SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

ELECTRICAL ENGINEERING

Syllabus Structure for

S.E. (Electrical Engineering) w.e.f. Academic Year 2017-18

T.E. (Electrical Engineering) w.e.f. Academic Year 2018-19

B.E. (Electrical Engineering) w.e.f. Academic Year 2019-20

Choice Based Credit System

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY
Electrical Engineering

PROGRAMME: BACHELOR OF ELECTRICAL ENGINEERING PROGRAMME OBJECTIVES

A. Program Educational Objectives

1. To develop an ability to understand the basic concepts of fundamental laws in electrical circuits and their applications in the Working principle of electrical apparatus.
2. To introduce students about the power generation, transmission, distribution and utilization of electrical energy and their controls.
3. To develop an application oriented understanding amongst the students about electrical energy utilization.
4. To develop an analytical skills amongst the students about electrical systems used in power sector and various industries.

B PROGRAMME OUTCOMES

Students attain the following outcomes:-

a. an ability to apply knowledge of mathematics, science, and engineering
b. an ability to design and conduct experiments, as well as to analyze and interpret data,
c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. an ability to function on multidisciplinary teams
e. an ability to identify, formulate, and solve engineering problems
f. an understanding of professional and ethical responsibility
g. an ability to communicate effectively
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. a recognition of the need for, and an ability to engage in life-long learning,
j. a knowledge of contemporary issues
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Engineering & Technology
S.E. (Electrical Engineering)

Choice Based Credit System Syllabus Structure of S. E. Electrical Engineering W.E.F. 2017-2018 **Semester I**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EL211	Engineering Mathematics-III	4	1	-	5	30	70	25	125
EL212	Electrical Machines-I	4	-	-	4	30	70	-	100
EL213	Electrical Measurement and Instrumentation	3	-	-	3	30	70	-	100
EL214	Power Plant Engineering	3	1	-	4	30	70	25	125
EL215	Electronic Devices and Circuits	4	-	-	4	30	70	--	100
EL216	Object Oriented Programming with C++	2	-	-	2	-	--	--	--
Sub Total		20	2	-	22	150	350	50	550
ENV21	Environmental Science	1	-	-	-	-	-	-	-
Laboratory Course Name									
							ESE		
							POE	OE	
EL212	Electrical Machines-I	-	-	2	1	-	50	-	25	75
EL213	Electrical Measurement and Instrumentation	-	-	2	1	-	50	-	25	75
EL215	Electronic Devices and Circuits	-	-	2	1	-		-	25	25
EL216	Object Oriented Programming with C++	-	-	2	1	-	50	-	25	75
Sub Total		-	-	8	4	-	150		100	250
Grand Total		**20**	**2**	**8**	**26**	**150**	**500**		**150**	**800**

- *Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)*

SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Engineering & Technology
S.E. (Electrical Engineering)

Choice Based Credit System Structure of S.E. Electrical Engineering W.E.F. 2017-2018 **Semester II**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EL221	Numerical Methods and Linear Algebra	4	1		5	30	70	25	125
EL222	Electrical Machines-II	4	-	-	4	30	70	-	100
EL223	Elements of Power System	4		-	4	30	70	-	100
EL224	Analog and Digital Integrated Circuits	4		-	4	30	70	-	100
EL225	Network Analysis	4	1	-	5	30	70	25	125
Sub Total		20	2	-	22	150	350	50	550
ENV 22	**Environmental Science**	1	-	-	-	-	-	-	1
Laboratory Course Name									
							ESE		
							POE	OE	
EL222	Electrical Machines-II	-	-	2	1	-	50	-	25	75
EL223	Elements of Power System	-	-	2	1	-	_	25	25	50
EL224	Analog and Digital Integrated Circuits	-	-	2	1	-	50	-	25	75
EL226	Programming and Simulation by Using MATLAB	-	-	2	1	-	-	-	50	50
Sub Total		-	-	8	4	-	125		125	250
Grand Total		**20**	2	**08**	**26**	**150**	**475**		**175**	**800**

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Note –

- Batch size for the SE practical /tutorial shall be of 20 students. On forming the batches, if the strength of remaining student exceeds 9, then a new batch shall be formed.

- Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & the report shall be submitted and evaluated in B.E. Part-I

- Appropriate Elective I & II Subjects may be added when required.

- Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group

- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology

- Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department

- Project group for T.E.(Electrical) Part II Mini Project shall not be of more than **three** student

- Project group for B.E. (Electrical) Part I and Part II shall not be of more than **three** students.

- ICA shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable

SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Engineering & Technology
T.E. (Electrical Engineering)

Choice Based Credit System Syllabus Structure of T. E. Electrical Engineering W.E.F. 2018-2019 **Semester I**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EL 311	Power System Analysis	4	-	-	4	30	70	-	100
EL 312	Control System-I	4	-	-	4	30	70	-	100
EL 313	Microprocessor and Microcontroller	4	-	-	4	30	70	-	100
EL 314	Engineering Economics and Management	4	1	-	5	30	70	25	125
EL 315	Electromagnetic Engineering	4	1	-	5	30	70	25	125
SLH31	Self-Learning Module-I			-	2		50		50
Sub Total		20	2	-	24	150	400	50	600
Laboratory Course Name									
							ESE		
							POE	OE	
EL311	Power System Analysis	-	-	2	1	-	-	25	25	50
EL312	Control System-I	-	-	2	1	-	-	25	25	50
EL313	Microprocessor and Microcontroller	-	-	2	1	-	50	-	25	75
EL316	Electrical Workshop	-	-	2	1	-	-	-	25	25
Sub Total		-	-	8	4	-	100		100	200
Grand Total		**20**	**2**	**8**	**28**	**150**	**500**		**150**	**800**

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SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Engineering & Technology

T.E. (Electrical Engineering)

Choice Based Credit System Structure of T.E. Electrical Engineering W.E.F. 2018-2019 ***Semester II***

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 321	Electrical Utilisation	4	1	-	5	30	70	25	125
EL 322	Power Electronics	4	-	-	4	30	70	-	100
EL 323	Control System-II	4	-	-	4	30	70	-	100
EL 324	Signals and Systems	4	1	-	5	30	70	25	125
EL 325	Electrical Machine Design	4	-	-	4	30	70	-	100
EL 326	Self-Learning Module-II	-	-	-	2	--	50	-	50
Sub Total		20	2	-	24	150	400	50	600
Laboratory Course Name									
							ESE		
							POE	OE	
EL 322	Power Electronics	-	-	2	1	-	50	-	25	75
EL 323	Control System-II	-	-	2	1	-	-	-	25	25
EL 325	Electrical Machine Design	-	-	2	1	-	--	25	25	50
EL 327	Mini Hardware Project	-	-	2	1	-		25	25	50
Sub Total		-	-	8	4	-	100		100	200
Grand Total		**20**	**2**	**8**	**28**	**150**	**500**		**150**	**800**

- *Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)*

Note –

- Batch size for the TE practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.

- Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & the report shall be submitted and evaluated in B.E. Part-I

- Appropriate Elective I & II Subjects may be added when required.

- Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group

- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology

- Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department

- Project group for T.E.(Electical) Part II Mini Project shall not be of more than **three** student

- Project group for B.E.(Electrical) Part I and Part II shall not be of more than **three** student.

- ICA shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable

SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Engineering & Technology
B.E. (Electrical Engineering)

Choice Based Credit System Syllabus Structure of B. E. Electrical Engineering W.E.F. 2019-2020 **Semester I**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EL411	Industrial Drives Control	4	-	-	4	30	70	-	100
EL412	Switchgear and Protection	4	-	-	4	30	70	-	100
EL413	Energy Audit and Management	3	-	-	3	30	70	-	100
EL414	Extra High Voltage AC Transmission System	3	-	-	3	30	70	-	100
EL415A- To EL415D	Elective-I	3	1	-	4	30	70	25	125
Sub Total		17	1	-	18	150	350	25	525
Laboratory Course Name									
							ESE		
							POE	OE	
EL411	Industrial Drives Control	-	-	2	1	-	50		25	75
EL412	Switchgear and Protection	-	-	2	1	-	-	25	25	50
EL413	Energy Audit and Management	-	-	2	1	-	-	25	25	50
EL414	Extra High Voltage AC Transmission System	-	-	2	1	-	-	-	25	25
EL416	Vocational Training	-	-	-	-	-	-	-	25	25
EL417	Seminar and Project Phase-I	-	-	4	2	-	-	-	50	50
Sub Total		-	-	12	6	-	100		175	275
Grand Total		**17**	**1**	**12**	**24**	**150**	**450**		**200**	**800**

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SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Engineering & Technology
B.E. (Electrical Engineering)

Choice Based Credit System Structure of B.E. Electrical Engineering W.E.F. 2019-2020 **Semester II**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE		ICA	Total
EL421	Flexible AC Transmission System and HVDC	4	-	-	4	30	70		-	100
EL422	Power System and Operation Control	4	-	-	4	30	70		-	100
EL423	Electrical Installation and Estimation	4	-	-	4	30	70		-	100
EL424A-To-EL424D	Elective-II	4	-	-	4	30	70		-	100
Sub Total		16	-	-	16	120	280		-	400
Laboratory Course Name										
							ESE			
							POE	OE		
EL421	Flexible AC Transmission System and HVDC	-	-	2	1	-	-	-	25	25
EL422	Power System and Operation Control	-	-	2	1	-	-	50	25	75
EL423	Electrical Installation and Estimation	-	-	2	1	-	-	50	25	75
EL424A-To-EL424D	Elective-II	-	-	2	1	-	-	-	25	25
EL425	Seminar and Project Phase-II	-		6	3	-	100	-	100	200
Sub Total		-	-	14	7	-	200		200	400
Grand Total		**16**		**14**	**23**	**120**	**480**		**200**	**800**

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Elective-I:		Elective-II:	
Course Code	Course	Course Code	Course
EL415A	Programmable Logic Control and SCADA	***EL424A***	Power System Planning
EL415B	Digital Signal Processing	***EL424B***	Power Quality
EL415C	Renewable Energy Sources	***EL424C***	Power System Dynamics
EL415D	Smart Grid Technology	***EL424D***	High Voltage Engineering

Note –

- Batch size for the BE practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
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