

# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Credit System for F.Y. B.Tech. (Information Technology) Sem-I AY 2023-24

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE
<b>Professional Core (Theory)</b>												
01	BS	7MA101	Engineering Mathematics - I	3	1	0	0	4	4	30	20	50
02	BS	7CH103	Engineering Chemistry	3	0	0	0	3	3	30	20	50
03	ES	7EE106	Electrical & Electronics Engineering	3	0	0	0	3	3	30	20	50
04	PC	7IT101	IT Fundamentals	3	0	0	0	3	3	30	20	50
<b>Professional Core (Lab)</b>												
05	BS	7CH155	Engineering Chemistry Lab	0	0	2	0	2	1	30	30	40
06	ES	7EE156	Electrical & Electronics Engineering Lab	0	0	2	0	2	1	30	30	40
07	ES	7CS108	Computer Programming	0	0	2	2	4	3	30	30	40
08	ES	7ME108	Engineering Graphics	0	0	2	1	3	2	30	30	40
09	PC	7IT151	IT Fundamentals Lab	0	0	2	0	2	1	30	30	40
10	VS	7VS152	Engineering Skills - II	0	0	2	0	2	1	30	30	40
			<b>Total</b>	<b>12</b>	<b>1</b>	<b>12</b>	<b>3</b>	<b>28</b>	<b>22</b>			

### 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  $\geq 40\%$  to appear for Lab ESE.

**For further details, refer to Academic and Examination rules and regulations.**

*S.Shenoi*  
21/8/23  
Prof. B.S.Shetty  
DAC/Secretary, BoS

*R.R.Rathod*  
Dr. R.R.Rathod  
Head, Information Technology. Dept./  
Chairman, BoS

*S.P. Sonavane*  
23/8/2023  
Dr. Mrs. S. P. Sonavane  
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Vishrambag, Sangli - 415 415

Page No. \_\_\_\_/  
Date: 21/08/2023

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	<b>Matrices</b> Rank of matrix, Homogeneous and non-homogeneous linear equations, Eigen values, Eigen vectors, Cayley Hamilton theorem, Diagonalizations of matrices.				6
II	<b>Partial Differentiation and its application</b> 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	<b>Complex Number</b> 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

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IV	<b>First order ordinary differential equation and its application</b> Exact, Linear, Bernoulli's equations, Euler's equations, Orthogonal trajectory, applications to simple electric circuit.	7
V	<b>Numerical Solution of Ordinary Differential Equations of first order and first degree:</b> 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	<b>Calculus</b> 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, 10 <sup>th</sup> 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., 1 <sup>st</sup> Edition, 2014.
4	B.V.Ramana, "Higher Engineering Mathematics ", The McGraw Hill companies, 2006.

#### Useful Links

1	<a href="https://nptel.ac.in/courses/111105121">https://nptel.ac.in/courses/111105121</a>
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)

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# Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

**AY 2023-24**

## Course Information

<b>Programme</b>	B. Tech. (Mechanical, Civil, CSE,IT)
<b>Class, Semester</b>	First Year B. Tech. Sem. I/II
<b>Course Code</b>	7EE106
<b>Course Name</b>	Electrical & Electronics Engineering
<b>Desired Requisites:</b>	12 <sup>th</sup> Physics

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

## Course Objectives

<b>1</b>	This course intends to summarize and solve electrical and magnetic circuits.
<b>2</b>	It imparts skill to identifying principles, construction and working of electrical machines.
<b>3</b>	To <b>explain</b> the difference between analog and digital electronic circuits.
<b>4</b>	To <b>explain</b> the working of diode circuits, transistorized and op-amp based amplifiers.

## Course Outcomes (CO) with Bloom's Taxonomy Level

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

<b>CO</b>	<b>Course Outcome Statement/s</b>	<b>Bloom's Taxonomy Level</b>	<b>Bloom's Taxonomy Description</b>
<b>CO1</b>	<b>Explain</b> principles, construction and working of electrical machines.	II	Understanding
<b>CO2</b>	<b>Solve</b> electrical and magnetic circuits.	III	Applying
<b>CO3</b>	<b>Explain</b> the fundamentals of digital electronics.	I	Understanding
<b>CO4</b>	<b>Solve</b> the examples on digital circuits, diodes and transistors and Op-amp based circuits.	III	Applying

<b>Module</b>	<b>Module Contents</b>	<b>Hours</b>
<b>I</b>	<b>Module 1: DC Circuits</b> Review of R-L-C- Electrical circuit elements, KCL and KVL. Star- delta conversion, voltage and current sources. Thevenin, Norton and Superposition, Maximum powers transfer Theorems	6
<b>II</b>	<b>Module 2: AC Circuits</b> Representation of sinusoidal waveforms, peak, RMS values, phasor representation real, reactive and apparent power. Analysis of single-phase, ac circuits consisting of R, L, C, RL, RC, RLC (series and parallel) circuits and three-phase balanced circuits. Voltage and current relations in star and delta.	6
<b>III</b>	<b>Module 3: Electrical Machines</b> Construction, working principle and types of DC generator and Motor. Speed-Torque characteristics. Construction and working principle of single and three- phase induction motor. Torque, torque, speed characteristics	6







Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)					
AY 2023-24					
Course Information					
Programme	B.Tech. (Computer Science & Engineering)				
Class, Semester	First Year B. Tech., Sem I				
Course Code	7IT101				
Course Name	IT Fundamentals				
Desired Requisites:	Basic Computer literacy				
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 introduce the concepts of computer system and its components				
2	To familiarize with computer storage and computer Networking				
3	To discuss the basic concepts of Data structures				
Course Outcomes (CO) with Bloom's Taxonomy Level					
At the end of the course, the students will be able to,					
CO1	Describe the various components of the computer system				Understand
CO2	Classify various storage devices and networking techniques				Apply
CO3	Explain stack, queue and Compare different sorting and searching techniques				Analyse
Module	Module Contents				Hours
I	<b>Module 1: Introduction to Computer and its Basics</b> Basic components of a computer system, Interaction between hardware and software for I/O operations, Role of hardware and software in the execution of programs, Fundamentals of Operating Systems.				6
II	<b>Module 2: Computer Hardware</b> Different Types of Computers,, Memory RAM (Random Access Memory),CPU, CPU Cores and GPU (Graphical Processing Unit),Hard Disk Drive, Motherboard Other Internal and External Parts of a Computer system .Computer Comparison with Human				6
III	<b>Module 3: Computer Storage:</b> How Storage is Calculated (KB, MB, GB et.c) Types of Computer Storage ,Difference Between RAM, SWAP, Virtual Memory, Cache etc. Hard Disk and Solid-State Drives SATA and SAS RAID Hardware RAID vs. Software RAID, NAS Device for File system Sharing				7
IV	<b>Module 4: Computer Networking :</b> How Computers Communicate? IP address (Static vs. DHCP) ,Computer MAC Address LAN, MAN and WAN, Protocols and Ports ,Types of Network Devices (Hub, Switch, Modem, Router, Access point), How Internet, Intranet Works ?				7
V	<b>Module 5: Basics of stack and queue</b> Introduction to Data Structure & Algorithmic ,Recursion: Direct and Indirect recursion, Tower of Hanoi problem				7

Course Contents for B. Tech Programme, Department of Computer Science & Engineering, AY 2023-24

*Shruti*  
Mrs. B.S. Shetty  
22/8/23



	Fundamentals of stack and queue Representation of stack and queue using array. Application and Types of stack and queue	
VI	<b>Module 6: Basics of Searching &amp; Sorting Techniques</b> Importance of searching and Sorting,, Types of searching & Sorting	6
<b>Text Books</b>		
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	S. Lipschutz, “Data Structures with C”, Schaum's Outlines Series, Tata McGraw-Hill, 1 <sup>st</sup> edition, 2010	
<b>References</b>		
1	Criage Zacker and John Rourke “PC Hardware Complete reference Tata McGraw-Hill	
2	Brian W. Kernighan and Dennis M. Ritchie, “The C Programming Language”, 2ndEdition, Prentice Hall of India	
3	Prashant Joshi ” Introduction to IT Systems” First Edition: 2021 Khanna Book Publishing Co. (P) Ltd.	
4		
<b>Useful Links</b>		
1	<a href="http://www.tutorialspoint.com/">http://www.tutorialspoint.com/</a>	
2	<a href="https://www.javatpoint.com/hardware">https://www.javatpoint.com/hardware</a>	
3	<a href="https://edu.gcfglobal.org/en/computerbasics/keeping-your-computer-clean/1/#">https://edu.gcfglobal.org/en/computerbasics/keeping-your-computer-clean/1/#</a> .	

<b>CO-PO Mapping</b>														
	<b>Programme Outcomes (PO)</b>												<b>PSO</b>	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
<b>CO1</b>	2												2	
<b>CO2</b>		1	2										1	
<b>CO3</b>	2		1										1	
<b>CO4</b>		2			1								2	
<b>CO5</b>														
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.														

<b>Assessment (for Theory Course)</b>
<p>The assessment is based on MSE, ISE and ESE.</p> <p>MSE shall be typically on modules 1 to 3.</p> <p>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.</p> <p>ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.</p> <p>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)</p>



## Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

## Course Information

Programme	B.Tech.
Class, Semester	First Year B. Tech. Sem I/II
Course Code	7CH155
Course Name	Engineering Chemistry Lab
Desired Requisites:	Chemistry course at secondary and higher secondary level

Teaching Scheme		Examination Scheme (Marks)			Total
Practical	2Hrs/ Week	LA1	LA2	Lab ESE	
Interaction	0Hrs/ Week	30	30	40	100

Credits: 1

## Course Objectives

- 1 To make the student familiar with analytical techniques.
- 2 To provide hands on practice of Instrumental and titrimetric analysis.

## 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	Apply principles of Volumetry/gravimetry to quantitative analysis for water quality parameter, metal and alloys.	III	Applying
CO2	Demonstrate use of instrument for quantitative analysis.	III	Applying
CO3	Experiment physical/Chemical characteristics of material. Execute preparation of product.	III	Applying

## List of Experiments (Minimum 8 experiments from the following list)

List of Experiments (Minimum 15 Experiments from the following list)		
Sr. No	List of Experiments	Hours
1	Estimation of hardness of water by EDTA method (Complexometric Titration).	2 Hrs. each Expt.
2	Estimation of alkalinity of water (Neutralization Titration).	
3	Estimation of Dissolved Oxygen in water (Iodometric Titration).	
4	Estimation of Chloride content in water (Argentometry).	
5	Demonstration of pH meter & pH metric titration.	
6	Determination of strength of acid/base by conductometrically.	
7	Colorimetric estimation of Copper.	
8	Estimation of copper from Bronze. (Iodometric Titration).	
9	Estimation of Zn from Brass (Displacement Titration).	
10	Determination of purity of Iron (Redox Titration).	
11	Determination of viscosity of given liquid. by Ostwald viscometer.	
12	Determination of corrosion rate by weight loss method	
13	Gravimetric estimation of Ba from BaSO <sub>4</sub> as BaO.	
14	Preparation of Resin	
List of Topics(Applicable mode ):		
	Verification of Calcium content from Cement/ Limestone/Eggs shells/Calcium tablet.	

Dr. Dodlas.Rao  
A. A. Pawar

### Textbooks

- 1 College Practical Chemistry, V K Ahluwalia, Sunita Dhingra, Adarsha Gulati, Universities Press.
- 2 Laboratory Manual on Engineering Chemistry by Sudha Rani And S.K. Bashin, Dhanpat Rai & Co.

### References

- 1 Engineering Chemistry Laboratory Manual, Department of Chemistry WCE, Sangli.
- 2 J Mendham, R.C. Denney, J.D. Barnes, M.J.K Thomas, "Quantitative Chemical analysis", Vogels, Pearson Education, 2008, 6th Edition.

### Useful Links

- 1 <https://www.lccc.edu/academics/science-and-engineering/science-in-motion/labs-equipment/chemistry-lab-experiments>
- 2 <https://edu.rsc.org/resources/collections/classic-chemistry-experiments>

### CO-PO Mapping

CO-PO Mapping														PSO	
	Programme Outcomes (PO)														
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	3														
CO2	3														
CO3	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, 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,	Lab Course Faculty	During Week 1 to Week 8	30
	attendance, journal		Marks Submission at the end of Week 8	
LA2	Lab activities,	Lab Course Faculty	During Week 9 to Week 16	30
	attendance, journal		Marks Submission at the end of Week 16	
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty	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, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

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A. A. Powar



**Walchand College of Engineering, Sangli***(Government Aided Autonomous Institute)***AY 2023-24****Course Information**

<b>Programme</b>	First Year B. Tech. ( Mech, Civil, CSE, IT)
<b>Class, Semester</b>	First Year B. Tech., Sem I/II
<b>Course Code</b>	7EE156
<b>Course Name</b>	Electrical and Electronics Engineering Lab
<b>Desired Requisites:</b>	12 <sup>th</sup> Physics

Teaching Scheme		Examination Scheme (Marks)			
<b>Practical</b>	3 Hrs/ Week	<b>LA1</b>	<b>LA2</b>	<b>Lab ESE</b>	<b>Total</b>
<b>Interaction</b>	-	30	30	40	100

**Credits: 3****Course Objectives**

- |   |   |
|---|---|
| 1 | This course intends to demonstrate basic knowledge of Electrical engineering.   |
| 2 | It intends to develop skills to recognize working principle, construction and types of electrical Machines.   |
| 3 | This course intends to demonstrate basic knowledge of Electronics engineering.  |
| 4 | To provide knowledge of electronic components and circuits to first year engineering students, so that they can understand, design and implement simple analog / digital electronic circuits. |

**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	<b>Describe</b> basic concepts of electrical circuits and various theorems.	II	Understanding
CO2	<b>Demonstrate</b> the use of transformers and AC/DC machines.	III	Applying
CO3	<b>Identify and explain</b> use of electronics components and instruments.	II	Understanding
CO4	<b>Construct</b> digital IC, diode, transistor and op-amp based circuits.	III	Applying

**List of Experiments / Lab Activities/Topics****List of Topics(Applicable for Interaction mode ): Electrical**

1. To study AC and DC machines parts and their functions.
2. Study of AC/DC motor starters.
3. To study servo motor/ stepper motor with application.
4. Study of installation techniques using fuse, MCB and MCCB.
5. Measure voltage, current and power in single phase R-C series circuit.
6. Measure Voltage, current and power factor of 1-phase A.C R-L series circuit.

**List of Lab Activities: Electrical**

1. Electrical Safety Measures.
2. To study series-parallel RL, RC and RLC circuits
3. To verify KVL and KCL theorems.
4. To study speed control techniques of ac and dc machines.
5. To perform load test on transformer.
6. Find out equivalent resistance in series and parallel connection.

**List of Lab Activities: Electronics**

1. Identification of components and instruments required in lab to perform experiments in basic electronics engineering.
2. Realization of logic gates using basic building block (NAND/NOR).
3. Implementation of combinational and sequential logic circuit.
4. Study of half-wave and full-wave rectifier.
5. Study of diode-based clipper and clamper circuits
6. Study of transistor as a switch.
7. Study of inverting and non-inverting amplifier using op-amp.



Textbooks	
1	D.C. Kulshreshtha, "Basic Electrical Engineering", 1 st revised edition McGraw Hill, 2012.
2	D.P Kothari and I.J Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
3.	R. P. Jain, "Modern Digital Electronics", 4th edition, Tata McGraw Hill, 2009.
4.	Robert Boylestad, Louis Nashelsky, 11th edition, "Electronic Devices and Circuits, Pearson, 2015.
5.	Ramakant Gaikwad, "Op-amp and Linear Integrated Circuits", 4th edition, Pearson, 2015.
References	
1	V. N. Mittle and Arvind Mittal, "Basic Electrical Engineering", 2 nd edition, Tata McGraw Hill.
2	Morris Mano, "Digital Design", Pearson, 4th edition, 2011
3	Donald A. Neamen, "Electronic Circuit Analysis and Design", 3rd edition, Tata McGraw Hill, 2011
4	Robert F. Coughlin and Frederick F. Driscoll, "Operational Amplifiers and Linear Integrated Circuits", 6th edition, PHI, 2009
Useful Links	
1	Virtual Labs ,An Initiative of Ministry of Education Under the National Mission on Education through ICT, 1. <a href="https://www.vlab.co.in/broad-area-electrical-engineering">https://www.vlab.co.in/broad-area-electrical-engineering</a> 2. <a href="http://vlabs.iitkgp.ac.in/asnm/#">http://vlabs.iitkgp.ac.in/asnm/#</a>
2	Virtual Labs, An Initiative of Ministry of Education Under the National Mission on Education through ICT:Basic Electronics
3	<a href="https://nptel.ac.in/courses/122106025">https://nptel.ac.in/courses/122106025</a>

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								2					
CO3	3													
CO4	3								2					
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.				



(Government Aided Autonomous Institute)

## Course Information

Teaching Scheme		Examination Scheme (Marks)			
Practical	2 Hrs/ Week	LA1	LA2	Lab ESE	Total
Interaction	2 Hrs/ Week	30	30	40	100
		Credits: 3			

1	To understand problem solving and problem solving aspects.
2	To learn basics, features and future of C programming.
3	To acquaint with data types, input output statements, decision making, looping, functions, array, string, pointer, structure and union in C.

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

### List of Experiments / Lab Activities/Topics

**Module I: Basics of Problem Solving & C Programming:** General Problem Solving Concepts, Types of Problems, Problem Solving Strategies. **Program Design Tools:** Algorithms, Flowcharts and Pseudo-Codes. **C Programming:** Types of programming languages, Features of C, Basic Concepts, Structure of a C Program, Declarations, Constants, Variables, Data Types, Operators and Expressions, Input and Output Functions.

**Module III: Functions:** Need for functions, Definition, Function Call, Block Structure, Variable Scope, Return Type, Passing Arguments to a Function: Call by Reference, Call by Value, Recursive Functions.

**Module V: Pointers:** Introduction, Definition and Declaration of Pointers, Address Operator, Pointer Variables. **Structures and Unions:** Declaration, Initialization, Accessing members of a Structure, Initializing a Union, Accessing the Members of a Union.

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Course Com



**List of Experiments:**

1. Program to simulate simple calculator that performs basic tasks such as addition, subtraction, multiplication and division.
2. Program to demonstrate different operators and their order precedence.
3. Program to accept the number and Compute a) square root of number, b) Square of number, c) Cube of number d) check for prime, d) factorial of number e) prime factors.
4. Program to accept a number from user and print digits of number in a reverse order.
5. Program to accept two numbers from user and compute smallest divisor and Greatest Common Divisor of these two numbers.
6. Program to find whether the number is positive / negative / zero using conditional statement.
7. Programs to show different types of iteration / loop.
8. Program to accept N numbers from user and compute and display maximum in list, minimum in list, sum and average of numbers.
9. Program to print the Fibonacci Series (with & without recursion).
10. Program to swap two number using function (Call by value & reference).
11. Program to demonstrate structure to array.
12. Program to demonstrate structure and union.
13. Program to demonstrate file handling.

**Textbooks**

- |   |   |
|---|---|
| 1 | E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill.            |
| 2 | Yashavant Kanetkar, "Lets Us C", BPB Publication, 5th Edition, 20216. |

**References**

- |   |   |
|---|---|
| 1 | Maureen Spankle, "Problem Solving and Programming Concepts", Pearson; 9 <sup>th</sup> edition, ISBN-10: 9780132492645, ISBN-13: 978-0132492645. |
| 2 | Herbert Schidt, C: The complete reference, 4th edition, McGraw Hill publication.  |
| 3 | Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India  |

**Useful Links**

- |   |   |
|---|---|
| 1 | <a href="https://www.programiz.com/c-programming">https://www.programiz.com/c-programming</a>                                       |
| 2 | <a href="https://www.w3schools.com/c/c_intro.php">https://www.w3schools.com/c/c_intro.php</a>                                       |
| 3 | <a href="https://www.javatpoint.com/c-programming-language-tutorial">https://www.javatpoint.com/c-programming-language-tutorial</a> |

**CO-PO Mapping**

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

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, Submission	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, Submission	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30



Lab ESE	Lab activities/ submission/ 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.				

*Dr. V. N. V. V. V.*  
Dr. V. N. V. V. V.

Walchand College of Engineering, Sangli					
(Government Aided Autonomous Institute)					
AY 2023-24					
Course Information					
Programme		B.Tech. (Electrical, Electronics, CSE, IT)			
Class, Semester		First Year B. Tech., Sem I &II			
Course Code		7ME108			
Course Name		Engineering Graphics Lab			
Desired Requisites:		Basic Knowledge of Computer			
Teaching Scheme		Examination Scheme (Marks)			
Practical	2Hrs/Week	LA1	LA2	ESE	Total
Interaction	1 Hrs/Week	30	30	40	100
		Credits: 2			
Course Objectives					
1	To impart the techniques of engineering graphics.				
2	To prepare the students for applying knowledge of engineering graphics in real life drawings.				
3	To develop the skills of students for evaluating CAD software for its 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	Understand the basic principle of Engineering graphics.			II	Understanding
CO2	Draw different views of components using the first angle projections method.			III	Applying
CO3	Apply the knowledge of engineering graphics in real life applications.			III	Applying
List of Experiments / Lab Activities					
List of Experiments:					
Submission of drawing on following topics (Any two sheets on CAD)					
1: Plane Curves and Conic Sections (Min. 5 Problems)					
2: Projections of Points and Lines (Min. 5 Problems)					
3: Projections of Planes and Solids (Min. 6 Problems)					
4: Development of Lateral Surfaces (Min. 3 Problems)					
5: Orthographic Projections (Min. 2 Problems)					
6: Isometric Projections (Min. 2 Problems)					
Text Books					
1	Bhatt N.D., Panchal V.M. and Ingle P.R., Engineering Drawing, Charotar Publishing House, 2014				
2	Shah, M.B. and Rana B.C., Engineering Drawing and Computer Graphics, Pearson Education, 2008.				
3	Agrawal B. and Agrawal C. M., Engineering Graphics, TMH Publication, 2012.				
References					
1	Narayana, K.L. and P Kannaiah, Text book on Engineering Drawing, Scitech Publishers, 2008.				
2	Warren J. Luzzader, Fundamentals of Engineering Drawing, Prentice Hall of India, New Delhi, 2010				
3	Fredderock E. Giesecke, Alva Mitchell others, Principles of Engineering Graphics, Maxwell McMillan Publishing, 2010				
Useful Links					
1	<a href="https://nptel.ac.in/courses/112/103/112103019/">https://nptel.ac.in/courses/112/103/112103019/</a>				

  
(R.M. Channanwar)



2	<a href="https://nptel.ac.in/courses/105/104/105104148/">https://nptel.ac.in/courses/105/104/105104148/</a>
3	<a href="https://www.youtube.com/watch?v=xXdpkQXDmW&amp;list=PL9RcWoqXmzaJT-fligTSwUjWU4zCX_H2A">https://www.youtube.com/watch?v=xXdpkQXDmW&amp;list=PL9RcWoqXmzaJT-fligTSwUjWU4zCX_H2A</a>

CO-PO Mapping For Electrical Engineering Department															
	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															

CO-PO Mapping Electronics Engineering Department															
	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	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															

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

CO-PO Mapping For Information Technology Department															
	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1					3					1		1			
CO2			1												
CO3					3					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.(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

*(R. M. Chandra)*

Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)					
AY 2023-24					
Course Information					
Programme		B.Tech. (Information Technology)			
Class, Semester		First Year B. Tech., Sem I			
Course Code		7IT151			
Course Name		IT Fundamentals Lab			
Desired Requisites:		Programming in C including pointers and File Handling			
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 introduce computer hardware and its different peripherals				
2	To develop computer programming skills in the students for advanced computer science courses.				
3	To familiarize with networking concepts in computer				
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	Implement various connections of peripheral devices			III	Applying
CO2	Demonstrate the use of various programming techniques in application programs			III	Applying
CO3	Create networks according to the required application			VI	Creating
List of Experiments / Lab Activities/Topics					
List of Lab Activities:					
1. Hardware Components & Maintenance					
2. BIOS, CMOS and BOOT Process					
3. I/O Devices, Cables and Connections					
4. Network Types, Devices, Tools					
5. Operating System, Installation and Upgrades					
6. Windows Administrative Tools and Network Configuration, User and Group Management					
7. Physical and Digital Security Basics and Troubleshooting					
8. Network Architecture, Network Operation and Security					
Project Activity: Install any two operating systems on a PC making it dual boot, including latest version of Ubuntu Linux, Windows 7/8, Connect 2-4 computers together using a network hub to create a LAN					
9. . Program on recursive programs					
10. Program on stack and queue					
11. Program on searching					
12. Program on sorting					
Textbooks					

Dr. (Mrs.) A. P. Patil




1	E Balagurusamy "FUNDAMENTALS OF COMPUTERS "Tata McGraw-Hill 1 <sup>st</sup> Edition
2	Computer Science: The Hardware, Software and Heart of It 2011th Edition, Prentice Hall of India
<b>References</b>	
1	Pradeep K. Sinha Priti Sinha, "Computer Fundamentals "- 6Th Revised Edition, BPB Publications
<b>Useful Links</b>	
1	<a href="https://nptel.ac.in/courses/106105214">https://nptel.ac.in/courses/106105214</a>
2	<a href="https://nptel.ac.in/courses/106105171">https://nptel.ac.in/courses/106105171</a>
3	<a href="https://nptel.ac.in/courses/106106231">https://nptel.ac.in/courses/106106231</a>

<b>CO-PO Mapping</b>														
	<b>Programme Outcomes (PO)</b>												<b>PSO</b>	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
<b>CO1</b>		1	2											
<b>CO2</b>				3	2									
<b>CO3</b>				2									2	

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.

<b>Assessment</b>				
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%				
<b>Assessment</b>	<b>Based on</b>	<b>Conducted by</b>	<b>Typical Schedule</b>	<b>Marks</b>
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.

  
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Electronics

SKP

**AY 2023-24****Course Information**

<b>Programme</b>	B. Tech. (All Branches)
<b>Class, Semester</b>	First Year B. Tech., Sem.-I
<b>Course Code</b>	7VS152
<b>Course Name</b>	Engineering Skills Laboratory (E/EN)
<b>Desired Requisites:</b>	-

<b>Teaching Scheme</b>		<b>Examination Scheme (Marks)</b>			
<b>Practical</b>	2 Hrs/ Week	<b>LA1</b>	<b>LA2</b>	<b>Lab ESE</b>	<b>Total</b>
<b>Interaction</b>	-	30	30	40	100

**Credits: 1****Course Objectives**

<b>1</b>	To provide basic knowledge of handling electrical equipment and safety.
<b>2</b>	To impart skills to plan and implement simple electrical wiring.
<b>3</b>	To <b>provide</b> exposure to the students with hands on experience on various basic engineering practices in Electrical and Electronics Engineering.
<b>4</b>	To explain the working of small electronic gadget like electronic bell, emergency lamp etc.

**Course Outcomes (CO) with Bloom's Taxonomy Level**

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

<b>CO</b>	<b>Course Outcome Statement/s</b>	<b>Bloom's Taxonomy Level</b>	<b>Bloom's Taxonomy Description</b>
<b>CO1</b>	<b>Identify</b> the instruments for measurement of electrical parameters.	I	Remembering
<b>CO2</b>	<b>Illustrate</b> working of switchgear for electrical safety and protections.	III	Applying
<b>CO3</b>	<b>Identify and explain</b> the use of electronic instruments.	II	Understanding
<b>CO4</b>	<b>Build and Test</b> simple electronic gadget.	III	Applying

**List of Experiments / Lab Activities/Topics****List of Lab Activities: (minimum 08 experiments)****Engineering Skills (Electrical)****Module 1:**

- Measurement of Electrical Parameters in DC Circuits.
- Measurement of Electrical Parameters in Single Phase AC Circuits.

**Module 2:**

- Study of various types of wires and cables.
- Basic wiring schemes for residential and industrial applications.
- Demonstrate the operation of fuse, MCCB, ELCB

**Module 3:**

- Preparation of Earthing Pit for Electrical Installation Safety.
- Dismantling, Assembly and Fault Finding of Ceiling Fans / Table Fans, Automatic Electric Iron, Plate Tube Water Heater, Use of Megger.

**Engineering Skills (Electronics)****Module 1:** Introduction to Lab Instruments like CRO, Power supply, Oscillator, Multi meter. Frequency measurement, AC-DC voltage measurement using CRO and multi meter**Module 2:** Study of components (Resistance, capacitor, Diode, Transistor, Transformer, switches, relays, PCB etc.) testing and lead identification**Module 3:** Electronics Gadget building & testing (Gadget must work)



Textbooks	
1	Make: Electronics, by Charles Platt, Published by Maker Media, 2015
2	Electronics Projects For Dummies, by Earl Boysen and Nancy Muir, Published by Wiley Publishing, Inc., 2006
3	D.C. Kulshreshtha, "Basic Electrical Engineering", 1 st revised edition McGraw Hill, 2012.
4	D.P Kothari and I.J Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
References	
1	Paul Horowitz, Winfield Hill, "The Art of Electronics", Cambridge University Press, 1989
2	E-learning material through Intranet/Internet
3	V. N. Mittle and Arvind Mittal, "Basic Electrical Engineering", 2 nd edition, Tata McGraw Hill.
4	
Useful Links	
1	
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			1		2				1				1	
CO2			1		2				1				1	
CO3				2					1					1
CO4				2					1					2

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				
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