Walchand College of Engineering, Sangli
(Government Aided Autonomous Institute)

AY 2025-26

Course Information	
Programme	M. Tech (Data Science)
Class, Semester	Second Year M. Tech., Sem III
Course Code	1DS691
Course Name	Dissertation Phase I
Desired Requisites:	Seminar

Teaching Scheme		Examination Scheme (Marks)			
Lecture	-	**LA1**	**LA2**	**Lab ESE**	**Total**
Tutorial	-	30	30	40	100
Practical	24 Hrs/Week				
Interaction	-	**Credits: 12**			

Course Objectives	
1	To instruct factual knowledge, recent methods and trends for dissertation
2	To compare the rigorous literature in research domain
3	To select the best publication platform form to communicate the research

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	Blooms Taxonomy Level	Blooms Taxonomy Descriptor
CO1	Apply theoretical frameworks to the appropriate area of research.	II	Applying
CO2	Construct mathematical model for the dissertation topic.	II	Applying
CO3	Analyze mathematical model using modern tools.	III	Analyzing
CO4	Provide solution and synthesize research gap for engineering problem	V	Evaluating

Lab Activities

Following activities are to be carried out in dissertation:

1. Literature Survey: Detailed summarized literature survey from valid sources and gap Analysis. Research Objectives: Deeply and precisely stated objectives, novel methodologies to address the dissertation work.
2. Significance and scope: Comprehensive topic with full of exploration at each level, importance, challenges and expected outcomes
3. Synopsis: Technical write up and requirement analysis to achieve defined objectives and its implementation
4. Publications: Review/survey paper in standard/reputed publications.
5. Report writing: Proper citation of sources, organized section of chapters, standard and valid references, nearly absolute contents. Use of plagiarism tools.
6. The work should be completed in all aspects of design, implementation and testing and follow software engineering practices
7. Dissertation reports should be prepared and submitted in soft and hard form along with the code and other dependency documents. Preferable use online code repositories (github/bitbucket)

The students are required to submit the dissertation work in the form of report as per the institute rule. Dissertation report (pre-defined template) should be prepared using Latex/Word and submitted along with soft copy on CD/DVD (with code, PPT, PDF, Text report document & reference material) or on an online repository.

Text Books	
1	Dr. Hemant Kumar Mishra "A Book on Dissertation Writing", Walnut Publication , 1st edition ,July 2023
2	Vinod Gulati "HOW TO PREPARE PROJECT REPORTS: Preparing Effective Project reports", Kindle Edition, January 2024.
3	As per the research topic.

References	
1	Research journals from IEEE, ACM, Elsevier, Springer, Science Direct etc.

Useful Links	
1	https://ieeexplore.ieee.org/Xplore/home.jsp
2	https://www.sciencedirect.com
3	https://onlinecourses.nptel.ac.in/noc19_ge21/preview
4	https://www.researchgate.net
5	https://scientific-publishing.webshop.elsevier.com/manuscript-preparation/

CO-PO Mapping

	Programme Outcomes (PO)					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	
CO2	3	2	3	1	1	1
CO3	2	2	3		1	2
CO4	3	2	2	2	1	2

Assessment

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

Assessment	Based on	Conducted by	Typical Schedule	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 4 Marks Submission at the end of Week 5	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 5 to Week 10 Marks Submission at the end of Week 10	30
Lab ESE	Lab activities, attendance, journal	Lab Course Faculty	During Week 10 to Week 13 Marks Submission at the end of Week 13	40

Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 13-week semester. The actual schedule shall be as per academic calendar. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course.

Walchand College of Engineering, Sangli	
(Government Aided Autonomous Institute)	
AY 2025-26	
Course Information	
Programme	M. Tech. (Data Science)
Class, Semester	Second Year M. Tech., Semester III
Course Codes	Two courses- I and II

Teaching Scheme		Examination Scheme (Marks)			
Lecture	**3 Hrs**	**LA1**	**LA2**	**Lab ESE**	**Total**
Tutorial	-				100
Practical	-				
Interaction	-	**Credits: 3**			
Course Names	Online/NPTEL/Swayam Course				
Desired Requisites:	--				

Note:

NPTEL courses syllabus is available online with respective course link.
The Course Links will be decided and shared as per the NPTEL SCHEDULE in that semester.

Course Name	Link
Introduction To Large Language Models (LLMs)	https://onlinecourses.nptel.ac.in/noc25_cs45/preview
Deep Learning - IIT Ropar	https://onlinecourses.nptel.ac.in/noc25_cs106/preview
Distributed Optimization and Machine Learning	https://onlinecourses.nptel.ac.in/noc25_cs86/preview
Deep Learning for Computer Vision	https://onlinecourses.nptel.ac.in/noc25_cs93/preview

Walchand College of Engineering, Sangli		
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AY 2025-26		
Course Information		
Programme	M. Tech. (Data Science)	
Class, Semester	Second Year M. Tech., Sem IV	
Course Code	1DS692	
Course Name	Dissertation Phase II	
Desired Requisites:	Dissertation Phase I	

Teaching Scheme		Examination Scheme (Marks)			
Lecture	-	**LA1**	**LA2**	**Lab ESE**	**Total**
Tutorial	-	30	30	40	100
Practical	34 Hrs/Week				
Interaction	-	**Credits: 17**			

Course Objectives	
1	To instruct the issues of research design, methodology and ethics
2	To elaborate the process research with reference to existing systems
3	To test the objectives of research with standard benchmark

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**	**Blooms Taxonomy Level**	**Blooms Taxonomy Descriptor**
CO1	Demonstrate proposed solution for a dissertation	III	Applying
CO2	Test and validate designed system towards fault tolerance	V	Evaluating
CO3	Produce research findings in terms of technical publications and IPRs	VI	Creating
CO4	Publish and present research work in reputed journals or conferences	VI	Creating

Lab Activities

Following activities are to be carried out in dissertation:

1. Objective Achieved: 100 % of stated objective in synopsis, test cases to be used.
2. Design and Methodology: Standard design for implementation of dissertation, inline methodologies to achieve objectives.
3. Analysis: Review of methodology, debugging the codes, identifications of standard benchmarks for test comparisons.
4. Publications: at least 2 publications in standard/indexed conference or journal.
5. Report writing: Proper citation of sources, organized section of chapters, standard and valid references, nearly absolute contents. Use of plagiarism tools.
6. The work should be completed in all aspects of design, implementation and testing. Dissertation reports should be prepared and submitted in soft and hard form along with the code and other dependency documents. Preferable use online code repositories (GitHub/bitbucket) for implementation.

It is expected that the student has completed most of the experimental/computation work and analyzed the results so obtained as proposed in the synopsis. The work should be completed in all respects in this semester.
The students are required to submit the dissertation work in the form of report as per the institute rule.
Dissertation report (pre-defined template) should be prepared using Latex/Word and submitted along with soft copy on CD/DVD (with code, PPT, PDF, Text report document & reference material) or on an online repository.

Text Books	
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3	As per the research topic

	References
1	Research journals from IEEE, ACM, Elsevier, Springer, Science Direct etc

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3	https://www.researchgate.net
4	https://onlinecourses.nptel.ac.in/noc19_ge21/preview
5	https://scientific-publishing.webshop.elsevier.com/manuscript-preparation/

CO-PO Mapping

Programme Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	3	1	3	1	1
CO2	2	2	3			2
CO3	3	2	1	3	2	1
CO4	2	2	1	3	2	1

Assessment

There are three components of lab assessment, LA1, LA2 and Lab ESE.

IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.

Assessment	Based on	Conducted by	Typical Schedule	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 4 Marks Submission at the end of Week 5	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 5 to Week 10 Marks Submission at the end of Week 10	30
Lab ESE	Lab activities, attendance, journal	Lab Course Faculty	During Week 11 to Week 13 Marks Submission at the end of Week 13	40

Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 13-week semester. The actual schedule shall be as per academic calendar. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course.

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AY 2025-26

Course Information

Programme	M. Tech. (Data Science)
Class, Semester	Second Year M. Tech., Semester IV
Course Code	1DS645
Course Name	Internship
Desired Requisites:	

Teaching Scheme		Examination Scheme (Marks)			
Lecture	-	**LA1**	**LA2**	**ESE**	**Total**
Tutorial	-	-	-	100	100
Practical	4 Hrs./Week	**Credits: 2**			

Course Objectives

1	To expose the students to real life engineering problems encountered in industry/society.
2	To provide an opportunity to work in collaborative and multidisciplinary environment.
3	To adapt more knowledge as per the industry need.

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	Blooms Taxonomy Level	Blooms Taxonomy Descriptor
CO1	Perceive knowledge of group dynamics and contribute to multidisciplinary work in industry.	II	Understanding
CO2	Apply acquired knowledge to solve problems and handle efficient management of projects independently /or in teams.	III	Applying
CO3	Establish ethical behavior with professional code of conduct and contribute to sustainable development of society	V	Evaluating
CO4	Communicate effectively with industry/society for engineering activities and comprehend and create effective reports.	VI	Creating

Contents

The objective of this training is to expose the students to industry environment and practices. Students are sent to leading Engineering organizations/Research laboratories/Design and Consultancy organizations to undergo a rigorous training for a minimum period of one month during summer term/vacation.

CO-PO Mapping

	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1		3	1	2	2	
CO2	2	2	2	2	2	1
CO3				3	3	
CO4		1		3	3	1

Assessment

- o The assessment is based on ESE. The panel of minimum two members from the department shall assess the student for the internship.
- o The students are expected to present the work done in internship tenure.
- o The students should submit a detailed report based on activities done in an internship and learning's through the same.
- o The students should submit the duly signed internship certificate from the organization/s where internship was done, clearly indicating the period of internship in the certificate.

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AY 2025-26

Course Information	
Programme	M. Tech. (Data Science)
Class, Semester	Second Year M. Tech., Semester IV
Course Code	1DS646
Course Name	Techno-Socio Activity
Desired Requisites:	-

Teaching Scheme		Examination Scheme (Marks)			
Lecture	-	ISE	MSE	ESE	Total
Tutorial	-			100	100
Practical	2 Hrs/week	**Credits: 1**			

Course Objectives	
1	To develop skills like leadership, teamwork, ethics and communication through technical contribution on socio-economic issues
2	To enhance understanding of the socio-economic impact of engineering projects and technology on society.
3	To apply engineering knowledge and problem-solving skills to address real-world/social challenges.

Course Outcomes (CO) with Bloom's Taxonomy Level

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

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Descriptor
CO1	Acquire professional culture/ethics and build proficiency in leadership, professional communication, teamwork, and decision making.	III	Applying
CO2	Apply the technical knowledge through participation in various techno-socio assignments.	III	Applying
CO3	Demonstrate ethical quality and social responsibilities through the technical or social knowledge gained.	V	Evaluating
CO4	Participate actively in Techno –social activities.	V	Evaluating

List of Activities
1. Involvement in techno-socio activity :
a) Presentation on involvement in techno-socio activity individually/through student clubs during F.Y. & S.Y. M. Tech.
b) Submission of summary report on these activities.
2. Techno-socio activity (Team Activity):
a) Organization of a technical activity/event for the benefit of society in a batch.
b) Submission of report on the organized activity.
3. Submission of certificates/documents required for student port-folio
(Participation in Curricular and Extra-Curricular Activities within and outside the campus).

References	
1	National Institute for Engineering Ethics (NIEE)
2	Professional ethics, National Society of Professional Engineers (NSPE).

	Useful Links
1	https://www.asce.org/pdf/ethics_manual.pdf
2	https://www.aicte-india.org/atal
3	https://onlinecourses.nptel.ac.in/noc19_ge21/preview

CO-PO Mapping						
	Programme Outcomes (PO)					
	1	2	3	4	5	6
CO1		1		3	3	
CO2	1	3		3	1	1
CO3			1	3	3	
CO4	1			3	3	1

Assessment
o The assessment is based on ESE. The panel of minimum two members from the department shall assess the student for the techno-socio activity.
o The students are expected to present the work done in a four semesters.
o The students should submit a detailed report based on activities done and learning's through the same.
o The students should submit the duly signed certificate from the organization/s, local bodies where activities were carried out.