



**Savitribai Phule Pune University**  
**Fourth Year of Computer Engineering (2019 Course)**  
**410248: Project Work Stage I**

<b>Teaching Scheme:</b>	<b>Credit</b>	<b>Examination Scheme:</b>
<b>Practical:02Hours/Week</b>	<b>02</b>	<b>Presentation:50Marks</b>

**Course Objectives:**

- To Apply the knowledge for solving realistic problem
- To develop problem solving ability
- To Organize, sustain and report on a substantial piece of team work over a period of several months
- To Evaluate alternative approaches, and justify the use of selected tools and methods
- To Reflect upon the experience gained and lessons learned
- To Consider relevant social, ethical and legal issues
- To find information for yourself from appropriate sources such as manuals, books, research journals and from other sources, and in turn increase analytical skills.
- To Work in Team and learn professionalism

**Course Outcomes:**

On completion of the course, student will be able to–

- Solve real life problems by applying knowledge.
- Analyze alternative approaches, apply and use most appropriate one for feasible solution.
- Write precise reports and technical documents in a nutshell.
- Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work
- Inter-personal relationships, conflict management and leadership quality.

**Guidelines**

Project work Stage – I is an integral part of the Project work. In this, the student shall complete the partial work of the Project which will consist of problem statement, literature review, SRS, Model and Design. The student is expected to complete the project at least up to the design phase. As a part of the progress report of project work Stage-I, the candidate shall deliver a presentation on the advancement in Technology pertaining to the selected project topic. The student shall submit the duly certified progress report of Project work Stage-I in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute. The examinee will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on work undergone, content delivery, presentation skills, documentation, question-answers and report.

**Follow guidelines and formats as mentioned in Project Workbook recommended by Board of Studies**



## Savitribai Phule Pune University

### Fourth Year of Computer Engineering (2019 Course)

#### 410256: Project Work Stage II

<b>Teaching Scheme:</b>  <b>TH: 06 Hours/Week</b>	<b>Credit</b>  <b>06</b>	<b>Examination Scheme:</b>  <b>Term work: 100 Marks</b> <b>Presentation: 50Marks</b>
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#### Prerequisite Courses: Project Stage I(410248)

#### Course Objectives:

- To follow SDLC meticulously and meet the objectives of proposed work
- To test rigorously before deployment of system
- To validate the work undertaken
- To consolidate the work as furnished report

#### Course Outcomes:

On completion of the course, student will be able to–

- CO1: Show evidence of independent investigation
- CO2: Critically analyze the results and their interpretation.
- CO3: Report and present the original results in an orderly way and placing the open questions in the right perspective.
- CO4: Link techniques and results from literature as well as actual research and future research lines with the research.
- CO5: Appreciate practical implications and constraints of the specialist subject

### Guidelines

In Project Work Stage–II, the student shall complete the remaining project work which consists of Selection of Technology and Tools, Installations, UML implementations, testing, Results, performance discussions using data tables per parameter considered for the improvement with existing/known algorithms/systems and comparative analysis and validation of results and conclusions. The student shall prepare and submit the report of Project work in standard format for satisfactory completion of the work that is duly certified by the concerned guide and head of the Department/Institute

**Follow guidelines and formats as mentioned in Project Workbook recommended by Board of Studies**

Savitribai Phule Pune University, Pune Final Year Information Technology (2019 Course) <b>414448: Project Stage I</b>		
<b>Teaching Scheme:</b>	<b>Credit Scheme:</b>	<b>Examination Scheme:</b>
<b>Tutorial (TUT): 02 hrs/week</b>	<b>02 Credits</b>	<b>Term Work: 50 Marks</b>
<b>Prerequisite Courses, if any:</b> PBL, Seminar, Basic Knowledge of Latest Technologies in IT.		
<b>Companion Course, if any:</b> NOT APPLICABLE		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To build up their practical experience with implementation and hence develops self-confidence.</li> <li>2. To generate the opportunities to experience practically the facts learned in various fields together.</li> <li>3. To improve overall communication skill, Teamwork and Leadership Qualities, professionalism.</li> <li>4. To apply the knowledge for solving realistic problems.</li> <li>5. To evaluate alternative approaches and justify the use of selected tools and methods.</li> </ol>		
<b>Course Outcomes:</b>		
On completion of the course, students will be able to–		
<b>CO1.</b> To apply knowledge of mathematics, science, and engineering to formulate the Problem statement.		
<b>CO2.</b> To design and conduct experiments, as well as to analyze and interpret data.		
<b>CO3.</b> Understand the professional and ethical responsibility.		
<b>CO4.</b> To communicate effectively.		
<b>CO5.</b> Get broad education which is necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.		
<b>CO6.</b> Recognition of the need for, and an ability to engage in life-long learning.		
<b>CO7.</b> To use the techniques, skills, and modern engineering tools necessary for engineering practices.		
<b>CO8.</b> 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.		
<b>Introductory Information:</b>		
BE Project can be application oriented and/or will be based on some innovative work in recent technologies like IoT, Cloud Computing, Web Technologies, Bio-inspired Algorithms, Artificial Intelligence, Machine Learning, Natural Language Processing, Theoretical Computer Science fundamentals. In Project Phase-I the student will undertake project over the academic year, which will involve the analysis, design of a system or sub system in the area identified earlier in the field of Information Technology and Computer Science and Engineering. The project will be undertaken preferably by a group of 3-4 students who will jointly work and implement the project. The group will select a project based on their internship or Guide can suggest based on recent technologies / Industrial Applications.		

**Guidelines to Faculty and Students:**

- 1) The Head of the department / Project coordinator shall constitute a review committee (preferably same committee needs to carry throughout the year) for project group; project guide would be one member of that committee by default.
- 2) For sponsored projects, an employee of the sponsoring organization may be one of the member of review committee.
- 3) There shall be **TWO** reviews in Project phase –I (in semester-I) by the review committee.
- 4) The Project Review committee will be responsible for evaluating the timely progress of the projects. It is suggested to evaluate the skills learned by the students in their PBL (in their previous years).
- 5) Student should identify project of enough complexity, which has at least 4-5 major functionalities.
- 6) Student should adopt skills learned in Software Engineering / Software Architecture to identify stakeholders, actors, Architectural Styles etc... and write detail problem statement for the system.
- 7) Review committee should finalize the scope of the project.
- 8) If change in project topic is unavoidable then the students should complete the process of Project approval by submitting synopsis along with the review of important papers which should be approved by review committee.
- 9) Every student of the project group shall make presentation on the progress made by them before the committee during each review. Each student/group is required to give presentation as part of review for 10 to 15 minutes followed by a detailed discussion and query session.
- 10) Students need to note down the queries raised during review(s) and comply the same in the next review session.
- 11) The record of the remarks/suggestions of the review committee (project diary) should be properly maintained and should be made available at the time of university examination.
- 12) Project group needs to present / publish TWO papers (One in each semester, at least one paper should be in **UGC – Care journal**).
  - a) Paper must be checked for Plagiarism by any open software.
  - b) One paper during first semester which includes Literature Survey and Detailed design components of the Project Statement.
  - c) One paper during second semester which includes Methodologies / Algorithms implemented, Results obtained, Analysis of results and conclusion.
- 13) Project report must also be checked for Plagiarism.
- 14) The examinee will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on work undergone, content delivery, presentation skills, documentation, question-answers, and report.

**Review 1: Synopsis –**

Points to be covered:

- 1) The precise problem statement/title based on literature survey and feasibility study.
- 2) Motivation, objectives, and scope of the project.
- 3) List of required hardware, software, or other equipment for executing the project, test Environment/tools, cost and software measurement/human efforts in hours.
- 4) System overview- proposed system and expected outcomes.
- 5) Architecture and initial phase of design (DFD).

**Review 2: Requirement and Design Specification**

**Points to be covered:**

- 1) User and System Requirements.
- 2) Functional and Non-functional Requirements.
- 3) SRS Document, Writing structures SRS as per Problem Statement.
- 4) Requirement Analysis / Models.
- 5) UML/ER Diagrams.
- 6) Detail architecture / System design/ Algorithms with analysis / Methods / Techniques.
- 7) Need to discuss Design models and Component level designs.
- 8) Detailed Design (DFD levels as per the problem statement).
- 9) At least 30-40% coding documentation with at least 3 to 4 working modules.
- 10) Identification of test to be essential and appropriate (to be implement later).
- 11) Project plan.

**Evaluation Criteria:**

**Following criteria and weightage is suggested for evaluation of Project-Phase I Term Work.**

- 1) Originality of Problem Statement: 10% (05 Marks)
- 2) Depth of Understanding the Problem Statement: 10% (05 Marks)
- 3) Concrete Literature Survey with identified gaps in all referred papers: 10% (05 Marks)
- 4) Design and Analysis of Algorithm / Model / Architecture / System: 40% (20 Marks)
- 5) Representation of results using suitable tools like tabulation, graph etc: 10% (05 Marks)
- 6) Presentation Skill: 10% (05 Marks)
- 7) Report preparation and Paper publication: 10% (05 Marks)

**Project report contains the details as Follows:**

**Project report must have:**

- i. Certificate from the institute
- ii. Certificate sponsoring organization (If any)
- iii. Acknowledgement
- iv. Abstract
- v. Contents
- vi. List of Abbreviations (As applicable)
- vii. List of Figures (As applicable)
- viii. List of Graphs (As applicable)
- ix. List of Tables (As applicable)
  1. Introduction and aims/motivation and objectives.
  2. Literature Survey (with proper citation).
  3. Problem Statement/definition.
  4. Software Requirement Specification (In SRS Documentation only).
  5. Flowchart
  6. Project Requirement specification.
  7. Proposed system Architecture.
  8. High level design of the project (DFD,UML, ER Diagrams).
  9. System implementation-code documentation: Algorithm style, Description of detailed methodologies, protocols used etc..as applicable.
  10. Test cases.
  11. Proposed GUI/Working modules/Experimental Results (Module wise if available) in suitable format.
  12. Project Plan.
  13. Conclusions.
  14. Bibliography in IEEE format.

**Appendices:**

- A. Plagiarism Report of Paper and Project report from any open-source tool.
- B. Base Paper(s) [If any].
- C. Tools used / Hardware Components specifications [If any].
- D. Published Papers and Certificates.

**Use appropriate plagiarism tools, reference managers, Latex for efficient and effective project writing.**

**Reference Books:**

1. UML2 Bible by Tom Pender, Wiley India Pvt. Limited 2011
2. Applying UML and Patterns Second Edition by Craig Larman, Pearson Education
3. UML 2 and the Unified Process, Second Edition, JIM Arlow, Ila Neustadt, Pearson
4. Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma, Pearson
5. Design Patterns in Java Second Edition by Steven John Metsker, Pearson

**All the assignments should be conducted on Latest version of Open-Source Operating Systems, tools and Multi-core CPU supporting Virtualization and Multi-Threading**

Savitribai Phule Pune University, Pune Final Year Information Technology (2019 Course) <b>414456 : Project-II</b>		
<b>Teaching Scheme:</b>	<b>Credit Scheme:</b>	<b>Examination Scheme:</b>
<b>Practical: 10 hrs/week</b>	<b>05 Credits</b>	<b>Term Work : 100 Marks Oral : 50 Marks</b>
<b>Prerequisite Courses, if any:</b> Project Phase-I (B.E. (IT) Final Year Semester-I)		
<b>Companion Course, if any:</b> NA		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To enable the student to extend further the investigative study taken up under Project stage-I, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&amp;D laboratory / Industry.</li> <li>2. To build up exposure of implementation and hence develops analysis of results by considering performance measures.</li> <li>3. To expose students to product development environment using industrial experience, use of state of art technologies.</li> <li>4. To encourage and expose students with funding agency for sponsored projects.</li> <li>5. To generate the opportunities to experience practically the facts learned in various fields together.</li> <li>6. To improve overall communication skill, Teamwork and Leadership Qualities, professionalism.</li> <li>7. Evaluate the various validation and verification methods.</li> <li>8. Analyzing professional issues, including ethical, legal and security issues, related to computing projects.</li> <li>9. To evaluate alternative approaches, and justify the results obtained.</li> </ol>		
<b>Course Outcomes:</b>		
On completion of the course, students will be able to–		
<ol style="list-style-type: none"> <li>1. To apply engineering and mathematical knowledge to investigate / select proper technology / Algorithm suitable to solve the problem in hand.</li> <li>2. To apply knowledge of statistics for analysis of results and express conclusion and justification for the same.</li> <li>3. To design and conduct experiments, as well as to analyze and interpret data or develop prototype model of the application.</li> <li>4. To communicate effectively.</li> <li>5. Get broad education which is necessary to understand the impact of engineering solutions in a global, economic, environmental, ethically and societal context.</li> <li>6. Recognition of the need for, and an ability to engage in life-long learning.</li> </ol>		
<b>Introductory Information:</b>		
BE Project Phase-II is the continuation of Project Phase-I for implementation, and analysis of results to arrive a valid conclusion with justification.		
<b>Guidelines to Faculty and Students:</b>		

1. Preferably same review committee needs to continue for Project Phase-II.
2. There shall be **TWO** reviews in Project phase –II (in semester-II) by the review committee.
3. The Project Review committee will be responsible for evaluating the timely progress of the projects. It is suggested to evaluate the skills learned by the students in their PBL (in their previous years).
4. Student needs to justify the Algorithm / Model used for implementation.
5. Every student of the project group shall make presentation on the progress made by them before the committee during each reviews. Each student/group is required to give presentation as part of review for 10 to 15 minutes followed by a detailed discussion and query session.
6. Students need to note down the queries raised during review(s) and comply the same in the next review session.
7. The record of the remarks/suggestions of the review committee (project dairy) should be properly maintained in continuation of Project Phase-II and should be made available at the time of university examination.
8. Project group needs to present / publish **TWO** papers (One in each semester, at least one paper should be in **UGC – Care journal**).
  - a. Paper must be checked for Plagiarism by any open software.
  - b. One paper during second semester which includes Methodologies / Algorithms implemented, Results obtained, Analysis of results and conclusion.
9. Project report must also be checked for Plagiarism.
10. The examinee will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on work undergone, content delivery, presentation skills, documentation, question-answers and report.

### Review 3: Implementation –

Points to be covered:

1. Detailed study of Algorithm(s) / Model / Hardware specification (As applicable).
2. Confirmation of Data set used (As applicable)
3. Detailed ER Diagram / DFD diagrams.
4. Detailed UML Diagrams.
5. Sample results (module based).

### Review 4: Testing and Result Analysis.

Points to be covered:

1. Appropriate test cases and results of test cases.
2. Representation of results with analysis.
3. Conclusion over performance parameters (as applicable)
4. Conclusion and future work suggested.
5. Knowledge of references utilized.

### Evaluation Criteria:



Following criteria and weightage is suggested for evaluation of Project-Phase II Term Work.

- |   |     |
|---|-----|
| 1. Availability of standard Data set / Input parameters:                          | 10% |
| 2. Depth of Understanding of implemented Technology / Algorithm / Domain / Model: | 40% |
| 3. Test cases / Validation and Verification process:                              | 10% |
| 4. Justification of Algorithm / Model / Architecture / System:                    | 10% |
| 5. Analysis of results and conclusion:  | 10% |
| 6. Presentation Skill:  | 10% |
| 7. Report preparation and Paper publication:                                      | 10% |

**Project report contains the details as Follows:**

**It is suggested to have only one Project report which includes work carried at Project Phase-I as well. Project report must have:**

- i. Certificate from the institute.
- ii. Certificate sponsoring organization (If any).
- iii. Acknowledgement.
- iv. Abstract.
- v. Contents.
- vi. List of Abbreviations (As applicable).
- vii. List of Figures (As applicable).
- viii. List of Graphs (As applicable).
- ix. List of Tables (As applicable).
  - 1) Introduction and aims/motivation and objectives.
  - 2) Literature Survey (with proper citation).
  - 3) Problem Statement/definition.
  - 4) Software Requirement Specification (In SRS Documentation only).
  - 5) Flowchart
  - 6) Project Requirement specification.
  - 7) Proposed system Architecture.
  - 8) High level design of the project (DFD , UML , ER Diagrams).
  - 9) System implementation-code documentation: Algorithm style, Description of detailed methodologies, protocols used etc..as applicable.
  - 10) Test cases.
  - 11) GUI/Working modules and Experimental Results in suitable format.
  - 12) Project Plan.
  - 13) Analysis and Conclusions with future work.
  - 14) Bibliography in IEEE format.

**Appendices**

- a) Plagiarism Report of Paper and Project report from any open source tool.
- b) Base Paper(s) [If any].
- c) Tools used / Hardware Components specifications [If any].
- d) Published Papers and Certificates (Both Papers).

**Use appropriate plagiarism tools, reference managers, Latex for efficient and effective project writing.**

**Savitribai Phule Pune University**

**Fourth Year of E & Tc Engineering (2019 Course)**

**404188: Project Phase – I**

<b>Teaching Scheme:</b>	<b>Credit</b>	<b>Examination Scheme:</b>
<b>Practical: 02 Hrs. / Week</b>	<b>01</b>	<b>Term Work: 50 Marks</b>

**Course Objectives:**

- To understand the basic concepts & broad principles of projects.
- To understand the value of achieving perfection in project implementation & completion.
- To apply the theoretical concepts to solve real life problems with teamwork and Multidisciplinary approach.
- To demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context.

**Course Outcomes:**

**CO1: Demonstrate** a sound technical knowledge in field of E&TC in the form of project.

**CO2: Undertake** real life problem identification, formulation and solution.

**CO3: Design** engineering solutions to complex problems utilizing a systematic approach.

**CO4: Demonstrate** the knowledge, effective communication skills and attitudes as professional engineer.

Project phase 1 is an integral part of the project work. The project work shall be based on the knowledge acquired by the student during the graduation and preferably it should meet and contribute towards the needs of the society. The project aims to provide an opportunity of designing and building complete system or subsystems in the field of Electronics and communication where the student likes to acquire specialized skills. The student shall prepare the duly certified Fourth report of project work in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

**Guidelines:**

1. **Group Size:** The student shall carry the project work individually or by a group of students. Optimum group size shall be 3 students. However, if project complexity demands a maximum group size of 4 students, the project committee should be convinced about such complexity and scope of the work. Projects selected should meet and contribute towards the needs of the society.
2. **Selection and approval of topic:** Topic should be related to real life application in the field of Electronics and Telecommunication engineering.
3. **The topic may be based on :** Investigation of the latest development in a specific field of Electronics or Communication / The investigation of practical problem in manufacture and / or testing of electronics or communication equipment/ Software based projects related to VHDL, Communication, Instrumentation, Signal Processing agriculture Engineering etc. with the justification for techniques used / any topic in the field of E&TC may be allowed.
4. **Interdisciplinary projects** should be encouraged. The examination of Interdisciplinary projects shall be conducted independently in respective departments.
5. **The term work assessment of project phase 1** shall be based on Innovative Idea of selected project, literature survey, Depth of understanding, Applications, Individual contributions, presentation, project report, timely completion of work.
6. **The department** should prepare project planner and should follow accordingly
7. **A log book of work** carried out during the semester should be maintained with weekly review remarks by the guide and committee.
8. **A certified copy of report** preferably using LATEX is required to be presented to external examiner at the time of Fourth examination.
9. **The project report** must undergo by plagiarism check and the similarity index must be less than 15%. The plagiarism report should be included in the project report.

**Savitribai Phule Pune University**

**Fourth Year of E & Tc Engineering (2019 Course)**

**404197: Project Phase – II**

<b>Teaching Scheme:</b>	<b>Credit</b>	<b>Examination Scheme:</b>
<b>Practical: 10 Hrs. / Week</b>	<b>05</b>	<b>Term Work: 100 Marks</b>
		<b>Oral: 50 Marks</b>

Project phase 2 is extension of Project phase 1 carried out in seventh semester. The student shall prepare the duly certified Fourth report of project work in standard format preferably in LATEX for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

**GUIDELINES**

1.	The project TW/OR assessment shall be based on Live Project Demonstration and presentation by the students. The assessment parameters shall be Innovative Idea of selected project, literature survey, Depth of understanding, Applications, Individual contributions, presentations, project report, timely completion of work (Project review presentations), participation in project competition, publication of research work in journal/conference, publication in the form of patent and copyright etc. The college can prepare the rubrics based on these parameters
2.	Certified hard bound project report to be submitted by the students in prescribed format.
3.	Students must preferably publish at least one technical paper on project work in the conference or peer reviewed Journals or publish patent or copyright or should participate into one of the project competition at university/State/National/International level.
4.	A log book of work carried out during the semester should be maintained with weekly review remarks by the guide and committee.
5.	A certified copy of report preferably using LATEX is required to be presented to external examiner at the time of Fourth examination.
6.	The project report must undergo by plagiarism check and the similarity index must be less than 10%. The plagiarism report should be included in the project report.

## Savitribai Phule Pune University

## Third Year of Computer Engineering (2019 Course)

**310255: Internship\*\*** Home

Teaching Scheme:

Credit: 04

Examination Scheme:

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Term work: 100 Marks

**Course Objectives:**

Internship provides an excellent opportunity to learner to see how the conceptual aspects learned in classes are integrated into the practical world. Industry/on project experience provides much more professional experience as value addition to classroom teaching.

- To encourage and provide opportunities for students to get professional/personal experience through internships.
- To learn and understand real life/industrial situations.
- To get familiar with various tools and technologies used in industries and their applications.
- To nurture professional and societal ethics.
- To create awareness of social, economic and administrative considerations in the working environment of industry organizations.

**Course Outcomes:**

On completion of the course, learners should be able to

**CO1:** To demonstrate professional competence through industry internship.

**CO2:** To apply knowledge gained through internships to complete academic activities in a professional manner.

**CO3:** To choose appropriate technology and tools to solve given problem.

**CO4:** To demonstrate abilities of a responsible professional and use ethical practices in day to day life.

**CO5:** Creating network and social circle, and developing relationships with industry people.

**CO6:** To analyze various career opportunities and decide carrier goals.

**\*\* Guidelines:**

Internships are educational and career development opportunities, providing practical experience in a field or discipline. Internships are far more important as the employers are looking for employees who are properly skilled and having awareness about industry environment, practices and culture. Internship is structured, short-term, supervised training often focused around particular tasks or projects with defined time scales.

Core objective is to expose technical students to the industrial environment, which cannot be simulated/experienced in the classroom and hence creating competent professionals in the industry and to understand the social, economic and administrative considerations that influence the working environment of industrial organizations.

Engineering internships are intended to provide students with an opportunity to apply conceptual knowledge from academics to the realities of the field work/training. The following guidelines are proposed to give academic credit for the internship undergone as a part of the Third Year Engineering curriculum.

**Duration:**

Internship is to be completed after semester 5 and before commencement of semester 6 of at least 4 to 6 weeks; and it is to be assessed and evaluated in semester 6.

**Internship work Identification:**

Student may choose to undergo Internship at Industry/Govt. Organizations/NGO/MSME/Rural Internship/ Innovation/IPR/Entrepreneurship. Student may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/NGO's/Government organizations/Micro/Small/ Medium enterprises to make themselves ready for the industry[1].

Students must register at Internshala [2]. Students must get Internship proposals sanctioned from college authority well in advance. Internship work identification process should be initiated in the Vth semester in coordination with training and placement cell/ industry institute cell/ internship cell. This will help students to start their internship work on time. Also, it will allow students to work in vacation period after their Vth semester examination and before academic schedule of semester VI.

Student can take internship work in the form of the following but not limited to:

- Working for consultancy/ research project,
- Contribution in Incubation/ Innovation/ Entrepreneurship Cell/ Institutional Innovation Council/ startups cells of institute /
- Learning at Departmental Lab/Tinkering Lab/ Institutional workshop,
- Development of new product/ Business Plan/ registration of start-up,
- Industry / Government Organization Internship,
- Internship through Internshala,
- In-house product development, intercollegiate, inter department research internship under research lab/group, micro/small/medium enterprise/online internship,
- Research internship under professors, IISC, IIT's, Research organizations,
- NGOs or Social Internships, rural internship,
- Participate in open source development.

### **Internship Diary/ Internship Workbook:**

Students must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The students should record in the daily training diary the day-to-day account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed every day by the supervisor.

Internship Diary/workbook and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training.

### **Internship Work Evaluation:**

Every student is required to prepare a maintain documentary proofs of the activities done by him as internship diary or as workbook. The evaluation of these activities will be done by Programme Head/Cell In-charge/ Project Head/ faculty mentor or Industry Supervisor based on- Overall compilation of internship activities, sub-activities, the level of achievement expected, evidence needed to assign the points and the duration for certain activities.

Assessment and Evaluation is to be done in consultation with internship supervisor (Internal and External – a supervisor from place of internship).

**Recommended evaluation parameters-Post Internship Internal Evaluation -50 Marks + Internship Diary/Workbook and Internship Report - 50 Marks**

### **Evaluation through Seminar Presentation/Viva-Voce at the Institute-**

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

- Depth of knowledge and skills
- Communication & Presentation Skills
- Team Work
- Creativity
- Planning & Organizational skills
- Adaptability
- Analytical Skills
- Attitude & Behavior at work

- Societal Understanding
- Ethics
- Regularity and punctuality
- Attendance record
- Diary/Work book
- Student's Feedback from External Internship Supervisor

After completion of Internship, the student should prepare a comprehensive report to indicate what he has observed and learnt in the training period.

Internship Diary/workbook may be evaluated on the basis of the following criteria:

- Proper and timely documented entries
- Adequacy & quality of information recorded
- Data recorded
- Thought process and recording techniques used
- Organization of the information

The report shall be presented covering following recommended fields but limited to,

- Title/Cover Page
- Internship completion certificate
- Internship Place Details- Company background-organization and activities/Scope and object of the study / Supervisor details
- Index/Table of Contents
- Introduction
- Title/Problem statement/objectives
- Motivation/Scope and rationale of the study
- Methodological details
- Results / Analysis /inferences and conclusion
- Suggestions / Recommendations for improvement to industry, if any
- Attendance Record
- Acknowledgement
- List of reference (Library books, magazines and other sources)

### Feedback from internship supervisor(External and Internal)

Post internship, faculty coordinator should collect feedback about student with recommended parameters include as- Technical knowledge, Discipline, Punctuality, Commitment, Willingness to do the work, Communication skill, individual work, Team work, Leadership.....

Reference:

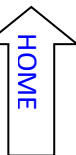
[1] <https://www.aicte-india.org/sites/default/files/AICTE%20Internship%20Policy.pdf>

[2] <https://internship.aicte-india.org/>

### @ The CO-PO Mapping Matrix

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	3	1	1	1	1	2	1	1
CO2	1	2	2	2	3	2	1	1	1	2	2	1
CO3	-	-	-	-	-	1	-	-	2	2	1	1
CO4	2	-	-	-	-	2	2	3	-	1	-	2
CO5	-	-	-	-	-	1	2	1	1	1	2	1
CO6	-	-	-	-	-	1	-	-	2	1	-	1

Savitribai Phule Pune University, Pune Third Year Information Technology (2019 Course) <b>314455: Internship</b>		
<b>Teaching Scheme:</b>	<b>Credit Scheme:</b>	<b>Examination Scheme:</b>
<b>Theory (TH) : 4 hrs/week</b>	<b>04 Credit</b>	<b>Team work: 100 Marks</b>
<b>Prerequisite Courses: if Any</b>		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>● To encourage and provide opportunities for students to get professional/personal experience through internships.</li> <li>● To learn and apply the technical knowledge gained from academics /classroom learning in real life/industrial situations.</li> <li>● To get familiar with various tools and technologies used in industries and their applications.</li> <li>● To enable students to develop professional skills and expand their professional network with the development of employer-valued skills like teamwork, communication.</li> <li>● To apply the experience gained from industrial internship to the academic course completion project.</li> <li>● To nurture professional and societal ethics in students</li> <li>● Understand the social, economic and administrative considerations that influence the working environment of industrial organizations</li> </ul>		
<b>Course Outcomes:</b>		
On completion of the internship, learner will be able to –		
<b>CO1:</b> To develop professional competence through industry internship.		
<b>CO2:</b> To apply academic knowledge in a personal and professional environment		
<b>CO3:</b> To build the professional network and expose students to future employees.		
<b>CO4:</b> To Apply professional and societal ethics in their day to day life.		
<b>CO5:</b> To become a responsible professional having social, economic and administrative considerations.		
<b>CO6:</b> To make own career goals and personal aspirations.		
<b>Guidelines:</b>		
<p>Internships are educational and career development opportunities, providing practical experience in a field or discipline. Internships are far more important as the employers are looking for employees who are properly skilled and having awareness about industry environment, practices and culture. Internship is structured, short- term, supervised training often focused around particular tasks or projects with defined time scales.</p> <p>Core objective is to expose technical students to the industrial environment, which cannot be simulated/experienced in the classroom and hence creating competent professionals in the industry and to understand the social, economic and administrative considerations that influence the working environment of industrial organizations.</p> <p>Engineering internships are intended to provide students with an opportunity to apply theoretical knowledge from academics to the realities of the field work/training. The following guidelines are proposed to give academic credit for the internship undergone as a part of the Third Year Engineering curriculum.</p>		





<b>Duration:</b>
<b>Internship to be completed after semester 5 and before commencement of semester 6 of at least 4 to 6 weeks; and it is to be assessed and evaluated in semester 6.</b>
<b>Internship work Identification:</b>
<p>Student may choose to undergo Internship at Industry/Govt./NGO/MSME/Rural Internship/Innovation/IPR/Entrepreneurship. Student may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/NGO's/Government organizations/Micro/Small/ Medium enterprises to makethemselves ready for the industry.</p> <p>Contacting various companies for Internship and Internship work identification process should be initiated in the Vth semester in coordination with training and placement cell/ industry institute cell/ internship cell. This will help students to start their internship work on time. Also, it will allow students to work in vacation period after their Vth semester examination.</p> <p>Student can take internship work in the form of Online/onsite work from any of the following but not limited to:</p> <ul style="list-style-type: none"> <li>• Working for consultancy/ research project,</li> <li>• Participation at Events (Technical / Business)/in innovation related completions like Hackathon,</li> <li>• Contribution in Incubation/ Innovation/ Entrepreneurship Cell/ Institutional Innovation Council/ startups cells of institute /</li> <li>• Learning at Departmental Lab/Tinkering Lab/ Institutional workshop,</li> <li>• Development of new product/ Business Plan/ registration of start-up,</li> <li>• Participation in IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos,</li> <li>• Industry / Government Organization Internship,</li> <li>• Internship through Internshala,</li> <li>• In-house product development, intercollegiate, inter department research internship under research lab/group, micro/small/medium enterprise/onle ineinternship,</li> <li>• Research internship under professors, IISC, IIT's, Research organizations,</li> <li>• NGOs or Social Internships, rural internship,</li> <li>• Participate in open source development.</li> </ul>
<b>Internship Diary/ Internship Workbook:</b>
<p>Students must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The students should record in the daily training diary the day-to-day account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.</p> <p>Internship Diary/workbook and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training. Internship Diary/workbook may be evaluated on the basis of the following criteria:</p> <ul style="list-style-type: none"> <li>• Proper and timely documented entries</li> <li>• Adequacy &amp; quality of information recorded</li> <li>• Data recorded</li> <li>• Thought process and recording techniques used</li> <li>• Organization of the information</li> </ul>

### Internship Work Evaluation:

Every student is required to prepare a maintain documentary proofs of the activities done by him as internship diary or as workbook. The evaluation of these activities will be done by Programme Head/Cell In-charge/ Project Head/ faculty mentor /faculty or Industry Supervisor based on- Overall compilation of internship activities, sub-activities, the level of achievement expected, evidence needed to assign the points and the duration for certain activities.

Assessment and Evaluation is to be done in consultation with internship supervisor (Internal and External – a supervisor from place of internship).

**Recommended evaluation parameters-Post Internship Internal Evaluation -50 Marks +Internship Diary/Workbook and Internship Report - 50 Marks**

### Evaluation through Seminar Presentation/Viva-Voce at the Institute-

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

- Depth of knowledge and skills Communication & Presentation Skills
- Team Work
- Creativity
- Planning & Organizational skills
- Adaptability
- Analytical Skills
- Attitude & Behavior at work

- Societal Understanding
- Ethics
- Regularity and punctuality
- Attendance record
- Log book
- Student's Feedback from External Internship Supervisor

After completion of Internship, the student should prepare a comprehensive report to indicate what he/she has observed and learnt in the training period. The student may contact Industrial Supervisor/ Faculty Mentor/Faculty/TPO for assigning special topics and problems and should prepare the final report on the student's presence physically, if the student is found absent without prior intimation to the department/institute/concern authority/T & P Cell, entire training can be cancelled.

The report shall be presented covering following recommended fields but limited to,

- Title/Cover Page
- Internship completion certificate
- Internship Place Details- Company background-organization and activities/Scope and object of the study / personal observations
- Index/Table of Contents
- Introduction

Title/Problem statement/objectives Motivation/Scope and rationale of the study Methodological details

Results / Analysis /inferences and conclusion

Suggestions / Recommendations for improvement to industry, if any Attendance Record

Acknowledgement

List of reference (Library books, magazines and other sources)

#### **Feedback from internship supervisor(External and Internal)**

Post internship, faculty/faculty coordinator should collect feedback about student with following recommended parameters-

Technical knowledge, Discipline, Punctuality, Commitment, Willingness to do the work, Communication skill, individual work, Team work, Leadership.

## Savitribai Phule Pune University

### Third Year of **E & Tc Engineering** (2019 Course)

#### **304199: Internship**

Teaching Scheme:	Credit	Examination Scheme:
**	04	Term Work: 100 Marks

#### Course Objective:

- Will expose technical students to the industrial environment, which cannot be simulated in the classroom and hence creating competent professionals for the industry.
- Provide possible opportunities to learn, understand and sharpen the real time technical / managerial skills required at the job.
- Exposure to the current technological developments relevant to the subject area of training.
- Experience gained from the '**Internship**' will be used in classroom discussions.
- Create conditions conducive to quest for knowledge and its applicability on the job.
- Learn to apply the Technical knowledge in real industrial situations.
- Gain experience in writing Technical reports/projects.
- Expose students to the engineer's responsibilities and ethics.
- Familiarize with various materials, processes, products and their applications along with relevant aspects of quality control.
- Promote academic, professional and/or personal development.
- Expose the students to future employers.
- Understand the social, economic and administrative considerations that influence the working environment of industrial organizations.
- Understand the psychology of the workers and their habits, attitudes and approach to problem solving.

**Course Outcomes:** On completion of the internship, learner will be able to –

**CO1:** To develop professional competence through internship.

**CO2:** To apply academic knowledge in a personal and professional environment.

**CO3:** To build the professional network and expose students to future employees.

**CO4:** Apply professional and societal ethics in their day to day life.

**CO5:** To become a responsible professional having social, economic and administrative considerations.

**CO6:** To make own career goals and personal aspirations.

Internships are educational and career development opportunities, providing practical experience in a field or discipline. Internships are far more important as the employers are looking for employees who are properly skilled and having awareness about industry environment,

practices and culture. Internship is structured, short-term, supervised training often focused around particular tasks or projects with defined time scales.

Core objective is to expose technical students to the industrial environment, which cannot be simulated/experienced in the classroom and hence creating competent professionals in the industry and to understand the social, economic and administrative considerations that influence the working environment of industrial organizations.

Engineering internships are intended to provide students with an opportunity to apply theoretical knowledge from academics to the realities of the field work/training. The following guidelines are proposed to give academic credit for the internship undergone as a part of the Third Year Engineering curriculum.

#### **A. Duration:**

Internship to be completed after semester 5 and before commencement of semester 6 of at least 4 to 6 weeks; and it is to be assessed and evaluated in semester 6.

#### **B. Framework of Internship:**

- ✓ Students are required to be involved in Inter/ Intra Institutional Activities viz; Training with higher Institutions.
- ✓ Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.
- ✓ Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop.
- ✓ During the vacation after 5<sup>th</sup> semester, students are ready for industrial experience. Therefore, they may choose to undergo Internship / Innovation / Entrepreneurship related activities.
- ✓ Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry.
- ✓ Every student is required to prepare a file containing documentary proofs of the activities done by him. The evaluation of these activities will be done by Programmed Head / Cell In-charge / Project Head / TPO / faculty mentor or Industry Supervisor.

#### **C. Internship Guidelines:**

##### **a) Guidelines to the Institute:**

Department will arrange internship for students in industries / organization after fifth semester or as per AICTE/ affiliating University guidelines & managing internships. The general procedure for arranging internship is given below:

**Step 1:** Request Letter/ Email should go to industry to allot various slots of 4-6 weeks as internship periods for the students. Students request letter /profile / interest areas may be submitted to industries for their willingness for providing the training.

**Step 2:** Industry will confirm the training slots and the number of seats allocated for internships via Confirmation Letter/ Email. In case the students arrange the training themselves the confirmation letter will be submitted by the students.

**Step 3:** Students on joining Training at the concerned Industry / Organization, submit the Joining Report/ Letters / Email.

**Step 4:** Students undergo industrial training at the concerned Industry / Organization. In-between Faculty Member(s) evaluate(s) the performance of students once/twice by visiting the Industry/Organization and Evaluation Report of the students is submitted in department.

**Step 5:** Students will submit training report after completion of internship.

**Step 6:** Training Certificate to be obtained from industry.

**Step 7:** List of students who have completed their internship successfully will be issued by Training and Placement Cell.

**b) Guidelines to the students:**

Any absenteeism by students during their internship should be informed immediately to the mentor/reporting manager and the internal guide. No special considerations will be accepted. Students cannot take leave for college work or fest activities. The leave permission for any college related activities will be solely approved by the HOD. The monthly attendance format should be duly submitted to the internal guide by the intern.

**c) Internal reporting Guidelines:**

Every intern should send weekly report to their internal guide without fail. It is mandatory for the intern to send weekly reports to their respective guide on regular basis. Interns should have at least fortnightly verbal communication with the internal guide without fail. In cases where in the company wants to secure their confidential information in the project / internship report, the internal guide should duly co-ordinate with the respective mentor/reporting manager on the method of reporting to assure that no information will be leaked outside and is purely for academic purposes.

**d) Internship Diary / Internship Workbook:**

Students must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The students should record in the daily training diary account of the observations, impressions, information gathered and

suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.

Internship Diary/workbook and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training. Internship Diary / workbook may be evaluated on the basis of the following criteria:

- Proper and timely documented entries.
- Adequacy & quality of information recorded
- Data recorded.
- Thought process and recording techniques used.
- Organization of the information.

**e) Internship Work Evaluation:**

Every student is required to prepare a maintain documentary proofs of the activities done by him / her as internship diary or as workbook. The evaluation of these activities will be done by Programme Head/ Cell In-charge / Project Head / faculty mentor or Industry Supervisor based on overall compilation of internship activities, sub-activities, the level of achievement expected, evidence needed to assign the points and the duration for certain activities.

Assessment and Evaluation is to be done in consultation with internship supervisor (Internal and External - a supervisor from place of internship).

**f) Evaluation through Seminar presentation / Viva-voce at the institute:**

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

- ✓ Depth of knowledge and skills Communication & Presentation Skills.
- ✓ Team Work
- ✓ Creativity
- ✓ Planning & Organizational skills
- ✓ Adaptability and Analytical Skills
- ✓ Attitude & behavior at work.
- ✓ Societal Understanding
- ✓ Ethics
- ✓ Regularity and punctuality
- ✓ Attendance record
- ✓ Log book
- ✓ Student's Feedback from External Internship Supervisor

**g) Internship Report:**

The report shall be presented covering following recommended fields but limited to:

- Title/Cover Page
- Internship completion certificate.
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- Motivation/Scope and rationale of the study
- Methodological details
- Results / Analysis /inferences and conclusion
- Suggestions / Recommendations for improvement to industry, if any
- Attendance Record
- List of reference (Library books, magazines and other sources)

**h) Feedback from internship supervisor (External and Internal):**

Post internship, faculty coordinator should collect feedback about student with following recommended parameters:

- ✓ Technical knowledge
- ✓ Discipline
- ✓ Punctuality
- ✓ Commitment
- ✓ Willingness to do the work
- ✓ Communication skill
- ✓ Individual work
- ✓ Team work
- ✓ Leadership