Walchand College of Engineering

(Government Aided Autonomous Institute)

Credit System for F.Y. B.Tech. (Computer Science and Engineering) Sem-I AY 2023-24

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE
Professional Core (Theory)												
01	BS	7MA101	Engineering Mathematics - I	3	1	0	0	4	4	30	20	50
02	BS	7PH103	Engineering Physics	3	0	0	0	3	3	30	20	50
03	ES	7AM102	Engineering Mechanics	2	0	0	0	2	2	30	20	50
04	ES	7CM106	Civil & Mechanical Engineering	3	0	0	0	3	3	30	20	50
05	PC	7CS101	Computer and Networking Essentials	3	0	0	0	3	3	30	20	50
Professional Core (Lab)												
06	BS	7PH155	Engineering Physics Lab	0	0	2	0	2	1	30	30	40
07	HS	7HS101	Communication & Generic Skills	0	0	2	1	3	2	30	30	40
08	ES	7AM155	Engineering Mechanics Lab	0	0	2	0	2	1	30	30	40
09	ES	7CM156	Civil & Mechanical Engineering Lab	0	0	2	0	2	1	30	30	40
10	PC	7CS151	Computer and Networking Essentials Lab	0	0	2	0	2	1	30	30	40
11	VS	7VS151	Engineering Skills - I	0	0	2	0	2	1	30	30	40
			Total	**14**	**1**	**12**	**1**	**28**	**22**			

Notes:

- For Theory courses: There shall be MSE, ISE and ESE. Theory-ESE is a separate head of passing.
- For Lab courses: There shall be continuous assessment (LA1, LA2, ESE). Lab-ESE is a separate head of passing.
- For Lab Courses, (LA1+LA2) should be >= 40% to appear for Lab ESE.
- **For further details, refer to Academic and Examination rules and regulations.**

Dr. N. L. Gavankar
DAC/Secretary, BoS

Dr. Mrs. M. A. Shah
Head, Computer Science and Engg. Dept./
Chairman, BoS

23/8/2023
Dr. Mrs. S. P. Sonavane
Dean Academics

Dean Academics
Walchand College of Engg.
Vishrambag, Sangli - 416 415

Date: 23 /08 /2023

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information	
Programme	B.Tech. (All Branches)
Class, Semester	First Year B. Tech., Sem I
Course Code	7MA101
Course Name	Engineering Mathematics- I
Desired Requisites:	Mathematics course at Higher Secondary Junior College

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	3 Hrs/week	**MSE**	**ISE**	**ESE**	**Total**
Tutorial	1 Hrs/week	30	20	50	100
		Credits: 04			

Course Objectives	
1	Introduce the basic concepts required to understand, construct, solve and interpret various types of differential equation.
2	Improve the Mathematical skill for enhancing logical thinking power of students
3	Acquire knowledge with a sound foundation in Mathematics and prepare them for graduate.
4	

Course Outcomes (CO) with Bloom's Taxonomy Level		
At the end of the course, the students will be able to,		
CO1	Explain mathematical concepts in engineering field.	Understanding
CO2	Solve engineering and scientific problems.	Applying
CO3	Applying the Mathematical concept in Engineering field	Applying
CO4		

Module	**Module Contents**	**Hours**
I	**Matrices** Rank of matrix, Homogeneous and non-homogeneous linear equations, Eigen values, Eigen vectors, Cayley Hamilton theorem, Diagonalizations of matrices.	**6**
II	**Partial Differentiation and its application** Partial derivative, chain rule for partial differentiation, Euler's theorem for homogeneous and non-homogeneous function, Jacobian, Error and approximation, maxima and minima of function of two variables	**8**
III	**Complex Number**Polar form of complex number, Argand's diagram, De Moiver's theorem, roots of complex number, Hyperbolic function, relation between circular and hyperbolic function.	**7**

IV	**First order ordinary differential equation and its application** Exact, Linear, Bernoulli's equations, Euler's equations, Orthogonal trajectory, applications to simple electric circuit.	**7**
V	**Numerical Solution of Ordinary Differential Equations of first order and first degree:** Numerical Solution by (i) Taylor's series method (ii) Euler's method (iii) Modified Euler's method (iv) Runge- Kutta fourth order method	**6**
VI	**Calculus** Rolle's theorem, Mean value theorem, Taylor's and Maclaurin's theorem with remainders	**5**

Textbooks	
1	P. N. and J. N. Wartikar "A Text Book of Applied Mathematics, Vol I and II, Vidyarthi Griha Prakashan, Pune, 2006.
2	B .S. Grewal "Higher Engineering Mathematics", , Khanna Publication, 44th Edition, 2017.
3	
4	
References	
1	Erwin Kreyszig , "Advanced Engineering Mathematics", , Wiley Eastern Limited Publication, 10th Edition, 2015.
2	Wylie C.R *"Advanced Engineering Mathematics",*., Tata McGraw Hill Publication, 8th Edition 1999.
3	H. K. Dass, "*Advanced Engineering Mathematics",* S. Chand & Company Ltd., 1st Edition, 2014.
4	B.V.Ramana, "Higher Engineering Mathematics ", The McGraw Hill companies, 2006.
Useful Links	
1	https://nptel.ac.in/courses/111105121
2	
3	
4	

CO-PO Mapping

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2			1										
CO2	2			1										
CO3	2			1										
CO4														

The strength of mapping is to be written as 1: Low, 2: Medium, 3: High
Each CO of the course must map to at least one PO.

Assessment

The assessment is based on MSE, ISE and ESE.
MSE shall be typically on modules 1 to 3.
ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.
ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.
For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Walchand College of Engineering, Sangli

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AY 2023-24

Course Information	
Programme	B.Tech. (Computer Science & Engineering and Information Technology)
Class, Semester	First Year B.Tech., Sem I / II
Course Code	7PH103
Course Name	Engineering Physics for CSE & IT Engineers
Desired Requisites:	Students are expected to know the basic concept in Physics.

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	03Hrs/week	MSE	ISE	ESE	Total
Tutorial	0 Hrs/week	30	20	50	100
		Credits: 3			

Course Objectives	
1	To provide basic concepts to solve many engineering and technical issues.
2	To give deep insights into the understanding of engineering courses.
3	To encourage them to understand engineering and technical development.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy Level**	**Bloom's Taxonomy Descriptor**
CO1	Exhibit memory of previously learned information by recal ling facts, terms, basic concepts in Wave Optics, Modern Physics and Quantum Mechanics, Ultrasonic, Semiconductors, Nanoscience and Nanotechnology, Instrumentation and Transducer.	1	Remembering
CO2	Demonstrate understanding of facts and ideas by recalling, comparing, interpreting for all terms in these modules.	2	Understanding
CO3	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules for various concepts in a different way.	3	Applying

Module	**Module Contents**	**Hours**
I	**Wave optics:** Introduction, interference of light, Newton's rings, Fresnel's diffraction: Fresnel's half-period zones, zone plate and diffraction at a straight edge. Fraunhofer's diffraction: Diffraction due to single slit, Diffraction due to double slits, Plane diffraction grating.	6
II	**Modern Physics and Quantum mechanics:** Introduction, black body radiation, Planck's quantum theory, Wien's displacement law and Rayleigh – Jeans law, phase velocity, group velocity and particle velocity, de-Broglie's hypothesis, Photoelectric effect, Compton effect, Heisenberg's uncertainty principle and applications, wave function and physical significance, Schrödinger's wave equation: time dependent and time independent, Eigen value and Eigen function.	8

III	**Ultrasonic:** Introduction, generation of ultrasonic waves (Magnetostriction and Piezoelectric method), detection of ultrasonic waves by Kundt's tube, thermal detection and sensitive flame method, velocity of ultrasonic waves in liquid, applications of ultrasonic waves in scientific and engineering field.	6
IV	**Semiconductors:** Introduction, formation of energy bands, classification of solid on basis of band theory, number levels in a band, density of states, Fermi-Dirac statistics, Fermi level, variation of Fermi level with temperature, electrical conductivity of metal and semiconductor, Hall effect, basic concept of p-n junction.	7
V	**Nanoscience and Nanotechnology:** Introduction to nano-science and nanotechnology, Surface to volume ratio, Two main approaches in nanotechnology -Bottom up technique and top down technique. Nano materials: Methods to synthesize nanomaterials (Ball milling, Sputtering, Vapour deposition, sol gel), properties and applications of nanomaterials. Applications of nanomaterials, Introduction to Carbon Nanotubes and its applications.	6
VI	**Instrumentation and Transducers:** Introduction, instrumentations, measurement system, control system, Transducer and Sensor: transducers, sensors, classification of transducers, characteristics of transducers, selection criterion for transducers, temperature transducers, strain gauge, pressure transducers, force transducers, optical transducers and actuators.	6

Textbooks	
1	M. N. Avadhanulu and P. G. Kshirsagar, "A Text book of Engineering Physics", S.Chand Pub.
2	R. K. Gaur and S. L. Gupta "Engineering Physics", Dhanpat Rai Publications, 2011

References	
1	Halliday, Resnic and Walker, "Fundamentals of Physics", John Wiley, 9th edition 2011.
2	A. Beiser, "Concepts of Modern Physics", McGraw Hill International, 5th edition, 2003.
3	Ajoy Ghatak, "Optics", Tata McGraw Hill 5th edition, 2012.
4	Halit Eren, John G. Webster "Measurement, Instrumentation, and Sensors Handbook" CRC Press 2018
5	Charles P.Poole and Frank J. Owner, "Introduction to Nanotechnology", Wiley India.

Useful Links	
1	For optics https://nptel.ac.in/courses/122/107/122107035/
2	For Quantum Physics https://nptel.ac.in/courses/122/106/122106034/
3	For Ultrasonic https://freevideolectures.com/course/3531/engineering-physics-i/8
4	For Solid State Physics https://nptel.ac.in/courses/115/105/115105099/
5	For Introduction to Nanotechnology https://youtu.be/ebO38bbq0_4
6	For Instrumentation and Transducers https://youtu.be/1uPTyjxZzyo

CO-PO Mapping

	Programme Outcomes (PO)												**PSO**	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2													
CO2	2													
CO3	2													

The strength of mapping is to be written as 1: Low, 2: Medium, 3: High

Each CO of the course must map to at least one PO.
Assessment
The assessment is based on MSE, ISE and ESE. MSE shall be typically on modules 1 to 3. ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be Tests, assignments, oral, seminar etc. and is expected to map at least one higher order PO. ESE shall be on all modules with around 30 - 40% weightage on modules 1 to 3 and 60 - 70% weightage on modules 4 to 6. For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Walchand College of Engineering, Sangli

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AY 2023-24

Course Information

Programme	B.Tech. (CSE, IT, Electrical , Electronics)
Class, Semester	First Year B. Tech., Sem I/II
Course Code	7AM102
Course Name	Engineering Mechanics
Desired Requisites:	Physics

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	2 Hrs/week	**MSE**	**ISE**	**ESE**	**Total**
Tutorial	---	30	20	50	100
		Credits: 2			

Course Objectives

1	To impart knowledge on fundamentals of mechanics
2	To provide knowledge of basic concepts and system of forces in statics and dynamics
3	To illustrate the principles of mechanics in engineering applications

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Explain fundamental concepts in statics and dynamics	II	Understanding
CO2	Apply fundamental concepts of mechanics to solve problems on static systems	III	Applying
CO3	Use Newton's laws of motion, D'Alemberts and work energy principles to solve problems related to dynamic systems	III	Applying

Module	Module Contents	Hours
I	**Force System:** Fundamentals, Systems, Composition and Resolution, Resultant of planar force systems. Free Body Diagram, Laws of Forces, Varignon's Theorem, Lami's Theorem	5
II	**Equilibrium:** Concepts of determinacy and indeterminacy, Equilibrium of beams, Supports, Loads, Equilibrium, Reactions Principle of Virtual Work and its applications to statically determinate beams	4
III	**Centroid and Moment of Inertia** Centre of gravity and Centroid, Moment of Inertia of Plane figure, Composite Sections, Radius of gyration, Mass-Moment of Inertia.	5
IV	**Kinematics of Particles** Rectilinear motion of particle, Equations of motion, Motion under gravity, Relative Motion, Relation between linear and angular motion, Motion of a Projectile.	5
V	**Kinetics of Particles** Friction: Laws of friction, application of laws of friction, wedge friction, Newton's laws of motion, D'Alemberts principle, Applications to rough inclined plane, lift, and connected bodies, Circular motion, Rotation of rigid bodies	4

VI	**Work Energy and Impact** Work energy Principle, Potential and Kinetic Energy, Law of Conservation of Energy, Impulse Momentum Method Collisions: Impact, Collision of bodies, Coefficient of Restitution, Loss of Kinetic Energy due to Impact	5

	Textbooks
1	Ramamrutham., S. "Textbook of Applied Mechanics", Dhanpat Rai Publishing Company Limited, 2008.
2	Bhavikatti., S. S. and Rajashekarappa., K. G. "Engineering Mechanics", New Age International Publishers, 2015, 5th Edition.
3	Beer, F. P. and Johnston, E. R. "Vector Mechanics for Engineers Vol. I and II", McGraw Hill Company Publication, 2011, 9th Edition.
	References
1	Singer, F. L. "Engineering Mechanics Statics & Dynamics", B. S. Publications, 2011.
2	Timoshenko, S. and Young, D. H. "Engineering Mechanics", McGraw Hill Companies, 2008, 4th Edition.
3	Meriam, L. and L.G. Kraige, "Engineering Mechanics – Dynamics", John Wiley & Sons, 2002, 6th Edition.
	Useful Links
1	https://nptel.ac.in/courses/112106286
2	https://www.youtube.com/watch?v=9Yt3I4bP-90

CO-PO Mapping

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													
CO2	3	1												
CO3	3	1												

The strength of mapping is to be written as 1: Low, 2: Medium, 3: High
Each CO of the course must map to at least one PO.

Assessment

The assessment is based on MSE, ISE and ESE.
MSE shall be typically on modules 1 to 3.
ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.
ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.
For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

B.B. Sawant

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	B.Tech. (Electrical, Electronics, CSE and IT)
Class, Semester	F.Y.B.Tech
Course Code	7CM106
Course Name	Civil and Mechanical Engineering
Desired Requisites:	

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	3 Hrs/week	**MSE**	**ISE**	**ESE**	**Total**
Tutorial	-	30	20	50	100
		Credits: 3			

Course Objectives

1	To provide a solid grounding in the fundamental principles and concepts of mechanical engineering, including mechanics, thermodynamics, materials science, and fluid mechanics.
2	To introduce students to the field of mechanical engineering, its history, scope, and its importance in various industries.
3	Familiarize students with different building systems, their components, and the principles of building bye-laws, promoting a comprehensive understanding of safe and compliant construction practices.
4	Provide students with an in-depth understanding of the significance of infrastructure development in urban areas, with a specific focus on transportation, water supply, and waste management.
5	Enable students to comprehend the properties and applications of various construction materials, including concrete, steel, wood, and masonry, enhancing their ability to design and analyze structures effectively.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy**	
		Level	**Description**
CO1	Identify suitable materials for engineering applications, understand basic manufacturing processes, and understand mechanical engineering applications in various industries and be aware of current industry practices and standards.	II	Understanding
CO2	Apply problem-solving techniques to analyze and solve basic engineering problems related to mechanical systems and components	III	Applying
CO3	Explain the various building systems, their components, and the principles of building bye-laws to ensure safe and compliant construction practices..	II	Understanding
CO4	Summarize the significance of infrastructure development in urban areas and analyze its impact on transportation, water supply, and waste management..	II	Understanding
CO5	Analyze the properties and applications of various construction materials, such as concrete, steel, wood, and masonry, to make informed decisions in structural design.	III	Analysis

Module	**Module Contents [Mechanical]**	**Hours**

I	Introduction Engineering Materials, Properties of engineering materials (metals, polymers, ceramics) Material selection considerations for computer hardware and robotics applications Material testing and characterization techniques, Overview of manufacturing techniques (casting, machining, molding, etc.) Rapid prototyping methods (3D printing, laser cutting, etc.) for computer hardware prototypes.	6
II	Thermodynamics and Heat Management, Basic concepts of thermodynamics and heat transfer Heat dissipation and thermal management in computer hardware, Electronic Packaging and Cooling Packaging considerations for computer components and devices Cooling strategies for high-performance computer hardware	7
III	Introduction to Robotics, Basics of robotics and its integration with computer engineering, Overview of robotic mechanisms and control system, Gears, pulleys, belts, and other power transmission elements Bearings and lubrication Linkages and mechanical movements relevant to computer engineering	6
Module	**Module Contents [Civil]**	**Hours**
IV	**Introduction to Civil Engineering** Scope of civil engineering, Disciplines of civil engineering Role of Civil Engineers in infrastructure development Building Systems: Conceptualization, Need for buildings, Defining Sustainability for Building systems, Structural systems; Load bearing, Framed, Prefabricated, Pre Engineered Construction, Loads on Building, Components in Buildings and their functions, building bye laws, Principle of building planning	7
V	**Construction Materials** Construction materials and classification Properties and uses of stone, brick, tile, timber, cement, sand, lime, mortar, concrete, bitumen and steel.	6
VI	**Urban Infrastructure** Urban Planning and Infrastructure, Transport systems, Water supply and drainage, Waste management facilities, Concept of smart city	7

Text Books[Mechanical]	
1	Materials Science and Engineering: An Introduction" by William D. Callister Jr. and David G. Rethwisch, 10th ed. 2018 edition, Wiley.
2	Thermodynamics: An Engineering Approach" by Yunus A. Çengel and Michael A. Boles, 8th edition.2017, McGra hill
Text Books[Civil]	
1	Bhavikatti S.S “Basic Civil Engineering”, I.K. International Publishing House Pvt. Ltd.
2	Hirasakar G. K., “Basic Civil Engineering”, DhanpatRai publications, 1st Edition,2007
3	Gole L.G., “Introduction to Civil Engineering”, Mahu Publisher House, 4th Edition, 2005
References[Mechanical]	
1	Manufacturing Engineering and Technology (SI Edition), Serope Kalpakjian , Steven R. Schmid, SI edition, 2018, Pearson
References[Civil]	
1	Bindra S.P., Arora S.P. , “Building Construction”, Dhanpat Rai publication, 5th edition, 2012
2	Smart Cities Mission Statement & Guidelines, Ministry of Urban Development Government of India
Useful Links[Mechanical]	
1	https://ocw.mit.edu/courses/mechanical-engineering/
2	https://www.coursera.org/browse/engineering/mechanical-engineering

3	https://www.edx.org/learn/mechanical-engineering

CO-PO Mapping															
	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	2				1					1		1			
CO2			1												
CO3					2					1					
The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High															

Assessment
The assessment is based on MSE, ISE and ESE. MSE shall be typically on modules 1 to 3. ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO. ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6. For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

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AY 2023-24

Course Information

Programme	B.Tech. (Computer Science & Engineering)
Class, Semester	First Year B. Tech., Sem I
Course Code	7CS101
Course Name	Computer and Networking Essentials
Desired Requisites:	-

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	3 Hrs/week	**ISE**	**MSE**	**ESE**	**Total**
Tutorial	-	20	30	50	100
Practical	-				
Interaction	-	**Credits: 3**			

Course Objectives

1	To perceive knowledge of the I/O Devices, Hardware, Software and networking.
2	To use software, hardware and networking
3	To understand common hardware troubleshooting techniques.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy Level**	**Bloom's Taxonomy Description**
CO1	Perceive knowledge of the I/O Devices, Hardware and Software, Networking, and common troubleshooting techniques .	II	Understanding
CO2	Use the software, hardware and networking	III	Applying
CO3	Analyse different hardware and software required before acquiring	IV	Analysing

Module	**Module Contents**	**Hours**
I	**Module 1: Introduction to Computer Hardware, I/O Devices and OS** Overview of computer hardware and its importance in CSE, Basic components of a computer system, Interaction between hardware and software for I/O operations, Role of hardware in the execution of programs, Fundamentals of Operating Systems	6
II	**Module 2: CPU Architecture & Memory Hierarchy** CPU components and their functions, Instruction Set Architecture (ISA), CPU organization and operation, Types of memory: RAM, ROM, cache, virtual memory, Memory management and addressing, Memory hierarchy in modern computer systems	7
III	**Module 3: Motherboard and Expansion Slots & Storage Devices** Anatomy of a motherboard, Understanding expansion slots and connectors, Installing and configuring hardware components, Hard disk drives (HDDs) and Solid-State Drives (SSDs), Optical drives and other storage media, RAID configurations and data redundancy	7
IV	**Module 4: Graphics Processing Unit (GPU) and Display Devices** Role of GPUs in modern computers, Graphics cards and their components, Display technologies: CRT, LCD, LED, etc.	6
V	**Module 5: Basics of Networking**	6

	Introduction to LAN, WAN, MAN, WiFi. Types of Ethernet cables, Servers, Clients, Ports and Protocols	
VI	**Module 6: Troubleshooting and Diagnostics, Introduction to Computer Security and Antivirus** Common hardware issues and their solutions, Diagnostic tools and techniques, Hands-on troubleshooting exercises, Basics of Computer Security, Virus and Antivirus	7

Text Books	
1	Modern Computer Hardware Course by Manahar Lotia, BPB Publication
2	Computer Networking: A Top-Down Approach, by James F. Kurose, Keith W. Ross
References	
1	Computer Maintenance Hacks: 15 Simple Practical Hacks to Optimize, Speed Up and Make Computer Faster by Life 'n' Hack
2	Computer systems: a programmer's perspective I Randal E. Bryant, Carnegie Mellon University, David R. O'Hallaron,. Carnegie Mellon. University.-Third edition.
3	
Useful Links	
1	

CO-PO Mapping

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2												1	
CO2	3												1	
CO3	1	3											1	

The strength of mapping is to be written as 1,2,3; Where, 1: Low, 2: Medium, 3: High
Each CO of the course must map to at least one PO.

Assessment (for Theory Course)

The assessment is based on MSE, ISE and ESE. MSE shall be typically on modules 1 to 3. ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO. ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6. For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Walchand College of Engineering, Sangli

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AY 2023-24

Course Information					
Programme		B.Tech.			
Class, Semester		First Year B.Tech., Sem I &II			
Course Code		7PH155			
Course Name		Engineering Physics Lab.			
Desired Requisites:		Students are expected to know the basic practical knowledge up to HSC			
Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	-	**LA1**	**LA2**	**Lab ESE**	**Total**
Tutorial	-	30	30	40	100
Practical	2 Hrs/week				
Interaction	-	**Credits: 1**			

Course Objectives		
1	To gain practical knowledge by applying the experimental methods to correlate with the physics theory.	
2	To learn the usage of electrical and optical systems for various measurements.	
3	To Apply the analytical techniques and graphical analysis to the experimental data.	
Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Calculate the diameter of the thin wire, Planck's constant, Refractive index of liquid / radius of curvature of Plano convex lens , Specific rotation of optical active substances, I-V characteristics of Semiconductor diode, Velocity of sound in air, Calculate R.T for specific hall/auditorium, Verify the expression for the resolving power of a telescope	Applying
CO2	Demonstrate Hartley and Colpitt's oscillator and simulation , Wavelength of light by Plane diffraction grating, Wavelength of light by He-Ne LASER	Applying
List of Experiments / Lab Activities.		
List of Experiments/ Lab Activities- Any Eight Experiments		
1	Find the diameter of the thin wire by diffraction of the light	
2	Determination of wavelength of light by plane diffraction grating.	
3	Determine the Specific rotation of sugar solution	
4	Find the wavelength of He-Ne Laser using Plane diffraction grating.	
5	Verify the expression for the resolving power of a telescope.	
6	Measure the wavelength of ultrasonic waves by Kundt's tube method.	
7	Design and simulate Colpitt's & Hartley Oscillator.	
8	Determine the Planck's constant.	
9	Study the I-V characteristic of semiconductor diode.	
10	Newton's ring: Determination of wavelength of light and refractive index of liquid /radius of curvature of Plano convex lens	
11	To calculate the reverberation time of specific hall.	
12	Determination of Fermi energy of copper using a Wheatstone bridge.	
Text Books		
1	C. L. Arora *"Practical Physics"* S. Chand & Co Edition 2009.	
2	P.R. Sasi Kumar *"Practical Physics"*, PHI Learning Pvt. Ltd 1st edition 2011.	
References		
1	Halliday, Resnic and Walker, *"Fundamentals of Physics"*, John Wiley, 9th edition 2011.	
2	A. Beiser, *"Concepts of Modern Physics"*, McGraw Hill International, 5th edition, 2003.	
3	Ajoy Ghatak, *"Optics"*, Tata McGraw Hill 5th edition, 2012.	
Useful Links		
1	https://nptel.ac.in/courses/115/105/115105121/	
2	https://www.iitg.ac.in/cet/nptel.html	
3	https://youtu.be/imHvRBOMg84	

CO-PO Mapping For All B.Tech. Programs															
	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	1													
CO2	2														
The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High															

Assessment (for Lab. Course)

There are three components of lab assessment, LA1, LA2 and Lab ESE.
IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.

Assessment	Based on	Conducted by	Typical Schedule (for 26-week Sem)	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 6 Marks Submission at the end of Week 6	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 7 to Week 12 Marks Submission at the end of Week 12	30
Lab ESE	Lab activities, attendance, journal	Lab Course Faculty	During Week 15 to Week 18 Marks Submission at the end of Week 18	40

Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-week semester. The actual schedule shall be as per academic calendar. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments.

Assessment Plan based on Bloom's Taxonomy Level

Bloom's Taxonomy Level	LA1	LA2	Lab ESE	Total
Remember	10	10	15	**35**
Understand	10	10	10	**30**
Apply	10	10	15	**35**
Analyze	0	0	0	**0**
Evaluate	0	0	0	**0**
Create	0	0	0	**0**
Total	**30**	**30**	**40**	**100**

Walchand College of Engineering, Sangli

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Course Information

Programme	First Year B. Tech
Class, Semester	Sem I and Sem II
Course Code	7HS101
Course Name	Communication & Generic skills
Desired Requisites:	10+2 level English

Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	---	**LA1**	**LA2**		**ESE**	**Total**
Tutorial	---	30	30		40	100
Practical	2Hrs/week					
Interaction	1Hr/week	**Credits: 2**				

Course Objectives

1	Enable the students to communicate with clarity and precision.
2	Prepare the students to acquire structure of Oral and written expression required for their profession and enable them to acquire proper behavioural skills
3	Provide relevant knowledge about generic skills, its importance and enable them to understand personal attributes like commitment, loyalty, ethical values, team building, and ensure exposure to personal growth.
4	Infuse the ability to positively consider other's views and to work effectively in teams and teach them self-management skills, problem solving skills and technological skills.

Course Outcomes (CO) with Bloom's Taxonomy Level

CO1	Communicate clearly, precisely and competently in different scenario	Apply
CO2	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.	Understand
CO3	Practice Lifelong Learning (LLL) with positive attitude. loyalty, commitment, reliability, self-development and manage himself/herself physically, intellectually and psychologically.	Apply
CO4	Work ethically and effectively as a team member, manage tasks effectively and apply knowledge to solve problems.	Apply

Module	**Module Contents**	**Hours**
I	**Module 1: Introduction to communicative English** 1.Fundamentals 2. Elements 3.Process 4.Types 5.Barriers 6.Need to develop good interpersonal and intrapersonal skills 7.Developing effective Listening Skills (types, Barriers, listening and note making)	02
II	**Module2: Communicative Grammar & Developing advanced.** **Vocabulary.** 1.Modal verbs, non-modal verbs ,semi-modal verbs 2.Question tags 3.Misplaced Modifiers 4.Passives 5.Phrasal verbs **Vocabulary:** 1. Connectives, 2. Prefixes and suffixes, 3.Synonyms and Antonyms 4.one-word substitutions , 5.Re-arranging Jumbled sentences 6.redundancies	05

III	**Module 3 : Formal Communication Skills** **a. Oral skills:** Developing non-verbal skills. 1.Extempore /Public Speaking Skills (speeches) 2.Group Presentation 3.Individual Presentations **b. Written Skills**: 1.Paragraph Writing 2.Comprehension passage 3.Inter-office communication – Memorandums ,Circulars 4.Report Writing	05
IV	**Module 4: Introduction to Generic Skills** a. Importance of Generic Skill Development (GSD) b. Global and Local Scenario of GSD c. Lifelong Learning (LLL) and associated importance of GSD.	01
V	**Module 5: Self-management skills** **1. Knowing Self for Self-Development. (01 hrs)** a. Self-concept. b. Attitude, c. Self-esteem. d. Self-confidence. e. Self-motivation. **2 Personal Attributes (02 hrs)** a. Loyalty. b. Commitment. c. Honesty and integrity. d. Reliability. e. Enthusiasm. f. Balanced attitude while studying, working and home life. **3. Managing Self – Physical (02 hrs)** a. Personal grooming. b. Health, Hygiene. c. Time Management. **4. Managing Self – Psychological (02 hrs)** a. Stress, Emotions, Anxiety- concepts and significance. b. Exercises related to stress management. c. Techniques to manage the above.	07
VI	**Module 6: Teamwork Skills** **1. Team Building (01 hrs.)** Definition, hierarchy, team dynamics. **2. Team related skills. (02 hrs)** a. Sympathy, empathy. b. co-operation, concern, lead and negotiate. c. work well with people from culturally diverse background. **3. Technological Skills. (02 hrs.)** a. Task Initiation, Task Planning, Task execution, Task close out b. Exercises/case studies on task planning towards development of skills for task management. **4. Problem Solving skills. (02 hrs.)** a. Prerequisites of problem solving- meaningful learning, ability to apply knowledge in problem solving. b. Different approaches for problem solving. c. Steps followed in problem solving. d. Exercises/case studies on problem solving.	07

Text Books	
1	Textbook: Sanjay Kumar, Pushpalata, Communication Skills, Oxford University Press, First edition ,2012
References	
1	Ashraf Rizvi, Effective Technical Communication, Tata McGraw Hills publishing Company 2006
2	William Sanborn Pfeiffer, T.V.S. Padmaja, Technical Communication: A Practical Approach, Pearson, Sixth Edition 2012
3	Exercises in Spoken English, Parts 1 and II CIEFL, Hyderabad, Oxford University Press
Useful Links	
1	www.oupinheonline.com
2	www.scitechpublications.com

CO-PO Mapping

	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1										1					
CO2										1					
CO3									2			2			
CO4								2	3						

The strength of mapping is to be written as 1,2,3; Where, 1: Low, 2: Medium, 3: High
Each CO of the course must map to at least one PO.

Assessment

The assessment is based on two In-semester evaluations (LA) of 30 marks each, one End-semester examination (ESE) of 40 marks.
LA1 and LA2 are based on the modules taught (typically Module 1-3) and ESE is based on all modules with 30-40% weightage on modules before LA1 and 60-70% weightage on modules LA2.

Assessment Plan based on Bloom's Taxonomy Level

Bloom's Taxonomy Level	LA1	LA2	ESE	Total
Remember				
Understand	10	10	10	**30**
Apply	20	20	30	**60**
Analyse				
Evaluate				
Create				
Total	**30**	**30**	**40**	**100**

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Course Information

Programme	B.Tech. (All Branches)
Class, Semester	First Year B. Tech., Sem I/II
Course Code	7AM155
Course Name	Engineering Mechanics Lab
Desired Requisites:	Engineering Mechanics

Teaching Scheme		**Examination Scheme (Marks)**			
Practical	2 Hrs/ Week	**LA1**	**LA2**	**Lab ESE**	**Total**
Interaction	---	30	30	40	100
		Credits: 1			

Course Objectives

1	To provide hands on practice for the conduct of experiments to verify the principles of mechanics
2	To demonstrate the graphical methods to verify the analytical solutions

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Demonstrate verification of laws and basic principles of mechanics through experiments.	III	Applying
CO2	Apply graphical method to solve problems on force system, beams, and frames.	III	Applying

List of Experiments / Lab Activities/Topics

List of Experiments :

1. Verification of law of triangle of forces
2. Verification of law of polygon of forces
3. Determination of support reactions for Simply Supported Beam
4. Verification of the principle of moments using Bell crank lever apparatus
5. Determination of the coefficient of friction for motion on horizontal plane
6. Determination of the coefficient of friction for motion on inclined plane
7. Analysis of concurrent and non-concurrent coplanar force system by graphical method
8. Analysis of statically determinate beams by graphical method
9. Analysis of pin jointed perfect plane frames by graphical method

Textbooks

1	Lab Manual Link - https://atifmohd077.files.wordpress.com/2019/03/em-lab-manual-1.pdf
2	Lab Manual Links - https://jecassam.ac.in/wp-content/uploads/2018/10/1_Engineering-Mechanics-Laboratory-2nd-SEM-DU-Old-Course.pdf
3	Bhavikatti., S. S. and Rajashekarappa., K. G. "Engineering Mechanics", New Age International Publishers, 2015, 5th Edition.

References

1	Ramamrutham., S. "Textbook of Applied Mechanics", Dhanpat Rai Publishing Company Limited, 2008.
2	Beer, F. P. and Johnston, E. R. "Vector Mechanics for Engineers Vol. I and II", McGraw Hill Company Publication, 2011, 9th Edition.
3	R. K. Bansal "Engineering Mechanics" Laxmi Publications ltd.

Useful Links	
1	https://nptel.ac.in/courses/112106286
2	https://www.youtube.com/watch?v=9Yt3I4bP-90
3	https://www.vlab.co.in/broad-area-civil-engineering
4	Virtual Lab link by IIT Mumbai - http://vlabs.iitb.ac.in/vlab/labsme.html

CO-PO Mapping

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1				1										
CO2		1												

The strength of mapping is to be written as 1,2,3; where, 1: Low, 2: Medium, 3: High
Each CO of the course must map to at least one PO, and preferably to only one PO.

Assessment

There are three components of lab assessment, LA1, LA2 and Lab ESE.
IMP: Lab ESE is a separate head of passing.(min 40 %), LA1+LA2 should be min 40%

Assessment	Based on	Conducted by	Typical Schedule	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty and External Examiner as applicable	During Week 18 to Week 19 Marks Submission at the end of Week 19	40

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

B. B Sawant

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Course Information

Programme	B.Tech. (Electrical, Electronics, CSE, IT)
Class, Semester	First Year B. Tech. SEM-I & II
Course Code	7CM156
Course Name	Civil and Mechanical Engineering Lab
Desired Requisites:	

Teaching Scheme		**Examination Scheme (Marks)**			
Practical	2 Hrs/Week	**LA1**	**LA2**	**ESE**	**Total**
Interaction	-	30	30	40	100
		Credits: 1			

Course Objectives

1	To provide a solid grounding in the fundamental principles and concepts of mechanical engineering, including mechanics, thermodynamics, materials science, and fluid mechanics
2	To introduce students to the field of mechanical engineering, its history, scope, and its importance in various industries.
3	To introduce students to fundamental civil engineering experiments and procedures.
4	To develop practical skills in handling civil engineering equipment and instruments.
5	To promote teamwork, problem-solving, and analytical skills while conducting experiments and interpreting results.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy**	
		Level	**Description**
CO1	To understand mechanical testing and inspections, such as hardness testing, non-destructive testing (e.g., ultrasonic testing), and dimensional measurements.	II	Understand
CO2	To demonstrate experiments related to thermodynamics and heat transfer, such as measuring heat conduction through different materials or studying heat dissipation from electronic components.	II	Apply
CO3	Demonstrate identification and reading ability of elements in building drawing.	II	Understand
CO4	Examine the material properties and comment on their quality.	III	Applying
CO5	Use surveying equipment to measure distance and area.	III	Applying

List of Experiments / Lab Activities

Mechanical:

1. Ultrasonic thickness measurements and flaw detection.
2. Liquid and magnetic particle testing for discontinuity examination.
3. Hardness measurements by using Rockwell, Brinell hardness testers.
4. Tensile test of metallic materials and study of Stress vs Strain curve.
5. Eddy current and acoustic emission flaw measurement techniques.
6. Use of machine learning and AI in mechanical testing. Only Demonstration.

Civil:

1. Study and identify basic elements in
   i) Site plan,
   ii) Plan, elevation and section of a residential building
2. Study water supply and sanitation plan of a residential building
3. Field tests on brick
4. Field tests on Cement
5. Measurement of distance and area

6. Demonstration of Total station	
Text Books [Mechanical]	
1	Raghuwanshi B. S., "A Course in Workshop Technology I", Dhanpat Rai Publications, 10th Ed., 2009
2	S. K. Hajra Choudhury and A. K. HajraChoudhary,"Workshop Technology" – Vol I [Manufacturing Processes]", Media Promoters and Publishers Pvt. Ltd., 10th edition, reprint 2001
3	Bawa H S. "Workshop Practice," McGraw Hill Education, Noida, 2nd edition, 2009 ISBN-13: 978-0070671195
4	Gupta, J. K.; Khurmi, "A Textbook of Manufacturing Process" (Workshop Tech.) R S S Chand and Co., New Delhi, 2020, ISBN:81-219-3092-8
5	Singh Rajender, "Introduction to Basic Manufacturing Process and Workshop Technology", New Age International, New Delhi; 2014, ISBN: 978-81-224-3070-7
References [Mechanical]	
1	W.A.J. Chapman, "Workshop Technology Volume I", CBS Publishing & Distributors, Delhi. [ISBN-13:9788123904016] 2001
2	Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House,2017
3	Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008
Text Books [Civil]	
1	Hiraskar G. K., "Basic Civil Engineering", DhanpatRai publications, 1st Edition,2007
2	Gole L.G., "Introduction to Civil Engineering", Mahu Publisher House, 4th Edition, 2005
3	Bhavikatti S.S., "Basic Civil Engineering", New Age Publications, 2010
References [Civil]	
1	Duggal S. K., "Surveying (Vol-I)", Tata McGraw Hill, 4th edition 2013
2	Bindra S. P., Arora S. P., "Building Construction", DhanpatRai publication, 5th edition, 2012
Useful Links	
1	https://www.vlab.co.in/broad-area-mechanical-engineering

CO-PO Mapping															
	Programme Outcomes (PO)												**PSO**		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	3		1							1		1			
CO2	3		1												
CO3						2				1					
The strength of mapping is to be written as 1,2,3; Where, 1: Low, 2: Medium, 3: High															

Assessment				
There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.				
Assessment	**Based on**	**Conducted by**	**Typical Schedule (for 26-week Sem)**	**Marks**
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 6 Marks Submission at the end of Week 6	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 7 to Week 12 Marks Submission at the end of Week 12	30
Lab ESE	Lab activities, attendance, journal	Lab Course Faculty	During Week 15 to Week 18 Marks Submission at the end of Week 18	40
Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-week semester. The actual schedule shall be as per academic calendar. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments.				

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Course Information

Programme	B.Tech. (Computer Science Engineering)
Class, Semester	First Year B. Tech., Sem I
Course Code	7CS151
Course Name	Computer and Networking Essentials Lab
Desired Requisites:	Basic Computer Literacy

Teaching Scheme		**Examination Scheme (Marks)**			
Practical	2 Hrs/Week	**LA1**	**LA2**	**ESE**	**Total**
Interaction	-	30	30	40	100
		Credits: 1			

Course Objectives

1	To identify and describe the basic components of a computer system.
2	To troubleshoot common hardware issues and perform repairs or replacements
3	To Analyze different hardware and software before acquiring

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy Level**	**Bloom's Taxonomy Description**
CO1	To identify and describe the basic components of a computer system (CPU, motherboard, RAM, storage devices, etc.).	II	Understand
CO2	Troubleshoot common hardware issues and perform repairs or replacements effectively.	III	Apply
CO3	Analyze different hardware and software before acquiring	IV	Analyse

List of Experiments / Lab Activities

List of Experiments:

1. **To familiarize students with the basic components of a computer system**.
   Procedure:
   - Provide a disassembled computer system (CPU, motherboard, RAM, storage device, etc.).
   - Ask students to identify and label each component correctly.
   - Discuss the function of each component and its role in the computer system.
2. **To understand the interaction between hardware and software for I/O operations**.
   Procedure:
   - Introduce students to a simple I/O operation, such as reading input from the keyboard.
   - Discuss the hardware components involved in the process, including the keyboard controller and CPU.
   - Demonstrate how the software interacts with hardware to perform the I/O operation.
3. **To introduce students to the fundamentals of operating systems**.
   Procedure:
   - Set up multiple computers with different operating systems (Windows, macOS, Linux).
   - Ask students to perform basic tasks on each system, such as file management and software installation.
   - Compare and contrast the features and interfaces of different operating systems.
4. **To understand the components and functions of a CPU.**
   Procedure:
   - Disassemble a CPU to show its internal components, such as ALU, control unit, and registers.
   - Explain the function of each component and how they work together to execute instructions.
   - Demonstrate a simple instruction execution process using a simulator.
5. **To explore the performance of different levels of memory hierarchy.**
   Procedure:
   - Use a benchmarking tool to measure the access time of RAM, cache, and virtual memory.
   - Compare the performance results of each memory level and discuss the trade-offs.
   - Analyze the impact of cache hits and misses on program execution time.
6. **To familiarize students with the anatomy of a motherboard.**
   Procedure:
   - Show a motherboard diagram highlighting various components and connectors.
   - Ask students to identify each component and explain its purpose.
   - Demonstrate the installation of hardware components like RAM and expansion cards.
7. **To explore the components of a graphics card and their functions.**
   Procedure:
   - Disassemble a graphics card to show its GPU, VRAM, and other components.
   - Explain the role of each component in processing and rendering graphics.
   - Demonstrate basic GPU-accelerated tasks using graphics software.
8. **To compare different display technologies.**
   Procedure:
   - Set up a computer system with displays using different technologies (CRT, LCD, LED, etc.).
   - Observe and compare the image quality, resolution, and power consumption of each display type.
   - Discuss the advantages and disadvantages of each display technology.
9. **To set up a simple LAN and understand basic networking components**.
   Procedure:
   - Provide networking equipment like switches and Ethernet cables.
   - Ask students to connect multiple computers to form a LAN.
   - Verify network connectivity and communication between connected devices.
10. **To understand the role of ports and protocols in networking.**
    Procedure:

- Introduce students to different network protocols (TCP, UDP) and port numbers.
- Use network monitoring tools to analyze network traffic and identify the protocols used.
- Demonstrate the establishment of a connection between a client and server using specific protocols.

11. To teach students common hardware troubleshooting techniques.

Procedure:

- Intentionally create hardware issues like loose connections or faulty components in a computer.
- Ask students to diagnose and resolve these issues using appropriate troubleshooting tools.
- Discuss the troubleshooting process and best practices.

12. To understand the importance of computer security and antivirus.

Procedure:

- Set up a computer with various types of malware (simulated or isolated) on it.
- Install an antivirus program and demonstrate malware scanning and removal.
- Discuss the importance of keeping antivirus software up to date and practicing safe computing habits

13. Case study of Data Center.

Procedure:

- Selecting any data center for study
- Study the components of data center
- If possible visit to the data center

Text Books	
1	James, K.L. " The computer hardware installation, interfacing, troubleshooting and maintenance" PHI Learning, New Delhi, 2014, ISBN: 978-81-203-4798-4.
2	Gupta, Vikas "Comdex: Hardware and Networking Course Kit " Dreamtech Press, New Delhi, ISBN: 978-93-5119-265-7.
3	Criage Zacker and John Rourke "PC Hardware Complete reference Tata McGraw-Hill.

References	
1	Minasi, Mark "The Complete PC Upgrade And maintenance Guide " BPB Publication, New Delhi ISBN:978-81-265-0627-9 4.
2	Kadam, Sachin "Computer Architecture and Maintenance"Shroff Publication, Mumbai Vol.1 ISBN: 978-9350230244

Useful Links	
1	https://www.javatpoint.com/hardware
2	https://edu.gcfglobal.org/en/computerbasics/keeping-your-computer-clean/1/#.

CO-PO Mapping

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2												1	
CO2	3												2	
CO3	2	3											1	

The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High
Each CO of the course must map to at least one PO.

Assessment				
There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing.(min 40 %), LA1+LA2 should be min 40%				
Assessment	**Based on**	**Conducted by**	**Typical Schedule**	**Marks**
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end ofWeek 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty andExternal Examiner as applicable	During Week 18 to Week 19 Marks Submission at the end of Week 19	40
Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments andrelated activities if any.				

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Course Information

Programme	B.Tech. All Branches
Class, Semester	First Year B. Tech. SEM-I & II
Course Code	7VS151
Course Name	Engineering Skills-I
Desired Requisites:	

Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	-	**LA1**	**LA2**	**ESE**	**Total**
Tutorial	-	30	30	40	100
Practical	2Hrs/Week	-			
Interaction	-	**Credits: 1**			

Course Objectives

1	To train the students to use different tools and equipment involved in the manufacturing processes
2	To develop the skills to handle the basic cutting tools and devices required for various manufacturing processes, interpret the given job drawing, select relevant fitting tools
3	To prepare the students to carry out the various operations to make a finished product

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	**Course Outcome Statement/s**	**Bloom's Taxonomy**	
		Level	**Description**
CO1	Describe the basic methods, operations and processes of manufacturing	I	Understand
CO2	Illustrate the simple mechanical systems, machines, equipment, the basic working of cutting tools for manufacturing.	II	Apply
CO3	Use of Fitting tools, job holding devices, measuring tools	III	Apply
CO4	Check verticality and level difference.	III	Apply
CO5	Estimate the material requirement in constructed structure.	III	Apply
CO6	Sketch building plan.	III	Apply

List of Experiments / Lab Activities

List of Mechanical Engineering Skills:

1. Introduction to **wood working**, the hand tools required and machines:
   Perform Planning operation, cutting by chisel to prepare small **mobile phone stand** [Square joint type] (**4 Hrs)**
2. Introduction to **fitting shop** tools, equipment/machines:
   Job consisting of **male and female parts** viz.one with groove, another with matching projection, holes on both and their assembly, as per given job drawing.
   operations to be performed: Marking, Punching, Saw cutting, Drilling, Edge filing operations **(4 Hrs.)**
3. Introduction to **sheet metal work**: Job of small **sheet metal tray** as per given job drawing with following operations: Marking, Cutting, bending/folding **(4 Hrs.)**

List of Civil Engineering Skills:

1. Establishing verticality, right angle corner, and level difference in masonry construction (2 Hrs)
2. Line out of building plan on site (2 Hrs)
3. Estimate the quantities/ material requirement for (4Hrs)
   a) Brickwork
   b) Concrete components/elements
   c) Flooring
4. Sketching of building plan and calculation of FSI (2Hrs)

Text Books [Mechanical]	
1	Raghuwanshi B. S., "A Course in Workshop Technology I", Dhanpat Rai Publications,10th Ed., 2009
2	S. K. Hajra Choudhury and A. K. HajraChoudhary, "Workshop Technology" – Vol-I [Manufacturing Processes]", Media Promoters and Publishers Pvt. Ltd., 10th edition, reprint 2001
3	Bawa H S. "Workshop Practice," McGraw Hill Education, Noida, 2nd edition ,2009 ISBN-13: 978-0070671195
4	Gupta, J. K., Khurmi, "A Textbook of Manufacturing Process" (Workshop Tech.) R S S Chand and Co., New Delhi,2020, ISBN:81-219-3092-8
5	Singh Rajender, "Introduction to Basic Manufacturing Process and Workshop Technology", New Age International, New Delhi; 2014, ISBN: 978-81-224-3070-7
References [Mechanical]	
1	W.A.J. Chapman, "Workshop Technology Volume I", CBS Publishing & Distributors, Delhi. [ISBN-13:9788123904016] 2001
2	Rao P. N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House,2017
3	Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008
Text Books [Civil]	
1.	Gole L. G., "Introduction to Civil Engineering", Mahu Publisher House, 4th Edition, 2005
2.	Bhavikatti S. S., "Basic Civil Engineering", New Age Publications, 2010
References [Civil]	
1	Bindra S. P., Arora S. P., "Building Construction", Dhanpat Rai publication, 5th edition, 2012
Useful Links	
1	https://www.vlab.co.in/broad-area-mechanical-engineering
2	https://drive.google.com/file/d/1tp5yV2ghp_Slub58S7iKnvvJyoEwQVYq/view
3	https://www.youtube.com/@workshop.supdtjmdabir5653
4	https://www.youtube.com/watch?v=gPaBULgRRuM
5	https://www.youtube.com/watch?v=-f7tTNRH_04
6	https://www.youtube.com/watch?v=UD3q5R0N8U4
7	https://www.youtube.com/watch?v=uapzeNwKq4U
8	https://www.youtube.com/watch?v=jbRgJbIGAwc
9	https://www.youtube.com/watch?v=TeErxz59Sss
10	https://www.youtube.com/watch?v=F4SwbJ1euB8
11	https://www.youtube.com/watch?v=cuv-tP6JHEI
12	https://www.youtube.com/watch?v=vUIY_BiLyFI
13	https://www.youtube.com/watch?v=xMQOR6Jg3o4
14	https://www.youtube.com/watch?v=OdrBpPNJMaI
15	https://www.youtube.com/watch?v=uAIXHqOm0AM
16	https://www.youtube.com/watch?v=DzCBASUKpF4
17	https://www.youtube.com/watch?v=TQ_NeHenT9Y
18	https://www.youtube.com/watch?v=rkp2Uvpop-g
19	https://www.youtube.com/watch?v=iDJ_sMvXsYs
20	https://www.youtube.com/watch?v=xZgtyNdGHvs

CO-PO Mapping															
	Programme Outcomes (PO) Mechanical												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1				1											
CO2				1											
CO3					1										
The strength of mapping is to be written as 1,2,3; Where, 1: Low, 2: Medium, 3: High															

Assessment
There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.

Assessment	Based on	Conducted by	Typical Schedule (for 26-week Sem)	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 6 Marks Submission at the end of Week 6	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 7 to Week 12 Marks Submission at the end of Week 12	30
Lab ESE	Lab activities, attendance, journal	Lab Course Faculty	During Week 15 to Week 18 Marks Submission at the end of Week 18	40
Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-week semester. The actual schedule shall be as per academic calendar. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments.				