	1

Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	5	4	-
Understand	-	-	10
Apply	5	6	20
Analyse	5	4	10
Evaluate	5	6	20
Create	-	-	-
TOTAL	20	20	60

Government College of Engineering, Karad				
First Year (Sem – II) B. Tech. Information Technology				
IT3205: Indian Knowledge Systems				
Teaching Scheme			**Examination Scheme**	
Lectures	-		ISE	-
Tutorials	-		ESE	100
Total Credits	02			

Course Outcomes (CO): Students will be able to

CO1	Illustrate and appreciate the rich heritage that resides in our traditions
CO2	Inculcate an understanding of the mind/voice dynamic and its function in Indian knowledge systems
CO3	Learn to appreciate the need and importance of Sanskrit in getting to the roots of the philosophical concepts
CO4	Being primed for practices that will prepare one for the inner-journey to discover the Self

<div align="center">

Course Contents

</div>

Students should complete any one of the MOOC course certification of Indian Knowledge System and submit a copy of the certificate to Head of Department prior to ESE.

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Guidelines:

</div>

- Duration for completion of MOOC course certification is minimum 8 Weeks.

- Platform: NPTEL or SWYAM only

- Assessment Guideline:- The evaluation of Indian Knowledge System MOOC Course will be based on at actual score secured by the student in NPTEL or SWAYAM course certification and it will be converted to ESE score.

- If the student unable to submit the NPTEL or SWAYAM completion Certificate, in such cases evaluation will be based on assignment score (60% weightage) of registered NPTEL/SWAYAM and internal evaluation (40 % weightage).

- The rubrics for internal evaluation are given below.

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Government College of Engineering, Karad

Department of _____

</div>

A. Y. 2023-24									
Course Code :					**Assessment Sheet**			**Class:**	
Course Title :-									
Sr No.	**Reg. No**	**Name of Student**	**Course Title**	**Knowledge of Course (08 Marks)**	**Communication Skill (08 Marks)**	**Presentation Skill (08 Marks)**	**Content (08 Marks)**	**Q & A (08 Marks)**	**Total Marks (out of 40)**
1									
2									

Guide Name and Sign.   **Head of the Department**

Government College of Engineering, Karad			

Government College of Engineering, Karad					
First Year (Sem – II) B. Tech. Information Technology					
IT3206: Engineering Physics Lab					
Laboratory Scheme:			**Examination Scheme:**		
Practical	02 Hrs/Week		ISE	25	
Total Credits	01		ESE	--	
Prerequisite : Basics of Physics					
Course Outcomes (CO): Students will be able to					
CO1	Verify laws of electrostatic and magneto static experimentally.				
CO2	Demonstrate a behavior of light by LASER, Ultrasonic waves and monochromatic light				
CO3	Compute required physical quantity from given data. of semiconductor, superconductor, magnetic and dielectric materials				
CO4	Demonstrate recent synthesis methods for engineering and technology.				
Course Contents					**CO**
Experiment 1	To study the volt-ampere characteristics of pn-junction and Zener diode, voltage regulator using Zener diode				**CO1, CO3**
Experiment 2	To determine the velocity of ultrasonic waves in liquid medium by interferometer.				**CO2, CO4**
Experiment 3	Find an object by Ultrasonic waves				**CO2, CO4**
Experiment 4	To calculate the divergence of LASER beam.				**CO2, CO4**
Experiment 5	Determination of wavelength of LASER using diffraction grating.				**CO2, CO4**
Experiment 6	To study magneto resistance of n-type semiconductor				**CO1, CO3**
Experiment 7	To study Hall effect in Semiconductor				**CO1, CO3**
Experiment 8	To determine the energy gap in semiconductor by four probe method				**CO1, CO3**
Experiment 9	To study Fundamental of Solar Energy trainer/Wind energy Trainer				**CO2, CO4**
Experiment 10	To study fundamentals of fiber optics using fiber optics trainer				**CO2, CO4**
Experiment 11	To understand the reconstruction of hologram by Holography				**CO2, CO4**
Experiment 12	To determine the magnetic susceptibility of the $FeCl_3$ solution.				**CO1, CO3**
Experiment 13	To verify Faradays Law				**CO1**
Experiment 14	To verify Lenz's law				**CO1**
Demonstration Experiment					
Experiment 15	To synthesize Nano particles by spray Pyrolysis/CVD method				**CO4**
Experiment 16	To study behavior of material with temperature by TGA/DTA.				**CO4**
List of Submission:					
1.	Minimum number of Experiments: 10				

Mapping of COs and Pos:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	3	1	-	1	1	-	1	-	2	2	-	-	
CO 2	3	3	1	-	-	1	1	-	1	-	2	2	-	-
CO 3	3	3	1	-	-	1	1	-	1	-	2	2	-	-
CO 4	3	3	1	-	-	1	1	-	1	-	2	2	-	-
CO5	3	3	1	-		1	1	-	1	-	2	2	-	-

1: Slight (Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad
First Year (Sem – II) B. Tech. Information Technology
FE3207 : Object Oriented Programming Lab

Laboratory Scheme:			Examination Scheme:	
Practical	02 Hrs/week		ISE	50
Total Credits	01		ESE	25

Prerequisite : C Programming

Course Outcomes (CO): Students will be able to

CO1	Test and execute the programs and correct syntax and logical errors.
CO2	Develop and execute program by using multiple concepts.
CO3	Implement basic C++ programming concepts like inheritance, polymorphism.
CO4	Analyze errors and program behavior for different set of inputs.

Course Contents	CO
Implementation of following concepts	
Experiment 1 Class objects, constructor, destructor, constructor overloading.	**CO1**
Experiment 2 Friend function and friend class.	**CO1, CO2**
Experiment 3 Inline function.	**CO2**
Experiment 4 Single inheritance and multilevel inheritance.	**CO3**
Experiment 5 Multiple inheritances and hybrid inheritance.	**CO3**
Experiment 6 Hierarchical Inheritance.	**CO3**
Experiment 7 Virtual base class.	**CO2**
Experiment 8 Operator overloading- New and Delete operators.	**CO2**
Experiment 9 Function overloading.	**CO3**
Experiment 10 Operator overloading- Unary and Binary Operators.	**CO4**
Experiment 11 Operator overloading- Relational and Logical operators.	**CO4**
Experiment 12 Virtual and Pure virtual function.	**CO4**
List of Submission:	
2. Minimum number of Experiments : 10	

Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	-	2	3	-	-	-	-	-	-	-	-	-	1	1
CO 2	-	3	1	-	-	-	-	-	-	-	-	-	-	2
CO 3	1	2	3	-	-	-	-	-	-	-	-	-	2	1
CO4	-	3	2	-	-	-	-	-	-	-	-	-	1	2

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Exp 11	Exp 12	Avg
Task I	15	15	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25	25	25	25	25	25

Government College of Engineering, Karad
First Year (Sem – II) B. Tech. Information Technology
IT3208: Data Structures Lab

Laboratory Scheme:			Examination Scheme:	
Practical	02 Hrs/week		ISE	50
Total Credits	01		ESE	25

Prerequisite : C Programming, Fundamental of Computing and Programming

Course Outcomes (CO): Students will be able to

CO1	Implement various basic data structures and its operations.
CO2	Implement and apply the appropriate linear and non-linear data structures in problem solving.
CO3	Develop algorithms using various searching and sorting techniques.

Course Contents	CO
Implementation of following concepts:	
Experiment 1 Stack and Queue using array	**CO1**
Experiment 2 Circular queue using array	**CO1**
Experiment 3 Single Linked list	**CO1**
Experiment 4 Stack: to perform expression conversion and evaluation for infix, postfix, prefix	**CO1,CO2**
Experiment 5 Depth First Search (DFS) and Breadth First Search (DFS)	**CO1,CO2**
Experiment 6 Searching an element in the array using Linear Search	**CO1,CO2**
Experiment 7 Searching an element in the array using recursive Binary Search	**CO1,CO2**
Experiment 8 Binary Search Tree	**CO3**
Experiment 9 Bubble sort	**CO3**
Experiment 10 Selection sort	**CO3**
Experiment 11 Insertion sort	**CO3**
Experiment 12 Merge sort	**CO3**
List of Submission:	
Minimum number of Experiments : 10	

Mapping of COs and POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1	2	2	2	1	-	-	-	-	-	-	-	-	2	2
CO2	2	1	3	2	-	-	-	-	-	-	-	-	2	1
CO3	3	2	2	1	1	-	-	-	-	-	-	-	2	1

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Avg .
Task I	15	15	15	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05	05	05	05
ISE											

Government College of Engineering, Karad				
First Year (Sem – II) B. Tech. Information Technology				
IT3209: Engineering Graphics Lab				
Teaching Scheme			**Examination Scheme**	
Lectures	02 Hrs/week		ISE	50
Practical	02 Hrs/week		ESE	25
Total Credits	03			
Prerequisite: Nil				
Course Outcomes (CO): Students will be able to				
CO1	Acquire skills sets to use engineering drawing instruments, symbols, conventions, title block in engineering drawing, to communicate his ideas, information and instructions.			
CO2	Dimension and annotate two-dimension & three dimensional engineering drawings			
CO3	Plan and prepare neat engineering drawing of various engineering curves, orthographic drawings of points, straight lines, planes, solids, and section of solids, isometric views			
CO4	Develop a skill of visualization to understand and read the engineering drawing			

	Course Contents	**CO**	**Hours**
Unit 1	**Introduction to Engineering Drawing& Engineering Curves:** Principles of Engineering Graphics and its significance, usage of Drawing instruments and accessories, layout of drawing sheets, different types of lines used in drawing practice, lettering, Introduction to SP46: 2003, Dimensioning system as per BIS, Geometric constructions. Construction of regular polygons Engineering Curves: Conic sections; Construction of Ellipse, Parabola, and hyperbola using Focus-Directrix method only; Cycloidal curves, (excluding Epicycloid, Hypocycloid), and Involutes, Methods to draw tangent and normal for above engineering curves. Applications of curves in engineering.	CO1, CO2	(07)
Unit 2	**Theory of Projections:** Principles & theory of Projections, projection systems, projection methods, First angle & third angle method of projection, relative positions of different view, symbol of first angle and third angle; Auxiliary planes; AIP, AVP, views on auxiliary planes. Projection of Points & Lines: Projections of Points situated in any quadrant, notation system. Projection of straight line; parallel, inclined and oblique w.r.t. reference planes (RP's). Traces of lines, (Line only first quadrant should be considered).	CO1, CO3	(07)
Unit 3	**Projections of Regular Planes:** Types of planes, Projections of planes, positioned - parallel, inclined, and oblique *w.r.t.* HP & VP planes.	CO1, CO3	(05)
Unit 4	**Projections of Regular Solids:** Types of Solids, Projection of simple solids; Prisms, Pyramids, and cylinder, inclined to both reference planes.	CO1, CO3	(05)
Unit 5	**Projections of Regular Sectional Solids:** Sections and Sectional views of right angular Solids; Prism, Cylinder, Pyramid, Cone – Auxiliary Views; finding true shape of a section.	CO1, CO3	(03)
Unit 6	**Isometric Projections:** Principles of Isometric projection – Terminology, Isometric Scale, Isometric Views of standard shapes & standard solids.	CO2, CO4	(03)
	In semester Evaluation (ISE) shall be done on punctuality, interactive participation in class, laboratory work done and oral assessment.		
	ESE will be based on Oral examination on submission work of Drawing sheets, Quiz etc		

	Lab Contents	CO
Dwg Sheet no. 1	Engineering Curves	**CO1, CO2, CO3**
Dwg Sheet no. 2	Projections of Points & Lines	**CO1, CO2, CO3, CO4**
Dwg Sheet no. 3	Projections of Planes	**CO1, CO2, CO3, CO4**
Dwg Sheet no. 4	Projections of Solids	**CO1, CO2, CO3, CO4**
Dwg Sheet no. 5	Projections of Section of Solids	**CO1, CO2, CO3, CO4**
Dwg Sheet no. 6	Isometric Projections of Simple solids	**CO1, CO2, CO3, CO4**
Dwg Sheet no. 7	Orthographic Projection of Simple components (optional)	**CO1, CO2, CO3, CO4**

Text Books

1. Bhatt N.D., Engineering Drawing: Plane & Solid Geometry, 54th edition, 2023, Charotar Publishing House
2. Basant Agrawal, C M Agrawal, Engineering Graphics, 3rd edition (2019)TMH Publication
3. Dhananjay A Jolhe, Engineering Drawing with an introduction to AutoCAD, TMH Publication, (2010)

Reference Books

1. Cencil Jenson, Jay D. Helsel, D. R. Short, Engineering Drawing & Design, 7th ed, 2015 TMH Pub
2. M. L. Dabhade, Engineering Graphics, Vision Publication

Useful Links

1. https://nptel.ac.in/courses/112103019/
2. https://archive.nptel.ac.in/courses/112/102/112102304/

Mapping of COs and Pos:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	3	-	-	1	-	2	-	1	1	1
CO2	2	2	-	-	2	-	-	2	-	3	-	2	1	1
CO3	3	3	-	-	3	-	-	2	-	3	-	2	1	1
CO4	2	2	-	-	2	-	-	2	-	3	-	2	1	1

1: Slight(Low)   2: Moderate(Medium)   3: Substantial(High)

Assessment Pattern:

Skill Level (as per CAS Sheet)	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Avg
Task I	15	15	15	15	15	15	15	15
Task II	05	05	05	05	05	05	05	05
Task III	05	05	05	05	05	05	05	05
ISE	25	25	25	25	25	25	25	25

Government College of Engineering, Karad				
First Year (Sem – II) B. Tech. Information Technology				
IT3210: National Cadet Corps(NCC)				
Teaching Scheme			**Examination Scheme**	
Lectures	00 Hrs/Week		ISE	50
Practical	02 Hrs/Week		ESE	-
Total Credits	01			
Prerequisite:				
Course Outcomes (CO): Students will be able to				
CO1	Develop sense of discipline, character, and brotherhood, the spirit of adventure and ideals of selfless service.			
CO2	Illustrate grace and dignity in the performance of foot drill.			
CO3	Rewrite the importance of a weapon its detailed safety precautions necessary for prevention of accidents.			
CO4	Develop awareness about different types of terrain and how it is used in battle craft.			
	Course Contents			**CO**
Unit 1	Following list of topics and practical's are to be covered during NCC training sessions. • National Integration & Awareness • Personality Development and Leadership • Disaster Management • Social Awareness & Community Development • Health & Hygiene • Environment Awareness and Conservation • Drill • Weapon Training • Adventure Training • Introduction to Armed Forces • Obstacle Training • Military History • Introduction to Infantry Weapons and Equipment • Communication • Map reading • Field Craft and Battle Craft			CO1, CO2, CO3, CO4,
	Min. 75% attendance is mandatory. NCC training will start in Semester I			
	Eligibility Criteria for NCC certificate A Exam 1. The Cadet must have attended a minimum of 75% of total training periods laid down in the syllabus for the first and second years of Junior Division/Wing NCC (All Wings). 2. In order to count his previous tenure, the break in the NCC Training Tenure of the cadet prior to his appearing in the exam should not exceed more than 12 months at one time. 3. In case the break exceeds 12 months the following procedure will be followed :- A. If he has been on the unit rolls for a minimum of two years before his discharge and had attended 75% of the total periods during his NCC Tenure he will need another 36 periods of training to become eligible to appear for Certificate A examination. B. In all other cases, where above conditions are not fulfilled, the cadet must attend			

	a minimum of 75% periods of the first and second years of training. 4. Must have attended one Annual Training Camp. 5. NCC training activity will be covered in Semester I & II.														

Text Books

1.	"Cadet Hand Book" published by Directorate General of NCC, New Delhi under the Ministry of Defence, Govt. Of India.
2.	"NCC Red Book", published by Directorate General of NCC, New Delhi under the Ministry of Defence, Govt. of India.

Reference Books

1.	"NCC Coffee Table Book", published by Directorate General of NCC, New Delhi under the Ministry of Defence, Govt. of India.

Useful Links

1.	https://indiancc.nic.in/
2.	https://indiancc.mygov.in/

Mapping of COs and POs

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	-	-	-	-	-	2	-	2	1	-	-	1	-	-	1
CO 2	-	-	-	-	-	-	-		2	-	-	1	-	-	-
CO 3	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
CO 4	-	-	-	-	-	-	-		1	-	-	1	-	-	1

Assessment Pattern:

Marks obtained in NCC certificate 'A' exam will be converted into equivalent In-Semester Evaluation marks.

Certificate A exam will be conducted by National Cadet Corps.

<table>
<tr><td colspan="5" align="center">Government College of Engineering, Karad</td></tr>
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Government College of Engineering, Karad
First Year (Sem – II) B. Tech. Information Technology
IT3210: National Service Scheme (NSS)

Teaching Scheme			Examination Scheme	
Lectures	00 Hrs/Week		ISE	50
Practical	02 Hrs/Week		ESE	-
Total Credits	01			

Course Outcomes (CO): Students will be able to

CO1	Outline the community in which they work and their relation
CO2	Identify the needs and problems of the community and involve them in problem-solving
CO3	Develop capacity to meet emergencies and natural disasters
CO4	Practice national integration and social harmony.
CO5	Utilize their knowledge in finding practical solutions to individual and communityproblems.

Course Contents	CO	Hrs

National Service Scheme:
The NSS activities and allotted hours are mentioned below:
1. Blood donation Camp   8 Hrs.
 	
2. Tree Plantation   4 Hrs.
 	
3. Internal Cleanliness Drive   8 Hrs.
 	
4. External Cleanliness Drive   8 Hrs
 	
5. Arranging Lectures on Social Issues in schools or villages   4 Hrs.
 	
6. Demonstration of Street Plays on Social issues   4 Hrs.
 	
7. Demonstration of Street Plays on Safety issues   4 Hrs.
 	
8. Arranging Rally on Social issues   4 Hrs
 	
   (Anti-Tobacco, Vysan Mukti etc.).
 	
9. Celebration of National Days (As per NSS list)   4 Hrs.
 	
10. Arrangement of free medical checkup camp in villages   4 Hrs.
 	
11. Arrangement of environment protection awareness camp   4 Hrs.
 	
12. Arrangement of veterinary awareness camp   4 Hrs.
 	
13. Participation in disaster management training   8 Hrs.
 	
14. Arrangement of water conservations awareness camp   8 Hrs.
 	
15. Arrangement of rain water harvesting awareness camp   8 Hrs.
 	
16. Assisting local administration for law and order,   8 Hrs.
   regulation, social issues.
 	
17. Any other activity as decided by Hon. Principal / Program Officer   8 Hrs
   from time to time .
	CO1, CO2, CO3, CO4, CO5	(30)

Instructions: 1) The Students will have to complete for a total period of 30 hours activities (in one Semester) **OR** Participation in seven days residential camp with completion certificate of NSS camp. 2) NSS Volunteer has to complete 30 hours NSS activities mentioned in above		

| | curriculum. NSS volunteer has to prepare and submit NSS activity report of 30 hours to NSS   Coordinator.
3) The In Sem Evaluation (ISE) will be conducted by NSS Coordinator based on the attendance, overall performance and the report. | |

Reference Books:

1.	National Service Scheme Manual, Government of India.
2.	Training Programme on National Programme scheme, TISS.
3.	Orientation Courses for N.S.S. Programme officers, TISS.
4.	Case material as Training Aid for field workers, Gurmeet Hans.
5.	Social service opportunities in Hospitals, Kapil K.Krishan,TISS.
6.	Social Problems in India, Ram Ahuja.
7.	National Service Scheme Manual (Revised), Government of India, Ministry of Youth Affairs and Sports, New Delhi. 2006
8.	University of Mumbai National Service Scheme Manual, 2009
9.	Avhan Chancellor's Brigade - NSS Wing, Training Camp on Disaster Preparedness Guidelines, March, 2012.
10.	Rashtriya Seva Yojana Sankalpana - Prof. Dr. Sankey Chakane, Dr. Pramod / Pabrekar, Diamond Publication, Pune.
11	National Service Scheme Manual for NSS District Coordinators, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya.
12	Annual Report of National Service Scheme (NSS) published by Dept. of Higher and Technical Education, Mantralaya.
13	NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA - Socio and Cultural Guidelines.
14	Purushottam Sheth, Dr. Shailaja Mane, National Service Scheme

Useful Links

1.	https://www.youtube.com/watch?v=3o40NbNLoWQ
2.	https://www.youtube.com/watch?v=paJK5X6zqI8&list=PLp4YWOW_llESHogw-coZo7PQdYliF-msj
3.	https://www.youtube.com/watch?v=paJK5X6zqI8&list=PLp4YWOW_llESHogw-coZo7PQdYliF-msj&index=1

Mapping of COs and POs

PO \ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 2	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 3	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 4	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO5	1	1				1	1	1	1				1	1

Assessment Pattern: (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	-	-	-
Understand	-	-	20
Apply	-	-	10
Analyse	-	-	10
Evaluate	-	-	10
Create	-	-	-
Total	-	-	50

Government College of Engineering, Karad
First Year (Sem – II) B. Tech. Information Technology
IT3210: Community Service and Practices (CSP)

Teaching Scheme			Examination Scheme	
Lectures	00 Hrs/Week		ISE	50
Practical	02 Hrs/Week		ESE	-
Total Credits	01		Duration of ESE	-

Course Outcomes (CO): Students will be able to	
CO1	Understand the community needs in which they are living.
CO2	Identify the problems of the community and help to solve them.
CO3	Apply technical knowledge of respective field to train local community.
CO4	Practice national integration and social harmony.

	Course Contents	CO	Hours
	Community Service and Practices (CSP): 1. Student has to register for CSP with department coordinator. 2. He/she has to complete one of the following two modules. 3. He/she has to obtain certificate of participation from Head of the department to that effect.		
	MODULE I: The institute has signed MoU with NASSCOM for implementation of digital literacy program (under NDLM - National Digital Literacy Mission). The program shall cover training of school children or village youths on one of the 7 modules designed by NASSCOM such as internet, mobile banking, e-commerce, e-business, use of media like WhatsApp/ linkedin etc. The course details are provided by NASSCOM. The course work of each module consists of presentation of readymade power point slides as a theory and separate practice sessions. The module shall be followed by test and joint certification of successful candidates (institute and NASSCOM). The theory sessions shall be conducted in the respective schools and the practical may be conducted in schools subject to availability of computational facility OR in the computer centre of our institute on weekend. The total duration of the course shall be between 40 to 60 hours. The students shall visit schools covering 20 km surrounding area (rural and municipal schools) and register the school students. The target for each student shall be delivery and certification of one of the modules to a group of 6 school students. Travelling allowance for travel by bus (bus ticket) or sleeper class shall only be admissible to the students at actual subject to prior sanction of Hon. Principal for the activity.	**CO1, CO2, CO3, CO4**	40 to 60
	MODULE II He/she should participate in all/few of the following activities and complete at least 60 hours of activities for technology transfer to community within 20 km. The activities shall be declared by respective Head of the department. The list of different CSP activities to be conducted under this module shall be but not limited to the following. The activity has to be conducted under the institute banner and counting of its equivalent duration shall be as Indicated against each. He/she should collect total 60 Hours from CSP activities. 1. Two wheeler maintenance 16 Hrs. 2. Motor cycle repairing 16 Hrs. 3. Electrical wiring 16 Hrs.	**CO1, CO2, CO3, CO4**	60

4. Plumbing 16 Hrs. 5. Carpentry 16 Hrs. 6. Computer Hardware maintenance 16 Hrs. 7. Radio / T.V. repair 16 Hrs. 8. Rain water harvesting 16 Hrs. 9. Roof water harvesting 16 Hrs. 10. Electric safety 16 Hrs. 11. Electrical Safety 16 Hrs. 12. Constructional Safety 16 Hrs.	

Reference Books:

1.	Community Service and Practices Manual, Government of India.
2.	Training Programme on National Programme scheme, TISS.
3.	Case material as Training Aid for field workers, Gurmeet Hans.
4.	Social service opportunities in Hospitals, Kapil K.Krishan,TISS.
5.	Social Problems in India, Ram Ahuja.
6.	National Service Scheme Manual (Revised), 2006 Government of India, Ministry of Youth Affairs and Sports, New Delhi.
7.	University of Mumbai National Service Scheme Manual, 2009
8.	Avhan Chancellor's Brigade - NSS Wing, Training Camp on Disaster Preparedness Guidelines, March, 2012.
9.	Rashtriya Seva Yojana Sankalpana - Prof. Dr. Sankey Chakane, Dr. Pramod / Pabrekar, Diamond Publication, Pune.
10.	National Service Scheme Manual for NSS District Coordinators, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya.
11	Annual Report of National Service Scheme (NSS) published by Dept. of Higher and Technical Education, Mantralaya.
12	NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA - Socio and Cultural Guidelines.
13	Purushottam Sheth, Dr. Shailaja Mane, National Service Scheme

Useful Links

1.	https://www.youtube.com/watch?v=3o40NbNLoWQ
2.	https://www.youtube.com/watch?v=paJK5X6zqI8&list=PLp4YWOW_llESHogw-coZo7PQdYliF-msj
3.	https://www.youtube.com/watch?v=paJK5X6zqI8&list=PLp4YWOW_llESHogw-coZo7PQdYliF-msj&index=1

Mapping of COs and POs

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1		1	-	-	-		1	1		1	-	-	1	1
CO 2	1	1	-	-	-	1	1	1	1	1	-	-	1	1
CO 3	1	1	-	-	-	2	1	1	1	1	-	-	1	1
CO 4	1	1	-	-	-	1	1	1	1	1	-	-	1	1
CO5	1	1				1		1	1				1	1

Assessment Pattern: (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	-	-	10
Understand	-	-	10
Apply	-	-	20
Analyse	-	-	10
Evaluate	-	-	-
Create	-	-	-
Total	-	-	50

Government College of Engineering, Karad				
First Year (Sem – II) B. Tech. Information Technology				
IT3210: E-Cell				
Teaching Scheme			**Examination Scheme**	
Lectures	00 Hrs/Week		ISE	50
Practical	02 Hrs/Week		ESE	-
Total Credits	01			

Course Outcomes (CO): Students will be able to

CO1	Apply various schemes supporting entrepreneurship.
CO2	Use various entrepreneurship models.
CO3	Identify qualities of entrepreneurs.
CO4	Utilize their knowledge in finding practical solutions to individual and communityproblems.

	Course Contents	CO	Hrs
	E-Cell Activities: The E-Cell activities and allotted hours are mentioned below: 1. Orientation and Motivation 2. Opportunity assessment 3. Kick starting the Entrepreneurial campus 4. Business planning workshops 5. Prototype to commercialization- drafts preparation 6. Market Analytics 7. Team Building 8. Managing funds/ entrepreneurship finance 9. Social Entrepreneurship locally in the area	CO1, CO2, CO3, CO4	(30)
	Instructions: 1) The Students will have to complete for a total period of 30 hours activities (in one Semester). 2) The In Sem Evaluation (ISE) will be conducted by Coordinator based on the attendance, overall performance and the report. 3) E- Cell consists of faculty member's act as the facilitator and students as the active members. The student's members for the E-cell will be selected on the basis of their interest and their willingness to work for E-cell voluntarily. E-cell team will prepare an activities mentioned above for the semester.		

Reference Books:

1.	Dr. Gupta and Dr. Srinivasan, Entrepreneurship development in India, 2022.
2.	Vasant Desai, Dynamics of Entrepreneurial Development and Management, 2001.
3.	Sarugadharan and Resia Begum, Women Entrepreneurship; institutional support and problems.
4.	M.W.Deshpande, Entrepreneurship of small Scale Industries.
5.	D.L. Saxon and RW Smilor (eds), The Art and Science of Entrepreneurs.
6.	Venkateshwara Rao and Udai Pareek,(Eds)Developing Entrepreneurship-A Handbook.

7.	Ravi J. Mathai, Rural Entrepreneurship A Frame Work in Development Entrepreneurship –A handbook.				
Useful Links					
1.	https://gpdaman.in/entrepreneurship-development-cell-edc/				
2.	https://www.ecell.in/2020/ IIT Bombay.				
3.	https://www.ecelliitk.org/ IIT Kanpur				

Mapping of COs and POs

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 2	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 3	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO 4	1	1	-	-	-	1	1	1	1	-	-	-	1	1
CO5	1	1				1	1	1	1				1	1

Assessment Pattern: (with revised Bloom's Taxonomy)

Knowledge Level	MSE	ISE	ESE
Remember	-	-	-
Understand	-	-	20
Apply	-	-	10
Analyse	-	-	10
Evaluate	-	-	10
Create	-	-	-
Total	-	-	50