# Walchand College of Engineering, Sangli

*(Government Aided Autonomous Institute)*

**AY 2025-26**

## Course Information

| | |
|---|---|
| **Programme** | M. Tech. (Electronics and Communication Engineering) |
| **Class, Semester** | Second Year M. Tech., Sem. III |
| **Course Code** | 1EC691 |
| **Course Name** | Dissertation Phase I |
| **Desired Requisites:** | Concept, Knowledge of Research Methodology, Project Management |

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

## 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, students will be able to,

| | | |
|---|---|---|
| CO1 | Search the existing literature and identification of research problem | Analyze |
| CO2 | Design and develop the solution for complex engineering problem | Evaluate |
| CO3 | Create the new knowledge in the specialized field | Create |

## Course Content

In dissertation Phase I the student has to complete the partial work of the Dissertation inElectronics Engineering which will consist of problem statement, literature review from IEEE Transactions and Journals, design, and scheme of implementation (viz. Block diagram, Mathematical Model, Algorithm, Simulation tool, hardware setup requirements etc.)

The student is expected to complete the dissertation at least up to the design phase. As a part of the progress report of Dissertation Phase I, the candidate shall deliver a presentation on the advancement in Technology pertaining to the selected dissertation topic.

The student shall submit the duly approved and certified progress report of Dissertation Phase I in standard format for satisfactory completion of the work by the concerned guide and head of the Department.

The student will be assessed by a panel of examiners in the department for LA. In ESE there will be one external examiner, internal examiner/guide and a chairman for assessment. The assessment will be broadly based on literature study, work undergone, content delivery, presentation skills, documentation and report.

## Text Books

| | |
|---|---|
| 1 | As per the research topic |

| 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** | 2 | | | 2 | | 2 |
| **CO2** | 2 | | 2 | | 2 | 2 |
| **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.

**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 (for 26-week Sem) | Marks |
|---|---|---|---|---|
| LA1 | Lab activities, attendance, journal | Lab Course Faculty | During Week 1 to Week 6<br>Marks Submission at the end of Week 6 | 30 |
| LA2 | Lab activities, attendance, journal | Lab Course Faculty | During Week 7 to Week 12<br>Marks Submission at the end of Week 12 | 30 |
| Lab ESE | Lab activities, attendance, journal | Lab Course Faculty | During Week 15 to Week 18<br>Marks Submission at the end of Week 18 | 40 |

Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-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. The experimental lab shall have typically 8-10 experiments.

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**AY 2025-26**

**Course Information**

| | |
|---|---|
| **Programme** | M. Tech. (Electronics and Communication Engineering) |
| **Class, Semester** | Second Year M. Tech., Sem. IV |
| **Course Code** | 1EC692 |
| **Course Name** | Dissertation Phase II |
| **Desired Requisites:** | Dissertation Phase I |

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

**Course Objectives**

| | |
|---|---|
| **1** | To develop the student to apply the knowledge gained to identify problem for research provide the solutions by self-study and interaction with stake holders |
| **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 student's learning through increased interaction with peers and colleagues. |

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

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

| | | |
|---|---|---|
| **CO1** | Design and Apply appropriate method to solve research problem | Analyze |
| **CO2** | Compare your method with existing methods | Evaluate |
| **CO3** | Create the new knowledge in the specialized field | Create |

**Course Contents**

In Dissertation Phase II the student shall consolidate and complete the remaining part of the dissertation work in the field of Electronics Engineering which will consist of implementation of devised algorithm/ system using simulation tool and/or selected hardware, testing, results, measuring performance, comparative analysis, validation of results and conclusions.
The student shall prepare the duly certified final report of Dissertation in standard format for satisfactory completion of the work by the concerned guide and head of the Department.
The students are expected to validate their study undertaken by publishing it at standard platforms.
The investigations and findings need to be validated appropriately at standard platforms – conference and/or peer reviewed journal.
The student will be assessed by a panel of examiners in the department for LA1 and 2. In ESE there will be one external examiner, internal examiner/guide and a chairman for assessment. The assessment will be broadly based on literature study, work undergone, content delivery, presentation skills, documentation and report.

**Text Books**

| | |
|---|---|
| 1 | As per the research topic |

**References**

| | |
|---|---|
| 1 | National and International Journals |
| | |
| **Useful Links** | |
| 1 | https://nptel.ac.in/courses/110/104/110104073/ |

| **CO-PO Mapping** | | | | | | |
|---|---|---|---|---|---|---|
| | **Programme Outcomes (PO)** | | | | | |
| | **1** | **2** | **3** | **4** | **5** | **6** |
| **CO1** | 3 | | | 3 | | 3 |
| **CO2** | 3 | | 3 | | 3 | 3 |
| **CO3** | | 2 | | | | 2 |
| The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High<br>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.<br>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 (for 26-week Sem)** | **Marks** |
| LA1 | Lab activities, attendance, journal | Lab Course Faculty | During Week 1 to Week 6<br>Marks Submission at the end of Week 6 | 30 |
| LA2 | Lab activities, attendance, journal | Lab Course Faculty | During Week 7 to Week 12<br>Marks Submission at the end of Week 12 | 30 |
| Lab ESE | Lab activities, attendance, journal | Lab Course Faculty | During Week 15 to Week 18<br>Marks Submission at the end of Week 18 | 40 |
| Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-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. The experimental lab shall have typically 8-10 experiments. | | | | |

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**Course Information**

| | |
|---|---|
| **Programme** | M. Tech. (Electronics and Communication Engineering) |
| **Class, Semester** | Second Year M. Tech., Semester IV |
| **Course Code** | 1EC645 |
| **Course Name** | Internship |
| **Desired Requisites:** | Courses taught in semester I and II |

| **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. |

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

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

| CO | Description | Blooms Taxonomy | |
|---|---|---|---|
| | | Descriptor | Level |
| **CO1** | ***Perceive*** knowledge of group dynamics and contribute to multidisciplinary work. | Understand | II |
| **CO2** | ***Demonstrate*** knowledge to solve societal problems and ***apply*** it for efficient management of projects independently and in teams. | Apply | III |
| **CO3** | ***Communicate*** with industry/society regarding engineering activities effectively and ***comprehend*** and write effective reports. | Understand | II |
| **CO4** | ***Demonstrate*** ethical behaviour with professional code of conduct and contribute to sustainable development of society. | Apply | III |

**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** | | | | | 2 | |
| **CO2** | | | | 2 | | |
| **CO3** | | 2 | | | | |
| **CO4** | | | | | 2 | |

| **Assessment** |
| --- |
| ○ The assessment is based on ESE. The panel of minimum two members from the department shall assess the student for the internship.<br>○ The students are expected to present the work done in an internship tenure.<br>○ The students shall also submit a detailed report based on activities done in an internship and learnings through the same.<br>○ The students shall also 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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**Course Information**

| | |
|---|---|
| **Programme** | M. Tech. (Electronics and Communication Engineering) |
| **Class, Semester** | Second Year M. Tech., Semester IV |
| **Course Code** | 1EC646 |
| **Course Name** | Techno-Socio Activity |
| **Desired Requisites:** | - |

| **Teaching Scheme** | | **Examination Scheme (Marks)** | | | |
|---|---|---|---|---|---|
| **Lecture** | - | **LA1** | **LA2** | **ESE** | **Total** |
| **Tutorial** | - | - | - | 100 | 100 |
| **Practical** | 2 Hrs./Week | | | | |
| **Interaction** | - | **Credits: 1** | | | |

**Course Objectives**

| | |
|---|---|
| **1** | Develop skills like teamwork, and communication through technical contribution on socio-economic issues |
| **2** | Enhance understanding of the socio-economic impact of engineering projects and technology on society. |
| **3** | Apply engineering knowledge and problem-solving skills to address real-world challenges |

**Course Outcomes (CO)**

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

| CO | Description | Blooms Taxonomy | |
|---|---|---|---|
| | | Descriptor | Level |
| **CO1** | ***Explain*** professional culture/ethics and build proficiency in professional communication, working in teams, decision making and leadership. | Understand<br>Apply | II<br>III |
| **CO2** | ***Apply*** the technical knowledge through participation in techno-socio assignments. | Apply | III |
| **CO3** | ***Demonstrate*** ethical quality and social responsibilities through the technical knowledge gained. | Evaluate | V |

**List of Activities**

**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 |

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

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