



List of Courses that include experiential learning through project work/field work/internship during A.Y. 2021-22

| Sr. No. | Program name           | Class | Name of the Course that include experiential learning through project work/field work/internship | Course code |
|---------|------------------------|-------|--|-------------|
| 1       | Basic Engineering      | FE    | PBL  | 110013      |
| 2       | Computer Engineering   | TE    | Internship   | 310255      |
| 3       | Computer Engineering   | BE    | Project Stage II   | 410256      |
| 4       | CIVIL Engineering      | BE    | Project  | 401006      |
| 5       | CIVIL Engineering      | SE    | Survey (Field Work)  | 201009      |
| 6       | Mechanical Sandwitch   | TE    | Industrial In-plant Training- I  | 302064      |
| 7       | Mechanical Engineering | TE    | Internship   | 302055      |
| 8       | Mechanical Sandwitch   | BE    | Project  | 402062      |
| 9       | Mechanical Engineering | BE    | Project Stage-I  | 402046      |
| 10      | Mechanical Engineering | BE    | Project Stage-II   | 402051      |
| 11      | MCA                    | TY    | Internship   | ITC61       |
| 12      | MCA                    | SY    | Internship   | ITC41       |
| 13      | MCA                    | FY    | Mini Project   | ITC11,ITC21 |
| 14      | MCA                    | SY    | Internship   | ITC31       |
| 15      | MBA                    | SY    | Summer Internship Project  | 303- GC 13  |

|            |               |
|------------|---------------|
|            | Total courses |
| Internship | 7             |
| Project    | 7             |
| Field work | 1             |



  
**Principal**  
Shree Chanakya Education Society's  
Indira College of Engineering & Management  
Parandwadi, Pune.

6. Jensen, C., Helsel, J. D., Short, D. R., (2008), "Engineering Drawing and Design", McGraw-Hill International, Singapore

### Guidelines for Laboratory Conduction

#### Tutorial Session

Can be utilized to teach the basic commands of any drafting package, by using this knowledge students shall be able to complete the five assignments on the CAD software. (Minimum 2 problems in each assignment)

Assignment 1: Construct any Engineering Curve using any method

Assignment 2: Orthographic view of any machine element along with sectional view.

Assignment 3: Draw Isometric view for given orthographic views.

Assignment 4 : Draw the isometric or Orthographic view of a product/object (For example Workshop Job prepared during the workshop practice or any product developed during the first year session).

Assignment 5: Draw the development of lateral surface of a solid/ truncated solid.

#### Practical Session

Draw minimum two problems on each assignment on the A3 size drawing sheet.

#### Suggested List of Laboratory Experiments/Assignments

Assignment 1: Construct any Engineering Curve by any method

Assignment 2: Orthographic view of any machine element along with sectional view.

Assignment 3: Draw Isometric view for given orthographic views.

Assignment 4: Draw the development of lateral surface of a solid/ truncated solid

Assignment 5: Draw the isometric or Orthographic view of a product/object (For example Workshop Job prepared during the workshop practice or any product developed during the first year session.)

### 110013: Project Based Learning

#### Teaching Scheme:

PR: 04 Hrs/Week

#### Credits

02

#### Examination Scheme:

PR : 50 Marks

#### Preamble:

For better learning experience, along with traditional classroom teaching and laboratory learning; project based learning has been introduced with an objective to motivate students to learn by working in group cooperatively to solve a problem.

Project-based learning (PBL) is a student-centric pedagogy that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems. Students learn about a subject by working for an extended period of time to investigate and respond to a complex question, challenge, or problem. It is a style of active learning and inquiry-based learning. (Reference: Wikipedia). Problem based learning will also redefine the role of teacher as mentor in learning process. Along with communicating knowledge to students, often in a lecture setting, the teacher will also to act as an initiator and facilitator in the collaborative process of knowledge transfer and development.

#### Course Objectives:

1. To emphasizes learning activities that are long-term, interdisciplinary and student-centric.
2. To inculcate independent learning by problem solving with social context.
3. To engages students in rich and authentic learning experiences.
4. To provide every student the opportunity to get involved either individually or as a group so as to develop team skills and learn professionalism.





**Course Outcomes:**

**CO1:** Project based learning will increase their capacity and learning through shared cognition.

**CO2:** Students able to draw on lessons from several disciplines and apply them in practical way.

**CO3:** Learning by doing approach in PBL will promote long-term retention of material and replicable skill, as well as improve teachers' and students' attitudes towards learning.

**Group Structure:**

Working in supervisor/mentor –monitored groups. The students plan, manage and complete a task/project/activity which addresses the stated problem.

- There should be team/group of 5 -6 students
- A supervisor/mentor teacher assigned to individual groups

**Selection of Project/Problem:**

The problem-based project oriented model for learning is recommended. The model begins with the identifying of a problem, often growing out of a question or “wondering”. This formulated problem then stands as the starting point for learning. Students design and analyze the problem within an articulated interdisciplinary or subject frame.

A problem can be theoretical, practical, social, technical, symbolic, cultural and/or scientific and grows out of students’ wondering within different disciplines and professional environments. A chosen problem has to be **exemplary**. The problem may involve an interdisciplinary approach in both the analysis and solving phases.

By exemplarity, a problem needs to refer back to a particular practical, scientific, social and/or technical domain. The problem should stand as one specific example or manifestation of more general learning outcomes related to knowledge and/or modes of inquiry.

There are no commonly shared criteria for what constitutes an acceptable project. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content and structure of the activity.

- A few hands-on activities that may or may not be multidisciplinary
- Use of technology in meaningful ways to help them investigate, collaborate, analyze, synthesize and present their learning.
- Activities may include- Solving real life problem, investigation /study and Writing reports of in depth study, field work.

**Assessment:**

The institution/head/mentor is committed to assessing and evaluating both student performance and program effectiveness.

Progress of PBL is monitored regularly on weekly basis. Weekly review of the work is necessary. During process of monitoring and continuous assessment AND evaluation the individual and team performance is to be measured. PBL is monitored and continuous assessment is done by supervisor /mentor and authorities.

Students must maintain an institutional culture of authentic collaboration, self-motivation, peer-learning and personal responsibility. The institution/department should support students in this regard through guidance/orientation programs and the provision of appropriate resources and services. Supervisor/mentor and Students must actively participate in assessment and evaluation processes.

Group may demonstrate their knowledge and skills by developing a public product and/or report and/or presentation.

- Individual assessment for each student (Understanding individual capacity, role and involvement in the project)
- Group assessment (roles defined, distribution of work, intra-team communication and togetherness)
- Documentation and presentation





**Evaluation and Continuous Assessment:**

It is recommended that the all activities are to be record and regularly, regular assessment of work to be done and proper documents are to be maintained at college end by both students as well as mentor (you may call it PBL work book).

Continuous Assessment Sheet (CAS) is to be maintained by all mentors/department and institutes.

Recommended parameters for assessment, evaluation and weightage:

- Idea Inception (5%)
- Outcomes of PBL/ Problem Solving Skills/ Solution provided/ Final product (50%) (Individual assessment and team assessment)
- Documentation (Gathering requirements, design & modeling, implementation/execution, use of technology and final report, other documents) (25%)
- Demonstration (Presentation, User Interface, Usability etc) (10%)
- Contest Participation/ publication (5%)
- Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects (5%)

PBL workbook will serve the purpose and facilitate the job of students, mentor and project coordinator. This workbook will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken.

**References:**

- Project-Based Learning, Edutopia, March 14, 2016.
- What is PBL? Buck Institute for Education.
- [www.schoolology.com](http://www.schoolology.com)
- [www.wikipedia.org](http://www.wikipedia.org)
- [www.howstuffworks.com](http://www.howstuffworks.com)

**101014: Environmental Studies-II****TH: 02 Hr/week****Mandatory Non-Credit Course****Course Objectives:**

1. To provide a comprehensive overview of environmental pollution and the science and technology associated with the monitoring and control.
2. To understand the evolution of environmental policies and laws.
3. To explain the concepts behind the interrelations between environment and the development.
4. To examine a range of environmental issues in the field, and relate these to scientific theory.

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

**CO1:** Have an understanding of environmental pollution and the science behind those problems and potential solutions.

**CO2:** Have knowledge of various acts and laws and will be able to identify the industries that are violating these rules.

**CO3:** Assess the impact of ever increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources.

**CO4:** Learn skills required to research and analyze environmental issues scientifically and learn how to use those skills in applied situations such as careers that may involve environmental problems and/or issues.

**Course Contents****Unit V****Environmental Pollution****(08 Hrs)**

Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution

Nuclear hazards and human health risks

Solid waste management: Control measures of urban and industrial waste





**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:



**Savitribai Phule Pune University**  
**Fourth Year of Computer Engineering (2015 Course)**  
**410256:Project Work Stage II**



|                                  |               |  |
|----------------------------------|---------------|--|
| <b>Teaching Scheme:</b>          | <b>Credit</b> | <b>Examination Scheme:</b>                                   |
| <b>Practical : 06 Hours/Week</b> | <b>06</b>     | <b>Term Work: 100 Marks</b><br><b>Presentation: 50 Marks</b> |

**Companion Course:****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–

- Show evidence of independent investigation
- Critically analyze the results and their interpretation.
- Report and present the original results in an orderly way and placing the open questions in the right perspective.
- Link techniques and results from literature as well as actual research and future research lines with the research.
- 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 the 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.**



## 401006 Project Phase-I

### Teaching Scheme:

**Tutorial: 2 Hrs/week**

### Examination Scheme:

**TW: 50 Marks.**

Project phase I Term Work will be evaluated for an individual student based on the seminar presented on the work done in first semester and submission of the report. If the student fails to present the seminar and submit the report, he / she will be marked absent in project examination. The project work phase I shall be consist of any one of the following nature in Civil Engineering related subjects.

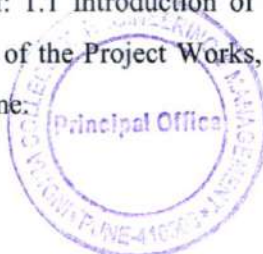
1. Experimental investigation.
2. Software development.
3. Benefits cost economic analysis.
4. Case study with own design.
5. Working model design and fabrication.
6. Case study with development of methodology using soft computing tools.

It is mandatory to present a seminar in presence of Internal and External Examiners and submit preliminary project report based on work done in first semester. The report shall contain finalization of topic, literature survey, planning schedule/ flow chart for completion of project. The report shall be typed or printed and hard/spiral bound. The project work to be taken up individually or in groups. The group shall not be of more than 4 students. References shall be mentioned at the end as per universal standards as mentioned in any international journal of professional body.

### Format of project report: Sequence of pages:

- |                     |                     |                      |               |
|---------------------|---------------------|----------------------|---------------|
| i) Front Cover Page | ii) Certificate     | iii) Acknowledgement | iv) Synopsis  |
| v) Contents         | vi) Notations       | vii) List of Tables  | viii) List of |
| Figures             | ix) List of Graphs. |                      |               |

Chapter 1 Introduction (This consists of: 1.1 Introduction of the Project Work; 1.2 Problem Statement, 1.3 Objectives and 1.4 Scope of the Project Works, 1.5 Research Methodology, 1.6 Limitations of study, 1.7 Expected outcome.





Chapter 2 Literature Review from minimum 10 articles (It shall include theoretical support, details regarding work done by various persons, methods established, any new approach. It should preferably highlight the development in the field of research chronologically as reflected from books, journals etc.).

Chapter 3 Planning Schedule/ Flow Chart For Completion of Project References and Bibliography (The references and bibliography shall include name of author/code/manual/book, title of paper/code/manual/book, name of the journal, month & year of publication, volume number/ISBN number, page number x-y. The references and bibliography shall be as per universal standards as mentioned in any international journal of professional body).

**Report Printing details:**

1. Report shall be typed on A4 size Executive Bond paper with single spacing preferably on Both sides of paper.
2. Margins: Left Margin: 37.5 mm, Right Margin: 25 mm, Top Margin: 25 mm, Bottom Margin: 25 mm.
3. Give page number at bottom margin at center.
4. Size of Letters: Chapter Number: 16 font size, Times New Roman in Capital Bold Letters, Chapter Name: 12 Font size in Capital Bold Letters, Main Titles (1.1, 2.5 etc): 16 Font size in Bold Letters Sentence case, Sub Titles (1.1.5, 4.5.1 etc): 14 Font size in Bold Letters-Sentence case. All other matter: 12 Font size sentence case.
5. No blank sheet be left in the report.
6. Figure name: 12 Font size in sentence case Bold- Below the figure.
7. Table title -12 font size in sentence case- Bold-Above the table.

**Savitribai Phule Pune University, Pune**  
**Second Year Civil Engineering (2019 Course)**

**201009 Surveying**

**Credit : 3**

**Teaching Scheme:**

Theory: 03hrs/ week

Practical: 04 hrs/week

**Examination Scheme:**

In-semester : 30 Marks

End-semester : 70 Marks

**Pre- requisites:**

Basic Introduction to Civil Engineering field, Engineering Mathematics

**Course Objectives:**

With the successful completion of the course, the student should have the capability to:

- 1 Describe the function of surveying in civil engineering construction,
- 2 Identify the sources of measurement errors and mistakes; understand the difference between accuracy and precision as it relates to distance, differential leveling, and angular measurements,
- 3 Identify and calculate the errors in measurements and to develop corrected values for differential level circuits, horizontal distances and angles for open or closed-loop traverses,
- 4 Effectively communicate with team members during field activities; identify appropriate safety procedures for personal protection; properly handle and use measurement instruments.
- 5 Be able to identify hazardous environments and take measures to insure one's personal and team safety
- 6 Perform traverse calculations; determine latitudes, departures, and coordinates of control points and balancing errors in a traverse. Use appropriate software for calculations and plotting.
- 7 Operate a total station to measure distance, angles, and to calculate differences in elevation. Reduce data for application in a geographic information system,
- 8 Work as a team member on a surveying party to achieve a common goal of accurate and timely project completion,
- 9 Calculate, design and establish curves, Understand, interpret, and prepare plan, profile, and cross-section drawings, Work with cross-sections and topographic maps to calculate areas, volumes, and earthwork quantities.

**Course Outcomes:**

On successful completion of this course, Student will be able to:

1. Define and Explain basics of plane surveying and differentiate the instruments used for it.
2. Express proficiency in handling surveying equipment and analyse the surveying data from these equipment.
3. Describe different methods of surveying and find relative positions of points on the surface of earth.
4. Execute curve setting for civil engineering projects such as roads, railways etc.
5. Articulate advancements in surveying such as space based positioning systems





**T.E. Mechanical (Sandwich) - 2015 Course  
(302064) Industrial In-plant Training –I**

| Code   | Subject                            | Teaching Scheme<br>(Weekly Load in hrs)                        |     |       | Examination Scheme |         |     |       |     | Total<br>Marks | Credits |    |
|--------|------------------------------------|--|-----|-------|--------------------|---------|-----|-------|-----|----------------|---------|----|
|        |                                    | Lect.  | Tut | Pract | In Sem             | End Sem | TW  | PR    | OR  |                | Th      | Pr |
| 302064 | Industrial In-plant<br>Training- I | One contact hour per<br>student per week by<br>college guide @ |     |       | -                  | -       | 100 | --    | 100 | 200            | 6       | 4  |
|        |                                    |  |     |       |                    |         |     | Total |     | 10             |         |    |

Students are expected to learn followings during their Industrial In-Plant Training. He or She shall be given training in Large or Medium size manufacturing unit (Core mechanical industry) in various departments.

1. Orientation: Types of Industry, Industrial Environment, Industrial Psychology, Industrial Management, Industrial Relations, Government Policies, Associated organizations and their role. Company profile, Organizational structure of the company, Organizational behavior, Scale and type of production, Types of products.

2. Departments in Manufacturing Industries: R & D (research and development), quality control, shipping, distribution, production, purchasing, recruiting or human resources, operations, finance, accounting, accounts payable, accounts receivable, billing, sales, marketing, advertising, maintenance, etc., There could be additional departments within other departments depending on the size and type of business.

3. Industrial Design and Drawing Practice: Design and Drawing Standards, Study of mechanical components and component design such as gears, gear boxes, chain and belt drives, couplings, shaft, keys, bearings, brackets, bolted and welded connections. Sub-assembly and assembly drawings. Simple assignments based on the above items.

4. Manufacturing processes:

To understand manufacturing concepts applied in industry. Study of material requirements, material standards. Heat treatments applied to products.

5. Machine Tools:

Machine tool classifications, types of machines tool, special machine tools, machine tool design, CNC controls, Programming languages and codes, Machine tool maintenance.

6. Manufacturing Automation:

Automation level, types of automation, application of hydraulics and pneumatics, mechatronics control, use of sensors and feedback in control, robotic control over the process.

7. Material Handling:

Unit load concept, types of material handling equipment, selection of Material handling equipment, design requirement of material handling system.

8. Measurement and Quality Control:

Precision measurement, Control chart, Statistical process control, Process capability, TQM

9. Processes and Operation Planning:

Production planning and control, Order preparation, Material planning, Process planning, Route sheets, documents in process planning, production control- dispatching, follow-up.

10. Machines, Personal and Plant safety.

Safety rules in organization, posters exhibits and publicity, fire prevention and protection, Health and sanitation, Protective wearing apparel, Safety signs, Industrial safety standards.

**Operational Guidelines:**

- Institute and Industry will prepare detail training program at the beginning of the training, covering as much as possible from above mentioned topics.
- It is expected that students get exposure to all departments in industry.
- The student shall be asked to do simple assignments in various departments where he or she is undergoing training.
- Institute will assign a supervisor faculty to each student.
- Supervisor will guide and monitor student's training by visiting the industry once a month.
- Student will maintain logbook during the training.

**Term Work:**

Term Work shall consist of a comprehensive report based on his or her observations, his or her contributions during six months of training.

The implant training report\* shall include, all the points mentioned below in the same sequence:

1. Industry History, Product/Service details, List of customers, Organizational Structure, Plant layout for small enterprise, detailed layout of shop floor, Safe working practices followed in the industry.
2. The department details where the student has undergone training in the first semester. Training details (Classroom training) if given shall be included. If training certificate is provided can be included.
3. The activities done during the training with technical details should be included in the report. Technical details in the form of drawings, figures, process sheets, machine specifications etc.
4. The assignments (if any) other than Mini Project completed in the Semester during training should be included in the report. Mini project work should not be included in implant training report to avoid duplication.
5. Any other relevant details if required.
6. Conclusion- (Major Learnings from the training)
7. The report should include a certificate of successful completion of training and attendance from concerned industry.

\* If a number of students are working in the same industry, point 1 will be same but 2 to 7 shall be different.

**Examination:**

Oral will be based on Term Work completed during training. Oral Examination shall be conducted by appointing one Internal Examiner and one External Examiner from industry.

**Instructions for in-plant training report writing**

It is important that the procedures listed below be carefully followed by all the students. Prepare 3 COPIES of your In-Plant Training report.

1. Limit your In-Plant Training report to preferably 40-50 pages
2. Header For e.g. University of Pune
3. The footer for e.g. Mechanical Engineering  
Institute Name, Mechanical Engineering Times New Roman 10 pt. and centrally aligned.
4. Page number as second line of footer, Times New Roman 10 pt, centrally aligned
5. Print the report using
  - a) Letter quality computer printing.
  - b) The main part of report should be Times New Roman 12 pt. and justified.
  - c) Use 1.5 line spacing.
  - d) Entire report shall be one chapter. No chapters for In-Plant Training report.
6. Use the paper size 8.5" × 11" or A4 (210 × 197 mm). Please follow the margins given below.  
Margin Location Paper 8.5" × 11", Paper A4 (210 × 197 mm)
  - Top 1", 25.4 mm
  - Left 1.5", 37 mm
  - Bottom 1.25", 32 mm
  - Right 1", 25.4 mm
7. All paragraphs will be 1.5 line spaced with a one blank line between each paragraph. Each paragraph will begin with without any indentation.
8. Section titles should be bold with 14 pt typed in all capital letters and should be left aligned.
9. Sub-Section headings should be aligning at the left with 12 pt, bold and Title Case (the first letter of each word is to be capitalized).



| 302055: Internship/Mini project  |  |         |                    |           |
|--|--|---------|--------------------|-----------|
| Teaching Scheme**  |  | Credits | Examination Scheme |           |
|  |  | 04      | TW                 | 100 Marks |
| <b>Prerequisites:</b> Knowledge of design, manufacturing processes, modeling, and mechanical systems   |  |         |                    |           |
| <b>Course Objectives:</b><br>Internship provides an excellent opportunity to learner to see understand the conceptual aspects learned in classes and deployed into the practical world. Industry/on project experience provides much more professional experience as value addition to classroom teaching. <ol style="list-style-type: none"> <li>1. To encourage and provide opportunities for students to get professional/personal experience through internships.</li> <li>2. To learn and understand real life/industrial situations.</li> <li>3. To get familiar with various tools and technologies used in industries and their applications.</li> <li>4. To nurture professional and societal ethics.</li> <li>5. To create awareness of social, economic and administrative considerations in the working environment of industry organizations.</li> </ol>  |  |         |                    |           |
| <b>Course Outcomes:</b><br>On completion of the course, learners should be able to <ul style="list-style-type: none"> <li>CO1. <b>DEMONSTRATE</b> professional competence through industry internship.</li> <li>CO2. <b>APPLY</b> knowledge gained through internships to complete academic activities in a professional manner.</li> <li>CO3. <b>CHOOSE</b> appropriate technology and tools to solve given problem.</li> <li>CO4. <b>DEMONSTRATE</b> abilities of a responsible professional and use ethical practices in day to day life.</li> <li>CO5. <b>DEVELOP</b> network and social circle, and <b>DEVELOPING</b> relationships with industry people.</li> <li>CO6. <b>ANALYZE</b> various career opportunities and <b>DECIDE</b> career goals.</li> </ul>  |  |         |                    |           |
| <b>**Guidelines:</b><br>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.<br>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.<br>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. |  |         |                    |           |



**Savitribai Phule Pune University**  
**Final Year of Mechanical Engineering (2015 Course)**

**Course Code : 402046**

**Course Name : Project – I**

| Teaching Scheme: |                   | Credits |      | Examination Scheme: |             |         |
|------------------|-------------------|---------|------|---------------------|-------------|---------|
| Theory           | : –               | TH      | : –  | Theory              | In-Sem : –  | PR : –  |
| Practical        | : 04 hrs per week | TW      | : 02 |                     | End-Sem : – | OR : 25 |
|                  |                   |         |      |                     |             | TW : 25 |

**Course Objectives:**

- To have ideology of the industrial project.
- Hands on working with tools, tackles and machines
- To carry out literature survey
- To do brain storming for mechanical engineering system

**Course Outcomes:**

On completion of the course, students will be able to -

- Find out the gap between existing mechanical systems and develop new creative new mechanical system.
- Learn about the literature review
- Get the experience to handle various tools, tackles and machines.

**Course Contents**

**INSTRUCTIONS FOR PROJECT REPORT WRITING (Project Stage I)**

It is important that the procedures listed below be carefully followed by all the students of B.E. (Mechanical Engineering).

1. Prepare **Three Spiral Bound Copies** of your manuscript.
2. Limit your Project Stage I to 25– 30 pages (preferably)
3. The footer *must include* the following:  
 Institute Name, B.E. (Mechanical) Times New Roman 10 pt. and centrally aligned.
4. Page number as second line of footer, Times New Roman 10 pt. centrally aligned.
5. Print the manuscript using
  - a) Letter quality computer printing.
  - b) The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.
  - c) Use 1.5 line spacing.
  - d) Entire report shall be of 5- 7 chapters
6. Use the paper size 8.5'' × 11'' or A4 (210 × 197 mm). Please follow the margins given below.

| Margin Location | Paper 8.5'' × 11'' | Paper A4 (210 × 197 mm) |
|-----------------|--------------------|-------------------------|
| Top             | 1''                | 25.4 mm                 |
| Left            | 1.5''              | 37 mm                   |
| Bottom          | 1.25''             | 32 mm                   |
| Right           | 1''                | 25.4 mm                 |



**Savitribai Phule Pune University**  
**Final Year of Mechanical Engineering (2015 Course)**

**Course Code : 402051**

**Course Name : Project – II**

| Teaching Scheme: |                   | Credits |      | Examination Scheme: |             |          |
|------------------|-------------------|---------|------|---------------------|-------------|----------|
| Theory           | : –               | TH      | : –  | Theory              | In-Sem : –  | PR : –   |
| Practical        | : 12 hrs per week | TW      | : 06 |                     | End-Sem : – | OR : 100 |
|                  |                   |         |      |                     |             | TW : 100 |

**Course Contents**

**INSTRUCTIONS FOR PROJECT REPORT WRITING**

It is important that the procedures listed below be carefully followed by all the students of B.E. (Mechanical Engineering).

1. Prepare **Three Hard Bound Copies** of your manuscript.
2. Limit your Dissertation report to 80– 120 pages (preferably)
3. The footer must include the following:  
Institute Name, B.E. (Mechanical) Times New Roman 10 pt. and centrally aligned.
4. Page number as second line of footer, Times New Roman 10 pt. centrally aligned.
5. Print the manuscript using
  - a) Letter quality computer printing.
  - b) The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.
  - c) Use 1.5 line spacing.
  - d) Entire report shall be of 5- 7 chapters
6. Use the paper size 8.5'' × 11'' or A4 (210 × 197 mm). Please follow the margins given below.

| Margin Location | Paper 8.5'' × 11'' | Paper A4 (210 × 197 mm) |
|-----------------|--------------------|-------------------------|
| Top             | 1''                | 25.4 mm                 |
| Left            | 1.5''              | 37 mm                   |
| Bottom          | 1.25''             | 32 mm                   |
| Right           | 1''                | 25.4mm                  |

7. All paragraphs will be 1.5 lines spaced with a one blank line between each paragraph. Each paragraph will begin with without any indentation.
8. Section titles should be bold with 14 pt. typed in all capital letters and should be left aligned.
9. Sub-Section headings should be aligning at the left with 12 pt. bold and Title Case (the first letter of each word is to be capitalized).
10. Illustrations (charts, drawings, photographs, figures) are to be in the text. Use only illustrations really pertinent to the text. Illustrations must be sharp, clear, black and white. Illustrations downloaded from internet are not acceptable.
  - a) Illustrations should not be more than two per page. One could be ideal
  - b) Figure No. and Title at bottom with 12 pt.
  - c) Table No. and Title at top with 12 pt.
  - d) Legends below the title in 10 pt.
  - e) Leave proper margin in all sides

13. Practical based on Divide and Conquer Technique-Binary Search, Tower of Hanoi
14. Implementation of Dynamic Programming- LCS, Regular Expression Matching
15. Practical based on backtracking- N Queen's problems

Course Code: ITC11

Course Name: Mini Project

| Credit Scheme |              |        | Evaluation Scheme |           |          |          |
|---------------|--------------|--------|-------------------|-----------|----------|----------|
| Lecture       | Practical    | Credit | Internal          |           |          | External |
|               |              |        | Written           | Practical | Tutorial | Total    |
| -             | 10 Hrs./Week | 5      | -                 | 75        | -        | 125      |

### Course Description:

A mini project is an assignment that the student needs to complete at the end of every semester to strengthen the understanding of fundamentals through effective application of the subjects learnt.

#### *Course Outcomes:*

Student will be able to

CO1: Create working project using tools and techniques learnt in this semester (Create)

#### *Course Structure:*

#### **Guidelines for Mini Project**

1. Students are expected to undertake one mini project starting from first semester till third semester.
2. The student may take up the mini project in first semester based on the courses learnt in that semester and for every next semester the mini project may be based on the courses learnt in the current semester along with all the subjects learnt in earlier semesters.
3. The student may take up the project individually or in group. However, if project is done in group, each student must be given a responsibility for distinct modules.
4. Selected project/module must have relevant scope as per the marks assigned and must be carried out in the Institute.
5. Internal guide should monitor and evaluate the progress of the project on individual basis through handwritten workbook (Project Diary) maintained by students containing various project milestones with learnings and remarks from internal guide for concurrent evaluation.
6. The Project Synopsis should contain an Introduction to Project clearly stating the project scope in detail justifying enough scope for 125 marks. The project work will carry 75 marks for internal assessment and 50 marks for external assessment.
7. Students are expected to show working demo of the project during final evaluation.
8. **Students are expected to upload mini-project on GITHUB as project repository of the institution.**
9. Students are expected to submit the soft copy of mini project report as a part of final submission.





| Semester I          |                                      |             |           |            |            |
|---------------------|--------------------------------------|-------------|-----------|------------|------------|
| Sr. No.             | Course Title                         | Course Code | CP        | EXT        | INT        |
| 1                   | Java Programming                     | IT11        | 3         | 50         | 25         |
| 2                   | Data Structure and Algorithms        | IT12        | 3         | 50         | 25         |
| 3                   | Object Oriented Software Engineering | IT13        | 3         | 50         | 25         |
| 4                   | Operating System Concepts            | IT14        | 3         | 50         | 25         |
| 5                   | Network Technologies                 | IT15        | 3         | 50         | 25         |
| 6                   | Open Course 1                        | OC11        | 1         |            | 25         |
| 7                   | Open Course 2                        | OC12        | 1         |            | 25         |
| <b>* Practicals</b> |                                      |             |           |            |            |
| 8                   | Practical                            | IT11L       | 5         | 50         | 75         |
| 9                   | Mini Project                         | ITC11       | 5         | 50         | 75         |
| <b>Soft Skills</b>  |                                      |             |           |            |            |
| 10                  | Soft Skills - I                      | SS11        | 1         |            | 25         |
|                     |                                      |             | <b>28</b> | <b>350</b> | <b>350</b> |

| Semester II         |                                |             |           |            |            |
|---------------------|--------------------------------|-------------|-----------|------------|------------|
| Sr. No.             | Course Title                   | Course Code | CP        | EXT        | INT        |
| 1                   | Python Programming             | IT21        | 3         | 50         | 25         |
| 2                   | Software Project Management    | IT22        | 3         | 50         | 25         |
| 3                   | Optimization Techniques        | MT21        | 3         | 50         | 25         |
| 4                   | Advanced Internet Technologies | IT23        | 3         | 50         | 25         |
| 5                   | Advanced DBMS                  | IT24        | 3         | 50         | 25         |
| 6                   | Open Course 3                  | OC21        | 1         |            | 25         |
| 7                   | Open Course 4                  | OC22        | 1         |            | 25         |
| <b>* Practicals</b> |                                |             |           |            |            |
| 8                   | Practical                      | IT21L       | 5         | 50         | 75         |
| 9                   | Mini Project                   | ITC21       | 5         | 50         | 75         |
| <b>Soft Skills</b>  |                                |             |           |            |            |
| 10                  | Soft Skills - II               | SS21        | 1         |            | 25         |
|                     |                                |             | <b>28</b> | <b>350</b> | <b>350</b> |

