KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE – 641 049

(An Autonomous Institution Affiliated to Anna University, Chennai)

REGULATIONS – 2015

(CBCS)

CURRICULUM AND SYLLABI FOR I & II SEMESTERS

From Academic year 2016-2017

Objectives of the Department

To impart the fundamental knowledge of the students in all facets of Science and Humanities needed to acquire better expertise in all disciplines of Engineering besides, bridging the curricular gap between the school and collegiate education.

Vision

- To train and develop the basic skill-sets which in turn facilitates the students in achieving academic excellence.
- To introduce innovative teaching methodologies and evaluation strategies which shall chisel the professional etiquette of the students.

Mission

- To inculcate the importance of Basic Sciences and develop a natural flair for Engineering and Technology which in turn shall mould the student into a competent professional.

B.E - AERONAUTICAL ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*202	Materials Science	BS	4	3	0	0	3
4.	U15CH*T*202	Applied Chemistry	BS	4	3	0	0	3
5.	U15ME*T*202	Engineering Mechanics	ES	5	3	2	0	4
6.	U15EE*T* 211	Basics of Electrical and Electronics Engineering	ES	4	3	0	0	3
Practical								
7.	U15CH*P*201	Chemistry Laboratory	BS	3	0	0	2	1
8.	U15CS*P*211	Computing Laboratory	ES	3	0	0	2	1
9	U15AE*P*201	CAD Laboratory – I	PC	3	0	0	2	1
10	U15GHP201	Personal Values -2	HS	1	1	0	0	1
11.	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				25

B.E – AUTOMOBILE ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact period	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*202	Materials Science	BS	4	3	0	0	3
4.	U15CH*T*202	Applied Chemistry	BS	4	3	0	0	3
5.	U15ME*T*202	Engineering Mechanics	ES	5	3	2	0	4
6.	U15EE*T* 211	Basics of Electrical and Electronics Engineering	ES	4	3	0	0	3
Practical								
7.	U15CH*P*201	Chemistry laboratory	BS	3	0	0	2	1
8.	U15AU*P*201	CAD Laboratory	PC	3	0	0	2	1
9	U15EE*P*211	Basics of Electrical and Electronics Engineering Laboratory	ES	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				25

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15MEP101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*206	Applied Physics	BS	4	3	0	0	3
4.	U15CH*T*206	Chemistry for Biotechnology	BS	4	3	0	0	3
5.	U15EET211	Basics of Electrical and Electronics Engineering	ES	4	3	0	0	3
6.	U15BT*T*201	Biomolecules and Genetics	PC	4	3	0	0	3
Practical								
7.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
8.	U15CSP211	Computing Laboratory	ES	3	0	0	2	1
9	U15BT*P*201	Biomolecules and Genetics Laboratory	PC	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				24

B.E CIVIL ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENT101	Technical English	HS	4	3	0	0	3
2.	U15MAT101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PHT101	Engineering Physics	BS	4	3	0	0	3
4.	U15CHT101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15MET101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CST101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PHP101	Physics Laboratory	BS	3	0	0	2	1
8.	U15MEP101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CSP101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GHP101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MAT201	Engineering Mathematics II	BS	5	3	2	0	4
3.	U15PHT201	Materials Science	BS	4	3	0	0	3
4.	U15CHT201	Chemistry for Civil Engineering	BS	4	3	0	0	3
5.	U15MET202	Engineering Mechanics	ES	5	3	2	0	4
6.	U15CET201	Construction Materials	PC	4	3	0	0	3
Practical								
7.	U15CHP201	Chemistry Laboratory	BS	3	0	0	2	1
8.	U15CSP211	Computing Laboratory	ES	3	0	0	2	1
9	U15CEP201	Construction Materials Laboratory	PC	3	0	0	2	1
10.	U15GHP201	Personal Values -2	HS	1	1	0	0	1
11	U15SIP201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				25

B.E - COMPUTER SCIENCE AND ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15IT*T*101	Foundations of Information Technology	PC	4	3	0	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	3	0	0	2	1
8.	U15CSP102	Computer Hardware Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
11	U15SI*P*101	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				25

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*203	Materials Science	BS	4	3	0	0	3
4.	U15EE*T*212	Electrical and Electronic Circuits	ES	4	3	0	0	3
5.	U15ME*T*201	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*202	Digital Systems and Design	PC	4	3	0	0	3
Practical								
7.	U15EE*P*212	Electrical and Electronic Circuits Laboratory	BS	3	0	0	2	1
8.	U15MEP201	Engineering Practices Laboratory	ES	3	0	0	2	1
9.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
10.	U15CS*P*203	Problem Solving Techniques Laboratory	ES	3	1	0	2	2
TOTAL				36				23

B.E - ELECTRONICS AND COMMUNICATION ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15EC*T*102	Electron Devices	ES	4	3	0	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
11.	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				25

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*203	Materials Science	BS	4	3	0	0	3
4.	U15CH*T*203	Chemistry for Circuit Engineering	BS	4	3	0	0	3
5.	U15ME*T*201	Engineering Graphics	ES	5	2	2	0	3
6.	U15EC*T*201	Circuit Theory	ES	5	3	2	0	4
Practical								
7.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
8.	U15EC*P*201	Electric Circuits and Simulation Laboratory	ES	3	0	0	2	1
9	U15EC*P*202	Electron Devices Laboratory	ES	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11.	U15CS*P*203	Problem Solving Techniques Laboratory	ES	3	1	0	2	2
TOTAL				40				25

B.E - ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENT101	Technical English	HS	4	3	0	0	3
2.	U15MAT101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PHT101	Engineering Physics	BS	4	3	0	0	3
4.	U15CHT101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15EET101	Circuit Theory	PC	5	3	2	0	4
6.	U15CST101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CHP101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15EEP101	Basics of Electric Circuits laboratory	PC	3	0	0	2	1
9	U15CSP101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GHP101	Personal Values -1	HS	1	1	0	0	1
11	U15SIP101	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				26

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MAT201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PHT205	Applied Physics	BS	4	3	0	0	3
4.	U15CHT203	Chemistry for Circuit Engineering	BS	4	3	0	0	3
5.	U15MET201	Engineering Graphics	ES	5	2	2	0	3
6.	U15MET204	Thermal Engineering and Fluid Mechanics	ES	4	3	0	0	3
Practical								
7.	U15PHP201	Physics Laboratory	BS	3	0	0	2	1
8.	U15MEP201	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15MEP202	Thermal Engineering and Fluid Mechanics Lab	ES	3	0	0	2	1
10.	U15GHP201	Personal Values -2	HS	1	1	0	0	1
TOTAL				36				22

B.E - ELECTRONICS AND INSTRUMENTATION ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15EI*T*101	Electronic Devices	PC	4	3	0	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
11	U15SI*P*101	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				25

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*203	Materials Science	BS	4	3	0	0	3
4.	U15CH*T*203	Chemistry for Circuit Engineering	BS	4	3	0	0	3
5.	U15EC*T*201	Circuit Theory	ES	5	4	0	0	4
6.	U15ME*T*201	Engineering Graphics	ES	5	2	2	0	3
Practical								
7.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
8.	U15CS*P*211	Computing Laboratory	ES	3	0	0	2	1
9	U15EI*P*201	Circuits and Devices Laboratory	PC	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
TOTAL				37				23

B.Tech - FASHION TECHNOLOGY

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15FT*T*101	Fiber Science	PC	4	3	0	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15FT*P*101	Fiber Analytical laboratory	PC	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
11	U15SI*P*101	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				25

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*204	Applied Physics	BS	4	3	0	0	3
4.	U15CH*T*204	Chemistry for Textiles	BS	4	3	0	0	3
5.	U15ME*T*201	Engineering Graphics	ES	5	2	2	0	3
6.	U15FT*T*201	Yarn Technology	PC	4	3	0	0	3
Practical								
7.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
8.	U15ME*P*201	Engineering Practices Laboratory	ES	3	0	0	2	1
9.	U15CS*P*203	Problem Solving Techniques Laboratory	ES	3	1	0	2	2
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
TOTAL				36				23

B.Tech - INFORMATION TECHNOLOGY

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CST101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry Laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*203	Materials Science	BS	4	3	0	0	3
4.	U15EE*T*212	Electrical and Electronic Circuits	ES	4	3	0	0	3
5.	U15CH*T*203	Chemistry for Circuit Engineering	BS	4	3	0	0	3
Practical								
6.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
7.	U15EE*P*212	Electrical and Electronic Circuits Laboratory	ES	3	0	0	2	1
8.	U15CS*P*203	Problem Solving Techniques Laboratory	ES	3	1	0	2	2
9	U15IT*P*201	Foundations of IT & Computer Hardware Laboratory	ES	4	0	0	4	2
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				37				24

B.E - MECHANICAL ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	4
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	2
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	2
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				26

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*202	Materials Science	BS	3	3	0	0	3
4.	U15CHT202	Applied Chemistry	BS	3	3	0	0	3
5.	U15ME*T*202	Engineering Mechanics	ES	3	3	0	0	3
6.	U15EE*T*211	Basics of Electrical & Electronics Engineering	ES	4	4	0	0	4
Practical								
7.	U15CH*P*201	Chemistry Laboratory	BS	2	0	0	2	1
8.	U15MEP203	Machine Drawing Laboratory	ES	3	0	0	2	1
9	U15EE*P*211	Basics of Electrical & Electronics Engineering Laboratory	ES	4	0	0	4	2
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				35				26

B.E - MECHATRONICS ENGINEERING

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15ENP201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*202	Materials Science	BS	4	3	0	0	3
4.	U15CH*T*202	Applied Chemistry	BS	4	3	0	0	3
5.	U15ME*T*202	Engineering Mechanics	ES	5	3	2	0	4
6.	U15MC*T*201	Electronic Devices and Circuits	PC	4	3	0	0	3
Practical								
7.	U15CH*P*201	Chemistry Laboratory	BS	3	0	0	2	1
8.	U15CS*P*211	Computing Laboratory	ES	3	0	0	2	1
9	U15EC*P*207	Electronic Devices and Circuits Laboratory	ES	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				25

B.Tech - TEXTILE TECHNOLOGY

SEMESTER – I

	Course Code	Course Title	Category	Contact periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	4	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	4	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	4	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	5	2	2	0	3
6.	U15CS*T*101	Structured Programming using 'C'	ES	4	3	0	0	3
Practical								
7.	U15CH*P*101	Chemistry laboratory	BS	3	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	3	0	0	2	1
9	U15CS*P*101	Structured Programming Laboratory using 'C'	ES	3	0	0	2	1
10.	U15GH*P*101	Personal Values -1	HS	1	1	0	0	1
TOTAL				36				23

SEMESTER – II

	Course Code	Course Title	Category	Contact Periods	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*P*201	Business Communication and Presentation Skills	HS	4	2	0	2	2
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*204	Applied Physics	BS	4	3	0	0	3
4.	U15CH*T*204	Chemistry for Textiles	BS	4	3	0	0	3
5.	U15ME*T*202	Engineering Mechanics	ES	5	3	2	0	4
6.	U15TX*T*201	Textile Fibers	PC	4	3	0	0	3
Practical								
7.	U15PH*P*201	Physics Laboratory	BS	3	0	0	2	1
8.	U15CS*P*211	Computing Laboratory	ES	3	0	0	2	1
9	U15TX*P*201	Fiber Analytical Laboratory	PC	3	0	0	2	1
10.	U15GH*P*201	Personal Values -2	HS	1	1	0	0	1
11	U15SI*P*201	Social Immersion Project	HS	2	0	0	2	2
TOTAL				38				25

U15EN*T*101 - TECHNICAL ENGLISH (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Use appropriate technical vocabulary when speaking and writing to express their understanding of technical concepts. (K2)

CO2: Write with greater felicity using the register suitable in the workplace.(K3)

CO3: Interpret the graphical data and convey the idea precisely.(K4)

CO4: Compose effective emails and write officials letters with greater clarity and precision.(K4)

CO5: Make effective oral presentations on topics related to science and technology.(K3)

CO6: Exhibit sufficient language skills for the needs of the corporate sector.(K4)

CO/PO Mapping

(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1				M					M	S		M		
CO2				M					M	S		M		
CO3				S					M	S		M		
CO4									M	S		M		
CO5									M	S		M		
CO6				M					M	S		M		

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment / Group Presentation 4. End Semester Examination	1. Course end survey

FOUNDATIONS OF TECHNICAL JARGON **9 Hours**

Parts of Speech – Word Formation – Affixing, Synonyms and Antonyms, Homonyms - Homophones and Homographs, One Word Substitutes, Nominal Compounds, Acronyms and Abbreviations, Definitions

TECHNICAL SYNTAX **9 Hours**

Tense, Voice, Kinds of Syntax, Gerund and Infinitives, Cause and effect expressions, Purpose and functional expressions, Conditional clauses, Reported speech

APPLICATIONS OF TECHNICAL SYNTAX **9 Hours**

Editing (Grammar – Concord, Articles, Parts of Speech, Modifiers – Dangling participles, Misplaced, Squinting and Punctuation), Instructions and Recommendations, Discourse markers – Process description, Writing a Paragraph – Descriptive, Narrative, Compare and Contrast, Argumentative, Evaluative, Persuasive, Sequencing of jumbled sentences

DRAFTING TECHNICAL DETAILS **9 Hours**

Note making – Linear, Report writing - Accident report, Project Proposals, Transcoding Graphics – Encoding and Decoding – Bar chart / Pie chart / Flow chart / Line graph / Tabulated data / Tree diagram or Organizational chart; Statement of Purpose

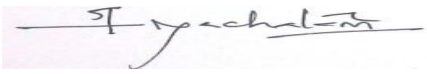
TECHNICAL CORRESPONDENCE **9 Hours**

Modules of a letter – Bank Loan applications, bona-fide Certificate Industrial Visit/ In-plant Training, Letter for Organizing functions, Letter of Application and Resume ,Notices and Circulars, Agenda, Basics of E-Mail writing and E-mail etiquette.

Total: 45 Hours.

Reference Books:

1. Rizvi Ashraf. M., Effective Technical Communciation, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Bhatnagar R.P. & Rahul Bhargava, “English for Competitive Examinations”, Macmillian Publishers, India, 1989, ISBN: 9780333925591
3. Aggarwal R.S., “A Modern Approach to Verbal & Non–Verbal Reasoning”, S.Chand Publishers, India, 2012, ISBN : 8121905516



U15ENP201 – BUSINESS COMMUNICATION AND PRESENTATION SKILLS (Common to all branches of Engineering and Technology)	L	T	P	C
	2	0	2	2

COURSE OUTCOMES

After successful completion of this course, the students should be able to

CO1: Gain cognizance of Effective Business Environment (K1)
CO2: Develop a milestone for leadership and group participation (K2)
CO3: Improve critical thinking and analytical skills to facilitate effective communication(K2)

CO4: Practice and perceive the full repertoire of listening strategies (K2)
CO5: Develop effective reading and writing skills and set goals for future growth (K2)
CO6: Inculcate Spoken Communication Skills required for presentations and discussions.(K2)

COs	CO/PO mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO1
CO1									S	S	M			
CO2									S	S				
CO3		S		M					S	S		S		
CO4				S					S	S				
CO5										S		S		
CO6									S	S				

Course Assessment methods

Direct	Indirect
1. Continuous assessment 2. Assignment 3. Model practical I 4. End Semester Exam	1. Course exit survey

Fundamentals of Business Communication **12 Hours**

Introduction to Business Communication - Greetings, Formal and Informal Introduction of Self and Others, Giving encouragement: Phrases for Positive Feedback, Agreeing and disagreeing – Expressions indicating frequency, Reading to Understand – Facts, Inference, Main Idea, Author's Opinion/ tone, Short prepared compositions on current affairs

Listening and Comprehending Business Communication **12 Hours**

Listening to monologues, Listening for general content- Listening to dialogues- Listening to a telephonic conversation- Listening for specific information, numbers, time, duration- Listening to conversations among three or more people - Listening to a group discussion and providing factual information, Intensive listening

Oral Business Communication **12 Hours**

Establishing Business relationships and negotiating, Describe an object or event- Describing a working mechanism- Argumentative speech about a Public issue - Responding to situations and providing solutions, Seeking Permission, Introduction to Presentation Skills - Presenting information, Giving and Getting Product and Service Information, Perceiving Visual Information, Talking about People and Places

Reading and Comprehending Business Communication **12 Hours**

Reading techniques, News Paper Reading, Reading brochures, leaflets, instruction manual- Cloze test- Reading Comprehension, Book review, Article review, Reading a Technical Report, Critical Reading (Editorial): Creative and Critical thinking

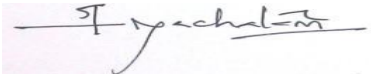
Written Business Communication **12 Hours**

Product Review, Writing a proposal for conducting science exhibition, E-mail etiquette and correspondence, Business Itinerary, Business Letters – Calling for a quotation – Placing Order – Letter of Complaint – Letter seeking Clarification – Acknowledging prompt / quality service, Letter requesting information, Letter explaining a situation, Letter of acceptance and declining, Encoding and decoding advertisements

Total: 60 Hours

Reference Books:

1. Spoken English: A foundation course for speakers of Tamil. Part I & II: Kamalesh Sadanand, Susheela Punitha. Orient Longman Publications, 2008.
2. Life Skills and Leadership for Engineers: David Goldsberg, University of Ilinois, Tata Mcgraw Hill.2007.



U15MAT101- ENGINEERING MATHEMATICS I (Common to all branches of Engineering and Technology)	L	T	P	C
	3	2	0	4

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Identify eigen values and eigen vectors and its role in the system of equations. (K3)
CO2: Discover the radius, centre and circle of curvature of any curves. (K4)
CO3: Solve the first order ordinary differential equations of certain types and its applications. (K3)
CO4: Compile the solution of the higher order ordinary differential equations and its applications. (K6)
CO5: Identify the maximum and minimum values of surfaces. (K3)
CO6: Extend the functions as series and find the dependency between them using Jacobian. (K2)

Pre-requisite: Differentiation and Integration

CO/PO Mapping

S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M							M	M		
CO2	S	M							M	M		
CO3	S	M							M	M		
CO4	S	M							M	M		
CO5	S	M							M	M		
CO6	S	M							M	M		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignments 3. End semester examination	Course end survey

MATRICES **9 Hours**

Rank of a matrix – Linearly dependent and independent vectors – Eigen values and eigenvectors of a real matrix – Properties of eigen values and eigenvectors – Cayley Hamilton theorem (excluding proof) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS 9 Hours

Curvature – Radius, Centre and Circle of curvature in Cartesian, Parametric and Polar form – Evolute – Envelope of family of curves with one and two parameters – Evolute as the envelope of normals – properties of evolute and envelope.

FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS 9 Hours

Leibnitz's equation – Bernoulli's equation – Equations of first order and higher degree - Clairauts form – Applications: Orthogonal trajectories and simple Electric circuit problems.

HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS 9 Hours

Linear equations of second and higher order with constant coefficients – Euler's and Legendre's linear equations – Method of variation of parameters – First order Simultaneous linear equations with constant coefficients - Application - Electrical circuit. (Differential equations and associated conditions need to be given).

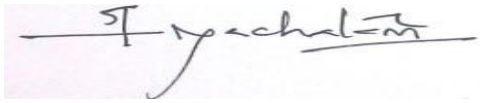
FUNCTIONS OF SEVERAL VARIABLES 9 Hours

Total derivative – Taylor's series expansion – Maxima and minima of functions of two variables – Constrained maxima and minima: Lagrange's multiplier method with single constraints – Jacobians.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

REFERENCES

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 40th Edition.
2. Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
3. Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics", S. Chand & Co., New Delhi, (Reprint) 2008.
4. Kreyzig E., "Advanced Engineering Mathematics", Eighth Edition, John Wiley and sons, 2010.
5. Arunachalam, T., Engineering Mathematics I, Sri Vignesh Publications, Coimbatore. (Revised) 2009.
6. Venkataraman M.K., "Engineering Mathematics", The National Pub. Co., Chennai,2003.
7. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, (2007).



U15MA*T*201- ENGINEERING MATHEMATICS II (Common to all branches of Engineering and Technology)	L	T	P	C
	3	2	0	4

COURSE OUTCOMES

After successful completion of this course, the students should be able to:
On completion of the course, the students are expected

CO1: Evaluate double and triple integrations and enable them to find area and volume using multiple integrals. (K5)

CO2: Explain the basics of vector calculus comprising gradient, divergence and curl. (K2)

CO3: Identify the relationship between line, surface and volume integrals. (K3)

CO4: Construct analytic functions of complex variables and conformal mappings. (K6)

CO5: Summarize the basics of residues, complex integration and contour integration. (K2)

CO6: Determine Laplace transform and it to represent system dynamic models and evaluate their time responses. (K5)

Pre- requisite: Differentiation and Integration

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M							M	M		
CO2	S	M							M	M		
CO3	S	M							M	M		
CO4	S	M							M	M		
CO5	S	M							M	M		
CO6	S	M							M	M		

Course Assessment methods:

Direct	Indirect
1. Internal Test I 2. Assignment 3. End semester examination	Course end survey

MULTIPLE INTEGRALS **9 Hours**

Double integration – Cartesian and polar coordinates – Change of order of integration –Change of variables between cartesian and polar coordinates - Triple integration in cartesian coordinates – Application : Area as double integral – Volume as triple integral .

VECTOR CALCULUS **9 Hours**

Gradient, divergence and curl – Directional derivative – Irrotational and solenoidal vector fields - Green's theorem in a plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelopipeds.

ANALYTIC FUNCTION **9 Hours**

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy- Riemann equations in Cartesian coordinates and sufficient conditions (excluding proofs) – Properties of analytic function – Construction of analytic function by Milne Thomson method – Conformal mapping : $w = z + c$, cz , $1 / z$ and bilinear transformation.

COMPLEX INTEGRATION **9 Hours**

Statement and applications of Cauchy's integral theorem and Cauchy's integral formula (excluding proofs) – Taylor's and Laurent's series expansions – Singularities – Residues – Cauchy's residue theorem (excluding proof) – Application of residue theorem to evaluate real integrals - Unit circle and semi-circular contours (excluding poles on real axis).

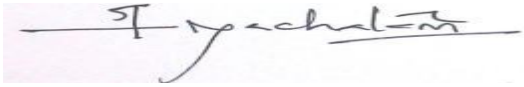
LAPLACE TRANSFORM **9 Hours**

Definition - Properties – Superposition - Shift in t - Shift in s - Time Derivatives - Time Integral – Initial and Final Value Theorems – Periodic functions: sine wave, saw-tooth, square and triangular waves - Inverse Laplace Transform – Simple system dynamic models – Transfer Functions – Poles and Zeroes - Response of First-Order Systems - Solution of RC Free, Step and Sinusoidal Responses; Response of Second-Order Systems - Free Response, step Response - Convolution theorem.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

REFERENCES

1. Grewal B.S., Higher Engineering Mathematics, Khanna Publishers, Delhi, 42nd Edition, 2012.
2. Philip D. Cha, James J. Rosenberg, Clive L. Dym, Fundamentals of Modelling and Analyzing Engineering Systems, Cambridge University Press, United Kingdom, 2000.
3 Kreyzig E., Advanced Engineering Mathematics, John Wiley & Sons (Asia), Pvt, Ltd., Singapore, 10th Edition, 2010.
4 Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill, Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
5 Venkataraman M.K., Engineering Mathematics, Volume - II, The National Pub. Co., Chennai, 2003.
6 Kandasamy P., Thilagavathy K. and Gunavathy K., Engineering Mathematics, S. Chand & Co., New Delhi, 2008.
7 Arunachalam T. and Sumathi K., Engineering Mathematics II, Sri Vignesh Publications, Coimbatore, Third Edition, 2011.



U15PH*T*101/ ENGINEERING PHYSICS (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Analyze and identify the crystal structure in materials
CO2 Imbibe the concept of optics, laser and their applications in engineering.
CO3 Categorize the optical fibre and apply it for various fields.
CO4 Acquire the basic knowledge in quantum mechanics
CO5 Apply the NDT techniques and modern engineering tools necessary for Engineering practice.
CO6 Emphasize the role of nuclear physics in energy production

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M			S							M
CO3	S	M			S							M
CO4	S	M			S							M
CO5	S	M			S							M
CO6	S	M					M					M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CRYSTAL PHYSICS **9 Hours**

Space lattice – unit cell – lattice planes – Bravais space lattices – Miller indices – calculation of interplanar distances – Atomic radius – co- ordination number – Packing factor for SC, BCC, FCC and HCP structures – crystal imperfections – point defects – line defects – surface defects – volume defects – effect of crystal imperfections.

APPLIED OPTICS **9 Hours**

Interference – airwedge and its applications - Lasers – spontaneous and stimulated emissions – Einsteins coefficients – Nd: YAG, Co_2 and semiconductor laser – Homojunction and Hetrojunction (only qualitative description) – applications – CD-ROM and holography (qualitative only) – optical fibre – principle and propagation of light in optcal fibers – Numerical aperture and acceptance angle – types of optical fibres – applications – fibre optic communication system – medical endoscopy.

QUANTUM PHYSICS **9 Hours**

Plancks quantum theory of black body radiation (derivation) – Photo electric effect – Compton effect (derivation) and experimental verification of Compton effect – De-broglies concept - Schrodinger wave equation – time independent and time dependent equations (derivations) – physical significance of wave function – particle in a box (one dimensional case) – Electron microscope – Scanning electron microscope – Transmission electron microscope.

ULTRASONICS AND NDT **9 Hours**

Introduction – production – magnetostriction effect – magnetostriction generator – piezoelectric effect – piezo electric generator –properties –detection – cavitation –acoustic grating – velocity measurement – applications –Sonar –velosity of blood flow – NDT –Liquid Penetrant method – Ultrasonic flaw detector – A scan, B scan, C scan – X- ray radiography and fluoroscopy – Thermography.

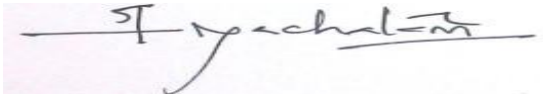
ATOMIC AND NUCLEAR PHYSICS **9 Hours**

Introduction – Atomic spectra – Molecular spectra – Applications – Raman effect – Stokes lines and anti stokes lines – Applications – Nuclear models – Liquid drop model –Nuclear fission – Theory – Energy released per fission – Chain reaction – Controlled chain reaction – Nuclear reactors – Condition for sustained chain reaction – Types of Nuclear reactors – Nuclear fusion – Thermo nuclear reactions – Differences between fission and fusion

TOTAL: 45 HOURS

REFERENCES

1. Rajendran V, Applied Physics, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
2. Gopal S., Engineering Physics, Inder Publications, Coimbatore, 2006.
3. Palinisamy P.K., Engineering Physics I, Scitech Publications, Chennai, 2011.
4. Avadhanulu M.N. andKshirsagar P.G., A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi,2005.
5. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, DhanpatRai Publications (P) Ltd., New Delhi, 2003.



U15PHT201 / MATERIALS SCIENCE *(For Civil Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Recognize the characteristics of sound and apply for good acoustics of building
CO2 Acquire the knowledge of conducting and superconducting materials and its applications
CO3 Perceive the preambles of semiconductors and categorize its applications
CO4 Categorize the different types of magnetic materials and their applications.
CO5 Enumerate the different types of polarization in dielectric materials.
CO6 Confer the properties, preparation and application of modern engineering materials

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M					M					M
CO2	S	M										M
CO3	S	M										M
CO4	S	M										M
CO5	S	M										M
CO6	S	M			M							M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

ACOUSTICS **9 Hours**

Classification of sound – characteristics of musical sound –loudness –Weber-Fechner law – decibel, phon – Reverberation – reverberation time – derivation of Sabines formula for reverberation time (rate of growth and rate of decay) –Absorption coefficient and its determination – factors affecting acoustics of buildings –optimum reverberation time, loudness, focusing, echo, echelon effect, resonance and noise and their remedies –sound absorbing materials –noise pollution – noise control in machines.

CONDUCTING AND SUPERCONDUCTING MATERIALS **9 Hours**

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number –

drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap of a semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory.

Dielectric Materials : Electronics, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

NEW ENGINEERING MATERIALS AND NANOTECHNOLOGY 9 Hours

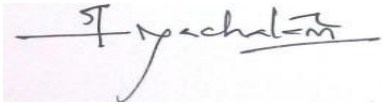
New Engineering Materials : Metallic glasses – preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA.

Nano Materials : Synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

TOTAL: 45 HOURS

REFERENCES

1. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003.
2. Palanisamy P.K., Materials Science, 2nd Edition, Scitech Pub. India, Pvt. Ltd., Chennai, 2003.
3. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007.
4. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003.
5. Avadhanalu M.N. and Kshirsagar P.G., A textbook of Engineering Physics, S. Chand & Company Ltd., New Delhi, 2005
6. Rajendran V. and Marikani A., Materials science, 5th edition, Tata Mc-Graw-Hill publishing company Ltd., 2004



U15PHT202/ MATERIALS SCIENCE (Common to Mechanical, Mechatronics, Aeronautical and Automobile Engineering)	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Acquire the knowledge of conducting and superconducting materials and its applications
CO2 Perceive the preambles of semiconductors and categorize its applications
CO3 Categorize the different types of magnetic materials and their applications.
CO4 Enumerate the different types of polarization in dielectric materials.
CO5 Confer the properties, preparation and applications of modern engineering materials
CO6 Recognize the basic concepts of strengthening of materials

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M										M
CO3	S	M										M
CO4	S	M										M
CO5	S	M			M							M
CO6	S	M										M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CONDUCTING AND SUPERCONDUCTING MATERIALS 9 Hours

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory.

Dielectric Materials : Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

NANOTECHNOLOGY AND NEW ENGINEERING MATERIALS 9 Hours

New Engineering Materials : Metallic glasses – preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA.

Nano Materials : synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

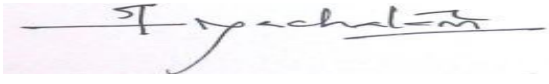
STRENGTHENING OF MATERIALS 9 Hours

Strengthening mechanisms for the improvement of mechanical properties - cold working precipitation hardening, solute hardening and diffusion hardening - Fracture-Mechanism of brittle fracture (Griffith's theory) and Ductile fracture - difference between brittle and ductile fracture - fatigue failure and its prevention - creep different stages in creep curve-Factors affecting mechanical properties Grain size and heat treatment .

TOTAL: 45 HOURS

REFERENCES

1. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003.
2. Avadhanalu M.N. and Kshirsagar P.G., A textbook of Engineering Physics, S. Chand & Company Ltd, New Delhi, 2005
3. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007
4. Rajendran V. and Marikani A., Materials science, 5th edition, Tata Mc-Graw-Hill publishing company Ltd, 2004
5. Arumugam M., Physics-II, Materials science for mechanical engineering, Anuradha agencies - publishers, Kumbakonam, 2005



U15PH*T*203 / MATERIALS SCIENCE *(Common to ECE, EIE, CSE & IT)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Acquire the knowledge of conducting and superconducting materials and its applications
CO2 Perceive the preambles of semiconductors and categorize its applications
CO3 Categorize the different types of magnetic materials and their applications.
CO4 Enumerate the different types of polarization in dielectric materials.
CO5 Confer the properties, preparation and applications of modern engineering materials
CO6 Recognize the basic concepts of optical materials

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M			M							M
CO3	S	M										M
CO4	S	M										M
CO5	S	M										M
CO6	S	M			M							M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CONDUCTING AND SUPERCONDUCTING MATERIALS 9 Hours

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS **9 Hours**

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS **9 Hours**

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory .

Dielectric Materials: Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

NEW ENGINEERING MATERIALS AND NANOTECHNOLOGY **9 Hours**

New Engineering Materials : Metallic glasses – preparation, properties and applications – Shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications - advantages and disadvantages of SMA.

Nano Materials : synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

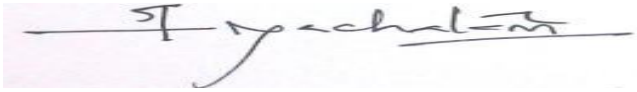
OPTICAL MATERIALS **9 Hours**

Optical properties of semiconductors – Excitons- Traps – colour centre – Types of colour centres – luminescence – fluorescence and phosphorescence - liquid crystal display – Dynamics scattering display – Twisted nematic crystal display – Non- linear materials – second harmonic generation – optical mixing – optical phase conjugation.

TOTAL: 45 HOURS

REFERENCES

1. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003
2. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007.
3. Palanisamy P.K., Materials Science, 2nd edition, Scitech Pub. India, (P) Ltd., Chennai, 2003.
4. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003 (Units: 1,2).
5. Rajendran V., Marikaniv A., Materials science, 5th edition, Tata Mc-Graw-Hill publishing company Ltd., 2004 (Units: 3,4,5).



U15PHT204 / APPLIED PHYSICS *(Common to Textile Technology and Fashion Technology)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Acquire the knowledge of conducting and superconducting materials and its applications
CO2 Perceive the preambles of semiconductors and categorize its applications
CO3 Categorize the different types of magnetic materials and their applications.
CO4 Enumerate the different types of polarization in dielectric materials.
CO5 Confer the properties, preparation and applications of modern engineering materials
CO6 Identify methods for etching of fabrics

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M										M
CO3	S	M										M
CO4	S	M										M
CO5	S	M										M
CO6	S	M			M							M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CONDUCTING AND SUPERCONDUCTING MATERIALS 9 Hours

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi

conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory.

Dielectric Materials : Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

NEW ENGINEERING MATERIALS 9 Hours

Metallic glasses - preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA .

Ceramics: Classification of ceramics- Fabrication, Properties and application.

Biomaterials: Biomechanisim - Classification of Biomaterials - Processing, Properties and applications.

NANO SCIENCE AND PLASMA TECHNOLOGY 9 Hours

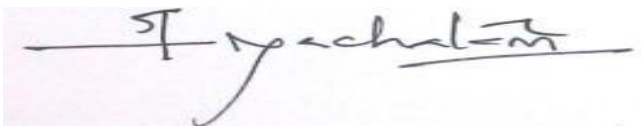
Nano Materials : synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

Plasma Technology: properties of plasma- types of plasma- thermal and non thermal plasma- Production of glow discharge plasma-Cold plasma- applications in textile and biomedical field.

TOTAL: 45 HOURS

REFERENCES

1. Gopal S., Materials Science, Inder Pub., Coimbatore, 2007.
2. Pillai S.O., Solid State Physics, 5th edition, New Age International Pub., New Delhi, 2003.
3. Avadhanalu M.N. and Kshirsagar P.G., A textbook of Engineering Physics, S. Chand & Company Ltd., New Delhi, 2005
4. Rajendran V. and Marikani A., Materials Science, Tata McGraw Hill Pub. Company Ltd., New Delhi, 2004
5. Goldston R.J. and Rutherford P.H., Introduction of Plasma Physics-I, CRC Pub., New York, America, 2000



U15PHT205 / APPLIED PHYSICS	L	T	P	C
(For Electrical and Electronics Engineering)	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Recognize the characteristics of sound and apply for good acoustics of building
CO2 Acquire the knowledge of conducting and superconducting materials and its applications
CO3 Perceive the preambles of semiconductors and optical materials
CO4 Categorize the different types of magnetic materials and their applications.
CO5 Enumerate the different types of polarization in dielectric materials.
CO6 Recognize the basic concepts of plasma and synthesis of nanomaterials

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(Pos)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M										M
CO3	S	M			M							M
CO4	S	M										M
CO5	S	M										M
CO6	S	M			M							M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

ACOUSTICS **9 Hours**

Classification of sound – characteristics of musical sound –loudness –Weber-Fechner law – decibel, phon – Reverberation – reverberation time – derivation of Sabines formula for reverberation time (rate of growth and rate of decay) –Absorption coefficient and its determination – factors affecting acoustics of buildings –optimum reverberation time, loudness, focusing, echo, echelon effect, resonance and noise and their remedies.

CONDUCTING AND SUPERCONDUCTING MATERIALS **9 Hours**

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING & OPTICAL MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration –

Optical Materials : Optical properties of semiconductors – Excitons- Traps – colour centre – Types of colour centres – luminescence – fluorescence and phosphorescence.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy,magnetic disc drives – Bubble memory.

Dielectric Materials : Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

PLASMA AND NANOTECHNOLOGY 9 Hours

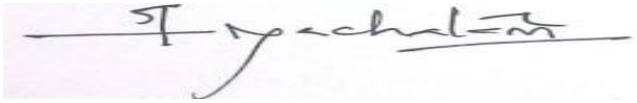
Plasma Technology : properties of plasma- types of plasma- thermal and non thermal plasma- Production of glow discharge plasma-Cold plasma- applications in textile and biomedical field.

Nano Materials - synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

TOTAL: 45 HOURS

REFERENCES

1. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007.
2. Palanisamy P.K., Materials Science, 2nd edition, Scitech Pub. India (P) Ltd.
3. Pillai S.O., Solid State Physics, 5th edition, New Age Int. Publication, New Delhi, 2003.
4. Avadhanalu M.N. and Kshirsagar P.G., A textbook of Engineering Physics, S.Chand & Company Ltd., New Delhi, 2004
5. Goldston R.J., Rutherford P.H., Introduction of Plasma Physics-I, CRC publication, New York, America, 2000
6. Rajendran V. and Marikani A., Materials Science, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2004



U15PHT206/ APPLIED PHYSICS *(For Biotechnology)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1 Acquire the knowledge of conducting and superconducting materials and its applications
CO2 Perceive the preambles of semiconductors materials
CO3 Categorize the different types of magnetic materials and their applications.
CO4 Enumerate the different types of polarization in dielectric materials.
CO5 Confer the properties, preparation and applications of modern engineering materials
CO6 Apply the knowledge of ultrasonics in different scanning methods

CO-PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(Pos)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M										M
CO3	S	M										M
CO4	S	M										M
CO5	S	M			M							M
CO6	S	M			M							M

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CONDUCTING AND SUPERCONDUCTING MATERIALS **9 Hours**

Conducting Materials: Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials: Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy,magnetic disc drives – Bubble memory.

Dielectric materials : Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

NANOTECHNOLOGY AND NEW ENGINEERING MATERIALS 9 Hours

New Engineering Materials : Metallic glasses – preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA.

Nano Materials : synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

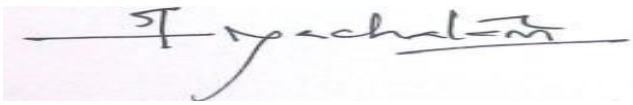
MEDICAL PHYSICS 9 Hours

Ultrasound picture of human body – Block diagram of basic pulse Echo system – A Scan – B scan & M Scan Phsychological effect - ultrasound therapy – Phonocardiograph (PCG) source of radioactivity for nuclear medicine - statistical aspects – Basic instrumentation (Geiger Muller counter, Photo multiplier Tube & Scintillation detector (Renogram) and its clinical applications (Thyroid and Kidney function) – Nuclear medicine imaging devices - Gamma Camera - Positron camera.

TOTAL: 45 HOURS

REFERENCES

1. Rajendran V., Engineering Physics, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2011.
2. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007.
3. Ali Omar M., Elementary Solid State Physics, Pearson Education (Singapore),Indian Branch, New Delhi, 2002.
4. Palanisamy P.K., Materials Science, 2nd Edition, Scitech Pub. India, Pvt., Ltd., Pillai S.O., Solid State Physics, 5th edition, New Age International Publication,New Delhi, 2003.
5. Avadhanalu M.N. and Kshirsagar P.G., A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi, 2005 (Units: 1,2,3,4).
6. Arumugam M., Physics-II (For Civil, Chemical, Textile, Biotechnology, Polymer and Fashion technology), Anuradha agencies, Kumbakonam, 2005 (Units: 5).



U15PH*P*101/ U15PH*P*201 PHYSICS LABORATORY (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

CO1 Acquire practical knowledge about different physical properties of materials
CO2 Devlop skills in multidisciplinary project works and applications
CO3 Acquire skills in the experiments involving the physical phenomena like interference and diffraction

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										M
CO2	S	M										M
CO3	S	M										M

Course Assessment methods

Direct	Indirect
1. Continuous Assessment of lab performance 2. Model Practical Examination 3. End Semester Practical Examination	1. Course end survey

LIST OF EXPERIMENTS

Any Ten Experiments

1. Lee's disc - determination of thermal conductivity of a bad conductor
2. Air wedge - determination of thickness of a given specimen.
3. Spectrometer - determination of wavelength of mercury source using grating
4. Compound pendulum - determination of accelaration due to gravity.
5. Melde's String- Determination of frequency of an electrically maintained vibrator (tuning fork)
6. Viscosity - determination of co-efficient of viscosity of a liquid by poiseuille's flow method.
7. Non-uniform bending – determination of Young's modulus
8. Ultrasonic interferometer –determination of velocity of sound and compressibility of liquid.
9. Lux meter – Determination of efficiency of a Solar cell
10. Semiconductor laser:
    a. Determination of wavelength of laser using grating
    b. Particle size determination
    c. Acceptance angle of optical fibre
11. Carey foster bridge – determination of specific resistance of given coil of wire.
12. Field along the axis of a coil – Determination of magnetic moment.

TOTAL: 30 HOURS

U15CHT101 ENGINEERING CHEMISTRY (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Assemble a battery and illustrate the phenomenon of production of electric current (K4)
CO2: Discuss the thermodynamic concepts and predict the feasibility of chemical reaction (K2)
CO3: Apply the theory of adsorption in real life situations (K3)
CO4: Outline the principles and instrumentation of spectroscopic techniques (K2)

CO/ PO MAPPING

CO/PO Mapping (S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	M				M							
CO2	M											
CO3	M	W				W						
CO4	M				M							

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

ELECTROCHEMISTRY **9 Hours**

Introduction - Electrode potential – Nernst equation and problems - Electrochemical series - Application of EMF measurements & problems - Kohlrausch law of independent migration of ions & its application - Conductometric titrations (acid - base & precipitation titration)

Electrodes : Standard and reference electrode (Hydrogen & Calomel) – Types of electrodes (Metal – Metal ion; Metal – Metal insoluble salt, Redox electrode) - Ion selective (glass electrode) – determination of pH using glass electrode
Cells : Galvanic cell – Types of concentration cells

ENERGY STORING DEVICES **9 Hours**

Batteries : Primary Battery (Lechlanche & Alkaline battery) - Secondary Battery (Lead acid storage battery, Nickel - Cadmium battery & Lithium – Polymer battery) – Flow battery

(Hydrogen and Oxygen Fuel Cell)

Solar Cells: Hybrid Solar cells
Nuclear Reactors: Light water nuclear power plant (nuclear fission) - ICF (nuclear fusion)

THERMODYNAMICS **9 Hours**

Introduction - Thermodynamic process (isothermic, isobaric, isochoric and adiabatic processes) - Internal energy – first law of thermodynamics (Mathematical derivation & limitation) - Enthalpy - Second law of thermodynamics - Entropy - Entropy change of an ideal gas & problems - Free energy - work function - Gibbs Helmholtz equation (derivation, applications & problems) - Van't Hoff isotherm (derivation & problems) - Van't Hoff isochore - (derivation & problems) - Third law and zeroeth law (Only statements)

SURFACE CHEMISTRY **9 Hours**

Introduction of adsorption - Types of Adsorption - Adsorption isotherm (Freundlich isotherm, Langmuir adsorption isotherm, BET isotherm) - Applications of adsorption : Role of adsorption in catalytic reactions, Ion exchange adsorption, adsorption chromatography (Column chromatography)

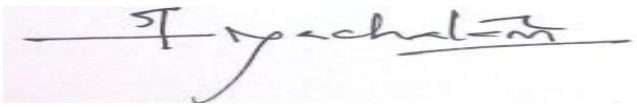
SPECTROSCOPY **9 Hours**

Introduction to spectroscopy - Beer Lambert's Law - Colorimetric analysis (principle, instrumentation (block diagram only) & application : Estimation of concentration of Ferrous and copper ions in solution) - UV – Visible spectroscopy (principle, instrumentation (block diagram only) & applications) - IR spectroscopy (principle, instrumentation (block diagram only) & applications) - Flame photometry (principle, instrumentation (block diagram only) & applications)

TOTAL: 45 HOURS

REFERENCES

1. Bahl B.S., Tuli G.D. and Arun Bahl., Essential of Physical Chemistry, S.Chand & Co. Ltd., New Delhi.
2. Somorjai G.A., Introduction to Surface Chemistry and Catalysis, John Wiley & Sons Inc., New York.
3. Shaw D.J., Introduction to Colloidal and Surface Chemistry, Butterworth – Heinemann Publishers
4. Syed Shabudeen, P.S. and Shoba U.S., Engineering Chemistry, Inder Publishers, Coimbatore.
5. Jain P.C. and Monika Jain, Engineering Chemistry, Dhanpatrai Pub. Co. (P) Ltd., New Delhi.
6. Puri B.R., Sharma L.R. and Pathania M.S., Principles of Physical Chemistry, ShobanLal Nagin Chand & Co., New Delhi



U15CHT201 CHEMISTRY FOR CIVIL ENGINEERING *(For Civil Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Design a water purifier (K3)
CO2: Defend the Corrosion problems (K2)
CO3: Identify the different construction materials and their constituents (K1)
CO4: Describe the impact of composite materials and Engineering plastics in construction (K2)
CO5: Categorize the engineering materials and their uses. (K1)

CO/PO MAPPING

CO/PO Mapping (S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	M		S			M								
CO2	W	M												
CO3	M				M									
CO4	M				M		W							
CO5	M													

Course Assessment methods

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment/ Seminar 4. End Semester Examination	1. Course end survey

WATER TECHNOLOGY **9 Hours**

Hard water : Water hardness - disadvantages in civil works – formation of deposits in steam boilers and heat exchangers - wastage of fuel - decrease in efficiency of boilers – priming – foaming - caustic embrittlement - boiler corrosion.

Prevention of scale formation : external treatment (ion exchange method) - internal treatment (phosphate, calgon, carbonate, colloidal), - desalination by reverse osmosis - Treatment of common effluents.

CORROSION SCIENCE **9 Hours**

Corrosion : principles of electrochemical corrosion - difference between chemical and electrochemical corrosion - factors influencing corrosion.

Types of corrosion : galvanic corrosion, differential aeration corrosion (soil (microbial) corrosion, pitting corrosion, water line corrosion) , stress corrosion
Corrosion control : cathodic protection (sacrificial anode) - electroplating (Copper plating).

ENGINEERING MATERIALS **9 Hours**

Abrasives: Moh's scale of hardness - natural abrasives (diamond, corundum, emery, garnets and quartz) - artificial abrasives (silicon carbide, boron carbide).

Refractories: characteristics - classification (acid, basic and natural refractories) - properties (refractoriness, refractoriness under load, dimensional stability, porosity thermal spalling) - general manufacturing methods of refractories - preparation, properties and uses of high alumina bricks, magnesite and zirconia bricks only.

Lubricants: functions - classification with examples - properties (viscosity index, flash and fire point, oiliness, carbon residue, aniline point, cloud and pour point) – greases (calcium based, sodium based, lithium based only) - solid lubricants (graphite, molybdenum sulphide).

CHEMISTRY OF CONSTRUCTION MATERIALS **9 Hours**

Cement : Chemical composition – setting and hardening — special cements (high alumina cement, sorel cement, white Portland cement, water proof cement).

Paint : constituents – functions – special paints (fire retardant, water repellant, temperature indicating and luminous paints) - Varnishes and lacquers

COMPOSITE MATERIALS **9 Hours**

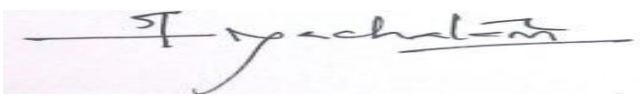
Composites: definition – characteristics – constituents – types: properties and applications of fibre reinforced plastic (FRP), metal matrix composites (MMC), ceramic matrix composites (CMC), Engineered cementitious composites (ECC), Natural fiber reinforced composite

Engineering Plastics : Preparation (mechanism not required) and applications of polyamide, polycarbonates, polyurethanes and thermocole - polymer blends and alloys

TOTAL: 45 HOURS

REFERENCES

1. Rangwala, Engineering Materials, Charator Publishing House, India.
2. Jain P.C. and Monica Jain, Engineering Chemistry, Dhanpat Rai Publishing company (P) Ltd, New Delhi, National Building Code – 2002.
3. Rajput R.K., Engineeing Materials, S. Chand & Company Ltd., New Delhi.
4. Syed Shabudeen P.S., Engineering Chemistry II, Inder publications, Coimbatore .
5. Dara S.S., A Textbook of Engineering Chemistry, S. Chand & Company Ltd., New Delhi
6. Kenneth G. Butinski, Engineering Material, Prentice – Hall of India, New Delhi



U15CH*T*202 APPLIED CHEMISTRY **(Common to Mechanical, Mechatronics, Aeronautical and Automobile Engineering)**	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Classify the different types of fuels and their properties (K3)
CO2: Categorize the engineering materials and their uses (K1)
CO3: Defend the Corrosion problems (K2)
CO4: Design a water purifier (K3)
CO5: Identify the techniques of preparing metal powder (K2)

CO/ PO MAPPING

CO/PO Mapping (S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	M					M								
CO2	M		M											
CO3	M	M				M								
CO4	M					M								
CO5	S													

Course Assessment methods

Direct	Indirect
1. Internal test I 2.Internal test II 3.Assignment/ Seminar 4. End Semester Examination	1. Course end survey

FUELS AND COMBUSTION **9 Hours**

Classification of fuels - coal varieties - analysis of coal (proximate and ultimate analysis) - coke manufacture (Otto-Hoffman byproduct coke oven method) - characteristics of metallurgical coke - cracking (thermal and catalytic cracking definition only) – manufacturing of synthetic petrol (Fischer Tropsch method, Bergius process) – knocking (octane number, cetane number) - gaseous fuels (production, composition and uses of producer gas, water gas and natural gas).

Combustion : gross and net calorific value - determination of calorific value by bomb calorimeter - explosive range - spontaneous ignition temperature - flue gas analysis (Orsat apparatus).

MECHANICAL ENGINEERING MATERIALS **9 Hours**

Abrasives: Moh's scale of hardness - natural abrasives (diamond, corundum, emery, garnets and quartz) - artificial abrasives (silicon carbide, boron carbide).

Refractories: Characteristics - classification (acid, basic and natural refractories) - properties (refractoriness, refractoriness under load, dimensional stability, porosity, thermal spalling) - General manufacturing methods of refractories - preparation, properties and uses of high alumina bricks, magnesite and zirconia bricks.

Lubricants: Classification - Functions - properties (viscosity index, flash and fire point, oiliness, carbon residue, aniline point, cloud and pour point) - greases (calcium based, sodium based, lithium based) - solid lubricants (graphite, molybdenum disulphide).

CORROSION SCIENCE **9 Hours**

Corrosion: Principles of electrochemical corrosion - difference between chemical and electrochemical corrosion - factors influencing corrosion.

Types of corrosion: Galvanic corrosion - differential aeration corrosion (soil (microbial) corrosion, pitting corrosion, water line corrosion) - stress corrosion.

Corrosion control: Cathodic protection (sacrificial anode) - Protective Coatings (Paint, Electroplating of Copper).

WATER TECHNOLOGY **9 Hours**

Boiler Feed water: Requirements - disadvantages of hard water : Formation of deposits in steam boilers and heat exchangers (scale and sludge), priming, foaming, caustic embrittlement, boiler corrosion, wastage of Fuel and decrease in efficiency.

Prevention of scale formation: external treatment (ion exchange method) - internal treatment (phosphate, calgon, carbonate, colloidal) - desalination by reverse osmosis - Treatment of Domestic water

PHASE RULE AND POWDER METALLURGY **9 Hours**

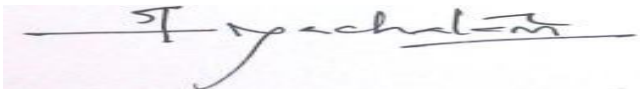
Phase rule - condensed phase rule - construction of phase diagram (thermal analysis) – Applications of phase rule: Simple eutectic system (Ag - Pb, Fe - C system).

POWDER METALLURGY: Preparation of metal powders (mechanical pulverization, atomization, chemical reduction, electrolytic process, decomposition) - mixing and blending - compacting - sintering - advantages and limitations of powder metallurgy.

TOTAL: 45 HOURS

REFERENCES

1. Samir Sarkar, Fuels and Combustion, Orient Longman, India.
2. Syed Shabudeen P.S., Engineering Chemistry II, Inder publications, Coimbatore.
3. Derek Pletcher and Frank C Walsh, Industrial Electrochemistry, Blackie Academic and Professional, London.
4. Dara S.S., A Text book of Engineering Chemistry, S. Chand Co. (P) Ltd., New Delhi
5. Jain P.C. and Monika Jain, Engineering Chemistry, Dhanpat Rai Pub. Co. (P) Ltd., New Delhi



U15CHT203 CHEMISTRY FOR CIRCUIT ENGINEERING	L	T	P	C
(Common For ECE, EEE, EIE, IT)	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Analyse and determine the required conducting polymers in fabrication of organic electronic devices (K3)

CO2: Describe the mechanism of formation of conducting polymeric materials (K2)

CO3: Design an Organic Thin film Transistor (K3)

CO4: Outline the performance of Pentacene Transistors (K2)

CO/PO MAPPING

CO/PO Mapping

(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

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

Course Assessment methods

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment/ Seminar 4. End Semester Examination	1. Course end survey

INTRODUCTION TO CONDUCTING POLYMERIC MATERIALS 9 Hours

Formation of polymers – Types of polymers - chain growth and step growth polymerization - copolymerization – Mechanism (free radical, cationic and anionic mechanism) - Thermoplastics and thermosets - Micro structures in polymers – polymer length - molecular weight - amorphous and crystalline - thermal transitions in plastics.

APPLIED CONDUCTING POLYMERS 9 Hours

Synthesis, structure, morphology, conductivity, doping theory and uses of Poly(sulfur nitride), polyacetylene, polyphenylene, poly(phenylene vinylenes), poly(phenylene sulfide), Polypyrrole, Polythiophene and Polyaniline - Polymers with transition metals in the side-group structure and

their uses (Stacked Phthalocyanine polymers).

MANUFACTURING METHODS OF ORGANIC ELECTRONIC MATERIALS 9 Hours

Organic electronic materials – classification - Production of substrates for organic electronics - Reel-to-reel Vacuum metallization - Organic vapor phase deposition – production of TFTs, OLED, organic photovoltaics – Micro and nanofabrication techniques -Solution based printing.

ORGANIC THIN-FILM TRANSISTORS 9 Hours

Organic thin-film transistor (OTFT) – architecture, operating mode- materials used and charge transportation-Fabrication techniques(Digital lithography)- Pentacene transistors: structure-property relationship - Methods of improving performance – structural perfection - device architecture - Electrical and environmental stability – chemical effects on stability - Gate dielectrics on electrical functionality.

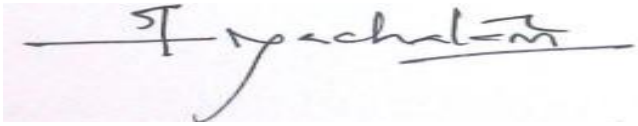
ADVANCED MATERIALS FOR ORGANIC ELECTRONICS 9Hours

Engineered pentacenes – Reversible functionalization – end-substituted derivatives - perifunctionalized pentacenes – Heteropentacenes - Semiconductors based on polythiophene and Indolo[3,2-*b*]carbazole – polydialkylterthiophenes – polydialkylquaterthiophenes - polythiophene nanoparticles - indocarbazole designs.

TOTAL: 45 HOURS

REFERENCES

1. Kiichi Takemoto, Raphael M. Ottenbrite, Mikiharu Kamachi, Functional Monomers and Polymers, CRC Press, New York.
2. Kaiser A.B., Electronic properties of conjugated polymers, Basics models and applications, Springer verlag, Berlin.
3. Chilton J.A. and Goosey M.T., Special polymers for electronics and optoelectronics, Kluwer Academic Pub., London.
4. Hagen Klauk, Organic Electronics: Materials, Manufacturing and Applications, Wiley – VCH, Weinheim
5. Hand book of Conducting Polymers, e-book
6. Gowariker V.R., Viswanathan N.V. and Jayadev Sreedhar, Polymer Science, New Age Int. Pvt. Ltd., New Delhi



U15CH*T*204 CHEMISTRY FOR TEXTILES *(Common to Textile Technology and Fashion Technology)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Design a water purifier (K3)
CO2: Discuss the mechanism of polymer formation (K2)
CO3: Classify dyes and describe its interaction with fibers using bonding (K3)
CO4: Analyse the usage of specialty chemicals in dyes (K3)

CO/PO MAPPING

CO/PO Mapping
(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

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

Course Assessment methods

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment/ Seminar 4. End Semester Examination	1. Course end survey

WATER TECHNOLOGY **9 Hours**

Hard water: Disadvantages of hard water in textile industries - Formation of deposits in steam boilers and heat exchangers (scale and sludge) – priming – foaming - caustic embrittlement - boiler corrosion - wastage of Fuel - decrease in efficiency.

Prevention of scale formation: external treatment (Ion exchange method), internal treatment (colloidal, phosphate, calgon & carbonate methods) – desalination (reverse osmosis and electro-dialysis) – Common effluent treatment.

POLYMERS **9 Hours**

Introduction – Degree of polymerization – functionality – tacticity - classification based on source, application, thermal properties (thermosetting and thermoplastics) - effect of polymer

structure on properties – types of polymerization (addition, condensation, co-polymerization, Ring polymerisation) - mechanism of polymerization (free radical mechanism)

Preparation (mechanism not required) and applications of polythene, polypropylene, polystyrene, polyamides (nylon 6,6), polyesters (PET)

CHEMICAL BONDING **9 Hours**

Ionic, covalent and co-ordinate covalent bonds (overview only) -- hydrogen bonding and its consequences - VanderWaal's forces (dipole – dipole, dipole – induced dipole, induced dipole – induced dipole interactions) – Hybridsation (sp, sp^2, sp^3 in simple molecules) - Interaction of enzymes with fibres (basic concepts only) - Interaction between fibers and dyes (basic concepts only) - Dyes substrate affinity (dyes for cellulose fibres, silk)

DYES **9 Hours**

Introduction - Classification system of dyes - Chromophore and auxochromes – Important chemical chromophores of dyes classes (azo, anthraquinone, phthalocyanin, Indigoid, polymethine, phthalocyanine, metal complex, Fluorescien) - synthesis of azo dye (Congo red), triaryl methane dye (Malachite green), Anthraquinone dye (Alizarin - 1,2 dihydroxy anthraquinone), Indigoid dye (Indigo), phthalein dyes (Eosin)

ANTHOLOGY OF SPECIALITY CHEMICALS IN TEXTILES **9 Hours**

An introduction on chemistry of the following in textiles: Dispersing agents, Leveling agents, Retarding agents, Dye fixing agents.

Thermal analysis (TG, DTA, DSC): Principle, Instrumentation and application in Textiles

TOTAL: 45 HOURS

REFERENCES

1. Finar I.L, Organic chemistry, Pub. House, UK.
2. Hungar K., Industrial Dyes - Chemistry, properties and applications, Wiley VCH Verlag GmbH & Co., KGaA, Weinheim.
3. Sivaramakrishnan C.N., Anthology of speciality chemicals for textiles, Colour Pub. (P) Ltd., Mumbai, India.
4. Seymour R.B. and Carraher, Polymer chemistry, Plenum Pub. Corporation, New York.
5. Syed Shabudeen P.S. and Shoba U.S., Chemistry for textiles, Inder Pub., Coimbatore.
6. Amarika Singh, Vairam S. and Suba Ramesh., Chemistry for engineers., Wiley India Ltd., New Delhi
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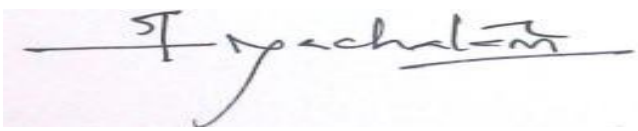

U15CH*T*206 CHEMISTRY FOR BIOTECHNOLOGY *(For Biotechnology)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Outline basic concepts of stereochemistry (K2)
CO2: Discuss the basic concepts of chemistry in amino acid (K2)
CO3: Paraphrase an experiment in required sequence (K3)
CO4: Design a water purifier (K3)

CO/PO MAPPING

CO/PO Mapping (S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak													
COs	Programme Outcomes(POs)												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	S													
CO2	S													
CO3	M		M										W	
CO4	M		S											M

Course Assessment methods

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment/ Seminar 4. End Semester Examination	1. Course end survey

CHEMICAL BONDING IN BIOMOLECULES **9 Hours**

Bonding : Introduction - Ionic bonding - **V**an der Waal's forces (dipole – dipole, dipole – induced dipole, induced dipole – induced dipole interactions) - hydrophobic interaction

Bonding in organic molecules: covalent and co-ordinate bonds (overview only) - hybridization (sp, sp^2, sp^3, sp^3d, sp^3d^2 in simple molecules) -. hydrogen bonding and its consequences - Role of base stacking in structural organization of proteins and nucleic acids, Mechanism of SN1, SN2, E1 & E2 reactions

INTRODUCTION TO STEREOCHEMISTRY **9 Hours**

Isomerism : Introduction and classification of isomerism -
Structural isomerism : Definition – chain – position – functional – tautomerism
Conformational isomerism : Definition - in simple organic molecules
Notation : d and l; R and S ; E and Z notation of simple organic molecules
Geometrical isomerism: Definition – in alkenes and cyclopropanes
Optical isomerism : Definition and conditions of optical isomerism - optical activity – chirality – optical isomerism in tartaric and lactic acids - optical activity without asymmetric carbon (allelenes, Biphenyl derivatives) – definition of enantiomers, diastereomers, mesocompounds, racemic mixture, Walden inversion

CHEMISTRY OF AMINO ACIDS **9 Hours**

Introduction to amino acids: pH - Henderson - Hassalbach equation - Amino acid as zwitter ion - Reactions of carboxyl and amino groups of amino acid, Chemical synthesis of amino acids: Streckers synthesis, Nucleophilic substitution reaction - Protecting group for amino acids - Solid phase peptide synthesis

WATER TECHNOLOGY **9 Hours**

Disadvantages of raw water in industries – conditioning methods : external treatment methods (ion exchange method), internal treatment (colloidal, phosphate, calgon and carbonate methods) – desalination (reverse osmosis and electrophoresis) – Treatment of sewage water.

QUANTITATIVE ANALYSIS **9 Hours**

Estimation of calcium in milk by EDTA Complexometry - Estimation of iodine in iodized common salt by Iodometry - Estimation of phosphoric acid in soft drinks (coca cola) by molybdenum blue method - Estimation and role of iron in Haemoglobin - Simultaneous estimation and role of Ni & Co in Vitamin B_{12} - Fluorescein and its use in angiogram techniques

TOTAL: 45 HOURS

REFERENCES

1. Finar I.L., Organic chemistry, Publishing house, UK.
2. Fifield F.W. and Kealey D., Principles and Practice of Analytical Chemistry, Blackwell Publishing, London.
3. Syed Shabudeen P.S. and Shoba U.S., Chemistry for Textiles, Inder publications, Coimbatore
4. Bahl B.S. and Arun Bahl, A Textbook Of Organic Chemistry, S. Chand & Co., New Delhi
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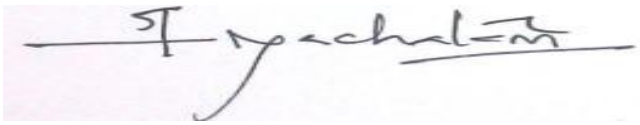


U15CH*P*101/ U15CH*P*201 CHEMISTRY LABORATORY (Common to all branches of Engineering and Technology except CSE)	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Prepare standard solutions (S1)

CO2: Analyse the properties of water by applying the chemical concepts (S2)

CO3: Analyse the solutions by electrochemical and spectroscopic techniques and apply it in real life situations like corrosion, soil, water testing etc (S3)

Pre-requisites : -

CO/ PO MAPPING

CO/PO Mapping (S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	W								W			
CO2	W	M					M					
CO3		M			M				M			

Course Assessment methods

Direct	Indirect
1. Continuous Assessment of lab performance 2. Model Practical Examination 3. End Semester Practical Examination	1. Course end survey

PREPARATION OF SOLUTIONS (STANDARD)

1. Preparation of normal solutions of the following substances - oxalic acid, sodium carbonate, hydrochloric acid.
2. Preparation of phosphate buffer using Henderson equation.

WATER TESTING

3. Determination of total, temporary and permanent hardness by EDTA method.
4. Estimation of DO by Winkler's method.
5. Estimation of alkalinity by Indicator method.
6. Estimation of chloride by Argentometric method.

ELECTRO CHEMICAL ANALYSIS

7. Estimation of hydrochloric acid by pH metry.

8. Conductometric titration of mixture of acids and strong base

9. Conductometric precipitation titration using $BaCl_2$ and Na_2SO_4.
10. Estimation of Iron by Potentiometry

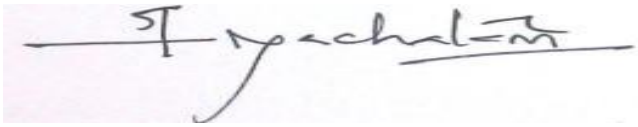
PHOTOMETRY

11. Estimation of the Ferrous ions (Thiocyanate method) by Spectrophotmetry.
12. Estimation of sodium and potassium by Flame photometry.

Total: 30 Hours

REFERENCES

1. Jeffery G.H., Bassett J., Mendham J. and Denny R.C., Vogel's Text Book of Quantitative Chemical Analysis, Oxford, ELBS, London, 2002.
2. Shoemaker D.P. and C.W. Garland., Experiments in Physical Chemistry, TataMcGraw-Hill Pub. Co., Ltd., London, 2003.
3. Shoba U.S., Sivahari R. and Mayildurai R., Practical Chemistry, Inder Publications, Coimbatore, 2011.



U15AE*P*201 CAD LABORATORY – I *(For Aeronautical Engineering)*	L	T	P	C
	0	0	2	1

Course Outcomes:

After successful completion of this course, the students would be able to

CO 1: Use the AutoCAD software program to create drawings from scratch and to modify, manipulate, copy, delete, save, and plot drawings.

CO 2: Use the full range of AutoCAD commands and options and employ shortcuts and time-saving strategies to operate the program at a level of efficiency acceptable for employment as a CAD Engineer.

CO 3: Create, render, and manipulate 3D AutoCAD drawings and convert 2D drawings to 3D drawings.

CO 4: Identify or roughly define the terms, concepts, and standards associated with the topics of the course.

CO 5: Report to a workplace regularly and punctually, engage effectively and congenially with peers and supervisors, work from written as well as oral instructions, use assigned time efficiently for productive work, and meet production deadlines.

CO 6: Demonstrate graphical and computational problem-solving skills appropriate to the level of the coursework.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	**Programme Outcomes (POs)**											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1					S							
CO 2					S							
CO 3					S							
CO 4	M	M										
CO 5								S	S	S	M	
CO 6					S							

Course Assessment methods

Direct	Indirect
1. Lab Exercises 2. Lab Observation / Record 3. Viva-voce 4. Model Practical Exams	Course end survey

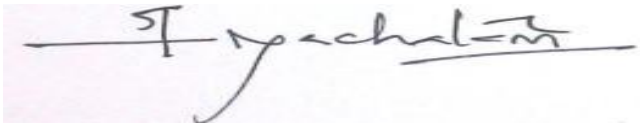
LIST OF EXERCISES

1. Study of drafting software.
2. Development of Part drawing for Simple components.
3. Development of Isometric drawing for Simple components.
4. Development of Assembled drawing for Screw Jack.
5. Development of Assembled drawing for Landing Gear.
6. Development of Part drawing for Wing Structure components.
7. Development of t Part drawing for Fuselage structure components.
8. Development of three view diagram of a typical Helicopter.
9. Development of three view diagram of a typical Aircraft.

TOTAL: 30 HOURS

List of Tools required

- Drafting & modeling software (Like AUTOCAD)



U15AUP201 CAD LABORATORY *(For Automobile Engineering)*	L	T	P	C
	0	0	2	1

Course Outcomes(COs)

After successful completion of this course, the students should be able to:

CO1: Draw 2D and 3D drawings using drafting software

CO2: Convert orthographic view into isometric view

CO3: Become familiar to draw Special curves

Pre-requisite Courses:

1. Engineering Graphics (U15MET101)

CO/PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S				M					M		M
CO2	S				M					M		M
CO3	S				M					M		M

Course Assessment methods:

Direct	Indirect
1. Continuous Assessment	Course end survey
2. Model Practical Examinations	
3. End Semester Practical Examinations	

LIST OF EXPERIMENTS

1. Introduction to CAD Commands
2. Creation of simple objects
3. Special curves
4. Projection & Section of simple solids
5. Orthographic views of solids
6. Isometric views of objects
7. Simple trusses
8. 3D modeling of simple solids
9. 2D multiple views from 3D model

TOTAL: 30 HOURS

U15BT*T*201 BIOMOLECULES AND GENETICS *(For Biotechnology)*	L	T	P	C
	3	0	0	3

Course Outcomes :		
CO1	**:**	**Draw the structure and explain the classification and functions of carbohydrates**
CO2	**:**	**Describe the structure and functions of lipids, and cholesterol**
CO3	**:**	**Classify and discuss the properties and functions of amino acids, vitamins and minerals**
CO4	**:**	**Recall the concepts of mendelian genetics and multiple allelism**
CO5	**:**	**Understand and explain the structure of chromosomes and related disorders**

Pre-requisite: Nil

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	**Programme Outcomes(Pos)**													
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO 10**	**PO11**	**PO 12**	**PSP O1**	**PSPO 2**
CO1	**S**	**M**		**W**					**W**				**S**	
CO2	**S**	**M**											**M**	
CO3	**S**	**M**											**M**	
CO4	**S**	**M**		**M**									**M**	
CO5	**S**	**M**											**S**	

Course Assessment methods:

Direct		**Indirect**	
1	Internal Tests	**1**	Course end survey
2	Assignments	**2**	Faculty survey
3	End semester examination	**3**	Industry survey
		4	Alumni survey

CARBOHYDRATES **9 Hours**

Definition; Carbohydrates-; Classification- Monosaccharides - Structure, and function, Disaccharides- Structure and function- Sucrose, Lactose, Polysaccharides- Starch, cellulose, heparin, hyaluronic acid.

LIPIDS **9 Hours**

Definition: Classification of lipids- Simple lipids -Physical and chemical properties of fats. Saponification number; Compound lipids-Structure and function of phospholipids and Glycolipids. Fatty acids (C16, C18) - Saturated and unsaturated fatty acids; Essential fatty acids. Steroids : Cholesterol Structure and functions.

AMINO ACIDS, PEPTIDES, VITAMINS AND MINERALS **9 Hours**

Amino acid- Definition, Structure and classification; Essential amino acids; Peptides- Definition, Structure and properties. Vitamins- Definition, Structure; Physiological functions of fat and water soluble vitamins. Minerals - Essential macro and micro minerals, sources and functions.

CLASSICAL GENETICS **9 Hours**

Mendelian genetics- Introduction, Principles; Monohybrid, Dihybrid and Trihybrid crosses; Backcross and testcross; Linkage, Crossing over, Genetic mapping, recombination; Multiple alleles- Blood group antigens.

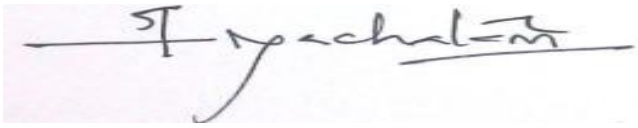
CHROMOSOME STRUCTURE AND ORGANIZATION **9 Hours**

Nucleic acids: structure of DNA, RNA; Chromosome organization of eukaryotes. Ploidy- polyploidy and Aneuploidy; Human karyotypes; Human sex Chromosome-linked disorders - Hemophilia, Fragile X; Special chromosomes - Polytene chromosomes and Lamp Brush chromosome.

TOTAL: 45 HOURS

REFERENCES

1. Enger, Concepts in Biology, Tata McGraw-Hill Publ., 11th Edition, 2005.
2. Gardner E.J., Simmons M.J.and Slustad D.P., Principles of Genetics, 8th Edition, Wiley Publishers, 1999.
3. McKee E. and McKee T., Biochemistry – an Introduction, Win. C. Brown Publ., 1996.
4. Soper R, Taylor DJ., Green NPO., Stout GW.(1998) "*Biological Science*" 3rd Edition. Cambridge Univ Press.



U15BTP201 BIOMOLECULES AND GENETICS LABORATORY *(For Biotechnology)*	L	T	P	C
	0	0	2	1

Course Outcomes :

CO1 : Draw the structure and explain the classification and functions of carbohydrates

CO2 : Describe the structure and functions of lipids, and cholesterol

CO3 : Classify and discuss the properties and functions of amino acids, vitamins and minerals

CO4 : Recall the concepts of mendelian genetics and multiple allelism

CO5 : Understand and explain the structure of chromosomes and related disorders

Pre-requiste : Nil

CO/PO Mapping

COs	Programme Outcomes(Pos) (S-Strong, M-Medium, W-Weak)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSP O1	PSPO 2
CO1	S	M		W					W				S	
CO2	S	M											M	
CO3	S	M											M	
CO4	S	M		M									M	
CO5	S	M											S	

Course Assessment methods:			
Direct		**Indirect**	
1	Internal Tests	**1**	Course end survey
2	Assignments	**2**	Faculty survey
3	End semester examination	**3**	Industry survey
		4	Alumni survey

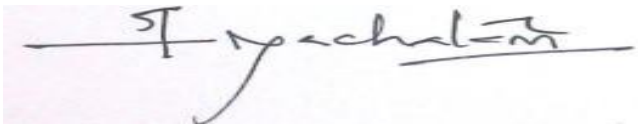
LIST OF EXPERIMENTS

1. Qualitative analysis of Carbohydrates (glucose, galactose, fructose, maltose, sucrose and starch)
2. Qualitative analysis of amino acids (tyrosine, tryptophan, methionine, alanine and proline)
3. Qualitative analysis of lipids (general lipids)
4. Qualitative analysis of Proteins (simple and glycoproteins)
5. Qualitative analysis of minerals.
6. Blood grouping
7. Isolation of starch from potato
8. Identification of mitotic stages in onion root tip
9. Identification of polytene chromosomes
10. Genetic Mapping (Problems to be worked out)

TOTAL : 30 HOURS

REFERENCES

1. Shanmugam S and Sathishkumar T. Complete Laboratory Handbook on Engineering Biotechnology and Life Sciences, 1st Edition, India: Inder Publishers, 2009.



U15CE*T*201 CONSTRUCTION MATERIALS *(For Civil Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Compare the properties of most common and advanced building materials.
CO2: Understand the typical and potential applications of these materials
CO3: Understand the quality test procedures for various materials
CO4: Know about the structural forms of various materials
CO5: Acquire knowledge on advanced materials used in civil engineering field.

Pre-requiste : Nil

CO/PO Mapping

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S				M					
CO2			S				M					
CO3			S				S					
CO4			S				S					
CO5			S				M					S

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Presentation 4. End semester exam	Course End survey

STONES-BRICKS-CONCRETE BLOCKS **9 Hours**

Stone as building material-Criteria for selection-Tests on stones-Deterioration and preservation of stone work-Bricks-Classification- Manufacture of clay bricks-Tests on bricks- Compressive strength-Water absorption-Efflorescence –Bricks for special use-Refractory bricks-cement and concrete hollow blocks-Light weight concrete blocks-Code Practices.

LIME-CEMENT-AGGREGATES-MORTAR **9 Hours**

Lime-preparation of lime mortar-Cement-Ingredients-Manufacturing process-Types and Grades-Properties of cement and cement mortar- Hydration-Compressive strength-Tensile strength-Soundness and consistency-Setting time- Aggregates-Natural stone aggregates-Industrial byproducts-Crushing strength-Impact strength-Flakiness-Abrasion resistance-Grading-sand-Bulking-Code practices.

CONCRETE **9 Hours**

Concrete-ingredients-Manufacture-Batching plants-RMC-Propertie of fresh concrete- slump-flow and compaction-Properties of hardened concrete- Compressive, Tensile and shear strength-Modulus of rupture- Tests- Mix specification- Mix proportioning-IS method- High strength concrete and HPC- Other types of concrete-Code Practices.

TIMBER AND OTHER MATERIALS **9 Hours**

Timber- Market forms-Industrial timber-Plywood-veneer-Thermocole-Panels of laminates-Steel-Aluminium and other metallic materials-Composition-uses-market forms-Thermomechanical treatment-Paints- Varnishes-Distempers-Coe Practices.

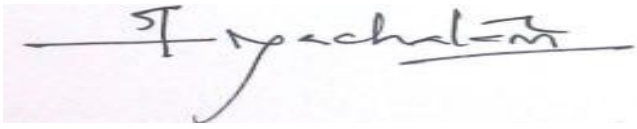
MODERN MATERIALS **9 Hours**

Glass-Ceramics-Sealants for joints- Fibre glass and metal reinforced plastic-clay products-Refractories-Composite materials –Types-Applications of laminar composites- Fibre textiles-Geosynthetics for Civil Engineering Applications- Flyash.

TOTAL: 45 HOURS

REFERENCES

1. Varghese P.C., Building Materials, PHI Learning Pvt. Ltd., 2005.
2. Rangwala S.C., Engineering materials, Charotar Publishing House, 2008.
3. Premalatha J., Building materials, Inder Publications, 2010.
4. Shetty M.S., Concrete Technology (Theory and Practice), S. Chand & Co Ltd.
5. Rajput R.K., Engineering materials, S. Chand & Company Ltd., 2000.
6. Duggal S.K., Building Materials, New Age International (P) Ltd., 2009.



U15CE*P*201 CONSTRUCTION MATERIALS LABORATORY *(For Civil Engineering)*	L	T	P	C
	0	0	2	1

Course Outcomes (CO):

After Successful completion of this course, the students will be able to :

CO 1 : Find the physical and mechanical properties of construction materials like cement, sand and aggregates by conducting various laboratory tests.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S	S								M

Course Assessment methods:

Direct	Indirect
1. Lab exercise 2. Model exam 3. Observation	Course End survey

LIST OF EXPERIMENTS

1. Tests on Aggregate
2. Moisture Content of Concrete Aggregate”
3. Specific Gravity and Absorption of Coarse Aggregate
4. Specific Gravity and Absorption of fine Aggregate”
5. Resistance to Degradation of Small-size coarse Aggregate by Abrasion in the Los Angeles Machine
6. Aggregate crushing strength test
7. Abrasion test
8. Shape Test (Flakiness Index)
9. Shape test (Elongation Index)
10. Shape Test (Angularitv Number)
11. Unit Weight and Voids in Aggregate in its compacted or loose condition”
12. Sieve analysis of fine and coarse aggregate

Tests on Cement

1. Blaine’s Air Permeability test
2. Fineness of Hydraulic Cement by No.100 or No. 200 Sieve”
3. Normal Consistency of Hydraulic Cement”
4. Initial and Final Time of Setting of Cement”
5. Density and Specific Gravity of cement”
6. Compressive Strength of Hydraulic Cement Mortars"
7. Tensile Strength of Cement Mortar
8. Compressive strength of brick
9. Strength tests on Flooring tiles

TOTAL: 30 HOURS

U15CST101 STRUCTURED PROGRAMMING USING C (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

Course Outcomes (CO):
After Successful completion of this course, the students will be able to :

CO1	Explain the basics of programs and programming	K2
CO2	Select appropriate data types and control structures for solving a given problem.	K2
CO3	Illustrate the representation of arrays, strings and usage of string operations.	K3
CO4	Illustrate the importance of pointers, functions and dynamic memory allocation.	K3
CO5	Explain the fundamentals of structures and unions.	K2
CO6	Explain the basics of file handling mechanism.	K2

Pre-requisite : Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	S														
CO2	S	M							W	W					
CO3	S	W							W	W					
CO4	M	W							W	W					
CO5	M	W							W	W					
CO6	M	W							W	W					

Course Assessment Methods:

Direct	Indirect
• Internal Tests • Assignments • Presentation • End Semester Exam	• Course End Survey

Course Content: **Hours**

INTRODUCTION **9**

Programs and Programming- Programming languages and Their Classification - Compiler, Linker, Loader and Interpreter – Structured Programming Concept –Algorithm – Pseudo Code – Flow Chart. Number System – Binary – Decimal – Conversion Problems.

C LANGUAGE BASICS **9**

Introduction to C Programming – Fundamentals – Structure of a C Program – Compilation And Linking Processes – Constants, Variables – Data Types – Expressions Using Operators In C – Managing Input And Output Operations – Decision Making And Branching – Looping Statements – Solving Simple Scientific And Statistical Problems.

ARRAYS AND STRINGS **9**

Arrays – Initialization – Declaration – One Dimensional And Two Dimensional Arrays. String- String Operations – String Arrays. Simple Programs - Sorting- Searching – Matrix Operations

FUNCTIONS, STORAGE CLASSES AND POINTERS **9**

Functions: Definition of function – Declaration of function – Pass by value – Pass by reference – Recursion.
Storage classes – auto, static, extern, register- scope rules.
Pointers: Definition – Initialization – Pointers arithmetic – Pointers and arrays - Dynamic memory allocation - Example Problems

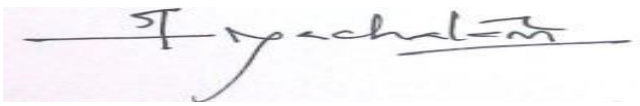
STRUCTURES, UNIONS AND FILES **9**

Structures and Unions: Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions.
Files: Introduction – Using files in C - Working with text files.

Total Hours: 45

References:

1. Pradip Dey and Manas Ghosh, “Programming in C”, Second Edition, Oxford University Press, 2011.
2. Rajasekaran S, “Numerical methods in Science and Engineering-A practical approach”, S.Chand and Company, New Delhi-55, 2012.
3. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education, 2006
4. Byron S Gottfried and Jitendar Kumar Chhabra, “Programming with C”, Tata McGraw Hill Publishing Company, Third Edition, New Delhi, 2011.
5. Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007



U15CS*P*101	STRUCTURED PROGRAMMING LABORATORY USING C (Common to all branches of Engineering and Technology)	L	T	P	C
		0	0	2	2

Course Outcomes (CO):

After Successful completion of this course, the students will be able to :

CO1	Apply and practice logical ability to solve simple problems	**S**
CO2	Demonstrate 'C' programs for statistical and scientific problem solving.	**S**
CO3	Implement pointers, memory allocation techniques in 'C' language.	**S**
CO4	Demonstrate code reusability using recursive and non-recursive functions.	**S**
CO5	Implement appropriate structures for the given scenario.	**S**
CO6	Implement the concept of basic file handling.	**S**

Pre-requisite: Nil

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	**Programme Outcomes(POs)**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	S	M													
CO2	S	M													
CO3	M	M													
CO4	M	M													
CO5	M	M													
CO6	M	W													

Course Assessment Methods:

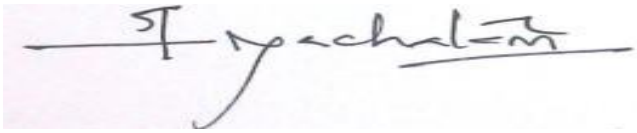
Direct	Indirect
1. Model Exam 2. Viva voce 3. End semester practical exam	Course End Survey

Course Content:

List of Experiments:

1. Simple programs
    - To find whether the given number is prime or not
    - Factorial of the given number
2. Programs involving Control and Looping Structures
    - Arithmetic Progression
    - Trigonometric series evaluation
3. Programs using Arrays
    - Sorting
    - Matrix addition and Multiplication
4. Calculation of median of a frequency distribution.
5. Evaluation of integrals
    - Trapezoidal Rule
6. String Processing
7. Program using Recursive function
8. Using pointers in C
9. Program using Functions, Structures and Files
    - Students Mark Analysis
10. Iterative method for finding Roots of the polynomials
    - Lagrange interpolation method

Total Hours: 24



U15CSP102 COMPUTER HARDWARE LABORATORY *(For Computer Science)*	L	T	P	C
	0	0	2	1

Course Outcomes (CO):

After Successful completion of this course, the students will be able to :

CO1	Explain the various computer hardware components and their functionality.	S
CO2	Illustrate the assembling process of a computer system.	S
CO3	Explain about local area network and file sharing methods.	S
CO4	Perform the installation of Windows operating system.	S
CO5	Analyze a few problems occurring in a computer	S
CO6	Perform the installation of Linux operating system.	S

Pre-requisite: Nil

CO/PO Mapping **(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak**															
COs	**Programme Outcomes(POs)**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1		M													M
CO2			S						W						M
CO3		M							W						S
CO4					M				W						M
CO5		M							W						M
CO6		M			M				W						M

Course Assessment Methods:

Direct	**Indirect**
• Viva • Model Exam • End Semester Exam	• Course End Survey

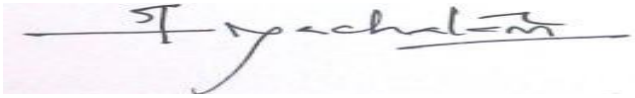
Course Content:

List of Experiments:

1 Study the components through assembling and disassembling of PC.
2 Study of different types of network topologies and cables along with crimping.
3 Study of network devices.
4 Installation and configuration of Windows and Linux operating systems.

5	Troubleshooting frequently occurring problems.
6	Application software installation and Device driver installation.
7	IP configuration and connecting a small LAN including file sharing.
8	Process Handling through task manager
9	Soldering a simple circuit on a PCB
10	Serial communication between computers

Total Hours: 30



U15CS*T*202/ DIGITAL SYSTEMS AND DESIGN *(For Computer Science)*	L	T	P	C
	3	0	0	3

Course Outcomes (CO):
After Successful completion of this course, the students will be able to :

CO1	Apply optimal minimization techniques to simplify the Boolean function.	K2
CO2	Analyze and design of combinational circuits.	K2
CO3	Analyze and design of sequential circuits.	K2
CO4	Apply the knowledge of sequential circuits to solve the real time problems related to digital circuits.	K3
CO5	Compare the various programmable devices and digital logic families.	K2
CO6	Demonstrate the design of a counter	K2

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	**Programme Outcomes(POs)**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	S	M													M
CO2		S	M						L	L					S
CO3		S	S						L	L					S
CO4		M	M	**S**					L	L					M
CO5		S							L	L					M
CO6		M	S	M					L	L					M

Course Assessment Methods:

Direct	**Indirect**
• Internal Tests • Assignment • Presentation • End Semester Exam	• Course Exit Survey

Course Content: **Hours**

BASIC LOGIC AND OPTIMAL MINIMIZATION TECHNIQUES **10**

Complements of numbers - Binary codes – Theorems of Boolean algebra – Boolean functions – Canonical and standard forms – Digital logic gates- Karnaugh map Minimization – POS simplification- Don't care conditions- NAND and NOR implementation

COMBINATIONAL CIRCUITS **9**

Analysis procedure- Design procedure – Code converters- Binary Adder – Subtractor - Decimal adder – Binary multiplier - Magnitude Comparator – Encoder- decoder- Multiplexer

SEQUENTIAL CIRCUITS **9**

Latches – Flip-flops – Edge and level triggering - Characteristic table and equation –Analysis of clocked sequential circuits – State reduction and assignment – Design procedure

REGISTERS AND COUNTERS **9**

Registers – Shift registers - Universal shift register - Ripple Counters - Synchronous counters

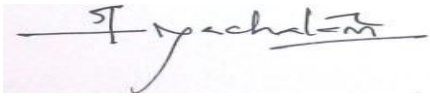
MEMORY AND PROGRAMMABLE LOGIC **8**

Memories: ROM – RAM – Programmable Logic Devices: Programmable Logic Array (PLA)- Programmable Array Logic (PAL)- Implementation of combinational logic using PLA and PAL

Total Hours: 45

References:

1. M. Morris Mano and Michael D. Ciletti, "Digital Design", 5th Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2013.
2. S.Salivahanan and S. Arivazhagan, "Digital Circuits and Design", 2nd Edition, Vikas Publishing House Pvt. Ltd, New Delhi, 2012.
3. Donald D.Givone, "Digital Principles and Design", Tata Mc-Graw Hill Publishing company limited, New Delhi, 2007.
4. Charles H.Roth. "Fundamentals of Logic Design", 7th Edition, Thomson Publication Company, 2013.
5. Donald P.Leach and Albert Paul Malvino, "Digital Principles and Applications", Tata McGraw Hill Publishing Company Limited, New Delhi, 2010.



U15CSP203 **PROBLEM SOLVING TECHNIQUES LABORATORY**

L	T	P	C
1	0	2	2

(Common to ECE, CSE, IT, FT)

Course Objectives:

To introduce students to the foundations of computing, programming and problem-solving.

To develop basic programming skills necessary for engineering education.

Course Outcomes (CO):

After Successful completion of this course, the students will be able to :

CO1	Write a pseudo code for the identified problem	S
CO2	Translate the pseudo code into an executable program	S
CO3	Validate the program for all the possible inputs.	S
CO4	Identify an appropriate approach to solve the problem	S
CO5	Use different data structures	S

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	S	M		M					L						
CO2	S	M		M	S				L						
CO3	S	M		M					L						
CO4	S	M		M					L						
CO5	S	M		M					L						

Course Assessment Methods:

Direct	Indirect
• Model Lab Exam • End Semester Practical Exam	• Course Exit Survey

Course Content:

Problem solving

General problem solving concepts, approaches and challenges, problem solving with computers, data structures

Approaches

Solve by analogy, Decompose the task into smaller subtasks, Building block approach, merging solutions, Algorithmic thinking, Choice of appropriate data structures, Implementation of the Pseudo-code, implementing the code, testing the solution

Introduction to program structure

Variables and constants, local and global variables, expressions, control structures, selection structures, arithmetic, relational and logical operators, Conditional and looping statements, programming in manageable pieces: program modules, subprograms, functions and recursion

Problem to code approach

Problem statement, problem analysis, program design, program code, program test

Sorting (Numbers and Strings)

Bubble sort, Insertion sort, Selection Sort

Searching (Numbers and Strings)

Binary search, Random search, Search for Max-Min

References:

1. *R. J. Dromey, How to solve it by Computer, Prentice Hall International, New Jersey, 2007*
2. *Harold Abelson and Gerald Sussman, Structure and Interpretation of Computer Programs, MIT Press, 1996.*
3. *Subhasis Banerjee, S. Arun Kumar, D. Dubhashi, Introduction to Computer Science, McGraw Hill India.*

List of Experiments:

I Problems based on Numbers:

1) Write a program to compute the factorial of a given number.

Test Case	**1**	**2**	**3**	**4**
Input	8	1	0	-5
Output	40320	1	1	Invalid

2) Write a program to find all numbers between 2000 and 3000 (both inclusive) which are divisible by 7 but not a multiple of 5. All such numbers are to be printed in a comma separated sequence on a single line.
Output: 2002, 2009, 2016, … 3199

II Problems based on Data Processing:

1) Write a program that takes an IP address of the form P.Q.R.S as input, where P, Q, R and S are decimal numbers in the range 0 to 255, and prints the class of the address as indicated in the table below.

Value of P	**Class**
1 – 126	A
128 – 191	B
192 – 223	C
224 – 239	D
240 – 254	E

Test Case	**1**	**2**	**3**	**4**	**5**
Input	224.220.206.91	126.220.206.91	127.0.0.1	0.100.100.100	255.255.255.255
Output	Class D	Class A	Invalid	Invalid	Invalid

2) Write a program to check if a given number is a stepping number or not.
Note: A number is called a stepping number if every adjacent digit, except those separated by commas, differs by 1. A stepping number can't be a 1-digit number; it must be at least a 2-digit number. For example 45 and 43,545 are valid stepping numbers, but 890,098 is not a stepping number because the difference between numbers 9 and 0 cannot be considered as 1.

Test Case	**1**	**2**	**3**	**4**	**5**
Input	567	89,432	780,023	7	49
Output	Valid	Valid	Invalid	Invalid	Invalid

3) Write a program that takes a large English text file as input and counts the number of occurrences of each alphabet in the text.
(i) Display the alphabet with maximum and minimum number of occurrences.
(ii) Swap the alphabets with maximum and minimum occurrences to obtain a modified text file.
(iii) Take the output of (ii) as input and get back the original text file.

Test case:
Input: A text file with 3000 characters - in which 500 are e and 5 are z.
Output: (i) Maximum occurrence – e and Minimum occurrence – z
(ii) The characters e and z in the text file are swapped to get a modified text
(iii) The original text file

4) The property of Exclusive OR operation (i) Any X ⊕ X is 0 (ii) Any X ⊕ 0 is X.
An Encryption and Decryption scheme using this property is given below:
Encryption Algorithm: Cipher Text (C) = Plain Text (P) ⊕ Key (K)
Decryption Algorithm: Plaint Text (P) = Cipher Text (C) ⊕ Key (K)
Answer the following questions:
(i) For any given P and the corresponding C, find K [K = P ⊕ C]
(ii) For any given C and the corresponding key K, find P [P = C ⊕ K]

Test Case		**1**	**2**	**3**
Inpu	P	1 1 0 0 1 1 0 0	0 0 1 1 1 1 0 0	1 1 1 1 1 1 1 1
	C	0 0 1 1 0 0 1 1	1 0 1 0 1 0 1 1	1 1 1 1 1 1 1 1
Outp ut	Key	1 1 1 1 1 1 1 1	1 0 0 1 0 1 1 1	0 0 0 0 0 0 0 0
	New cipher text	0 0 0 0 0 0 0 0	1 1 0 0 1 1 1 1	11 11 1 1 1 1
	Plaintext (New cipher text ⊕Key)	1 1 1 1 1 1 1	0 1 0 1 1 0 0 0	1 1 1 1 1 1 1 1

5) Write a function num_atoms( ) that takes the weight of the element in grams and its atomic weight as parameters and calculates the number of atoms in n grams of an element.
Note: Atomic weight of gold (Au) 196.97 with units in grams/mole.
Atomic weight of carbon=12.001, Atomic weight of hydrogen=1.008
Avogadro's number is a constant, 6.022×10^{23}
Test Case 1:
Amount of gold =4.5grams, n = 0.45/197 = 2.28×10^{-3} , 1 mol = 6.022×10^{23} atoms
Total number of atoms =$6.022 \times 10^{23} \times 2.28 \times 10^{-3} = 13.756 \times 10^{20}$

6) Define a procedure histogram() that takes a list of integers and prints a histogram to the screen.

Test Case	**1**	**2**	**3**
Input	histogram([4])	histogram([-3, 6, 12])	histogram([2, 0, 3])

Output	****	****** **********	** ***

7) Write a program to solve this classic ancient Chinese puzzle: We count 35 heads and 94 legs among the chickens and rabbits in a farm. How many rabbits and how many chickens do we have?

8) In cryptography, a Caesar Cipher is a very simple encryption technique in which each letter in the plain text is replaced by a letter some fixed number of positions down the alphabet. For example, with a shift of 3, A would be replaced by D, B would become E, and so on. ROT-13 ("rotate by 13 places") is a widely used example of a Caesar cipher where the shift is 13. Write a program to implement an encoder/decoder of ROT-13.

Test Case	**1**	**2**
Input	Roy eats	Deer stays back
Output	Ebl rngf	Qrre fgnlf onpx

9) Newton's Second Law of motion is expressed as $F = m \times a$, where F is force, m is mass and a is acceleration. Write a program to calculate the acceleration if mass of an object and the force on that object are given as input. Display the result to the user.

Test Case	**1**	**2**
Input	Mass=5, Force =1050	Mass =3, Force=564
Output	210	188

III Problems based on Strings and Functions:

1) Write a program (using functions) that takes a long sentence with multiple words as input and rearranges the words in the sentence in the reverse order.

Test Case	**1**	**2**	**3**
Input	My name is python	Kumaraguru College of Technology	Problem based on Strings
Output	python is name My	Technology of College Kumaraguru	Strings on based Problem

2) Write a program that accepts a sequence of 4 digit binary numbers as its input, which are comma separated and prints as output, only the binary numbers that are divisible by 5 in the same format.

Test Case	**1**	**2**	**3**
Input	0100,0011,1010,1001,1100, 1001,0101	0010, 1111, 1100	1110, 1000, 1110
Output	1010, 0101	1111	Not divisible by 5

3) Write a program that accepts a sentence as input and calculates the number of letters, digits and special characters.

Test Case	**1**	**2**

Input sentence		hello world! @$ 123	There is a laptop with #CS123…
Output	Letters	10	20
	Digits	3	3
	Special Characters	3	4

4) Write a String tokenizer program that accepts a file as input and counts the number of lines and words and prints the same as output. (Note: You can use wc command also)

Test Case	**Input Sentences**	**No. of lines**	**No. of words**
1	Correctness and efficiency issues in programming, time and space measures Basics of imperative style programming Assertions and loop invariants	3	19
2	greedy algorithms are not always the optimal process, even after adjusting the order of their processing	2	16

5) Write a "space_correction()" function that takes a string (sentence) as input and examines it for space characters. If there are two or more continuous space characters in the sentence then they are deleted, so as to have only one space character between words. It also examines the end of sentences; if the period (full stop) is directly then followed by a letter it inserts a space after the period.

Test case I	Input	space_correction(“This is very funny and cool.Indeed!")
	Output	"This is very funny and cool. Indeed!"
Test case II	Input	space_correction(“A flow chart provides appropriate steps to be followed.it is a program design tool”)
	Output	A flow chart provides appropriate steps to be followed. it is a program design tool

6) Write a function printValue() that can accept two strings as input and prints the longer of the two. If two strings have the same length, then the function should print both the strings.

Test case	**1**	**2**	**3**
Input	printValue(“one”,”three”)	printValue(“laptop”,”laptop”)	printValue(“ten”,”so”)
Output	three	laptop laptop	ten

7) An anagram is a type of word play, the result of rearranging the letters of a word, using all the letters in the original word exactly once; e.g., uleb = blue. Write a program that accepts the jumbled characters from user and choose the correct word from the given list by rearranging the characters in the word. Display the word, if it is available in the given list of word. Assume that the list of words is set of colors like {brown, blue, green etc}

Test case	**1**	**2**	**3**
Input	onwbr	reegn	etihw
Output	brown	green	white

8) Assuming that we have some email address of the form "username@companyname.com". Write a program to print the user name of a given email address. Both user names and company names consists of letters only.

Test case	1	2
Input	inboxcse@gmail.com	csedeptgroups#yahoomail.com
Output	inboxcse	Invalid email address

9) Write a program that takes a string as input and prints the number of occurrences of each character in the string.

Test case	1	2
Input	abbaca	icici
No. of occurrences	a=3,b=2,c=1	i-3 , c-2

10) Write a recursive function and an iterative function to compute the Fibonacci sequence. Compare the performance of both functions.

11) Write a version of a palindrome recognizer that also accepts phrase palindromes such as "Go hang a salami I'm a lasagna hog.". (Note: punctuation, capitalization and spacing are ignored)

Test case	1	2
Input	i am tired	was it a rat i saw
Output	Not a palindrome	Palindrome

12) In English, a sentence using present continuous is formed by adding the suffix *-ing* to the verb.(example: go€ going).

A simple set of heuristic rules can be given as follows:

1. If the verb ends in *e*, drop the *e* and add *ing* (if not exception: be, see, knee, etc.)
2. If the verb ends in *ie*, change *ie* to *y* and add *ing*
3. For words consisting of consonant-vowel-consonant, double the final letter before adding *ing*
4. By default, just add *ing*

Write a function "make_ing_form()" which converts a given verb to present continuous form. Test your function with words such as lie, see, move and hug.

Test case	1	2	3	4
Input	believe	tie	sit	walk
Output	believing	tying	sitting	walking

13) A pangram is a sentence that contains all the letters of the English alphabet at least once. Write a function to check if a given sentence is a pangram or not. If the given sentence is not a pangram print the missing letters.

Test case	1	2
Input	*The quick brown fox jumps over the lazy dog*	*The quick brown rat jumps over the lazy cat*
Output	Pangram	Not a Pangram Missing letters:*f,x,d,g*

14) Write a function "calc_weight_ on_ planet()" that takes two arguments - weight on Earth and the surface gravity of the other planet and calculates the equivalent weight on the other planet. (Note: The surface gravity of Jupiter is 23.1 m/s^2 (approx) and that of Earth is 9.8 m/s^2(approx), Weight = Mass x Surface gravity)

Test case	1	2
Weight on Earth(lb)	*127.2*	*-100*
Weight on Jupiter	297.6	*Invalid*

15) Write a program to check the validity of passwords entered by users.

Following are the criteria for a valid password:

1. At least 1 letter between [a-z]
2. At least 1 letter between [A-Z]

3. At least 1 number between [0-9]
4. At least 1 character from [$#@]
5. Minimum length of password: 6
6. Maximum length of password: 12

Your program should accept a sequence of passwords that are comma separated and check them for validity based on the criteria given above and print the valid passwords only in the comma separated form.

Test case	**1**	**2**	**3**
Input	ABd1234@1, a F1#,2w3E*,2We3345	HFd1244@1, a F1#,2w3E*,2We334#5	ABd12342, a F1#,2w2B*,2We3345
Output	ABd1234@1	HFd1244@1, 2We334#5	Invalid

V Problems based on Data Structures:

1) Write a program that maps a list of words to a list of integers (representing the lengths of the corresponding words). Write it in three different ways: 1) using a for-loop, 2) using the higher order function map (), and 3) using list comprehensions
2) Write a program that prompts the user to enter the name of the fruit and its weight. The program should then display the information in the same form but in the alphabetical order.

Test case	**1**	**2**	**3**
Input	Kiwi, 4 kg, Apple, 6 kg, Banana, 11 kg	Gowva, 4 kg, Apple, 6 kg, Banana, 11 kg	Carrot, 4 kg, Kiwi, 6 kg, Banana, 11 kg
Output	Apple, 6 kg, Banana, 11 kg, Kiwi, 4 kg	Apple, 6 kg, Banana, 11 kg, Gowva, 4 kg	Banana, 11 kg, Carrot, 4 kg, Kiwi, 6 kg

3) Write a program that prompts the user to enter a list of words and stores them in a list. Create a new list that retrieves words from the first list such that first letter occurs again within the word. The program should display the resulting list.

Test case	**1**	**2**
Input	Baboon, List, Duplicate	Frog, Snake, Lizard
Output	Baboon	No Such word exist in list

4) List Overlap Solution:
Consider the following lists, A = [1,1,2,3,5,8,13,21,34,55,89] &
B = [1,2,3,4,5,6,7,8,9,10,11,12,13]
Write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.
Hint: (A intersection B)

Test cases:
Input the following lists,
A = [1,1,2,3,5,8,13,21,34,55,89] B = [1,2,3,4,5,6,7,8,9,10,11,12,13]
Output: A ∩ B= [1,2,3,5,8,13]

VI Problems based on Sorting:

1) Write a program to sort the (name, age, score) tuples in ascending order where name is string, age and score are numbers. The tuples are input using the console. The sort criteria are:
    a. Sort based on name
    b. Then sort based on age;
    c. Then sort by score

d.

Test case	1	2
Input	Tom,19,80 John,20,90 Jony,17,91	Jony,17,91 Jony,17,93 Json,21,85
Output	[('John', '20', '90'), ('Jony', '17', '91'), ('Jony', '17', '93'),('Tom', '19', '80')]	[('Jony', '17', '91'), ('Jony', '17', '93'), ('Json', '21', '85')]

2) Write a program that accepts a sequence of words that are hyphen separated as input and prints the words in a hyphen-separated sequence after sorting them alphabetically.

Test case	1	2	3
Input	green-red-yellow-black-white	red-yellow-black	green-yellow-white
Output	black-green-red-white-yellow	black -red-yellow	green-white-yellow

VII Problems based on Divide and Conquer:

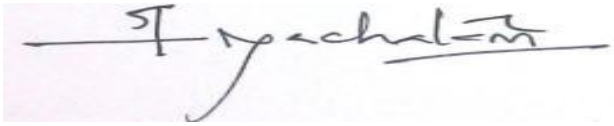
1) Write a program for binary search using arrays

Test case	1	2
Input	4, 7,8,11,21	4, 7,8,11,21
Enter the number to be search	11	18
Output	The number is present	The number is not present

VIII Problem Solving by Backtracking:

1) Write a program to solve the 4-Queen's Problem.

Total Hours:24



U15CSP211 COMPUTING LABORATORY	L	T	P	C
Common to AE,BT,CE,EIE,FT,ME,MCE,TXT	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Develop static web pages using HTML. [S]
CO2: Perform basic MATLAB operations. [S]
CO3: Make use of MATLAB to work with images and graphs. [S]
CO4: Perform integration and differentiation using MATLAB. [S]
CO5: Develop team spirit and professional attitude towards the development of simple web applications [A]

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	S	M													
CO2	S	M													
CO3	M	M													
CO4	M	M													
CO5	M	M													

Course Assessment Methods:

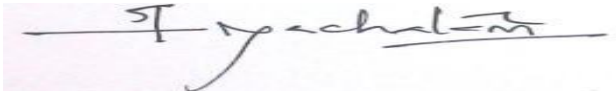
Direct	Indirect
1. Model Exam 2. Viva voce 3. End semester practical exam	Course End Survey

List of Experiments

1. Study of HTML tags
2. Design a web page using basic html tags
3. Design a webpage using table tags

4. Design a webpage using forms and frames
5. Design a webpage using list tags
6. Develop a website of your interest(include a minimum of 3 web pages)
7. Study of MATLAB functions
8. Working with matrix operations
9. Working with image arithmetic
    a. Addition of two images
    b. Subtraction of two images
10. Write a Matlab program for the following
    a. Read an image and crop
    b. Read an image and resize
11. Working with Integration and Differentiation
12. Working with graphs

TOTAL: 45 HOURS



U15ECT201 CIRCUIT THEORY	L	T	P	C
(Common For ECE, EIE)	3	2	0	4

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Able to model passive elements & sources
CO2: Apply circuit theory concepts to compute voltage, current & resistance in DC&AC circuits.
CO3: Use SPICE as a simulation tool to analyze electric circuits.
CO4: Estimate the transient response of simple RL, RC & RLC circuits.
CO5: Predict the frequency response of resonance circuits.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S												M	
CO2	S												M	
CO3	S				S								M	
CO4	S	M											M	
CO5	S	M											M	

Course Assessment methods

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Seminar 5. End Semester Exam	Course end survey

DC CIRCUITS ANALYSIS **9 Hours**

Basic Definitions: Charge, Current, Voltage and Power, Circuit elements: Resistors, Inductors, capacitors, Voltage and Current Sources - Ohm's Law, Kirchhoff's Current Law, Kirchhoff's Voltage Law, Circuit elements (R, L, C, Voltage and Current Sources) in Series and Parallel, Voltage and Current Division, Source Transformation, Delta-Star and Star- Delta transformation,

Mesh Analysis, super mesh, Nodal analysis, Super node.

NETWORK THEOREMS **9 Hours**

Superposition Theorem, Thevenin's Theorem and Norton's Theorem, Maximum Power Transfer Theorem, Reciprocity Theorem, Verification of Theorems, Introduction to PSPICE.

SINUSOIDAL STEADY STATE ANALYSIS **9 Hours**

Sinusoids, Phasors, Phasor representation of R, L and C, Phasor Diagrams, Impedance, Admittance, Susceptance, Conductance and Reactance.

AC Circuit Power Analysis-Instantaneous Power, Average Power, RMS Power, Apparent Power and Power Factor, Complex Power, Mesh Analysis & Nodal Analysis, Verification of Maximum Power Transfer theorem

FIRST ORDER AND SECOND ORDER CIRCUITS **9 Hours**

Basic RL and RC Circuits: The Source-Free RL Circuit, the Source-Free RC Circuit, The Unit-Step Function, Driven RL Circuits, Driven RC Circuits- Source free series and parallel RLC circuits

RESONANCE AND COUPLED CIRCUITS **9 Hours**

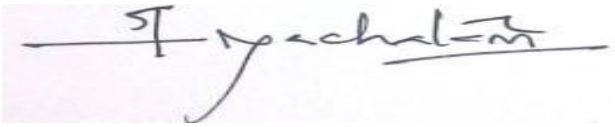
Frequency Response of Parallel and Series Resonance circuits-determination of Resonant Frequency, Q – Factor and Bandwidth.

Magnetically Coupled Circuits - Self Inductance, Mutual Inductance, Coefficient of Coupling, Energy in a coupled circuit, Linear Transformer, Ideal Transformer, Duality.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

REFERENCES

1. Charles K. Alexander and Mathew N.O. Sadiku, Fundamentals of Electric Circuits, 3rd edition, McGraw-Hill, 2008.
2. David E. Johnson, Johny R. Johnson and John L. Hilburn, Electric Circuit Analysis, 2nd edition, Prentice-Hall Int.
3. Murthy K.V.V., Kamath M.S., Basic Circuit Analysis, Jaico Publishing House, 1999.
4. Norman Balaba nian, Electric Circuits, Int. Edition, McGraw-Hill, 1994.
5. Decarlo R.A. and Lin P.M., Linear circuit analysis - The time domain, Phasor and Laplace transform approach, Oxford press, 2nd edition, 2003.
6. William H. Hayt, Jr Jack E. Kemmerly and Steven M. Durbin, Engineering Circuit Analysis, 7th edition, Tata MC GrawHill, 2010.
7. Joseph Edministor and Nahvi (Mohmood), Theory & Problems of Electric Circuits, 5th edition, MC Graw Hill, 2011.



U15ECT102 ELECTRON DEVICES *(For Electronics and Communication Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Recognize the concepts of Electron ballistics
CO2: Understand the principles of Semiconductor Physics
CO3: Illustrate the characteristics of diodes, BJT, FET, MOSFET and their applications.
CO4: Develop skills to implement simple projects using the basic devices

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	M											M	
CO2	S	M											M	
CO3	S	M											M	
CO4	S	M	M										M	

Course Assessment methods

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Seminar 5. End Semester Exam	Course end survey

ELECTRON BALLISTICS **9 Hours**

Force on charge particles in electric field – Motion of charge in uniform and time varying electric fields – Force in a magnetic field – Current Density – Motion in a Magnetic Field – Electrostatic deflection in a cathode ray tube – Magnetic deflection in a cathode ray tube – Deflection sensitivity- Magnetic Focusing –Parallel Electric and Magnetic Fields - Perpendicular Electric and Magnetic Fields – Cyclotron

SEMICONDUCTOR DIODES **9 Hours**

Law of electrical neutrality – Mobility, drift current – Diffusion current – Continuity equation. Band structure of PN Junction – Current Components in a PN Diode –Diode current equation – Temperature dependence of diode characteristics - Calculation of transition and diffusion capacitance – Switching characteristics of diode- Applications - Zener diode – Break down

Mechanisms – Zener diode as voltage regulator- Varactor diode –Schottky diode

BIPOLAR JUNCTION TRANSISTORS AND FIELD EFFECT TRANSISTORS9 Hours

Transistor types – Current components – Ebers – Moll model – Transistor Configurations – Characteristics - Transistor switching times – Transistor as an amplifier. Operation and characteristics of JFET- Generalized FET Amplifier – FET as a voltage variable resistor - MOSFET - Principle of operation - Depletion and Enhancement MOSFET - Output and Transfer Characteristics

SPECIAL SEMICONDUCTOR DEVICES 9 Hours

Tunnel diode, Operation and Characteristics - SCR ,TRIAC, DIAC - Applications. UJT - Operation - Characteristics – Equivalent Circuit and Applications – Opto electronic devices- LED - Photo diode –Photo transistor

FABRICATION OF SEMICONDUCTOR DEVICES 9 Hours

Basic monolithic integrated Circuits - Epitaxial growth - masking and etching - Diffusion of impurities- Transistors for monolithic circuits - Monolithic Diodes – Integrated Resistors - Integrated Capacitors & Inductors – Integrated Field Effect Transistors. Definition of LSI, MSI, VLSI circuits

TOTAL: 45 HOURS

REFERENCES

1. David A. Bell, Electronic Devices and Circuits, 4th edition Prentice Hall of India, 2006.
2. Robert L. Boylested and Louis Nashelsky, Electronic Devices and Circuits Theory, 10th edition, Prentice Hall India, 2009.
3. Theodore F. Bogart Jr, Jeffrey S. Beasley and Guillermo Rico, Electronic Devices and Circuits, 6th edition, Pearson Education, 2004.
4. Jacob Millman, Christos C. Halkias and Chetan D. Parikh, Integrated Electronics, 2nd edition, Tata McGraw–Hill, 2009.
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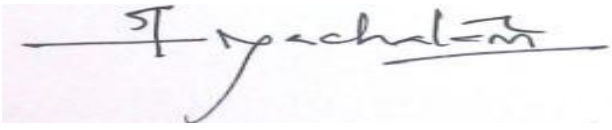

U15EC*P*201 ELECTRIC CIRCUITS & SIMULATION LABORATORY *(For Electronics and Communication Engineering)*	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Practice proper use of measuring instruments.
CO2: Relate physical observations and measurements involving electrical circuits to theoretical principles.
CO3: Experiment series and parallel resonance circuits.
CO4: Able to use simulation tools to analyze electric circuits.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M				S				S	M				S
CO2		S		M					S	M				S
CO3		M							S	M				S
CO4					S				S	M				S

Course Assessment methods

Direct	Indirect
1. Lab Exercises 2. Lab Observation / Record 3. Viva-voce 4. Model Practical Exams	Course end survey

LIST OF EXPERIMENTS

1. Measurement of current and voltage in series and parallel circuits.
2. Verification of Kirchhoff's Laws.
3. Verification of Thevenin's Theorem
4. Verification of Reciprocity Theorem
5. Verification of Super position Theorem
6. Verification of Maximum Power Transfer Theorem
7. Frequency Response of Series and Parallel resonance circuits

PSPICE SIMULATION

8. Verification of Theorems
9. Analysis of Transient Response of RL & RC circuits
10. Analysis of Series and parallel resonance circuits

TOTAL: 30 HOURS

U15EC*P*202/ ELECTRON DEVICES LABORATORY *(For Electronics and Communication Engineering)*	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Analyze the characteristics and behavior of devices like diode, zener diode, BJT, FET, MOSFET, UJT, SCR and optoelectronic devices
CO2: Verify the working of diodes, transistors and their applications
CO3: Build a common emitter/base/collector amplifier and measure h-parameters.

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CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	M							S	M			M	
CO2	S	M							S	M			M	
CO3	S	M							S	M			M	

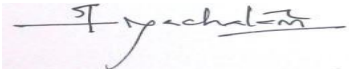
Course Assessment Methods:

Direct	Indirect
1. Lab Exercises 2. Lab Observation / Record 3. Viva-voce 4. Model Practical Exams	Course end survey

LIST OF EXPERIMENTS

1. PN Diode VI –Characteristics
2. Half Wave and Full wave rectifier
3. Zener Diode characteristics and Voltage regulator
4. Transistor (CE) characteristics and h parameter determination
5. JFET characteristics
6. MOSFET characteristics
7. UJT characteristics
8. SCR characteristics
9. TRIAC and DIAC characteristics
10. Photo Diode and Photo Transistor characteristics
11. BJT as an amplifier and switch

TOTAL: 30 HOURS



U15ECP207	ELECTRONIC DEVICES AND CIRCUITS LABORATORY	L	T	P	C
		0	0	2	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Construct input output characteristics of electronic devices.

CO2: Measure current voltage resistance capacitance of a given circuit.

CO3: Design and construct regulators, rectifiers, amplifiers and oscillators using electronic devices and operational amplifiers.

CO4: Simulate electronic circuits using software.

Pre-requisite : Nil

CO/PO Mapping

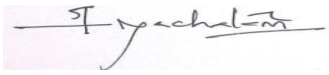
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			S		S									M
CO2			S											M
CO3			S											M
CO4			S	S										M

Course Assessment methods:

Direct	Indirect
Internal Models I Internal Models II End semester Examination	Course end survey

LIST OF EXPERIMENTS	
1. Characteristics of Semiconductor diode and Zener diode 2. Input and Output characteristics of BJT 3. Characteristics of JFET 4. Frequency response of CE amplifier 5. Clipper and Clamper 6. Phase shift and Wein Bridge oscillators using OP-AMP 7. Astable multivibrator using OP-AMP 8. Monostable and Bistable multivibrator using OP-AMP 9. Voltage Regulator (Zener diode, Transistor series and shunt) 10. Half-wave and Full-wave Rectifier with and without filter. 11. Circuit design using software (Multisim, Pspice) 12. Printed Circuit Board (PCB) design and fabrication using (software) for simple circuits. **Total Hours: 45**	



U15EE*T*101 **CIRCUIT THEORY** **L T P C**
3 2 0 4

(For Electrical and Electronics Engineering)

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Define and identify the basic electrical quantities and calculate the voltage, current parameters in DC circuits using basic laws.	**K2**
CO2	Analyse A.C. circuits, the concept of active, reactive and apparent powers, power factor and resonance in series and parallel circuits.	**K2**
CO3	Solve electrical network problems using mesh and nodal analysis and by applying network theorems.	**K2**
CO4	Know the basic concepts of magnetic coupled circuits.	**K2**
CO5	Know the fundamental relationships involved with three phase circuits and power measurement.	**K2**
CO6	Understand the basic concepts of resonance and resonant circuits.	**K2**

PRE-REQUISITE: NIL

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S												
CO2	S	S												
CO3	S	S												
CO4	S	S												
CO5	S	S												
CO6	M													

COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

BASIC CIRCUIT CONCEPTS **9 Hours**

Introduction to Electrical Circuits: voltage, current, power and energy. Circuit elements : R,L,C parameters – Energy sources – Kirchhoff's laws –Series and parallel DC circuits-voltage division and current division-power in dc series and parallel circuits-network reduction techniques – Source transformation- star-to-delta and delta-to-star transformation.

AC CIRCUIT CONCEPTS **9 Hours**

The sine wave- Angular relation of a sine wave-The sine wave equation-Voltage and current Values of sine wave- Phase relation in Pure R, L and C. Complex impedance: impedance diagram– Phasor diagram- Analysis of series, parallel and Compound circuits. Power and power factor: Instantaneous Power - Average Power- Apparent Power and Power Factor- Reactive Power- Power Triangle. Series resonance and Parallel resonance – bandwidth and Q factor.

CIRCUIT ANALYSIS & NETWORK THEOREMS **9 Hours**

Nodal analysis and Mesh analysis for D.C and A.C circuits, Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, maximum power transfer theorem, Duality in networks-problems.

MAGNETIC COUPLED CIRCUITS **9 Hours**

Self and mutual inductance-coefficient of coupling-dot convention-analysis of simple coupled circuits-ideal transformer-analysis of series and parallel connection of coupled coils- tuned circuits-analysis of magnetic circuits-comparisons of magnetic and electric circuits-magnetic leakage and fringing-parallel magnetic circuit.

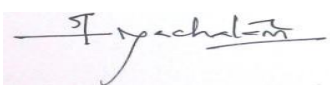
THREE PHASE CIRCUITS **9 Hours**

Phase sequence-line and phase quantities-Three phase star and delta connections -analysis of three phase circuits with star and delta connected balanced and unbalanced loads- power measurement in three phase circuits using two wattmeter method-power factor of an unbalanced system.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

REFERENCES

1. William H. Hayt Jr, Jack E. Kemmberly, and Steven M. Durbin, Engineering circuit analysis, Tata McGraw-Hill, New Delhi, 2002.
2. Joseph A. Edminister and Mahmood Nahvi, Electric Circuits, Schaum's Series, Tata, McGraw-Hill, New Delhi, 2004.
3. Arumugam M. and Premkumar N., Electric Circuit Theory, Khanna Publishers, New Delhi, 1991.
4. Gupta B.R, Fundamentals of Electric Circuits, S. Chand & Company (P) Ltd., New Delhi. 2002.
5. Paranjothi S.R., Electric Circuit Analysis, New Age International (P) Ltd., New Delhi, 2000.
6. Sudhakar A. and Shyammohan S.P., Circuits and Networks: Analysis and Synthesis, Tata McGraw-Hill, New Delhi, 2004.



U15EE*T*211/ BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING *(For Mechanical, Automobile & Biotechnology)*	L	T	P	C
	4	0	0	4

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Acquire the basic knowledge of fundamental laws of circuit elements	**K2**
CO2	Define various magnetic field concepts.	**K2**
CO3	Understand relationships among current, voltage and power in AC circuits	**K2**
CO4	Understand the characteristics of various electrical machines.	**K2**
CO5	Understand the characteristics of basic electronic devices and their applications	**K2**
CO6	Verify the truth table of digital logic gates.	**K2**

PRE-REQUISITE : Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S													
CO2	S													
CO3	S	S												
CO4	S	M												
CO5	S													
CO6	S													

COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

ELECTRIC CIRCUITS FUNDEMENTALS **9 Hours**

Electric current and Ohm's law – Resistance and Resistivity – Relation between Voltages, Current, Resistance and Power - Capacitance – Parallel plate capacitor – Energy stored in a capacitor.

ELECTROMAGNETISM **9 Hours**

Magnetic field - Field intensity, magnetic flux , Flux density – Permeability – Magnetic effects of electric current – Magnetic circuit – Faraday's laws of Electromagnetic Induction – Self-inductance and Mutual inductance – Energy stored in magnetic field – Magnetic Hysteresis.

AC-CIRCUITS **9 Hours**

Alternating voltages and current – Sinusoidal waveform – cycle and frequency – RMS value – vector diagram of sine waves of same frequency – Alternating current through Resistance, Inductance and Capacitance – current through series circuits – Power factor – Active and Reactive power – Generation of three phase voltage – Voltages, Currents and Power in Star and Delta connected loads.

ELECTRICAL MACHINES (Qualitative Treatment Only) **9 Hours**

DC motor – Principle of operation – Back-emf and voltage equation – Torque and speed Characteristics of Series and Shunt connected motors – Transformer – Ideal Transformer relationship – Three phase induction motor – Cage rotor and Wound rotor – Principle of operation – Slip – Torque Slip characteristics – Single phase induction motors.

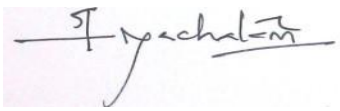
ELECTRONIC CIRCUITS **9 Hours**

Semiconductor diode – Half wave and Full wave rectifier – Bipolar Junction transistors – circuit configurations – static characteristics – load line and biasing – simple introduction to amplifiers – Introduction to Binary logic gates – AND, OR, NOT, NAND, NOR, EX-OR & EX-NOR.

TOTAL: 45 HOURS

REFERENCES

1. Thomas L Floyd, Electronic Devices, 6th Edition, Pearson Education, 2003.
2. Muthusubramanian R., Salivahanan S. and Muraleedharan. K.A., Basic Electrical Electronics and Computer Engineering, Tata Mcgraw Hill, 2nd Edition, 2006.
3. Thyagarajan T., Sendur Chelvi K.P. and Rangaswamy T.R., Engineering Basics, Revised 2nd Edition, New Age International Pvt. Ltd.
4. Theraja B.L., Fundamentals of Electrical Engineering and Electronics, S. Chand Publishing, 2012.



U15EE*T*212 ELECTRICAL AND ELECTRONIC CIRCUITS *(Common to CSE & IT)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Define and identify the basic electrical quantities and calculate the voltage, current parameters in DC circuits using basic laws.	**K2**
CO2	Understand the Phasor representation of various AC circuit parameters and acquire knowledge on fundamentals of three phase ac circuits.	**K2**
CO3	Differentiate the various semiconductor diodes and rectifiers	**K2**
CO4	Summarize the characteristics of different transistor configurations.	**K2**
CO5	Acquire the basic knowledge of oscillators	**K2**
CO6	Understand the basic operation of op-amp and their different applications.	**K2**

PRE-REQUISITE: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S												
CO2	S	S												
CO3	S	M												
CO4	S	M												
CO5	S													
CO6	S	M												

COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

DC CIRCUITS **9 Hours**

Electrical quantities – SI units – Circuit elements – Ohm's law – Kirchoff's laws – DC series and parallel circuits – Mesh and nodal analysis – Star to delta conversions – Simple problems.

AC CIRCUITS **9 Hours**

Sinusoidal excitation – RMS , Average and Peak values – Phasor representation – Power factor – Single phase RC,RL and RLC circuits – Series and Parallel resonance – Introduction to three phase circuits: V, I and P equations – Simple problems.

SEMICONDUCTOR DIODE AND APPLICATIONS **9 Hours**

N and P type semiconductors – PN junction – Biasing – VI characteristics – Diode operation – Rectifiers – Half wave, Full wave , Bridge rectifiers – Power supply filters – Zener diode – Applications – Optical diode.

TRANSISTORS AND APPLICATIONS **9 Hours**

Transistors – Operation, Characteristics, Biasing – BJT amplifiers – CE – CB – CC – Multistage amplifiers – JFET, MOSFET – Characteristics, Biasing – SCR – Phototransistor.

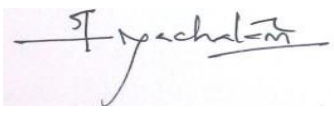
OSCILLATORS AND OPERATIONAL AMPLIFIERS **9 Hours**

Principle of oscillators – RC feedback Circuits – LC feedback circuits – Relaxation oscillators – Introduction to Operational Amplifiers – Input modes and Op- amp parameters – Op-amp with negative feedback – Comparator – Summing amplifier – Integrator and Differentiator.

TOTAL: 45 HOURS

REFERENCES

1. Edminister and Nahvi, Electronic Circuits, Schaum's outlines, Tata MC Graw – Hill, 1999.
2. Robert L. Boylested and Louis Nahelsky, Electronic Devices & Circuit theory, 7th Edition, Prentice Hall, 1999.
3. Choudhury R. and Jain S., Linear Integrated Circuits, 3rd Edition, New Age Publication, 2007.
4. David A. Bell, Electronic Devices and Circuits, Prentice Hall of India, 2004.
5. Muthusubramaniam R., Salivahanan S. and Muraledharan K.A., Basic Electrical Electronics and Computer Engineering, Tata McGraw Hill, 2nd Edition, 2006
6. Thomas L. Floyd, Electronic Devices, 6th Edition, Pearson Education, 2003.



U15EE*P*101 BASICS OF ELECTRIC CIRCUITS LABORATORY ***(For Electrical and Electronics Engineering)***	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Verify the basic laws of electric circuits.	**K2**
CO2	Find the magnitudes of voltages and currents in the given circuit and verifies experimentally using mesh and nodal analysis	**K2**
CO3	Observe the frequency response of series and parallel resonant circuits	**K2**
CO4	Verify the Phasor relationship of various AC circuits.	**K2**
CO5	Reduce the given complex circuit to simple circuit by applying theorems.	**K2**
CO6	Observe the Frequency response RL & RC Circuits	**K2**

PRE-REQUISITE: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M												
CO2	M	M												
CO3	M	M												
CO4	M	M												
CO5	M	M												
CO6	M	M												

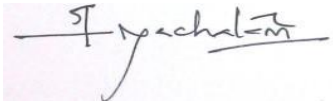
COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

LIST OF EXPERIMENTS

1. Verifications of Ohm's Laws & Kirchhoff's Laws.
2. Verifications of Superposition theorem.
3. Verifications of Thevenin's theorem.
4. Verifications of Norton's theorem.
5. Verifications of Reciprocity theorem.
6. Verifications of Maximum power transfer theorem.
7. Verifications of Mesh analysis.
8. Verifications of Nodal analysis.
9. Phasor relationships in RL & RC circuits.
10. Frequency response RL & RC Circuits
11. Frequency response of series resonance circuit.
12. Frequency response of parallel resonance circuit.

TOTAL: 30 HOURS



U15EE*P*211 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY	L	T	P	C
(For Automobile Engineering & Mechanical Engineering)	0	0	4	2

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Observe the performance characteristics of DC Motors.	**K2**
CO2	Observe the performance characteristics of AC Motors.	**K2**
CO3	Obtain the characteristics of electronic devices.	**K2**
CO4	Obtain the the performance characteristics of single phase transformer.	**K2**
CO5	Observe the output waveforms of half and full wave rectifier.	**K2**
CO6	Verify various logic gates.	**K2**

PRE-REQUISITE: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M												
CO2	M	M												
CO3	M	M												
CO4	M	M												
CO5	M	M												
CO6	M													

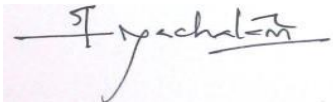
COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

LIST OF EXPERIMENTS

1. Load Test on DC Shunt Motor
2. Load Test on DC Series Motor
3. Speed Control of DC Shunt Motor
4. Load Test on three phase Induction Motor
5. Load Test on single phase Induction Motor
6. Load test on single phase transformer
7. Half wave and full wave rectifier
8. Characteristics of CE transistor configuration
9. Characteristics of PN diode
10. Verification of truth table of logic gates

TOTAL: 30 HOURS



U15EE*P*212 ELECTRICAL AND ELECTRONIC CIRCUITS LABORATORY	L	T	P	C
	0	0	2	1
(Common to Computer Science and IT)				

COURSE OUTCOMES

After successful completion of this course, the students will be able to

CO1	Verify the basic laws of electric circuits.	**K2**
CO2	Observe the frequency response of series and parallel resonant circuits.	**K2**
CO3	Obtain the characteristics of electronic devices.	**K2**
CO4	Obtain the characteristics of comparator and summing Amplifier.	**K2**
CO5	Understand the application of Zener diode as voltage regulator.	**K2**
CO6	Obtain the output waveforms of Integrator and Differentiator using Op-Amp .	**K2**

PRE-REQUISITE: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M												
CO2	M	M												
CO3	M	M												
CO4	M	M												
CO5	M	M												
CO6	M	M												

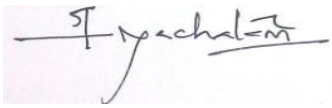
COURSE ASSESSMENT METHODS

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

LIST OF EXPERIMENTS

1. Verification of Kirchhoff's Laws
2. Series & Parallel Resonance
3. Power Measurement in series RLC circuit.
4. Half wave and full wave rectifier
5. Zener diode Regulator
6. Common Emitter Transistor characteristics
7. JFET characteristics
8. Wein Bridge oscillator
9. Comparator, summing Amplifier using Op-Amp
10. Integrator and Differentiator using Op-Amp

TOTAL: 30 HOURS



U15EIT101 ELECTRONIC DEVICES *(For Electronics and Instrumentation Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Describe the characteristics and operation of Diode.
CO2: Illustrate the characteristics and operation of Bipolar Junction transistors.
CO3: Comprehend the operation and characteristics of Field effect transistors.
CO4: Understand the characteristics and application of opto- electronic devices.
CO5: Analyze the working of four layered devices.
CO6: Analyze the characteristics of special diodes.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S		M									
CO2	S		M									
CO3	S		M									
CO4	S		M									
CO5	S		M									
CO6	S		M									

Course Assessment methods:

Direct	Indirect
Internal test I	Course end survey
Internal test II	
Assignment	
Tutorial	
Seminar	
End Semester Exam	

SEMICONDUCTOR DIODE **9 Hours**

Theory of p-n junction – p-n junction as diode – Volt-amp characteristics – Diode resistance – Temperature effect of p-n junction – Transition and diffusion capacitance of p-n diode – Diode switching times.

BI-POLAR TRANSISTOR **9 Hours**

Junction transistor – Transistor construction – Input and output characteristics of CE, CB and CC configurations – Transistor hybrid model for CE configuration – Transistor switching

times – Voltage rating – Power transistors.

FIELD EFFECT TRANSISTORS **9 Hours**

Junction field effect transistor – Pinch off voltage – JFET volt-ampere characteristics – JFET small signal model – MOSFETS and their characteristics – FET as a variable resistor – Unijunction transistor.

OPTO ELECTRONIC DEVICES **9 Hours**

Photo emissivity and photo electric theory – Theory, construction and characteristics: light emitting diodes, liquid crystal cell, seven segment display, photo conductive cell, photodiode, solar cell, photo transistor, opto couplers and laser diode.

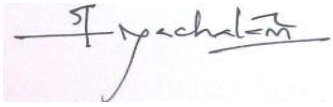
OTHER DEVICES **9 Hours**

Theory, characteristics and application: SCR, TRIAC, PUT, tunnel diode, thermistors, piezo electric devices, zener diode, charge coupled devices, varactor diode and LDR.

TOTAL: 45 HOURS

REFERENCES

1. Jacob Millman, Christos C. Halkias, Electronic Devices and Circuits, Tata McGraw Hill Publishing Ltd., New Delhi, 2003.
2. Salivahanan S. and Suresh Kumar N., Electronic Devices and circuits, Tata McGraw Hill Publishing Ltd., New Delhi, 2003.
3. Godse A.P. and Bakshi U.A., Electronic Devices and Circuits, Technical Pub., 2010.
4. David A. Bell, Electronic Devices and Circuits, Prentice Hall of India (P) Ltd., New Delhi, 2003.



U15EIP201 CIRCUITS AND DEVICES LABORATORY *(For Electronics and Instrumentation Engineering)*	L	T	P	C
	0	0	2	1

COURSE OUTCOMES

After successful completion of this course, the students should be able to

CO1: Verify the characteristics of PN and Zener Diode.
CO2: Analyze the characteristics and operation of BJT under various configurations.
CO3: Comprehend the operation and characteristics of FETs,UJT,SCR and Triac.
CO4: Verify the basic laws of electric circuits.
CO5: Verify the basic theorems in circuits.
CO6: Analyze the characteristics of resonance circuits.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M		M								
CO2	S											
CO3	S	M		M								
CO4	S											
CO5	S	M		M								
CO6	S			M								

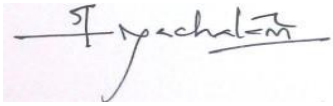
Course Assessment methods:

Direct	Indirect
Lab Exercises	Course Exit Survey
Model Exam	
End Semester Exam	
Observation	

LIST OF EXPERIMENTS

1. Characteristics of semiconductor and Zener diode.
2. Characteristics of transistor under CE configuration and Determination of h parameters
3. Characteristics of transistor under CB configuration and Determination of h parameters
4. Characteristics of JFET.
5. Characteristics of UJT.
6. Verification of ohms law, Kirchhoff's voltage and current laws.
7. Verification of Thevenin's and Norton's Theorems.
8. Verification of Superposition and maximum power transfer theorem.
9. Characteristics of SCR.
10. Characteristics of Triac.
11. Characteristics of MOSFET
12. Characteristics of Resonance circuits.

TOTAL: 30 HOURS



U15FTT101 FIBRE SCIENCE	L	T	P	C
(For Fashion Technology)	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to

CO1	Recognize the essential and desirable propertiesof fibres	K2
CO2	Understand the cultivation of natural fibres	K_2
CO3	Understand the production of Man – made fibres	K_2
CO4	Understand the Properties of natural, man-made fibres	K_2
CO5	Understand the Properties and application of specialty fibres	K_3
CO6	Application of the properties to Identify different natural and man-made fibres	K_3

Pre-requisite: Nil

COs	**CO/PO mapping** (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO1
CO1	S												S	S
CO2	S												S	S
CO3	S												S	S
CO4	S												S	S
CO5	S												S	S
CO6		S											S	

Course Assessment methods

Direct	Indirect
Internal tests	Course Exit Survey
Assignment	
Group Presentation	
End Semester Exam	

INTRODUCTION TO TEXTILE FIBRES **12 Hours**

Definition of various forms of textile fibres - staple fibre, filament, bicomponent fibres. Classification of Natural and Man-made fibres, essential and desirable properties of Fibres- Introduction to fibre linear density and strength units of measurements. Production and cultivation of Natural Fibers: Cotton, Silk, Wool, Flax, Jute -Physical and chemical structure of the above fibres.

MANUFACTURED FIBRES **10 Hours**

Production Sequence of Regenerated Cellulosic fibres: Viscose Rayon, Acetate rayon – High wet modulus fibres: Modal and Lyocel -.Production Sequence of Synthetic Fibers: Polyester, Nylon and Acrylic. Introduction to spin finishes and texturisation.

BASIC FIBRE PROPERTIES **8 Hours**

Physical (Tensile, Moisture, Density), Chemical, Biological, Thermal and Optical Properties of the above Natural, and manufactured fibres

SPECIALITY FIBRES **8 Hours**

Properties and end uses of high tenacity and high modulus fibres, high temperature and flame retardant fibres, elastomeric fibres, PLA fibre, ultra-fine fibres, nano-fibres, metallic fibres – Gold and Silver coated; Super-absorbent fibres for medical and hygiene applications

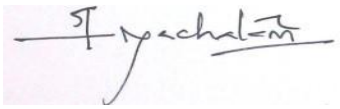
IDENTIFICATION OF TEXTILE FIBERS **7 Hours**

Appearance (Microscopic view, Colour), Solubility, density and Burning tests

TOTAL: 45 HOURS

REFERENCES

1. Mishra S.P., “Fibre Science & Technology”, New Age International Publishers, 2000.
2. Morton, W.E and Hearle, J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993.
3. Muthopadhyay S.K., “Advances in Fibre Science”, The Textile Institute, UK 1992.
4. Collier. B and Tortora.P, “Understanding Textiles”, Edition 6, Prentice Hall, 2001.
5. Gupta V.B., “Textile Fibres: Developments and Innovations”, Vol. 2, Progress in Textiles: Science & Technology, Edited by V.K. Kothari, IAFL Publications, 2000.
6. Corbman B.P., “Textiles: Fibre to Fabric”, McGraw Hill International Edn,1983



U15FTT201 YARN TECHNOLOGY	L	T	P	C
(For Fashion Technology)	3	0	0	3

After successful completion of this course, the students should be able to:

CO1	Describe the process flow in short staple spinning and also explain the different techniques in yarn manufacturing.	K2
CO2	Outline sequentially the processes involved in spinning long staple worsted yarns, and describe the working of various machines used	K2
CO3	Acquire knowledge on post spinning operations and machine used for the process	K1
CO4	Compare the quality characteristics of different yarns.	K4
CO5	Describe the various post spinning processes for spun yarns	K2
CO6	Acquire knowledge on sewing threads and various speciality yarn manufacturing techniques	K2

Pre Requisite:

1. U15FTT101 Fibre science
2. U15FTP101 Fibre analytical Laboratory

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S				M								S	
CO2	S				M								M	
CO3	S												M	
CO4	S													
CO5	S				M								M	
CO6	S												M	

Course Assessment methods

Direct	**Indirect**
Internal tests	**Course Exit Survey**
Assignment	
Group Presentation	
End Semester Exam	

SHORT STAPLE SPINNING SYSTEM (COTTON): **9 Hours**

Ginning- objectives, types, suitability and principle of working. Sequence of process in cotton spinning; Objectives and principles of working of Blow room, Carding, Drawing, Combing, Simplex and Ring spinning- Basic Principles of Rotor spinning, Air jet spinning and DREF spinning systems.

LONG STAPLE SPINNING SYSTEM (WORSTED): 9 Hours

Sequence of process; objectives and principles of working of Scouring, Drying, Oiling, Dyeing, Blending, Carding, Gilling and Combing, Drawing, Roving and Spinning. Solo and Compact spinning systems - objectives and principles of working.

YARN QUALITY AND CHARACTERISTICS: 9 Hours

Acceptable yarn Quality standards of cotton, polyester, polyester / cotton yarns. Yarn faults, imperfections and their identification. Comparison of characteristics of yarns from different spinning systems.

POST SPINNING: 9 Hours

Objectives and principles of working of Cone winding, Cheese winding, Reeling, Assembly winder, Ring doubler and Two for one twister (TFO) - Single yarn and ply yarn characteristics and their applications. Package faults (Cones and Hanks) and identification.

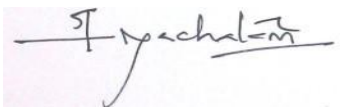
SEWING THREAD AND SPECIALITY YARNS: 9 Hours

Sewing Thread Manufacture**:** Fibres used and their characteristics. Essential quality requirements of sewing threads, Sequence of manufacturing process for sewing threads for cotton, polyester and polyester / cotton blends. Speciality Yarns: Fancy yarns, textured yarns and Melange yarns-Types and classifications. Core spun yarn production technique in ring frame.

TOTAL: 45 HOURS

REFERENCES

1. Klien,W.G,"TheTechnologyofShortStapleSpinning"TheTextileInstitute,, Manhester,1988 (five volumes)
2. Mahendra Gowda, R. V, "New Spinning Systems", NCUTE Publication, Second Edition, 2006
3. Joseph. M. L, "Essentials of Textiles", Hold Rienhart Winston Pub. Co., New York, 1990
4. Oxtoby E, "Spun Yarn Technology", Butterworth and Co., London, 1991.
5. Corbmann, B. P, "Textiles: Fibre to Fabric", McGraw Hill Inc., USA, 1996.
6. Chellamani, K. P, Chattopadhyay. D, "Yarns and Technical Textiles" SITRA publication, First Edition, 1999



U15FT*P*101 Fiber Analytical laboratory	L	T	P	C
(For Fashion Technology)	0	0	2	1

COURSE OUTCOMES

CO1: Ability to identify the given fibre by microscopical examination(K_3)
CO2: Ability to identify the given fibre by solubility Test(K_3)
CO3: Ability to identify the given fibre by Flammability Test(K_3)
CO4: Ability to identify cotton and viscose by alkali swelling Test(K_3)
CO5: Acquire Skill to determine the blend proportion(K_3)
CO6: Acquire Skill to determine the fibre physical properties(K_3)

Pre-requisite:NIL

COs	**CO/PO Mapping** (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	S	S											S	S
CO2	S	S											S	S
CO3	S	S											S	S
CO4	S	S											S	S
CO5	S	S											S	S
CO6	S	S											S	S

Course Assessment methods:

Direct	Indirect
Lab Exercises	Course Exit Survey
Model Exam	
End Semester Exam	
Observation	

LIST OF EXPERIMENTS

1. Study of longitudinal view of natural and synthetic fibres
2. Study of cross-sectional view of natural and synthetic fibres
3. Identification of fibres through flammability tests
4. Identification of fibres through solubility tests
5. Determination of fibre density
6. Study of swelling behaviour of cotton and viscose in alkaline solution
7. Determination of blend proportion of blends
8. Determination of moisture regain of fibres
9. Determination of fineness of fibre
10. Estimation of Trash cotton in cotton fibre
11. Determination of fibre strength and elongation.
12. Determination of fibre length.

Total: 45 Hours

U15ITT101 Foundations Of Information Technology *(For Computer Science Engineering)*	L	T	P	C
	3	0	0	3

Course Outcomes (COs):
After Successful completion of this course, the students will be able to :

CO1	Outline various functional components of computer system	**K2**
CO2	Interpret the computer memory hierarchy and its usages.	**K2**
CO3	Summarize the functions of operating systems, the different types of network topologies & protocols.	**K2**
CO4	Explain the various internet tools and fundamentals of database	**K2**
CO5	Interpret the need of computer security.	**K2**
CO6	Explain the basics of multimedia and the future trends in IT	**K2**

Pre-requisite: Nil

CO/PO Mapping
(S/M/L indicates strength of correlation) S-Strong, M-Medium, L- Less

COs	**Programme Outcomes(POs)**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1		M											M		
CO2		M											M	L	
CO3		M							M						M
CO4		M							M					M	
CO5	M	M							M						M
CO6		M												M	

Course Assessment Methods:

Direct	**Indirect**
• Internal Tests • Assignment • Presentation • End Semester Exam	• Course Exit Survey

BASICS COMPUTER ORGANIZATION AND ARCHITECTURE **9 Hours**

Introduction - Role of IT - Information Technology and Internet
Introduction – CPU - Communication among various units - Instruction Format-Instruction Cycle - Instruction Set - Data Representation in Computers - Coding schemes
Memory Hierarchy - Types of Memory - CPU interaction with memory - Secondary Storage devices and its types

OPERATING SYSTEMS AND DATA COMMUNICATION AND COMPUTER 9 Hours

NETWORKS

Evolution-Types of Operating System –Functions of Operating System-Coordinating machine activities-Handling competition among processes

Introduction - Data Communication -Transmission Media - Modulation-Multiplexing – Switching - Network Topologies -Communication Protocol - Network devices

INTERNET AND INTERNET TOOLS AND DATABASE FUNDAMENTALS 9 Hours

Internet Basics - Applications of Internet - Data over Internet -Web Browser - Email, Search Engines, Instant Messaging

Logical and Physical Data Concepts - Database Management System – Architecture - Database Models - Types of databases - Data warehousing and Mining

BASICS OF SOFTWARE AND COMPUTER SECURITY 9 Hours

Introduction to Software - Categories of Software - Software Piracy - Software Terminologies Security Threats - Malicious Programs – Cryptography - Digital Signature – Firewall - User Identification and Authentication

MULTIMEDIA ESSENTIALS AND E-COMMERCE 9 Hours

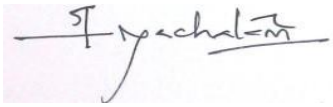
Building blocks - Multimedia system - Applications of multimedia

E-Commerce – EDI - Wireless Application Protocol - Smart Card - IPTV Blogging – RFID -Brain Computer Interface

Total Hours: 45

References:

1. ITL Education solutions limited, Introduction to Information Technology, Pearson Education,2012
2. J. Glenn Brookshear , Computer Science: An Overview,11th edition, Pearson Education,2012
3. V.Rajaraman, Introduction to Information Technology,2nd Edition, PHI Learning Private Limited,2013



U15ITP201 Foundations Of Information Technology and Computer Hardware Laboratory	**L**	**T**	**P**	**C**
(For Information Technology)	**0**	**0**	**4**	**2**

COURSE OUTCOMES :(Cos)

After successful completion of this course, the students should be able to:

CO1: Explain the various computer hardware components and their functionality. [S]

CO2: Illustrate the assembling process of a computer system. [S]

CO3: Explain the local area network and database concepts [S]

CO4: Perform the installation of Windows and Linux operating system. [S]

CO5: Illustrate the usage of text editing tools. [S]

Pre-requisite: Nil

CO/PO Mapping
(S/M/L indicates strength of correlation) S-Strong, M-Medium, L- Less

COs	**Programme Outcomes(POs)**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	M	M								**M**					
CO2	M	M								M					
CO3	M	M								M					
CO4	M	M													
CO5	M	M													
CO6	M	M								S					

Course Assessment methods:

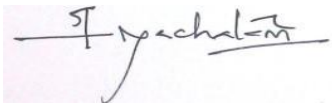
Direct	**Indirect**
Lab Exercises	Course Exit Survey
Model Exam	
End Semester Exam	
Observation	

LIST OF EXPERIMENTS

1. Study and identification of computer components
    a) Motherboard, RAM, ROM, Hard disk etc.,
    b) Ports
2. Study of various data representation methods in computers.
3. Understanding the CMOS configuration
4. Installing system and application software
    a) Single booting
    b) Dual booting
    c) Dual booting with virtualization concept
    d) Role of Operating system for process handling
5. Understanding control panel settings
    a) Attach/Detach of new devices
    b) Installation of device drivers/middleware

6. Assembly and disassembly of PC
7. Connecting computers using LAN
    a) Crimping Cat 5 cable with RJ45
    b) Configuration LAN by ip address and subnet mask.
    c) Understanding of Network Layers, topology, devices and protocols
8. Study and troubleshooting of Hardware
    a) Motherboard
    b) RAM
    c) Processor
    d) Power supply(SMPS)
9. Implementation of Wireless Network
10. Understanding of Linux settings & its configuration
11. Study of Database concepts and its real world importance
12. Exploring Ms Word, PowerPoint and Excel.

TOTAL:45 HOURS



U15ME*T*101/ U15ME*T*201 ENGINEERING GRAPHICS **(Common to all branches of Engineering and Technology)**	**L**	**T**	**P**	**C**
	2	**2**	**0**	**4**

COURSE OUTCOMES:
After successful completion of this course, the students should be able to:

CO1: Construct various plane curves
CO2: Solve problems in projection of points and lines.
CO3: Develop projection of surfaces and solids.
CO4: Solve problems in sections of solids and development of surfaces.
CO5: Apply the concepts of isometric, and perspective projections
CO6: Apply free hand sketching in engineering practice.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		M										
CO2	S	M								M		
CO3	S	M								M		
CO4	S	M								M		
CO5	S	M								M		
CO6	S	M										

Course Assessment methods:

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Group presentation 5. Tutorial 6. End semester exam	Course end survey

PLANE CURVES, PROJECTION OF POINTS AND LINES **12 Hours**

Importance of graphics in design process, visualization, communication, documentation and drafting tools, Construction of curves - ellipse, parabola, and hyperbola by eccentricity method only. Orthographic projection of points.
Projections of straight lines located in first quadrant - determination of true length and true inclinations.

PROJECTIONS OF SURFACES AND SOLIDS **12 Hours**

Projections of plane surfaces - polygonal lamina and circular lamina, located in first quadrant and inclined to one reference plane., Projection of simple solids - prism, pyramid, cylinder and cone. Drawing views when the axis of the solid is inclined to one reference plane.

SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES **12 Hours**

Sectioning of simple solids - prisms, pyramids, cylinder and cone. Obtaining sectional views and true shape when the axis of the solid is vertical and cutting plane inclined to one reference plane. Development of lateral surfaces of truncated prisms, pyramids, cylinders and cones.

PICTORIAL PROJECTIONS **12 Hours**

Isometric projection, Isometric scale, Isometric views of simple solids, truncated prisms, pyramids, cylinders and cones.

Perspective projection of prisms and pyramids when its base resting on the ground by vanishing point method.

FREE-HAND SKETCHING **12 Hours**

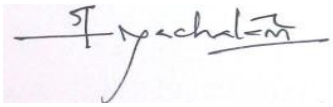
Free hand sketching techniques, sketching of orthographic views from given pictorial views of objects, including free-hand dimensioning.

Sketching pictorial views from given orthographic views.

L: 15Hrs; T: 45Hrs; TOTAL = 60 HOURS

REFERENCES

1. Basant Agrawal and CM Agrawal, Engineering Drawing, McGraw-Hill, New Delhi, First Edition, 2008.
2. Venugopal K. and Prabhu Raja V., Engineering Graphics, New Age International (P) Limited, New Delhi, 2008.
3. Nataraajan K.V., Engineering Drawing and Graphics, Dhanalakshmi Publisher, Chennai, 2005.
4. Warren J. Luzadder and Jon. M. Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., New Delhi, Eleventh Edition, 2005.
5. Gopalakirishna K.R., Engineering Drawing (Vol. I & II), Subhas Publications, 2001.



U15ME*T*202 ENGINEERING MECHANICS (Common to CE, AUE, AE, ME, MCE & TXT)	L	T	P	C
	3	0	0	3

COURSE OUTCOMES:
After successful completion of this course, the students should be able to:

CO1: Construct free body diagrams and estimate the magnitude and direction of the resultant force
CO2: Calculate moment of inertia for various sections.
CO3: Identify the state of the object and estimate magnitude and direction of frictional force.
CO4: Solve problems related to moving objects related to principles of kinematics.
CO5: Solve problems related to moving objects related to principles of kinetics.
CO6: Estimate the velocity after impact and use of kinetics in impact of elastic bodies.

Pre-requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M										
CO2	M	M										
CO3	M	M										
CO4	M	M										
CO5	M	M										
CO6	M	M										

Course Assessment methods:

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Group presentation 5. Tutorial 6. End semester exam	Course end survey

BASICS & STATICS OF PARTICLES **9+3 Hours**

Introduction - Units and Dimensions - Laws of Mechanics Lame's theorem, Parallelogram and triangular Laws of forces – Coplanar Forces - Resolution and Composition of forces – Free body diagram - Equilibrium of a particle.

EQUILIBRIUM OF RIGID BODIES **9+3 Hours**

Moment of a force about point – Varignon s theorem- Moment of a couple-Resolution of force in to force couple system-Resultant of coplanar non concurrent system - Types of supports and their reactions- Requirements of stable equilibrium - Equilibrium of Rigid bodies in two dimensions.

PROPERTIES OF SURFACES AND SOLIDS **9+3 Hours**

First moment of area and the Centroid of sections Rectangle, circle, triangle, T section, I section Angle section and Hollow section. Second and product moments of plane area Rectangle, triangle, circle. T Section, I section, Angle section and Hollow section, Parallel axis theorem and perpendicular axis theorem - Polar moment of inertia.

FRICTION **9+3 Hours**

Frictional force-Law of coloumb friction , simple contact friction, Rolling resistance and Belt friction, Ladder friction, Wedge friction.

DYNAMICS OF PARTICLES **9+3 Hours**

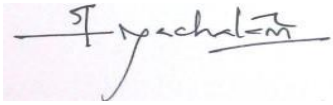
Kinematics: Rectilinear & Curvilinear motion of particles, Displacements Velocity and acceleration.

Kinetics: Newton's law, Work Energy method, Impulse and Momentum, Impact of elastic bodies.

L: 45Hrs; T: 15Hrs; TOTAL = 60 HOURS

REFERENCES

1. Sukumar T.R. and Sridhar S., Engineering Mechanics, Inder Publications, Coimbatore, 2013.
2. Hibbeller, R.C., Engineering Mechanics, Vol. I Statics and Vol. II Dynamics, Pearson Education, Asia Pvt. Ltd., 2000.
3. Ashok Gupta, Interactive Engineering Mechanics Statics A Virtual Tutor, Pearson Education, Asia Pvt. Ltd., New Delhi, 2002.
4. Palanichamy M.S., and Nagan S., Engineering Mechanics (Statics & Dynamics) Tata McGraw Hill, 2001.
5. Irving H. Shames, Engineering Mechanics – Statics and Dynamics, IV Edition, Pearson Education, Asia Pvt. Ltd., 2003.
6. Beer F.P. and Johnson Jr. E.R., Vector Mechanics for Engineers, Vol. I Statics and Vol. II Dynamics, McGraw-Hill International Edition, 2004.
7. Rajasekaran S. and Sankarasubramanian G., Fundamentals of Engineering Mechanics, Vikas Publishing House Pvt. Ltd., Second Edition, 2002.



U15ME*T*204 THERMAL ENGINEERING AND FLUID MECHANICS *(For Electrical and Electronics Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES:(COs)
After successful completion of this course, the students should be able to:

CO1: Explain the working of different power plants and boilers.
CO2: Outline the different primemovers working principles with its applications.
CO3: Explain the working principles of different types of compressors with its construction details.
CO4: Summarize the applications of different refrigirators and air conditioning systems
CO5: Solve problems in fluid properties
CO6: Solve problems in major and minor losses

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M								W	W		
CO2	M								W	W		
CO3	M								W	W		
CO4	M								W	W		
CO5	M								W	W		
CO6	M								W	W		

Course Assessment methods:

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Group presentation 5. Tutorial 6. End semester exam	Course end survey

POWER PLANT ENGINEERING **9 Hours**

Introduction, Classification of Power Plants – Working principles of thermal (coal, gas and diesel), Hydro-electric and Nuclear Power plants – Merits and Demerits – Non-conventional power generation methods- Solar and wind power – Boilers - construction and working principles of Cochran, Babcock and Wilcox boilers

PRIME MOVERS **9 Hours**

Steam turbines-Impulse (Delaval) and reaction turbines – Hydraulic prime movers- Pelton and Kaplan turbines- Internal combustion engines as automobile power plant – Working principles of Petrol and Diesel Engines – Four stroke and two stroke cycles – Comparison of four stroke and two stroke engines.

REFRIGERATION AND AIR CONDITIONING **9 Hours**

Positive displacement compressors – Reciprocating compressors- Rotary positive displacement compressors - Construction and working principles of centrifugal and axial flow compressors. Refrigeration –Vapour compression and vapour absorption refrigeration – Air conditioning- Terminology- Classification as to season of the year - window room air conditioning- thermoelectric cooling-applications.

FLUID PROPERTIES AND FLOW CHARACTERISTICS **9 Hours**

Fluid properties – Viscosity – Surface Tension – Capillarity – Fluid Pressure and Pressure Head – Types of Fluid Flow – Flow Lines – Continuity Equation Euler's equations – Bernoulli's Equation and Applications – Viscous flow and turbulent flow

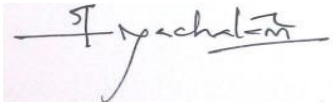
FLUID FLOW APPLICATIONS **9 Hours**

Energy losses due to fluid flow – Flow through Circular Pipes - Flow through pipes in series and parallel – Major and Minor Losses – Hydraulic Grade Line and Total Energy Line – Working principles of centrifugal pumps, reciprocating pumps (single acting and double acting).

TOTAL: 45 HOURS

REFERENCES

1. Domkundwar S., Kotandaraman C.P. and Domkundwar A.V., Thermal Engineering, Dhanpat Rai & Co, 2002.
2. Modi P.N. and Seth S.M., Hydraulic & Fluid Mechanics including Hydraulic Machines, Standard Book, 2006.
3. Venugopal K. and Prabhuraja V., Basic Mechanical Engineeering, Anuradha Publishers, 2005
4. Bansal R.K., Fluid Mechanics & Hydraulic Machines, Lakshmi Publications (P) Ltd., 2006



U15ME*P*101 / U15ME*P*201 ENGINEERING PRACTICES LABORATORY	L	T	P	C
(Common to all branches of Engineering and Technology)	**0**	**0**	**2**	**2**

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Select the various tools and equipments used in the fabrication workshop.
CO2: Develop various joints in carpentry, fitting,
CO3: Make simple shapes using sheet metal tools.
CO4: Demonstrate the use of welding tools to make a butt joint
CO5: Demonstrate and evaluate the parameters of basic electronic components (wires, resistors, capacitors, diodes etc.) and test the components.
CO5: Estimate DC and AC Voltage and currents using appropriate measuring instruments.

Pre-requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M				M							
CO2	M				M							
CO3	M				M							
CO4	M				M							
CO5	M				M							
CO6	M				M							

Course Assessment methods:

Direct	Indirect
1. Lab Excercises 2. Model Exam 3. End semester exam 4. Observation	Course end survey

LIST OF EXPERIMENTS

GROUP – I **21 Hours**

A. CIVIL ENGINEERING

1. Carpentry

- Study of carpentry tools
- Preparation of T joint
- Preparation of dovetail joint

2. Plumbing

- Study of pipeline joints

B. MECHANICAL ENGINEERING

1. Fitting

- Study of fitting tools

- Preparation of L joint
- Preparation of square joint

2. Sheet Metal Working

- Study of sheet metal working tools
- Preparation of cone and tray

3. Welding

- Study of arc welding tools and equipment
- Preparation of butt joint

GROUP - II (ELECTRICAL & ELECTRONICS ENGINEERING)

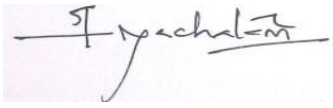
C. ELECTRICAL ENGINEERING PRACTICE **12 Hours**

- Basic household wiring using switches, fuse, indicator-lamp, etc.,
- Preparation of wiring diagrams.
- Stair case light wiring.
- Tube light wiring
- Study of iron-box, fan with regulator, emergency lamp and microwave oven.

D. ELECTRONIC ENGINEERING PRACTICE **12 Hours**

1. Assembling simple electronic component on a small PCB and Testing.
2. Soldering simple electronic circuits and checking continuity.
3. Measurements using digital multimeter.
   - DC and AC voltage measurement
   - DC and AC current measurements.
   - Resistance Measurement.
   - Continuity measurement.
4. Testing of Electronic components
   - Resistors
   - Inductors and capacitors
   - Diodes (resistance in forward bias and reverse bias)
   - Transistors
5. Study of CRO and Function generator
   - Study of Panel Controls
   - Measurement of Amplitude, Frequency, phase difference

TOTAL: 45 HOURS



U15ME*P*202 THERMAL ENGINEERING & FLUID MECHANICS LABORATORY *(For Electrical and Electronics Engineering)*	L	T	P	C
	0	0	2	1

COURSE OUTCOMES:
After successful completion of this course, the students should be able to:

CO1: Conduct performance and heat balance test in IC engines.
CO2: Estimate the heat transfer coefficient by free and forced convenction.
CO3: Conduct performance test on refrigerator
CO4: Examine the pump characteristics
CO5: Conduct test on turbines.
CO6: Estimate the flow rate and frictional losses in the pipe flow.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M								M	M		
CO2	M								M	M		
CO3	M								M	M		
CO4	M								M	M		
CO5	M								M	M		
CO6	M								M	M		

Course Assessment methods:

Direct	Indirect
1. Lab Excercises 2. Model Exam 3. End semester exam 4. Observation	Course end survey

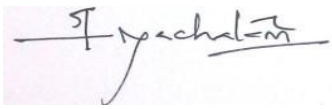
LIST OF EXPERIMENTS
THERMODYNAMICS LAB

1. Valve timing and port timing of IC engines
2. Performance test on refrigerator (COP)
3. Determination of heat transfer coefficient (Free and forced convection)
4. Performance and heat balance evaluation of four stroke diesel engine using electrical dynamometer
5. Test on reciprocating air compressor
6. Study of gas turbine models.

FLUID MECHANICS LABORATORY

1 Flow measurements using venturi meter
2 Test to estimate frictional losses in pipe flow.
3 Test on positive displacement pump for obtaining its characteristics curves and design flow parameters.
4 Test on centrifugal pump for obtaining its characteristics curves and design flow parameters.
5 Test on jet pump for obtaining its characteristics curves and design flow parameters.
6 Test on reaction turbine for obtaining the characteristics curve and to design values of specific speed, discharge, output and efficiency.
7 Test on impulse turbine to obtain its characteristics curves and hydraulic design values.

TOTAL: 45 HOURS



U15MC*T* 201 ELECTRONIC DEVICES AND CIRCUITS *(For Mechatronics Engineering)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Use passive elements and basic theorems to solve the electric circuits.
CO2: Relate the basic semiconductor physics to the characteristics and biasing of low powered electronic devices.
CO3: Design regulators and rectifiers using diodes.
CO4: Design amplifiers for oscillators using transistors.
CO5: Use operational amplifiers to solve simple mathematical operations and build conventional vibrators.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSo1	PS o2
CO1	S												W	S
CO2	S												W	
CO3		S												M
CO4		S												M
CO5		S												M

Course Assessment methods:

Direct	Indirect
Internal test I **Internal test II** **End semester Examination** **Assignment** **Group Presentation**	**Course end survey**

CIRCUIT THEORY **9 Hours**

Network Theorems: Kirchoff's laws – Thevinin's and Norton's theorems - Superposition theorem. Two port networks: Z Parameters – Y parameters h parameters.

THEORY OF SEMICONDUCTOR DEVICES **9 Hours**

PN junction – diode equation (Derivation not required) – forward and reverse bias – Diode dc and ac resistances – Zener diode – Bipolar Junction Transistor – CE, CB and CC configurations– Biasing of a transistor; fixed bias, collector feedback bias, self bias – FET – Common source and drain characteristics of JFET and MOSFET.

APPLICATIONS OF DIODES **9 Hours**

HW and FW rectifiers – Filters with Capacitior and Inductors -Clippers and Clampers – Voltage Multipliers – Voltage regulators – Zener, series and shunt types.

AMPLIFIERS AND OSCILLATORS **9 Hours**

Small signal amplifiers – h parameter model for low frequencies – Feedback amplifiers, cascading amplifiers, differential amplifier – Oscillators – Hartley and Colpitt oscillators.

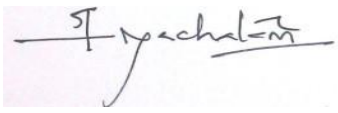
OPERATIONAL AMPLIFIERS **9 Hours**

Ideal characteristics – Inverting, Non-inverting – summer – Comparator, Integrator, differentiator – Schmitt trigger – R.C. Phase shift oscillator, Wein Bridge Oscillator – Multivibrators.

TOTAL: 45 HOURS

REFERENCES:

1. Albert Malvino and Bates J., Electronic Principles, Tata McGraw- Hill Pub. Company Ltd., 7th edition, 2008.
2. Millman J., Halkias C.C. and Satyabrata Jit, Electronic Devices and Circuits, Tata McGraw Hill, New Delhi, 2nd edition, 2008.
3. Thomas L. Floyd, Electronic Devices, Pearson Education Asia, 5th edition, 2001.
4. William Hayt, Kemmerly J. and Durban S.M., Engineering Circuit Analysis, McGraw Hill Education, 2011.
5. Sudhakar, Shyammohan and Palli S., Circuits and Networks: Analysis & Synthesis, Tata Mc Graw Hill, New Delhi, 4th edition, 2010
6. Salivahanan S., Suresh kumar N. and Vallavaraj A., Electronic Devices and Circuits, Tata Mc Graw Hill publishing company, New Delhi, 2nd edition, 2008
7. Roy Chowdhury D. and Jain Shail B., Linear Integrated Circuits, New Age Int. Pub., 4th edition, 2010



U15TX*T*201 TEXTILE FIBERS *(For Textile Technology)*	L	T	P	C
	3	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Outline the fundamentals about textile fibres
CO2: Describe about structure & properties major natural fibres
CO3: Explain the properties of major regenerated fibres
CO4: Illustrate the properties of major synthetic textile fibres
CO5: Demonstrate about the properties of high performance fibres and identification of fibres
CO6: Compare and contrast the properties of major textile fibres.

Pre-requisite: Nil

CO/PO Mapping
(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	M	M										W	M	
CO2	M	M										W	M	
CO3	M	M										W	M	
CO4	M	M											M	
CO5	M	M											M	
CO6	M	M										W	M	

Course Assessment methods

Direct	Indirect
1. Internal test I 2. Internal test II 3. Assignment/ Seminar/ Tutorial 4. End Semester Examination	1. Course end survey

INTRODUCTION **9 Hours**

Definition of polymer, fibre, filament and yarn. Characteristics of fibre forming polymers, molecular weight, orientation and crystallinity of polymer system. Classification of fibres. Essential and desirable properties of fibres. Concept of thermoplastic and thermoset polymers.

NATURAL FIBRES **9 Hours**

Vegetable fibres:

Cotton: Types & classification based on staple length, morphological & chemical structure, physical & chemical properties and applications.

Jute: Chemical constituents, physical & chemical properties and applications.

Animal fibres:

Wool: Types & grading of wool, morphological & chemical structure, physical & chemical properties and applications.

Silk: Types, chemical structure, physical & chemical properties and applications.

REGENERATED FIBRES **9 Hours**

Basic production systems of man-made fibres: Melt, Dry and wet spinning systems. Merits and demerits of man-made fibres; Viscose rayon: Raw material, physical & chemical properties and applications; Concept of high wet modulus fibres: Polynosic-Modal fibre, Lyocell-Tencel fibre. Introduction to acetate & triacetate fibres.

Protein Base: General properties and applications of Milk-Casein fibre, Soyabean-Ardil fibre and Zein-Vicara fibre.

SYNTHETIC FIBRES **9 Hours**

Polyamide: Raw material & Polymer, Physical & chemical properties and applications of Nylon6&Nylon 6, 6; Polyester: Raw material & Polymer, Physical & chemical properties and applications. Polyacrylonitrile fibre: Raw material & Polymer, Physical & chemical properties and applications of acrylic fibre, Introduction to modacrylic fibre; Polyolefin fibres: PP&PE-Raw material & Polymer, physical & chemical properties and applications.

SPECIALTY FIBRES AND FIBRE IDENTIFICATION **9 Hours**

Raw material & Polymer, General properties and applications of para & meta-aramid fibres, Carbon, Glass, PVA, Polyurethane & PVC fibre; Identification of textile fibres by microscopic, solubility, flammability and moisture absorption methods.

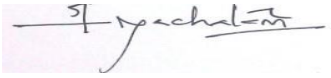
CASE STUDY:

1. Demographic cultivation and production of cotton fibre in India.
2. Production trend of synthetic fibres for last five years.
3. Worldwide production of high performance fibres.

TOTAL: 45 HOURS

REFERENCES

1. Mishra S.P., A Textbook of fibre science and technology, New Age Int., 2000.
2. Gohl E.P.G. and Vilensky L.D., Textile Science, CBS Pub. and Distributors, New Delhi, 2003.
3. Gupta V.B. and Kothari V.K., Manufactured fibre Technology, Chapman and hall, 1st edition, 1997.
4. Vaidya A.A., Production of synthetic fibres, Prentice Hall of India (P) Ltd., New Delhi, 1988.
5. Moncrieff R.W., Man made fibres, Butterworths Ltd., 1975.
6. Gordon Cook J., Hand book of Textile fibres, Vol. 1–Natural fibres, CBS Pub. and Distributors, 2005.
7. Gordon Cook J., Hand book of Textile fibres, Vol. 2–Manmade fibres, CBS Pub. and Distributors, 2005.
8. Sreenivasa murthy H.V., Introduction to Textile Fibres, The Textile Association (India) Pub., Mumbai, 1987.



U15TX*P*201 FIBRE ANALYTICAL LABORATORY *(For Textile Technology)*	L	T	P	C
	0	0	2	1

Course Outcomes:
After successful completion of this course, the students should be able to

CO1: Identify & distinguish the major textile fibres
CO2: Estimate the moisture regain and blend proportion of textile fibres
CO3: Experiment on effect of temperature, time and concentration on fibre degradation
CO4: Estimate the moisture absorption properties of fibres.
CO5: Evaluate the spin finish percentage of manmade fibre.
CO6: Estimate of molecular weight of a synthetic polymer.
Pre-requisites : NIL

CO/PO Mapping
(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	M	M											M	M
CO2	M	M											M	M
CO3	M	M											M	M
CO4	M	M											M	M
CO5	M	M											M	M
CO6	M	M											M	M

Course Assessment methods

Direct	Indirect
4. Observation 5. Lab Exercises 6. Model Practical Examination 7. End Semester Practical Examination	2. Course end survey

List of Experiment(s)
(Experiment beyond the syllabus should be taken)
1. Identification of textile fibres by touch feeling by finger sensory method.
2. Identification of textile fibres by microscopy method.
3. Studying swelling behavior and maturity measurement by caustic soda method of cotton fibres.
4. Analyze and plot the trend of polymer viscosity by the effect of concentration and

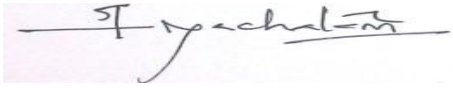
temperature using viscometry/ digital viscometer.

5. Identification of textile fibres by flammability methods.
6. Determination of moisture absorption properties of textile fibres.
7. Identification of textile fibres through solubility test & determination of blend proportion of given samples.
8. Effect of acids on fibres under various factors (Temperature/Time /Concentration).
9. Effect of alkalis on fibres under various factors (Temperature/ Time / Concentration).
10. Effect of oxidizing agents on fibres under various factors (Temperature/ time/Concentration).
11. Determination of molecular weight of polymers using viscometry.
12. Study of spin finish in manufactured fibres through soxhlet extraction

Total: 30 Hours

CREATIVE EVALUATION (any two)

1. Properties of various domestic cotton variety
2. Properties of various imported cotton variety
3. Collection and characteristics analysis of various micro denier fibres
4. Collection and study of modified polyester fibres samples



U15ME*P203* MACHINE DRAWING LABORATORY

L	T	P	C
0	0	3	1

Course outcomes

After successful completion of the course, the student would be able to

CO 1: Apply basic concepts of machine drawing in design and development of machine components.

CO 2: Illustrate the fits and tolerances in machine drawing.

CO 3: Outline the sectional views of fasteners and joints.

CO 4: Develop part and assembly drawings of bearings.

CO 5: Construct part and assembly drawings of valves.

CO 6: Develop the assembly drawing of machine parts.

Pre-requisite:1.U15ME*T*101- Engineering Graphics

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S					M					M		S	
CO2					M			M					S	
CO3	M					M								S
CO4	M							M	S	S	M			S
CO5	S				W				S	S			S	
CO6	S				W	M			S	S	M			S

Course Assessment methods:

Direct	**Indirect**
1. Lab Excercises 2. Model Exam 3. End semester exam 4. Observation	Course end survey

BASIC CONCEPTS OF MACHINE DRAWING

BIS codes for Engineering Drawing – Abbreviations – Conventional representation of standard components –surface finish, symbols and representing surface finish on drawing – sectioning conventions – Representation of welded joints, riveted joints and screw threads.

FITS AND TOLERANCES

Types of fits – types of tolerance – representation of tolerance on drawing – calculation of minimum and maximum clearances and allowances – Geometrical tolerance – form and position tolerances – symbols – indicating geometrical tolerances on drawings.

FASTENERS AND JOINTS

Fasteners – square threaded nut and bolt – Hexagonal headed nut and bolt – cotter joint with sleeve – knuckle joint – Gib and cotter joint.

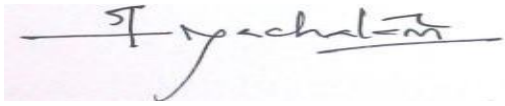
PART AND ASSEMBLY DRAWING OF BEARING AND VALVES

Plummer block– stop valve – Rams bottom safety valve.

ASSEMBLY OF MACHINE PARTS

Screw jack – Tailstock – Tool head of shaper – Machine vice – connecting rod.

Practical :45 Hrs **Total:45Hrs**



U15GHP101 PERSONAL VALUES -1	L	T	P	C
(Common to all branches of Engineering and Technology)	1	0	0	1

Course outcomes:

After successful completion of the course, the student would be able to:

CO 1 : The student on taking the course shall broadly understand what is Human Excellence and act accordingly

CO 2 : The student shall acquire the ability to introspect about the purpose of his/her life and carry his/her life accordingly

CO 3 : The student shall understand the importance of nurturing the body, mind and soul

CO 4: The student shall understand the impact of his/her thoughts on his/her life

CO 5 : The student shall learn basic contemplative practices so that he/she can practice at his/her leisure

Pre-requisite: NIL

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						W	M		W			S		
CO2						M		W				M		
CO3						W	S					M		
CO4						M	M		M			S		
CO5												M		

Course Assessment methods:

Direct	Indirect
1. Individual Assignment 2. Group Assignment 3. Presentation 4. Surprise Test 5. Practical Assessment 6. End Semester Assessment	1. Attendance and Behavioural Assessment

Introduction to Human Excellence 2 Periods

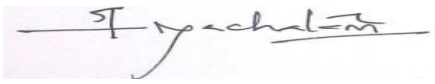
Body, Mind & Soul - Functional & Operational relationship 2 Periods

Analysis of Thought & Introspection	4 Periods
Learning Style Inventory & Neuro Linguistic Programming	2 Periods
Introduction to Contemplative Practices	6 Periods

Total Periods: 15

References Books:

1. Vethathiri's Maharishi's, ***"Yoga for Modern Age"***, The World Community Service Centre, Vedhathiri Publications 2009.
2. Swami Vivekananda, "***The Man Making Message"*** The Ramakrishna Tapovanam, Published 1972.
3. Vethathiri's Maharishi's, ***"Manavalakalai part 1,2&3"*** 1^{1th} edition, The World Community Service Centre, Vethathiri Publications,2005.
4. Laxmana Sharma, **". Who am I?"** Sri Ramanasramam Tiruvannamalai 606 603
5. Brian L Weiss, **"*Many Lives, Many Masters*"** 1st edition Published 1988 by Touchstone.
6. Sankar, **"Monk as a Man"** Penguin Books, Published 2011.
7. Norman Vincent Peale, **"Power of Positive Thinking"** Publisher Vermilion Books, 1993.



U15GH*P*201/ PERSONAL VALUES -2	L	T	P	C
(Common to all branches of Engineering and Technology)	**1**	**0**	**0**	**1**

Course outcomes:

After successful completion of the course, the student would be able to:

CO 1 : The student shall broadly understand how negative emotions affects his/her life and keep away from them
CO 2 : The student shall be aware of the self and his/her responsibilities to himself and society at large
CO 3: The student shall understand the importance of conscious living
CO 4 : The student shall be able to better able to life by listening to inner voice
CO 5 : The student shall learn advanced contemplative practices so that he/she can practice at his/her leisure

Pre-requisite: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						S	W	W				M		
CO2						M	M	M	W			S		
CO3						W	W	W				M		
CO4								W				M		
CO5						M	W					S		

Course Assessment methods:

Direct	Indirect
1.Individual Assignment 2.Group Assignment 3.Presentation 4.Surprise Test 5.Practical Assessment 6.End Semester Assessment	1.Attendance and Behavioural Assessment

Moralization of desire 1 Periods

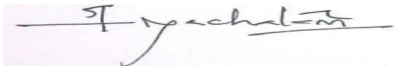
Neutralization of Anger 1 Periods

Heart Centered Living	3 Periods
Transactional Analysis	2 Periods
Self Awareness Methods	3 Periods
Advanced Contemplative Practices	5 Periods

Total Periods: 15

References Books:

1. Vethathiri's Maharishi's, ***"Yoga for Modern Age"***, The World Community Service Centre, Vedhathiri Publications 2009.
2. Swami Vivekananda, "***The Man Making Message"*** The Ramakrishna Tapovanam, Published 1972.
3. Vethathiri's Maharishi's, ***"Manavalakalai part 1,2&3"*** 1th edition, The World Community Service Centre, Vethathiri Publications,2005.
4. Devdas Medon, **"Stop Sleep Walking in Life"** Yogi Impressions Books, Published 2004.
5. Hermann Hesse, **"Siddhartha"** New Directions, Published 1922.



U15SIP101/ 201 – SOCIAL IMMERSION PROJECT

(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	4	2

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Achieve the desirable awareness regarding significant social problems and identify the needs to provide a possible and innovative solution.

CO2: Acquire and demonstrate effective professional skills and qualities to deal with social issues through innovative leadership and sustainable services / approaches.

CO3: Provide students with a rich practical and socially oriented team work approach.

CO4:Improve the quality of life of individuals and communities in proposed localities.

CO5: Enhance technical knowledge in addressing the needs of a community problem.

CO6: Understand the social reality of a community and work for the essential changes to be made.

Pre-requisite: NIL

CO/PO Mapping

(S/M/W indicates strength of correlation)S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO1			S			S	S							
CO2			M			S	M	M						
CO3			S			S	S		S					
CO4			S			S	S							
CO5			M			S	M							
CO6			S			S	S							

Course Assessment methods:

Direct	Indirect
1. Impact study 2. Village Visit & Observation Skill 3. Workshop participation & 4. General report preparation 5. Assignment / Team Presentation 6. End Semester Examination	1. Course end survey

Class Room Activities	Social issues / Projects (Major Area)

• Developing social consciousness • Theoretical reading (Based on the project / general) • Inculcating Social immersion and Leadership • Social immersion and Engineering implementation • Formation of groups • Study on the society and identifying problems • Analysis of problems on issue based • Multiple approaches towards the problem&Selection for addressing. • Addressing a theoretical social problem. • Providing multiple solution for the problem • Knowledge on budgeting andfund raising. • Approaching agencies related to problems. Partnering with agencies • Presentation Skills and Movie Maker • Report preparation • Identification of causes and effects of the social issue	• Water / Sanitation • and Hygiene • Waste Management • Women Empowerment • Community health • Child health/ Poverty/Education/others • Energy management • Environment Management • Adult Education • Youth Empowerment • Green Industry Given above are the broad areas of projects recommended. Projects may vary to individuals/ groups/ class/ branch.

TOTAL:45Hours

Method of End Semester Practical Evaluation :Video: 40 marks Viva voce: 60 marks

References:

1. Nicholls Alex and Murdock Alex, Social Innovation Blurring Boundaries to reconfigure markets, Palgrave Macmillan., New York, 2012. :

2. Osburg Thomas and Schmidpeter Rene`, Social Innovation Solutions for sustainable Future. Springer, Germany 2013.