

Walchand College of Engineering


(Government Aided Autonomous Institute)

Vishrambag, Sangli. 416415



Course Contents for S. Y. M. Tech. (Power System Engineering) Semester III & IV 2023-24


PG Coordinator


HOD (Electrical Engg.)

Semester- III

Professional Core (Theory)

Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS601
Course Name	Legal, Financial aspects of industrial project
Desired Requisites:	--

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

Course Objectives

1	To identify and analyze the relevant legal issues involved in Industrial Project and criminal matters affecting business.
2	To understand theories of value, risk and return, capital investment decisions, wages and working hours, insurance schemes, labour laws.
3	To become familiar with intellectual property in cyber space and different cyber laws.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	To understand the terms involved and laws applicable for an Industrial Project.	II	Understanding
CO2	To get acquainted with investments, taxes and employee schemes.	III	Applying
CO3	To be familiar with Cyber laws applicable for cyber-crimes.	III	Applying

Module	Module Contents	Hours
I	Economic Decision Making Introduction, Mathematics of Time Value of Money: Compound Interest, Cash Flow Diagram, Uniform Annual Series, Irregular Cash Flows, Cost Comparison: Present Worth Analysis, Annual Cost Analysis, Capitalized Cost Analysis	4
II	Taxes and Profitability Taxes, Profitability of Investments: Rate of Return, Payback Period, Net Present Worth, Internal Rate of Return, Inflation, Sensitivity and Break-Even Analysis, Uncertainty in Economic Analysis	4
III	Factories Act, 1948 Health, Safety, Provisions relating to Hazardous Processes, Welfare, Working Hours of Adults, Employment of young 4 Course Contents for M. Tech Programme, Department of Electrical Engineering, AY 2021-22 persons, Annual Leave with wages. The Employees Provident Fund and Miscellaneous Provisions Act, 1952.	4
IV	Constitution and Labour Laws labour laws, Equality before law and its application in Labour Laws, Equal pay for equal work; and Article-16 and reservation policies, Articles 19, 21, 23 and 24 and its implications.	4
V	Intellectual Property in Cyber Space Computer Software and Copyright Law, Software Licences, Computer Databases and the law, Domain Names and the law, Trademark issues in cyberspace	4

VI	Cyber Crimes and Cyber Laws Cyber Crimes, Malware, Computer Source Code, Digital Signature, Information Technology Laws, IT ACT & how to prevent yourself from being a victim of Cyber Crime.	4
Textbooks		
1	P.L. Mehta, Managerial Economics Analysis, Problems and cases, S. Chand & Co.Ltd., 2001	
2	Dieter G.E., Engineering Design, McGraw-Hill Education 5 th edition, 2012	
3	N. Godbole, S. Belapure, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley India Pvt. Ltd.	
4	Canter, L. W, Environmental Impact Assessment, McGraw-Hill, 2 nd Edition, 1997.	
5	"Environmental Auditing", Published by CPCB, Govt. of India Publication, New Delhi.	
References		
1	Peterson and Lewis: Managerial Economics, 4 th Ed., Prentice Hall , 2004	
2	R. Drefuss, J. Pila; The Oxford Handbook of Intellectual Property Law, Oxford University Press, 2018.	
3	Adv. P. Mali, Cyber Law & Cyber Crimes Simplified, Cyber Infomedia, 2017.	
4	No.29 of 1986, [23/5/1986] - The Environment (Protection) Act, 1986, amended 1991	
5	G.S.R.830(E), [24/11/2011] - The Water (Prevention and Control of Pollution) Amendment Rules, 2011.	
6	No.14 of 1981, [29/3/1981] - The Air (Prevention and Control of Pollution) Act 1981, amended 1987	
Useful Links		
1	-	

CO-PO Mapping						
Programme Outcomes (PO)						
	1	2	3	4	5	6
CO1				2		
CO2		2			1	
CO3				2		

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

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

Professional Core (Laboratory) Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS645
Course Name	Dissertation Phase I
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme

Practical	6 Hrs/ Week
Interaction	

Examination Scheme (Marks)

LA1	
100	

Credits: 3

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyze
CO2	Design and develop the solution for complex engineering problem	V	Evaluate
CO3	Create the new knowledge in the specialized field	VI	Create

List of Experiments / Lab Activities/Topics

ISE for dissertation phase 1 is based on the efforts by the student for synopsis preparation. It shall be evaluated using the parameters extent of literature review, scope defined, objectives, and fundamental concepts, quality of presentation, and interaction during presentation, effort/work done, quality of report and interaction with guide.

Textbooks

1	As per the research topic
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References

1	National and International Journals
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Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping

Programme Outcomes (PO)

	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS646
Course Name	Dissertation Phase II
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme

Practical	6 Hrs/ Week
Interaction	

Examination Scheme (Marks)

LA2	
100	

Credits: 3

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyze
CO2	Design and develop the solution for complex engineering problem	V	Evaluate
CO3	Create the new knowledge in the specialized field	VI	Create

List of Experiments / Lab Activities/Topics

ISE for dissertation phase 2 is based on the progress made during the semester for the objectives defined in the synopsis and the report submitted by the students. It shall be evaluated through progress seminar(s) at the end of the semester. The parameters for evaluation include extent of work done, results and discussion/publication efforts, quality of presentation, quality of report, interaction during presentation and interaction with guide. ISE shall be conducted by Dissertation Evaluation Committee (DEC).

Textbooks

1	As per the research topic
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References

1	National and International Journals
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Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS647
Course Name	Dissertation Phase III
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme

Practical	8 Hrs/ Week
Interaction	

Examination Scheme (Marks)

ESE	
100	

Credits: 4

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyze
CO2	Design and develop the solution for complex engineering problem	V	Evaluate
CO3	Create the new knowledge in the specialized field	VI	Create

List of Experiments / Lab Activities/Topics

ESE for dissertation phase 3 shall be conducted at the end of semester by a duly constituted examination panel composed of Chairman, internal examiner (guide) and external examiner.

Textbooks

1	As per the research topic
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References

1	National and International Journals
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Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping						
Programme Outcomes (PO)						
	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

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Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)					
AY 2023-24					
Course Information					
Programme	M. Tech. (Power System Engineering)				
Class, Semester	Second Year M. Tech., Sem I				
Course Code	6PS651				
Course Name	Industry Orientation Course				
Desired Requisites:	--				
Teaching Scheme		Examination Scheme (Marks)			
Practical		LA1	LA2	Lab ESE	Total
Interaction	1 Hrs/ Week	30	30	40	100
Credits: 1					
Course Objectives					
1	To provide a hands on experience of software in solving complex electrical engineering problems.				
2	To enhance the employability of electrical control engineering student.				
Course Outcomes (CO) with Bloom's Taxonomy Level					
At the end of the course, the students will be able to,					
CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description		
CO1	Use of the software related to design of electrical system effectively.	V	Evaluate		
CO2	Develop the solution for electrical engineering problem using software.	VI	Create		
CO3	Explain the working of research and development department.	II	Understand		
List of Experiments / Lab Activities/Topics					
This course is based on computers as a tool to design and analyse the electrical system. In the modern day work environment, Electrical Engineer should be able to simulate and solve complex problems on computers. Electrical Engineer must be highly computer literate. The engineer with strong fundamentals in Control Engineering and computer software proficiency is highly in demand from industry. Employability of the student can be enhanced by providing software training of Analysis and simulation software in electrical engineering.					
Textbooks					
1	Suitable books based on the software selected.				
References					
1	Suitable books based on the contents of software selected				
Useful Links					
1	As per the need of the software training				

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1		1				
CO2			2			2
CO3				3		

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

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

Lab

Professional Elective (Theory) Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS611
Course Name	Professional Elective 4: Power System Dynamics
Desired Requisites:	Power system

Teaching Scheme

Examination Scheme (Marks)

Lecture	3Hrs/week	MSE	ISE	ESE	Total
Tutorial	-	30	20	50	100

Credits: 3

Course Objectives

- 1 To introduce the concept of small signal and transient stability analysis of power systems.
- 2 To provide solutions to SSR problem and voltage stability problem.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Distinguish various categories of system stability.	I	Understanding
CO2	Analyse models, use analytical tools to decide upon the stability of various types.	IV	Analyzing
CO3	Recommend various methods to improve various type of stabilities of power system.	V	Evaluating

Module	Module Contents	Hours
I	Introduction to small signal stability of power system Small Signal Stability analysis of single machine connected to infinite bus. Step by step model development of single machine connected to infinite bus.	4
II	Improvement of small signal stability Power system stabilizer, Simulation of Power System Dynamic response using power system stabilizer in the small signal stability model of single machine connected to infinite bus.	6

	Large scale power systems	
III	Dynamic equalization of large scale system systems. Step by step reduction of large scale model to a smaller model for analysis purpose.	6
	Transient stability analysis	
IV	Introduction to Direct method of transient stability analysis by roller ball analogy. Development of model using energy concept, and analysis of model for transient stability.	4
	Sub synchronous resonance	
V	Introduction to Sub-Synchronous oscillation & sub-synchronous resonance. Effect of series compensation of transmission line. Induction generator effect, stability of hydro turbines.	4
	Voltage stability	
VI	Reactive power compensation and Voltage stability. Development of model of power system for voltage stability. Sensitivity analysis and QV modal analysis for voltage stability. Methods of improving stability.	4
Text Books		
1	P. Kundur, "Power System, Stability and Control", Tata McGraw Hill, New Delhi, 1994.	
References		
1	K. R. Padiyar, "Power System Dynamic, Stability & Control", B.S. Publication, 2008.	
Useful Links		
1		

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1			3			
CO2				3		
CO3						2

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6PS612
Course Name	Professional Elective 4: HVDC Transmission
Desired Requisites:	Power Electronics , Power System Engineering

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

Course Objectives

1	It is aimed to provide detailed knowledge of controlled converters for HVDC transmission system.
2	It demonstrates use of different control and protection methods in HVDC transmission system.
3	It provides recent trends in HVDC transmission system.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Investigate appropriate control and protection schemes for HVDC transmission system.	III	Applying
CO2	Interpret performance of converter for HVDC transmission systems.	IV	Analyzing
CO3	Appraise recent trends in HVDC transmission systems.	V	Evaluating

Module	Module Contents	Hours
I	Introduction to HVDC Transmission Technology Comparison of EHVAC and HVDC Transmission, types of HVDC transmission systems, components of HVDC transmission system	6
II	Analysis of HVDC converter Different modes of valve operation, o/p voltage waveforms and D C voltage in rectification, and inverter operation, valve voltages, equivalent electrical circuit, converter charts.	6
III	HVDCTS control features Control modes, control schemes and their comparisons, energization and de-energization of bridges, starting and stopping of D C link.	6
IV	Faults and over-voltages Converter mal-operations, commutation failure, over-voltages in HVDCTS, protection of converters, D C reactor and damper circuits.	6

V	Harmonics and their suppression in HVDCTS Harmonic analysis, filter design, minimum cost tuned A C filters, reactive power requirements.	6
VI	Multi terminal HVDCTS Series and parallel MTDCTS, their control, introduction to HVDC light, recent trends in HVDCTS.	6
Text Books		
1	E.W. Kimbark, " <i>Direct Current Transmission</i> ", Win publisher.	
2	K.R. Padiyar, " <i>H.V.D.C. Power Transmission</i> ", Wiley Eastern New Delhi.	
References		
1	J. Arrillaga, " <i>H.V.D.C. Transmission</i> ", Peter limited.	
2	S.Rao, " <i>E.H.V.A.C. & H.V.D.C. Transmission</i> ", Khanna Publishers.	
Useful Links		
1		

CO-PO Mapping						
Programme Outcomes (PO)						
	PO1	PO2	PO3	PO4	PO5	PO6
CO1				3		
CO2			3			
CO3						2

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

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

AICTE Mandatory Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem I
Course Code	6IC601
Course Name	Value Education
Desired Requisites:	--

Teaching Scheme		Examination Scheme (Marks)			
Lecture	2 Hrs/week	MSE	ISE	ESE	Total
Tutorial	--	30	20	50	100
Credits: 0					

Course Objectives

- 1 To impart knowledge on value of education and self- development.
- 2 To imbibe good values in students.
- 3 To highlight importance of character.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Explain value of education and self- development.	II	Understanding
CO2	Summarize importance of good character, and Behaviour development.	IV	Evaluating

Module	Module Contents	Hours
I	Values and self-development –Social values and individual attitudes. Work ethics, Indian vision of humanism, Moral and non- moral valuation. Standards and principles, Value judgments.	6
II	Importance of cultivation of values, Sense of duty. Devotion, Self-reliance, confidence, Concentration. Truthfulness, Cleanliness, Honesty, Humanity, Power of faith, National Unity, Patriotism, Love for nature, Discipline.	6
III	Personality and Behaviour Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline, Punctuality, Love and Kindness, Avoid fault Thinking, Free from anger, Dignity of labour universal brotherhood and religious tolerance, True friendship, Happiness vs. suffering, love for truth, Aware of self-destructive habits, Association and Cooperation, Doing best for saving nature	7
IV	Character and Competence –Holy books vs. Blind faith, Self-management and Good health, science of reincarnation, Equality, Nonviolence, Humility, Role of Women, All religions and same message, Mind your Mind, Self-control. Honesty, Studying effectively	7

Textbooks

1	Chakroborty, S.K. "Values and Ethics for organizations Theory and practice", Oxford University Press, New Delhi
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References

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Useful Links

Course Contents for M. Tech Programme, Department of Electrical Engineering, AY2023-24

1	https://nimsuniversity.org/wp-content/uploads/2018/02/Value-Education-Human-Rights-and-Legislative-Procedures.pdf
2	http://cbseacademic.nic.in/web_material/ValueEdu/Value%20Education%20Kits.pdf
3	https://www.verywellmind.com/personality-development-2795425
4	https://trudreadz.com/2019/09/10/blind-faith-in-religion-destroys-our-ability-to-critically-think-for-ourselves/

CO-PO Mapping

Programme Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2				1	2
CO2	1		1			2

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

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Semester- IV

Professional Core (Lab)

Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem II
Course Code	6PS691
Course Name	Dissertation Phase IV
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme		Examination Scheme (Marks)	
Practical	10 Hrs/ Week	LA1	
Interaction		100	
Credits: 5			

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyzing
CO2	Design and develop the solution for complex engineering problem	V	Evaluating
CO3	Create the new knowledge in the specialized field	VI	Creating

List of Experiments / Lab Activities/Topics

ISE for dissertation phase 4 is based on the efforts by the student for synopsis preparation. It shall be evaluated using the parameters extent of literature review, scope defined, objectives, and fundamental concepts, quality of presentation, and interaction during presentation, effort/work done, quality of report and interaction with guide.

Textbooks

1	As per the research topic
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References

1	National and International Journals
---	-------------------------------------

Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

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Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem II
Course Code	6PS692
Course Name	Dissertation Phase V
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme		Examination Scheme (Marks)	
Practical	10 Hrs/ Week	LA2	
Interaction		100	
Credits: 5			

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyzing
CO2	Design and develop the solution for complex engineering problem	V	Evaluating
CO3	Create the new knowledge in the specialized field	VI	Creating

List of Experiments / Lab Activities/Topics

ISE for dissertation phase 5 is based on the progress made during the semester for the objectives defined in the synopsis and the report submitted by the students. It shall be evaluated through progress seminar(s) at the end of the semester. The parameters for evaluation include extent of work done, results and discussion/publication efforts, quality of presentation, quality of report, interaction during presentation and interaction with guide. ISE shall be conducted by Dissertation Evaluation Committee (DEC).

Textbooks

1	As per the research topic
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References

1	National and International Journals
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Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

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Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem II
Course Code	6PS693
Course Name	Dissertation Phase VI
Desired Requisites:	Concept knowledge of research methodology, project management, Electrical Engineering

Teaching Scheme		Examination Scheme (Marks)	
Practical	12 Hrs/ Week	ESE	
Interaction		100	
Credits: 6			

Course Objectives

1	To develop the student to apply the knowledge gained to identify problems for research and provide the solutions by self-study and interaction with stakeholders.
2	Acquire knowledge to tackle real world problems of societal concerns
3	Impart flexibility to the student to have increased control over his/ her learning
4	Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor
5	Enhance a students' learning through increased interaction with peers and colleagues.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Search the existing literature and identification of research problem	IV	Analyzing
CO2	Design and develop the solution for complex engineering problem	V	Evaluating
CO3	Create the new knowledge in the specialized field	VI	Creating

List of Experiments / Lab Activities/Topics

ESE for dissertation phase 6 shall be conducted at the end of semester by a duly constituted examination panel composed of Chairman, internal examiner (guide) and external examiner.

Textbooks

1	As per the research topic
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References

1	National and International Journals
---	-------------------------------------

Useful Links

1	https://nptel.ac.in/courses/121/106/121106007/
2	https://www.youtube.com/watch?v=mAVswCbz_jM&feature=emb_imp_woyt
3	https://nptel.ac.in/courses/110/104/110104073/
4	https://nptel.ac.in/courses/110/107/110107081/

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1	1			1		2
CO2	1		1		2	1
CO3		2				1

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

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Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem II
Course Code	6PS694
Course Name	Techno-Socio Activity
Desired Requisites:	--

Teaching Scheme

Examination Scheme (Marks)

Practical		LA1	LA2	Lab ESE	Total
Interaction	1 Hrs/ Week	30	30	40	100

Credits: 1

Course Objectives

1	To record student performance in co-curricular and extra-curricular activities over two years will be considered.
2	To encourage the students to participate in activities that help develop leadership skills, team integrity, coordination skills, Time management, Communications skills, Interviewing skills etc.
3	To highlight importance of social responsibility.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Notice an improvement in his/her understanding and presentation skills.	III	Applying
CO2	Understand and value the importance of working in a diversified team.	IV	Analyzing
CO3	Demonstrate the soft skills like presentation skills, technical report writing etc.	V	Evaluating

List of Experiments / Lab Activities/Topics

The guide will be mentoring a given student batch for the duration of two years. The students shall submit proof of their achievements in various extra and co-curricular activities related to technical, cultural and social causes from first year to second year. The faculty will evaluate the students' performance at the end of 4th semester, based on the rubrics provided by the department from time to time.

Textbooks

1	NA
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References

1	NA
---	----

Useful Links

1	NA
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CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1	2				3	
CO2		1			2	
CO3			2		3	

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

Assessment				
There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing (min 40 %), LA1+LA2 should be min 40%				
Assessment	Based on	Conducted by	Typical Schedule	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty and External Examiner as applicable	During Week 18 to Week 19 Marks Submission at the end of Week 19	40

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

AICTE Mandatory Courses

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

Course Information

Programme	M. Tech. (Power System Engineering)
Class, Semester	Second Year M. Tech., Sem II
Course Code	6IC602
Course Name	Constitution of India
Desired Requisites:	--

Teaching Scheme

Examination Scheme (Marks)

Lecture	2 Hrs/week	MSE	ISE	ESE	Total
Tutorial		30	20	50	100
Credits: 0					

Course Objectives

- 1 To review and create awareness on various provisions in the constitution of India.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Explain the premises informing the twin themes of liberty and freedom from a civil rights perspective.	II	Understanding
CO2	Address the growth of Indian opinion regarding modern Indian intellectuals constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism	II	Understanding
CO3	Address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution	II	Understanding

Module	Module Contents	Hours
I	History of Making of the Indian Constitution Drafting Committee, (Composition & Working	4
II	Philosophy of the Indian Constitution : Preamble, Salient Feature	4
III	Contours of Constitutional Rights: Fundamental Rights; Right to Equality; Right to Freedom; Right against Exploitation; Right to Freedom of Religion; Cultural and Educational Rights; Right to Constitutional Remedies; Directive Principles of State Policy; Fundamental Duties.	5
IV	Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions	5
V	Local Administration: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Pachayati raj: Introduction, PRI: Zila Pachayat. Elected officials and their roles, CEO ZilaPachayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy	5

VI	Election Commission: Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.	5
Textbooks		
1	Dr. S. N. Busi, Dr. B. R. Ambedkar " <i>Framing of Indian Constitution</i> ", 1st Edition, 2015.	
2	M. P. Jain, " <i>Indian Constitution Law</i> ", 7th Edn., Lexis Nexis, 2014	
3	D.D. Basu, " <i>Introduction to the Constitution of India</i> ", Lexis Nexis, 2015	
References		
1	The Constitution of India, 1950 (Bare Act), Government Publication	
Useful Links		
1	https://en.wikipedia.org/wiki/Constituent_Assembly_of_India	
2	https://nptel.ac.in/courses/129/106/129106003/	
3	https://nptel.ac.in/noc/courses/noc20/SEM2/noc20-lw02/	
4	https://eci.gov.in/about/about-eci/the-functions-electoral-system-of-india-r2/	

CO-PO Mapping						
Programme Outcomes (PO)						
	PO1	PO2	PO3	PO4	PO5	PO6
CO1			1			
CO2	2					
CO3				1		2
The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High. Each CO of the course must map to at least one PO.						

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

