



Bharatiya Vidya Bhavan's

Sardar Patel Institute of Technology

(Autonomous Institute Affiliated to University of Mumbai)

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058

Department of Computer Engineering

| Sem III | | | | | | | |
|---------|------|-----------|--|----|----|---|----|
| No. | Type | Code | Course | L | T | P | O |
| 1 | BSC | MA203 | Probability and Statistics | 3 | 0 | 0 | 5 |
| 1 | BSC* | MA202 | Foundation of Mathematics-I* | 2 | 1 | 0 | 6 |
| 2 | PC | CS201 | Discrete Structures and Graph Theory | 3 | 0 | 0 | 4 |
| 3 | PC | CS202 | Data Structures | 3 | 0 | 2 | 5 |
| 4 | PC | CS203 | Computer Architecture and Organization | 3 | 0 | 2 | 4 |
| 5 | PC | CS204 | Database Management Systems | 3 | 0 | 2 | 5 |
| 6 | ABL | SVXX/STXX | SEVA II or III /SATVA II or III | 0 | 0 | 0 | 3 |
| 7 | HSSE | HSEX1 | HSS-I | 2 | 0 | 0 | 3 |
| TOTAL | | | | 17 | 0 | 6 | 29 |
| | | | | 52 | 21 | | |

*Only for Lateral Entry Students

| Sem IV | | | | | | | |
|--------|------|-----------|--------------------------------------|----|----|----|----|
| No. | Type | Code | Course | L | T | P | O |
| 1 | BSC | MA201 | Linear Algebra | 2 | 0 | 2 | 5 |
| 1 | BSC* | MA204 | Foundation of Mathematics-II | 2 | 1 | 0 | 6 |
| 2 | PC | CS205 | Design and Analysis of Algorithms | 3 | 0 | 2 | 5 |
| 3 | PC | CS206 | Operating Systems | 3 | 0 | 2 | 5 |
| 4 | PC | CS207 | Computer Communications and Networks | 3 | 0 | 2 | 5 |
| 5 | SBC | CS208 | Mini Project-I | 0 | 0 | 0 | 4 |
| 6 | ABL | SVXX/STXX | SEVA II or III /SATVA II or III | 0 | 0 | 0 | 3 |
| 7 | HSSE | HSEX2 | HSS-II | 2 | 0 | 0 | 3 |
| 8 | SBC | AS201 | Professional Communication Skills | 1 | 0 | 2 | 2 |
| 9 | S/M | SCX1/MNX1 | SCOPE-I/Minor-I | | | | 3 |
| TOTAL | | | | 14 | 0 | 10 | 32 |
| | | | | 56 | 22 | | |

*Only for Lateral Entry Students

| Second Summer for HSC students | | | | | | | |
|--------------------------------|------|-------|-----------------------|---|---|---|-------|
| No. | Type | Code | Course | L | T | P | O |
| 1 | MLC | AS202 | Constitution of India | | | | 06 |
| | | | | | | | 06 NC |

| Second Summer (For Lateral Entry Students) | | | | | | | |
|--|------|-------|----------------------------|---|---|---|-------|
| No. | Type | Code | Course | L | T | P | O |
| 1 | BSC | MA201 | Linear Algebra | 2 | 0 | 2 | 5 |
| 1 | BSC | MA203 | Probability and Statistics | 3 | 0 | 0 | 5 |
| 2 | MLC | AS202 | Constitution of India | | | | 06 |
| | | | | | | | 06 NC |



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Department of Computer Engineering

| Course (Category) Code | Course Name | Teaching Scheme (Hrs/week) | | | | | Credits Assigned | | | | |
|------------------------------|----------------|-------------------------------|---|-----|---|-----|------------------|-----|---|-------|-------|
| | | L | T | P | O | E | L | T | P | O | Total |
| 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 2 | 2 | 2 | |
| Examination Scheme | | | | | | | | | | | |
| (SBC) | Mini Project-I | Component | | ISE | | MSE | | ESE | | Total | |
| | | Theory | | -- | | -- | | -- | | -- | |
| CS208 | | Laboratory | | 100 | | -- | | 100 | | 200 | |

Pre-requisite Course Codes, if any.

Course Objective: To develop the skills of Planning and Designing the working model for solving the real world Problem.

Course Outcomes (CO): At the End of the course students will be able to

| | |
|---------|---|
| CS208.1 | Discover potential research areas for addressing societal issues |
| CS208.2 | Conduct a survey of basic and contemporary literature in the preferred field of study. |
| CS208.3 | Formulate and propose a plan for creating a solution for the research plan identified. |
| CS208.4 | Exercise the team building, communication and management for design and implementation of projects. |
| CS208.5 | Compare and contrast the several existing solutions for research challenge |
| CS208.6 | Report and present the findings of the study conducted in the preferred domain. |

CO-PO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CS208.1 | 2 | 2 | | | | 2 | | 3 | 3 | 3 | | 2 |
| CS208.2 | 2 | 2 | | | | 2 | | 3 | 3 | 3 | | 2 |
| CS208.3 | 2 | 3 | | | | | 2 | 3 | 3 | 3 | | 2 |
| CS208.4 | 2 | | 3 | 1 | 2 | | | 3 | 3 | 3 | 3 | 2 |
| CS208.5 | 2 | 2 | | 2 | | | | 3 | 3 | 3 | | 2 |
| CS208.6 | 2 | 2 | | | | | | 3 | 3 | 3 | | 2 |

CO-PEO/PSO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

| | PEO1 | PEO2 | PEO3 | PEO4 | PSO1 | PSO2 | PSO3 |
|---------|------|------|------|------|------|------|------|
| CS208.1 | 2 | 2 | 2 | | | 2 | |
| CS208.2 | 2 | 2 | 2 | | | 2 | |
| CS208.3 | 2 | 2 | 2 | | | 2 | |
| CS208.4 | 2 | 2 | 2 | | | 2 | |
| CS208.5 | 2 | 2 | 2 | | | 2 | |
| CS208.6 | 2 | 2 | 2 | | | 2 | |

BLOOM'S Levels Targeted (Pl. appropriate)

| | | | | | |
|----------|------------|-------|---------|----------|---------|
| Remember | Understand | Apply | Analyze | Evaluate | Create✓ |
|----------|------------|-------|---------|----------|---------|

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Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058

Department of Computer Engineering

Mini-project is an opportunity to make a difference in the experience of education in its own way. It is an attempt of scientific study of the problem in surrounding in order to guide, correct and evaluate the actions and decisions about it. It is based on a small project correlating scientific knowledge and day to day experience which encourages development of scientific attitude to solve real life problems among students.

The Objectives of Action Research are:

- ✓ To make students sensitive towards societal issues
- ✓ To learn scientific principles from day-to-day experiences
- ✓ To develop psycho-technological skills through observation, classification, statement of hypothesis etc.
- ✓ Development of communication, organizational skills and maturity through discussion, presentation etc.
- ✓ To develop ability to correlate science, technology and society
- ✓ To apply engineering knowledge and propose innovative, sustainable solutions to the real-life challenges
- ✓ **Steps for Implementation (ISE: 2 Phases) and ESE**

- ✓ Keen observation of the surrounding/society
- ✓ Identification of the problem
- ✓ Analysis of the problem
- ✓ Collection of relevant information by formulating research questions
- ✓ Suggesting plan of action
- ✓ Conducting experiments
- ✓ To draw conclusion
- ✓ To find the possible solution to rectify the problem
- ✓ To execute experiments and remedial measures wherever possible Students can seek guidance from teachers, other experts and make effective use of other sources of information available around them. Students must ensure that problem to be solved in manageable in one semester.

Criteria of a good project:

- ✓ Appropriate idea, clear understanding, and proper presentation of the concept
- ✓ Quality of work
- ✓ Project plan and its execution
- ✓ Credibility of the work
- ✓ Probable impact of the work on the attitude of students and society
- ✓ Scientific attitude, creativity and novelty reflected in project work and analysis of the situation
- ✓ Utility and innovation of the remedial measures
- ✓ Desirability, Feasibility and Viability in real life

The H/W and S/W resources required to complete the Mini-Project-I may be beyond the scope of curriculum of courses taken or may be based on the courses but thrust should be on

- Learning additional skills
- Development of ability to define and design the problem and lead to its accomplishment with proper planning
- Learn the behavioral discipline by working in a team. The team may be maximum three (03) students.

Evaluation:

Project report should contain project title, student details, certificate and acknowledgements. Other sections of the report shall be decided by the department based on projects. But it must have introduction, necessity of project, objectives, hypothesis, plan, observations, analysis of results, conclusion and references along with other sections related to technology. The ISE and ESE evaluation will be carried out based on the rubrics framed by the Department. The ESE marks will be based on final demonstration of the project and viva based on it and report/poster/technical paper of the project in the standard format provided by the Department.



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Department of Computer Engineering

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| Sem V | | | | | | | |
|-------|------|-----------|--|----|----|---|----|
| No. | Type | Code | Course | L | T | P | O |
| 1 | PC | CS301 | Theory of Computation | 3 | 0 | 0 | 6 |
| 2 | PC | CS302 | Software Engineering | 3 | 0 | 2 | 5 |
| 3 | PC | CS303 | Artificial Intelligence and Machine Learning | 3 | 0 | 2 | 5 |
| 4 | PC | CS304 | Distributed Computing | 3 | 0 | 2 | 5 |
| 5 | SBC | CS305 | Cloud and Internet Technology Lab | 1 | 0 | 2 | 5 |
| 6 | HSSE | HSEX3 | HSS-III | 2 | 0 | 0 | 3 |
| 7 | ABL | SVXX/STXX | SEVA II or III /SATVA II or III | 0 | 0 | 0 | 3 |
| 8 | S/M | SCX2/MNX2 | SCOPE-II/Minor-II | | | | 3 |
| TOTAL | | | | 15 | 0 | 8 | 29 |
| | | | | 52 | 20 | | |

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| Sem VI (Cat 1- For Students who have NOT preferred semester long internship) | | | | | | | |
|--|------|-----------|--|---|---|----|--------|
| No | Type | Code | Course | L | T | P | O E C |
| 1 | OE | OEXXX | Open Elective-I | 2 | 0 | 2 | 4 8 3 |
| 2 | PC | CS306 | System Programming and Compiler Construction | 3 | 0 | 2 | 5 10 4 |
| 3 | PC | CS307 | Fundamental of Signal and Image Processing | 3 | 0 | 2 | 5 10 4 |
| 4 | PE | CS3X1 | PE-I | 2 | 0 | 2 | 4 8 3 |
| 5 | PE | CS3X2 | PE-II | 2 | 0 | 2 | 4 8 3 |
| 6 | SBC | CS308 | Main Project Stage-I | 0 | 0 | 0 | 8 08 3 |
| 7 | ABL | SVXX/STXX | SEVA II or III /SATVA II or III | 0 | 0 | 0 | 3 3 1 |
| 8 | S/M | SCX3/MNX3 | SCOPE-III/Minor-III | | | | 3 |
| TOTAL | | | | 6 | 4 | 18 | 28 21 |

| Sem VI (Cat 2-For Students who have preferred semester long internship) | | | | | | | |
|---|------|--------------|---------------------|---|---|---|----------|
| No | Type | Code | Course | L | T | P | O E C |
| 1 | PE* | CS3X1 | PE-I | 2 | 0 | 2 | 4 8 3 |
| 2 | PE* | CS3X2 | PE-II | 2 | 0 | 2 | 4 8 3 |
| 4 | SBC | CS310/ CS309 | Research Internship | 0 | 0 | 0 | 40 40 15 |
| 5 | S/M* | SCXX/MNXX | SCOPE-III/Minor-III | | | | 3 |
| *To be completed online mode or allied courses from MOOCs | | | | | | | 21 |



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Department of Computer Engineering

| Course (Category) Code | Course Name | Teaching Scheme (Hrs/week) | | | | | Credits Assigned | | | |
|------------------------------|------------------------|----------------------------|-----|-----|-----|-------|------------------|---|---|-------|
| | | L | T | P | O | E | L | T | P | Total |
| | | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 3 |
| Examination Scheme | | | | | | | | | | |
| (SBC) | Mini Project-II | Component | ISE | MSE | ESE | Total | | | | |
| | | Theory | - | - | - | - | | | | |
| CS308 | | Laboratory | 200 | - | 100 | 300 | | | | |

Pre-requisite Course Codes, if any.

Course Objective: This course inculcates self-learning, research, and entrepreneurship attitude in students. Students will be able to understand the formal project development process to complete a project in a team. It will help students to develop communication, organizational skills and maturity through discussion, presentation etc.

Course Outcomes (CO): At the End of the course students will be able to

| | |
|---------|---|
| CS308.1 | Conduct a survey of basic and contemporary literature in the preferred field by identifying problems based on societal /research needs. |
| CS308.2 | Formulate the problem statement by making judgments on validity of ideas. |
| CS308.3 | Conclude suitable inferences from obtained results through theoretical/experimental/simulations-based analysis. |
| CS308.4 | Develop interpersonal skills to work as member of a team. |
| CS308.5 | Prepare a report of the findings for the study conducted in the preferred domain. |

CO-PO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CS308.1 | 2 | 2 | - | - | - | 2 | 1 | 3 | 3 | 3 | - | 2 |
| CS308.2 | 2 | 3 | 2 | 2 | - | - | 1 | 3 | 3 | 3 | - | 2 |
| CS308.3 | 2 | 2 | 2 | 2 | 2 | - | - | 3 | 3 | 3 | - | 2 |
| CS308.4 | - | - | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 |
| CS308.5 | 2 | 2 | - | - | - | - | - | 3 | 3 | 3 | 2 | 2 |

CO-PEO/PSO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

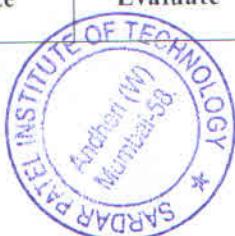
| | PEO1 | PEO2 | PEO3 | PSO1 | PSO2 |
|---------|------|------|------|------|------|
| CS308.1 | 2 | 2 | 2 | - | 2 |
| CS308.2 | 2 | 2 | 2 | - | 2 |
| CS308.3 | 2 | 2 | 2 | - | 2 |
| CS308.4 | 2 | 2 | 2 | - | 2 |
| CS308.5 | 2 | 2 | 2 | - | 2 |

BLOOM'S Levels Targeted (Pl. Tick appropriate)

| | | | | | |
|----------|------------|-------|---------|----------|----------|
| Remember | Understand | Apply | Analyze | Evaluate | Create ✓ |
|----------|------------|-------|---------|----------|----------|

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Department of Computer Engineering

Mini Project II is an opportunity to inculcate the research aptitude in students. It helps them to identify research gaps and come up with possible solutions. Students should be able to analyze these solutions for feasibility of their implementation. Mini project II is based on a small research project correlating scientific knowledge and day to day experience which encourages development of scientific attitude to solve real life problems among students.

Steps for Research:

- ✓ Keen observation of the surrounding/society
- ✓ Read existing Literature to understand and identify the research gaps
- ✓ Analysis of the problem
- ✓ Formulation of the problem statement
- ✓ Collection of relevant information by formulating research questions
- ✓ Suggesting plan of action
- ✓ Conducting experiments and draw conclusion
- ✓ To find the possible solution to rectify the problem
- ✓ To execute experiments and remedial measures wherever possible

Students can seek guidance from teachers, other experts and make effective use of other sources of information available around them. Students must ensure that problem to be manageable in one semester.

Criteria of a good project:

- ✓ Appropriate idea, clear understanding, and proper presentation of the concept
- ✓ Quality of work
- ✓ Project plan and its execution
- ✓ Credibility of the work
- ✓ Probable impact of the work on the attitude of students and society
- ✓ Scientific attitude, creativity and novelty reflected in project work and analysis of the situation
- ✓ Utility and innovation of the remedial measures
- ✓ Desirability, Feasibility and Viability in real life

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The H/W and S/W resources required to complete the Mini Project II may be beyond the scope of curriculum of courses taken or may be based on the courses but thrust should be on

- ✓ Learning additional skills
- ✓ Development of ability to define and design the problem and lead to its accomplishment with proper planning
- ✓ Learn the behavioral discipline by working in a team. Students should work in groups of three on the Mini Project-II.

Evaluation:

Project report should be submitted on A-4 size pages. Use both printing. Report must carry project title, student details, certificate, and acknowledgements. Other sections of the report shall be decided by the department based on projects. But it must have introduction, necessity of project, objectives, hypothesis, plan, observations, and analysis of results, conclusion, and references along with other sections related to technology.

The ISE and ESE evaluation will be carried out based on the rubrics framed by the Department. ISE marks will be based on the performance of the individual student in three phases of evaluation. The evaluation of the Phase-I will be based on Title approval where the domain and scope of the project will be evaluated. Phase-II will be based on presentation of the selected approach, Justification and Design. Evaluation of Phase-III will be based on demonstration of implementation, testing, presentation and technical report.

The ESE marks will be based on demonstration in front of the expert appointed by the Department. In the ESE examination each individual student would be assessed for his/her contribution in selecting the originality of the problem statement, understanding and knowledge gained about the task completed through presentation/demonstration, work done, and preparing the technical report/poster/technical paper of the project in the standard format provided by the Department.

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Computer Engineering Department

Semester VII common to both category '1' and category '2'

| Course Code | Course Name | Group | Teaching Scheme (Hrs/week) | | | Credits |
|-------------|---|-------|----------------------------|----|-----|---------|
| | | | L | T | P | |
| CE71 | Artificial Intelligence and Soft Computing | PC | 3 | -- | -- | 3 |
| CE72 | Distributed Systems | PC | 3 | -- | -- | 3 |
| CEE71^ | Elective-I | PE | 3 | -- | -- | 3 |
| CEE72^ | Elective-II | PE | 3 | -- | -- | 3 |
| CEL71 | Artificial Intelligence & Soft Computing Lab | PC | -- | -- | 2 | 1 |
| CEL72 | Distributed Systems Lab | PC | -- | -- | 2 | 1 |
| CEEL71^ | Elective-I Lab | PE | -- | -- | 2 | 1 |
| CEEL72^ | Elective-II Lab | PE | -- | -- | 2 | 1 |
| CEP71 | Category-'1': Major Project-II Category-'2': Major Project-I | PR | -- | -- | 10# | 5 |
| CEP5 | Problem solving module-V (Optional) | CEP | | | | |
| | Total | | 12 | -- | 18 | 21 |

Elective Subjects

| | | |
|--------|-------------|---|
| CEE71^ | Elective-I | A. Advanced Algorithm & Complexity B. Big Data Analytics |
| CEE72^ | Elective-II | A. Image Processing B. Decision Making and Business Intelligence |

Summer Term for Category '1': Student chooses for semester long internship

| Course Code | Course Name | Group | Summer Term | | | Credits |
|-------------|--|-------|-------------|----|-------|----------|
| | | | L | T | P | |
| HSS81 | Technology Entrepreneurship Lab | HSS | -- | -- | 2 | 1 |
| OE^ | Open Elective @ | OE | 1@ | -- | 2@ | 2@ |
| OE^ | Open Elective @ | OE | 1@ | -- | 2@ | 2@ |
| CEP81 | Category-'1': Major Project-I | PR | -- | -- | 10 | 5 |
| MOOC | MOOC (Min 8 week course) | MOOC | -- | -- | -- | 2 |
| INT | Internship | PR | -- | -- | -- | 10# |
| ABL5 | Financial Planning, Taxation Policies and Investment (Noncredit) | | -- | -- | -- | -- |
| | Total | | 2@ | -- | 12+4@ | 8+4@+10# |



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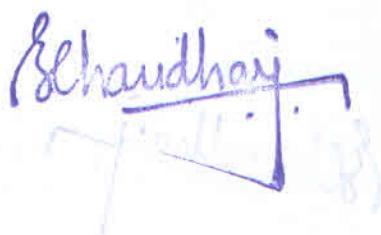
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Semester VIII for Category '2': Student opt out of 'Semester Long Internship'

| Course Code | Course Name | Group | Teaching Scheme (Hrs/week) | | | Credits |
|-------------|--|-------|----------------------------|----|-------|---------|
| | | | L | T | P | |
| | | | Total | | | |
| HSS81 | Technology Entrepreneurship Lab | HSS | -- | -- | 2 | 1 |
| OE^ | Open Elective @ | OE | 1@ | -- | 2@ | 2@ |
| OE^ | Open Elective @ | OE | 1@ | -- | 2@ | 2@ |
| CEP81 | Category-'2': Major Project-II | PR | -- | -- | 10 | 5 |
| MOOC | MOOC (Min 8 week course) | MOOC | -- | -- | -- | 2 |
| ABL5 | Financial Planning, Taxation Policies and Investment (Noncredit) | -- | -- | -- | -- | -- |
| CEE81^ | A. Human Machine Interaction B. Digital Forensic | PE | 3 | 1 | -- | 4 |
| CEE82^ | A. High Performance Computing B. Data Science | PE | 3 | 1 | -- | 4 |
| CEEL81^ | A. Human Machine Interaction Lab B. Digital Forensic Lab | PE | -- | -- | 2 | 1 |
| CEEL82^ | A. High Performance Computing Lab B. Data Science Lab | PE | -- | -- | 2 | 1 |
| | Total | | 6+2@ | 2 | 16+4@ | 18+4@ |

List of Open Elective Courses:

- OE1: Consumer Electronics (ETRX)
- OE2: Robotic Vision (ETRX)
- OE3: Cyber Security and Digital Forensics (EXTC)
- OE4: Internet of Things (EXTC)
- OE5: Fundamentals of Computational Intelligence (COMP)
- OE6: Fundamentals of Data Structures and Algorithms (COMP)
- OE7: Software Testing (IT)
- OE8: Database Management Systems (IT)




Monitoring & Evaluation of Internship

| Course Name: Internship Course Code: INT | MSE | ESE | Total Marks | Total Credits |
|---|-----|-----|-------------|---------------|
| Institute Supervisor Evaluation | 70 | 70 | 140 | 05 |
| Industry Mentor Evaluation | 70 | 70 | 140 | 05 |
| | 140 | 140 | 280 | 10 |

For MSE and ESE: 60 Marks Rubrics Based Evaluation
 10 Marks Internship Report Evaluation

Parameters for Rubrics Based Evaluation of Intern

(Needs improvement=1; Satisfactory=2; Good=3; Excellent=4)

| S.N. | Parameters | Scale (1 to 4) |
|------|--|----------------|
| 1 | Behaviors | |
| 2 | Performs in a dependable manner | |
| 3 | Cooperates with co-workers and supervisors | |
| 4 | Shows interest in work Learns quickly | |
| 5 | Shows initiative | |
| 6 | Accepts responsibility | |
| 7 | Accepts criticism | |
| 8 | Demonstrates organizational skills | |
| 9 | Shows good judgment | |
| 10 | Analyzes problems effectively | |
| 11 | Is self-reliant | |
| 12 | Communicates well | |
| 13 | Has a professional attitude and appearance | |
| 14 | Is punctual | |
| 15 | Uses time effectively | |

Rate the following parameters for Internship Report

(Needs improvement=1; Satisfactory=1.5; Good=2; Excellent=2.5)

| | | |
|----|--|--|
| 17 | Writes effectively | |
| 18 | Uses technical knowledge and expertise | |
| 19 | Demonstrates creativity/originality | |
| 20 | Produces high quality work | |

Total (Out of 70)



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| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | |
|-------------|-----------------------------|----------------------------|----|-----|------------------|-----|---|-------|
| | | L | T | P | L | T | P | Total |
| ELP81 | Category I: Major Project I | -- | -- | 10 | -- | -- | 5 | 5 |
| | | Examination Scheme | | | | | | |
| | | ISE | | MSE | | ESE | | Total |
| | | Phase-I:40 | | -- | | 20 | | 100 |

The main intention of Major Project is to enable students to apply the knowledge and skills learned out of courses studied to solve/implement predefined practical problem mainly addressing the issues of society, an industry or a research. These students have already undergone project assignment in their pre-final year. Therefore Major Project work may be based on the knowledge gained in the courses OR may be beyond the scope of curriculum of courses taken OR may be extension of the work done in Minor Project I and Minor Project II courses in pre-final year. The project area may be selected in which the student intend to do further education and/or may be either intending to have employment or self-employment. However thrust should be

- Learning additional skills, computational techniques.
- Development of ability to define, design, analysis and implementation of the problem and lead to its accomplishment with proper planning till the development of final deliverable end product (Hardware/Software) OR research publication in a reputed Conference/Journal OR Patent.
- Learn the behavioral science by working in a group.

Students of final year are categorized as Category I (Internship) and Category II (Non-Internship) students. In final year these students groups will have to execute Major Projects. Execution and evaluation of Major Project will be done as Major Project I and Major Project II in respective semesters of Category I Category II students. If a Guide and a group of students of a particular Major Project wish then they can continue the work done as Major Project I and Major Project II in respective semesters as a part of Major Project. Execution and evaluation of Major Project will be done as per the BE Project Process developed at Institute level. The details of this process are available in Project Log Book.

At the end of Sem VI; students are required to finalize whether they wish to opt Category I (Internship) OR Category II (Non-Internship). Since these are separate group of students; students are required to form a BE Project Group within the category they have opted for. In order for the smooth execution and evaluation of Major Project; formation of a BE Project Group from students belonging to different categories will not be allowed at any circumstances. However in order to promote execution of interdisciplinary project; students from different departments but from the same category may execute the Major Project after the approval/agreement from respective Guides. Evaluation of these Project Groups will however be done on the basis of the work assigned to them OR their project objectives. A BE Project group of maximum three students will be allowed. Each project group will be completing a comprehensive project work based on the knowledge required



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from the courses studied. Each group will be assigned one faculty as a Guide as per Department policies.

The project work will be internally evaluated in Phases (Phase I and Phase II) by the Expert Groups in the Department consisting of Guide and a domain expert faculty based on Scheme of examination for ISE Marks and on the basis of rubrics defined for each Phase of evaluation as per following but not limited to:

- Scope and objectives of the project work.
- Extensive Literature survey.
- Progress of the work (Continuous assessment).
- Design, implementation, and analysis of the project work*.
- Results, conclusions and future scope*.
- Report in prescribed format*.

(*if Major Project I and II are separate)

In order to keep proper evaluation record of the progress of project in the department; each BE Project Group should submit soft copy of report (approved by respective Guide) in the prescribed format of the Department before each phase of evaluation for ISE marks and one hard copy of the Report duly signed by respective Guide in prescribed format for ESE marks to Project co-ordinator.

For ESE Marks; an approved external examiner will assess the Major Project during oral examination. The oral examination is a presentation by the group members on the project along with demonstration of the work done. Each individual student should be assessed for his/her contribution, understanding and knowledge gained, the rubrics defined by department and Report in prescribed format for the awards of ISE and ESE marks.



Rishabh Jain

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Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | | |
|---------------------------|-------------|----------------------------|----|-----|------------------|-----|---|-------|--|
| | | L | T | P | L | T | P | Total | |
| | | -- | -- | 10 | -- | -- | 5 | 5 | |
| Examination Scheme | | | | | | | | | |
| | | ISE | | MSE | | ESE | | Total | |
| ELP71 | | Phase-III:40 | | -- | | 20 | | 100 | |
| | | Phase-IV:40 | | | | | | | |

The final year students have already undergone first stage of Major Project I work in their respective semesters and in this semester students are expected to continue the project work of stage I.

The project work will be internally evaluated in Phases (Phase III and Phase IV) by the Expert Groups in the Department consisting of Guide and a domain expert faculty based on Scheme of examination for ISE Marks. There will be Technical Paper Presentation (TPP) event conducted by R&D Cell and Project Exhibition (PE) event conducted by respective Departments as per the academic time table. Participation in these activities is mandatory. After evaluation Winners will be declared from TPP and PE events separately as per the rubrics, rules and regulations framed by R&D Cell and Department respectively however ISE marks are not allotted for these activities.

In order to keep proper evaluation record of the progress of project in the department; each BE Project Group should submit soft copy of report (approved by respective Guide) in the prescribed format of the Department before each phase of evaluation for ISE marks and one hard copy of the Report duly signed by respective Guide in prescribed format for ESE marks to Project co-ordinator.

The department should keep proper evaluation record of the progress of project and at the end of the semester it should be assessed for awarding ISE marks. The ISE Marks should be examined by approved internal faculty appointed by the head of Department on the basis of rubrics defined for each Phase of evaluation as per following but not limited to:

- Scope and objectives of the project work.
- Extensive Literature survey.
- Progress of the work (Continuous assessment)
- Design, implementation, and analysis of the project work.
- Results, conclusions and future scope.
- Report in prescribed format.

For ESE Marks; an approved external examiner will assess the Major Project during oral examination. The oral examination is a presentation by the group members on the project along with demonstration of the work done.

Each individual student should be assessed for his/her contribution, understanding and knowledge gained and the rubrics defined by department for awarding ISE and ESE marks.

Chaudhari
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Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | |
|---------------------------|------------------------------|----------------------------|----|-----|------------------|---|-------|-------|
| | | L | T | P | L | T | P | Total |
| -- | -- | 10 | -- | -- | 5 | 5 | | |
| Examination Scheme | | | | | | | | |
| ELP71 | Category II: Major Project I | ISE | | MSE | ESE | | Total | |
| | | Phase-I:40 | | -- | 20 | | 100 | |
| | | Phase-II:40 | | | | | | |

The main intention of Major Project is to enable students to apply the knowledge and skills learned out of courses studied to solve/implement predefined practical problem mainly addressing the issues of society, an industry or a research. These students have already undergone project assignment in their pre-final year in Minor Project I & Minor Project II courses. Therefore Major Project work may be based on the knowledge gained in the courses OR may be beyond the scope of curriculum of courses taken OR may be extension of the work done in Minor Project I and Minor Project II courses in pre-final year. The project area may be selected in which the student intend to do further education and/or may be either intending to have employment or self-employment. However thrust should be

- Learning additional skills, computational techniques.
- Development of ability to define, design, analysis and implementation of the problem and lead to its accomplishment with proper planning till the development of final deliverable end product (Hardware/Software) OR research publication in a reputed Conference/Journal OR Patent.
- Learn the behavioral science by working in a group.

Students of final year are categorized as Category I (Internship) and Category II (Non-Internship) students. In final year these students groups will have to execute Major Projects. Execution and evaluation of Major Project will be done as Major Project I and Major Project II in respective semesters of Category I Category II students. If a Guide and a group of students of a particular Major Project wish then they can continue the work done as Major Project I and Major Project II in respective semesters as a part of Major Project. Execution and evaluation of Major Project will be done as per the BE Project Process developed at Institute level. The details of this process are available in Project Log Book.

At the end of Sem VI; students are required to finalize whether they wish to opt Category I (Internship) OR Category II (Non-Internship). Since these are separate group of students; students are required to form a BE Project Group within the category they have opted for. In order for the smooth execution and evaluation of Major Project; formation of a BE Project Group from students belonging to different categories will not be allowed at any circumstances. However in order to promote execution of interdisciplinary project; students from different departments but from the same category may execute the Major Project after the approval/agreement from respective Guides. Evaluation of these Project Groups will however be done on the basis of the work assigned to them OR their project objectives. A BE Project group of maximum three students will be allowed. Each project group will be completing a comprehensive project work based on the knowledge acquired



Rishabh Desai



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from the courses studied. Each group will be assigned one faculty as a Guide as per Department policies.

The project work will be internally evaluated based on Scheme of examination for ISE Marks in Phases (Phase I and Phase II) by the Expert Groups in the Department consisting of Guide and a domain expert faculty.

The department should keep proper evaluation record of the progress of project and at the end of the semester it should be assessed for awarding ISE marks. The ISE Marks should be examined by approved internal faculty appointed by the head of the institute on the basis of rubrics defined for each Phase of evaluation as per following but not limited to:

- Scope and objectives of the project work.
- Extensive Literature survey.
- Progress of the work (Continuous assessment)
- Design, implementation, and analysis of the project work*.
- Results, conclusions and future scope*.
- Report in prescribed format*.

(*if Major Project I and II are separate)

For ESE Marks; an approved external examiner will assess the Major Project during oral examination. The oral examination is a presentation by the group members on the project along with demonstration of the work done. Each individual student should be assessed for his/her contribution, understanding and knowledge gained and the rubrics defined by department for the awards of ISE and ESE marks.

Ghandaiaj





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Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
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| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | | |
|-------------------------------|-------------|----------------------------|----|-----|------------------|-----|---|-------|--|
| | | L | T | P | L | T | P | Total | |
| | | -- | -- | 10 | -- | -- | 5 | 5 | |
| Examination Scheme | | | | | | | | | |
| Category II: Major Project II | | ISE | | MSE | | ESE | | Total | |
| Phase-III:40 | | -- | | 20 | | 100 | | | |
| Phase-IV:40 | | | | | | | | | |

The final year students have already undergone first stage of Major Project I work in their respective semesters and in this semester students are expected to continue the project work of stage I.

The project work will be internally evaluated in Phases (Phase III and Phase IV) by the Expert Groups in the Department consisting of Guide and a domain expert faculty based on Scheme of examination for ISE Marks. There will be Technical Paper Presentation (TPP) event conducted by R&D Cell and Project Exhibition (PE) event conducted by respective Departments as per the academic time table. Participation in these activities is mandatory. After evaluation Winners will be declared from TPP and PE events separately as per the rubrics, rules and regulations framed by R&D Cell and Department respectively however ISE marks are not allotted for these activities.

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The department should keep proper evaluation record of the progress of project and at the end of the semester it should be assessed for awarding ISE marks. The ISE Marks should be examined by approved internal faculty appointed by the head of Department on the basis of rubrics defined for each Phase of evaluation as per following but not limited to:

- Scope and objectives of the project work.
- Extensive Literature survey.
- Progress of the work (Continuous assessment)
- Design, implementation, and analysis of the project work.
- Results, conclusions and future scope.
- Report in prescribed format.

For ESE Marks; an approved external examiner will assess the Major Project during oral examination. The oral examination is a presentation by the group members on the project along with demonstration of the work done.

Each individual student should be assessed for his/her contribution, understanding and knowledge gained and the rubrics defined by department for awarding ISE and ESE marks.



Shaudh

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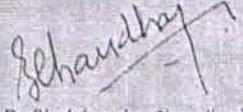
Preamble:

An Internship is a culminating experience, and also the transition from classroom students to working professionals in the industry. To bridge the gap between the Institute and the Industry, we have built a holistic approach for grooming the students to meet industry expectations by introducing a 6-month long internship program. The initiative was an outcome of a couple of meetings with our recruiters visiting our campus for placements, and with our alumni who are well-placed across industries. This initiative was taken after the Institute achieved "Autonomous" status in 2017. The six-month-long internship program has been incorporated in the 8th semester of the undergraduate program. Accordingly, credits have been assigned based for this activity. Students will be graded on the performance of the student during the internship as evaluated by their mentors in the industry and evaluation carried out by specially constituted committees. This document provides guidelines and procedures to be followed for evaluation of the Internship.



Dr. Dhananjay R. Kalbande

Dean (Industry Relations)



Dr. Bhalchandra Chaudhari

Principal

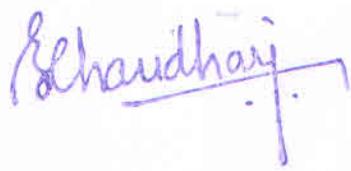
Internship Evaluation Guidelines and Procedures © IR-SPIT 2020



PROCESS OF CONSTITUTION OF INSTITUTE COMMITTEE FOR INTERNSHIP EVALUATION

Allocation of Faculty/ Institute Examiners will be appointed as per the following procedure:

- Any Faculty/ Institute Supervisors having a minimum one year of experience in SPIT.
- A committee will be constituted including 3 members from SPIT with the following structure:
 - Chairman: A person holding experience more than 10 years in SPIT
 - Member1: A person holding experience more than one year in SPIT.
 - Member 2: A person holding experience more than one year in SPIT.
- Allocating minimum 8 and maximum 12 students to Committee. These numbers may vary depending upon the count of students in respective department.
- IR faculty coordinator will ensure that the soft copy of internship reports in prescribed formats are received from all the students on or before 15th June 2020.
- IR faculty coordinator will share the reports to all the members of respective committees.
- A chairman of the Committee will receive a notification to monitor and evaluate the internship of the allocated students for a six months internship program.
- Evaluation will be based on VISUAL presentation by Interns and subsequent question/answer session.
- All the members are required to take a presentation of min 20 min followed by a question/answer session of equal duration from each intern allocated and note down the performance/marks in the prescribed format given by Institute.
- Committee should record the discussion and attendance using Google Meet wherever possible.
- Each member is required to submit the softcopy of marksheets to the Chairman. A duly signed hard copy is to be submitted once the institute re



opens. The Chairman will average out the marks and submit the marks on online portal of Internship Evaluation : internship.spit.ac.in.

- Once marks submitted , Chairman should send Interns reports and mark sheet to internship@spit.ac.in
- The evaluation carried out as above will be considered as external component.
- The student performance will also be evaluated by respective industry mentor/supervisor as per the respective criteria of the industries. This will be considered as the internal evaluation.
- Industry supervisor will submit their evaluation in the institute format or their format before 30th June 2020 to internship@spit.ac.in
- While assigning the final grades 50 : 50 weightage shall be given to internal and external evaluation.
- Dean IR will grade the students and submit to the Examination section.

PROPOSED EVALUATION OF INTERNSHIP

| Course Name: Internship | ESE | Total Marks | Total Credits |
|--------------------------------|-----|-------------|---------------|
| Course Code: INT | | | |
| Institute Faculty Evaluation | 60 | 60 | 05 |
| Industry Supervisor Evaluation | 60 | 60 | 05 |
| | 120 | 120 | 10 |



EVALUATION OF INTERN BY INSTITUTE SUPERVISOR

Student Name: _____

Mentor/Supervisor: _____

Title: _____

Company/Organization: _____

Internship Address: _____

Dates of Internship: From _____ To _____

Please evaluate internship using the following parameters.

| S.N. | Parameters | Marks (Max Marks=10) |
|-------------------|-------------------------------|----------------------|
| 1 | Clarity of task in Internship | |
| 2 | Commitment and perseverance | |
| 3 | Analysis and design skill | |
| 4 | Team Work | |
| 5 | Oral presentation and defense | |
| 6 | Report writing | |
| Total (Out of 60) | | |

Additional comments, if any:

Name and Sign of Chairman : _____

Name and Sign of Member 1 : _____

Name and Sign of Member 2: _____

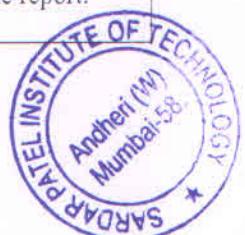
Ghanshyam



Rubrics for Internship Evaluation by SPIT Faculty Mentor

| Rubrics | (1-3) Marks | (4-6) Marks | (7-10) Marks |
|-----------------------------------|--|---|---|
| P1: Clarity of task in Internship | Student is still attempting to get the clarity in understanding the tasks given by the organization | Student has a partial understanding of the tasks given by the organization | Student is fully aware of the tasks given by the organization |
| P2: Commitment and perseverance | Student is not motivated. Student escapes work and gives up regularly. | The student is motivated. Overcomes an occasional setback with help of the supervisor. | The student is very motivated, goes at length to get the most out of the project. |
| P3: Analysis and design skill | Formulation of goals and framework of project/work assigned is not clear. | Formulation of goals and framework of project/work assigned is clear, but link between tasks and goals is not always clear. Framework of project does not fit with all aspects of the internship project. | Clear formulation of goals and framework of project /work assigned. Both are well linked with all aspects of the internship project. |
| P4: Team Work | Student is not coordinating with team effectively and need more understanding of the task assigned during internship. | Students has developed ability to coordinate the work assigned effectively with team members but lacks leadership. | Student has developed ability to work effectively as a member and leader in teams, preferably in a multi-disciplinary setting. |
| P5: Oral presentation and defense | Presentation is uninspired and/or monotonous and/or student reads from slides: attention of audience not captured. Language and interest of audience hardly taken into consideration. Timing not well kept (at most 30% deviation from planned time). | Mostly clearly spoken. Sometimes monotonous in some places. Language and interest of presentation mostly targeted at audience. Timing is OK (at most 10% deviation from planned time). | Relaxed and lively though concentrated presentation. Clearly spoken in such a way that keeps audience's attention. Take-home message is clear to the audience. Language and interest of presentation well-targeted at audience. Student is able to adjust to signals from audience that certain parts are not understood. Presentation finished well in time. |
| P6: Report writing | Uncomfortable with content. Only basic concepts are demonstrated and interpreted. Many departures from required format or inconsistencies between figures and graphs. Captions are ineffective in | At ease with content and able to elaborate and explain to some degree. Captions effectively communicate content. Most figures are properly interpreted, and important features noted. Minor inconsistencies | Demonstration of full knowledge of the subject with explanations and elaboration. Captions effectively communicate content. All figures are effectively interpreted and discussed in the report. |

(Signature)



| | | | |
|--|--|---|---|
| | <p>communicating content. Many figures are not interpreted. Important features are not communicated or understood. Inadequate list of references or failure to follow required format.</p> | <p>referring to figures. Minor departures from required format or inconsistencies between equations. Minor problems with citation of equations. Some symbols not properly defined. Minor inadequacies in references or inconsistencies in format.</p> | <p>Citations consistent with format. Reference section complete, comprehensive and follows required format.</p> |
|--|--|---|---|

Shaudhay



EVALUATION OF INTERN BY INDUSTRY SUPERVISOR

Student Name: _____ Mentor/Supervisor: _____

Title: _____

Company/Organization: _____

Internship Address: _____

Dates of Internship: From _____ To _____

Please evaluate your intern for the following parameters on the marks mentioned.

(Needs improvement=1; Satisfactory=2; Good=3; Very Good=4; Excellent=5)

| S.N. | Parameters | Marks (1 to 5) |
|-------------------|--|----------------|
| 1 | General Behavior and etiquette of the intern | |
| 2 | Cooperates with co-workers and supervisors and helps others in need | |
| 3 | Takes initiative and shows interest in work | |
| 4 | Accepts responsibility as well as criticism | |
| 5 | Demonstrates organizational skills and professional ethics | |
| 6 | Shows good judgment and Analyses problems effectively | |
| 7 | Is an enthusiastic learner and self-reliant | |
| 8 | Communicates effectively. | |
| 9 | Is punctual and manages time effectively | |
| 10 | Domain knowledge and skills | |
| 11 | Report writing skills (with specific reference to internship report) | |
| 12 | Any other parameter/General evaluation | |
| Total (Out of 60) | | |

Additional comments, if any:

Signature of Industry supervisor _____

Signature of HR Manager

(Signature)



STUDENT FEEDBACK OF INTERNSHIP

(To be filled by students after internship completion via internship.spit.ac.in)

Student Name:

Date:

Industry Supervisor:

Title:

Supervisor Email:

Internship is:

Paid / Unpaid

Company/Organization:

Internship Address:

.....
.....
.....

.....
.....
.....

Faculty/Institute Supervisor:

Dates of Internship: From _____ To _____

Give a brief description of your internship work (title and tasks assigned to you)

.....
.....
.....
.....
.....

Was your internship experience related to your major area of study? 1 / 2 / 3

{(1) Yes, to a large degree (2)Yes, to a slight degree (3) No, not related at all }

S. Chaudhary



Indicate the degree to which you agree or disagree with the following statements.

| This Internship experience has: | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|----------------|-------|---------|----------|-------------------|
| Given me the opportunity to explore a career field | | | | | |
| Allowed me to apply classroom theory to practice | | | | | |
| Helped me develop my decision-making and problem-solving skills | | | | | |
| Expanded my knowledge about the work world prior to permanent employment | | | | | |
| Helped me develop my written and oral communication skills | | | | | |
| Provide a chance to use leadership skills (influence others, develop ideas with others, stimulate decision-making and action) | | | | | |
| Expanded my sensitivity to the ethical implications of the work involved | | | | | |
| Helped me develop new interests and abilities | | | | | |
| Given me a chance to improve my interpersonal skills | | | | | |
| Helped me clarify my career goals | | | | | |

In what areas did you most develop and improve?

What has been the most significant accomplishment or satisfying moment of your internship?

What did you like about the internship?

What did you dislike about the internship?

Considering your overall experience, how would you rate this internship?

(Un Satisfactory / Satisfactory / Good / Excellent/ Truly outstanding)

Give suggestions as to how your internship experience could have been improved Or Any other suggestions.

Signature of the Intern

Date and Place

Shradha

