



JAYAWANT SHIKSHAN PRASARAK MANDAL'S **RAJARSHI SHAHU COLLEGE OF ENGINEERING**



An Empowered Autonomous Institute Affiliated to Savitribai Phule Pune University,
Approved by AICTE, Accredited by NBA (UG Programs),
Accredited by NAAC With "A" Grade. MHRD-NIRF Rank:151-200

CURRICULUM PATTERN 2023





JSPM's
Rajarshi Shahu College of Engineering, Tathawade Pune-33
(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)
Academic Manual (Pattern 2023)



Table of Contents

1.	Program curriculum of the autonomy.....
	1.1 Features of curriculum.....
	1.2 Brief Description.....
	1.3 Components of curriculum.....
2.	Processes followed to improve quality of Teaching & Learning ...
	2.1 Adherence to Academic Calendar.....
	2.2 Use of Instructional methods and pedagogical initiatives.....
	2.3 Quality of class room Teaching.....
	2.4 Conduct of Experiment.....
	2.5 Processes followed to improve quality of Teaching & Learning



1. Program curriculum of the autonomy

The college was granted autonomous status in the year 2019 for all UG and PG courses. Considering the Program Outcomes (POs), Program Specific outcome (PSOs), curriculum gaps in SPPU, industry requirements and expectation of stakeholders.

1.1 Features of the curriculum

1. Curriculum centered at Outcome Based Education:

The new Curriculum is based on student-centered instruction models that focus on measuring student performance through outcomes. The outcomes include subject knowledge, industry required skills and attitudes.

2. Emphasize on Fundamentals:

The nature of the new curriculum is rigorous and well prescribed so that the students can spend more time on preparation and self-study. The students have to learn core subjects, solve practical based assignments and must attempt periodical quizzes. This will benefit them to grasp and keep a strong hold on fundamentals of Engineering in the most effective way.

3. Experiential Learning:

The curriculum emphasizes on hands-on sessions along with theoretical information. The new curriculum considers teaching pedagogy and includes different courses that encourage the students for hands on learning through virtual labs, mini-projects, etc. Accordingly, the curriculum maintains good balance between theory and laboratory credits.

4. Promote Creativity and Innovation:

Along with experiential learning, the curriculum also motivates the students to inculcate creativity and innovation. Apart from conventional lab, the curriculum provides a freedom for students to perform industry assignments, pilot projects, innovative development, etc.



5. Inculcating Ethics and Values:

To improvise student's behavior, the curriculum has included systematic courses on ethics and values. The moral principles can help students to make right decisions, lead their professional lives and become ethical citizen.

6. Blend of Curricular and Noncurricular Activities

The curriculum also gives importance of different activities like co-curricular, extra-curricular, sports, culture, etc. This will help to do all round development of students in all possible ways.

7. Four Tracks in B-Tech:

By offering various courses flexibility in choosing mentoring at work in specified field as:

- | | |
|---------------------------------|-------------------|
| I. Industry Internship | III. Entrepreneur |
| II. Higher Studies and Research | IV. Regular |

8. Global Competence:

The curriculum provides a unique opportunity for students to learn and engage in open and effective interaction with people from diverse and interconnected world. The combination of foreign languages (German, Japanese, English) and international internships in the curriculum help the students to build a capacity to examine global and intercultural issues and to propose perspectives and views.

9. Industry Induced Internship Program

To support ever demanding industry requirements, the curriculum has included an industry internship with an objective to learn technologies pertaining to their discipline and enhance their technical knowledge with a support of the live platform of Industry.

10. Motivation for Self-Learning:

The curriculum also offers a freedom to students to take the initiatives in their learning needs and set the goals with the help of online learning platforms like MOOCs, NPTEL, Swayam, etc.



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Academic Manual (Pattern 2023)



1.2 Brief Description of Program Curriculum

The following is a semester wise distribution of credits for 2019 Pattern

UG 2019 Pattern - Total 170 Credits	
Year	Credits
F. Y. B. Tech Sem I	23
F. Y. B. Tech Sem II	23
S. Y. B. Tech Sem III	23
S. Y. B. Tech Sem IV	23
T. Y. B. Tech Sem V	22
T. Y. B. Tech Sem VI	20
Final Year B. Tech Sem VII	18
Final Year B. Tech Sem VIII	18
Total	170

Analysis of the Curriculum with respect to AICTE model curriculum:

Course Component	Curriculum Content(% of total number of credits of the program)		Total number of credits	
	According to AICTE Norms	According to Structure	According to AICTE Norms	According to Structure
Basic Sciences	14%	14%	23	24
Engineering Sciences	18%	9%	29	16
Humanities and Social Science	10%	8%	16	14



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Academic Manual (Pattern 2023)



and management				
Program Core	36%	36%	59	61
Program Electives	7%	11%	12	18
Open Electives	6%	4%	9	6
Project(s)	9%	8%	15	13
Internships/Seminars		9%		16
Audit				
Any Other (Please Specify)		1% (self-study-course)		2

Since 2023-24 Syllabus is upgraded as per NEP Guidelines

Curriculum Highlights in Context of NEP 2020:

1. The flexibility to move from one discipline of study to another.
2. The opportunity for learners to choose the courses of their interest in all disciplines.
3. The multiple entry and exit options with the award of UG certificate/ UG diploma/ or three-year degree depending upon the number of credits secured.
4. Provision of Vocational and Skill Enhancement Courses (VSEC), Indian Knowledge System (IKS), Community Engagement Project (CEP)/Field Project (FP) in Major Discipline Degree.
5. Horizontal and Vertical mobility with multiple entry and exit options at each Level.
6. Provision of Skill-based Courses for Exits at different Levels.
7. Credits for Co-curricular Activities
8. Interdisciplinary or Multidisciplinary education through Single and Double Minors and Open Electives (OE).
9. The flexibility to switch to alternative modes of learning (offline, Online



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 Academic Manual (Pattern 2023)



learning, and hybrid modes of learning).

The following is a semester wise distribution of credits for 2023 Pattern

Proposed UG 2023 Pattern	
Year	Credits
F. Y. B. Tech Sem I	22
F. Y. B. Tech Sem II	22
S. Y. B. Tech Sem III	22
S. Y. B. Tech Sem IV	22
T. Y. B. Tech Sem V	22
T. Y. B. Tech Sem VI	22
Final Year B. Tech Sem VII	22
Final Year B. Tech Sem VIII	16
Total	170 (156 + 14 :MDM*)

1.3 Components of Curriculum 2023 Pattern:

(a) Major (Core) Subject comprising Mandatory and Elective Courses:

- Minimum 50% of total credits corresponding to Three/Four - year UG Degree- Mandatory Courses offered in all Four years;
- Four Professional Elective courses of Major are offered in the third and/or final year.
- Vocational Skill Courses, Internship/ Apprenticeship, Community Engagement Project (CEP)/ Field Projects (FP) of 2 credits offered in First Year, Research Projects connected to Major

(b) Compulsory Multidisciplinary Minor Subject: 14 Credits

- The Minor subjects are the different disciplines of the Engineering faculty.



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Academic Manual (Pattern 2023)



ii. Offered from SY to Final year.

(c) Open Elective Courses (OE): 06 credits

i. OE1 offered in T. Y. Sem V and OE2 T. Y. sem VI

(d) Vocational and Skill Enhancement Courses (VSEC): 08 credits

i. Including Hands on training corresponding to the Major and/or Minor Subject

(d) (1) Ability Enhancement Courses (AEC): 03 credits

(i) Professional English Communication/ English Language skills, German/ Japanese:
02 credits offered in First Year

(ii) Soft Skills: 01 credit in second year

(2) Indian Knowledge System (IKS) : 02 credits offered in First Year

(3) Value education Courses (VEC): 06 credits offered in Second Year

(i) Environmental Science: 02 credits

(ii) UHV: 02 credits

(iii) Digital and Technological Lab: 02 credits

(e) Community Engagement Project: 02 credits offered in First Year

(f) Two tracks in Final Year: Each 16 credits

(i) Regular Track

(ii) Internship and Training

(a) Industry Internship (b) Entrepreneurial Internship (c) Training Program (Each of 12 credits) and 4 credits courses in online mode

(g) Co-curricular Courses (CC): 03 credits

Offered in FY: 01 credit, SY: 01 credit, TY: 01 credit

(h) Additional Credits for Bachelor's Degree- with Double Minor: 18 credits

These are additional credits to be offered from the second year to the final year and will be offered as an option to students.

(i) Additional Credits for Bachelor's Degree- Honors with Research: 18 credits

(j) Provision of Exit courses after FY/SY/TY

Student have to earn 8 credits within summer vacation for exit after FY/SY/TY



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 Academic Manual (Pattern 2023)



(k) Provision of 2 credits branch specific course for students of other discipline
 Diploma students admitting to SY

(l) (a) Eligibility for admission to the UG Bachelor's Degree with Double Minor:

Minimum CGPA/CPI of 7.5 after second semester for UG Bachelor's Degree

(b) Eligibility for admission to the UG Bachelor's Degree with Honors:

Minimum CGPA/CPI of 7.5 after sixth semester for UG Bachelor's Degree

Credit distribution structure:

Sr. No.	Course Category	I	II	III	IV	V	VI	VII	VIII	RSCOE
Computer Engineering										
1	Basic Science Course	11	8		3					22
2	Engineering Science course	7	7							14
3	Program core Course (PCC)			16	10	8	4	8	2	48
4	Program Elective Course (PEC)					4	8	4		16
5	Multidisciplinary minor (MD M)				3	4	3	4		14
6	Open Elective other than Particular Program (OE)					3	3			06
7	Vocational and Skill enhancement Course (VSEC)	2			2	2	2			8
8	Ability Enhancement Course (AEC-01, AEC-02)		2		1					3
9	Entrepreneurship /Economics/Management Courses		2	2				2		6
10	Indian Knowledge system (IKS)	2								2
11	Value Education Course (VEC)			4	2					6
12	Research Methodology									-
13	Common Engineering Project (CEP)/ Field Project (FP)		2							2
14	Project						2	4	2	8
15	Internship/OJT								12	12
16	Co Curricular Courses (CC)		1		1	1				3
Total Credits		22	22	22	22	22	22	22	16	170
Type of Degree										Credits
1.	(B.E./ B.Tech. or Equivalent) in Engg./ Tech. with Multidisciplinary Minor									170
2.	4-Years Bachelor's degree (B.E./ B.Tech. or Equivalent) in Engg./ Tech.- Honors with Research and Multidisciplinary Minor									188
3.	4-Years Bachelor's degree (B.E./ B.Tech. or Equivalent) in Engg./ Tech.- Major Engg. Discipline with Double Minors (Multidisciplinary and Specialization Minors)									188

2. Processes followed to improve quality of Teaching & Learning

By following the OBE method, the Department of Computer Engineering is devoted to successful enrichment, implementation, and improvement of the curriculum through the Planning, Delivery, Evaluation, and Implementation through Feedback (PDEI) cycle depicted in Figure 1.

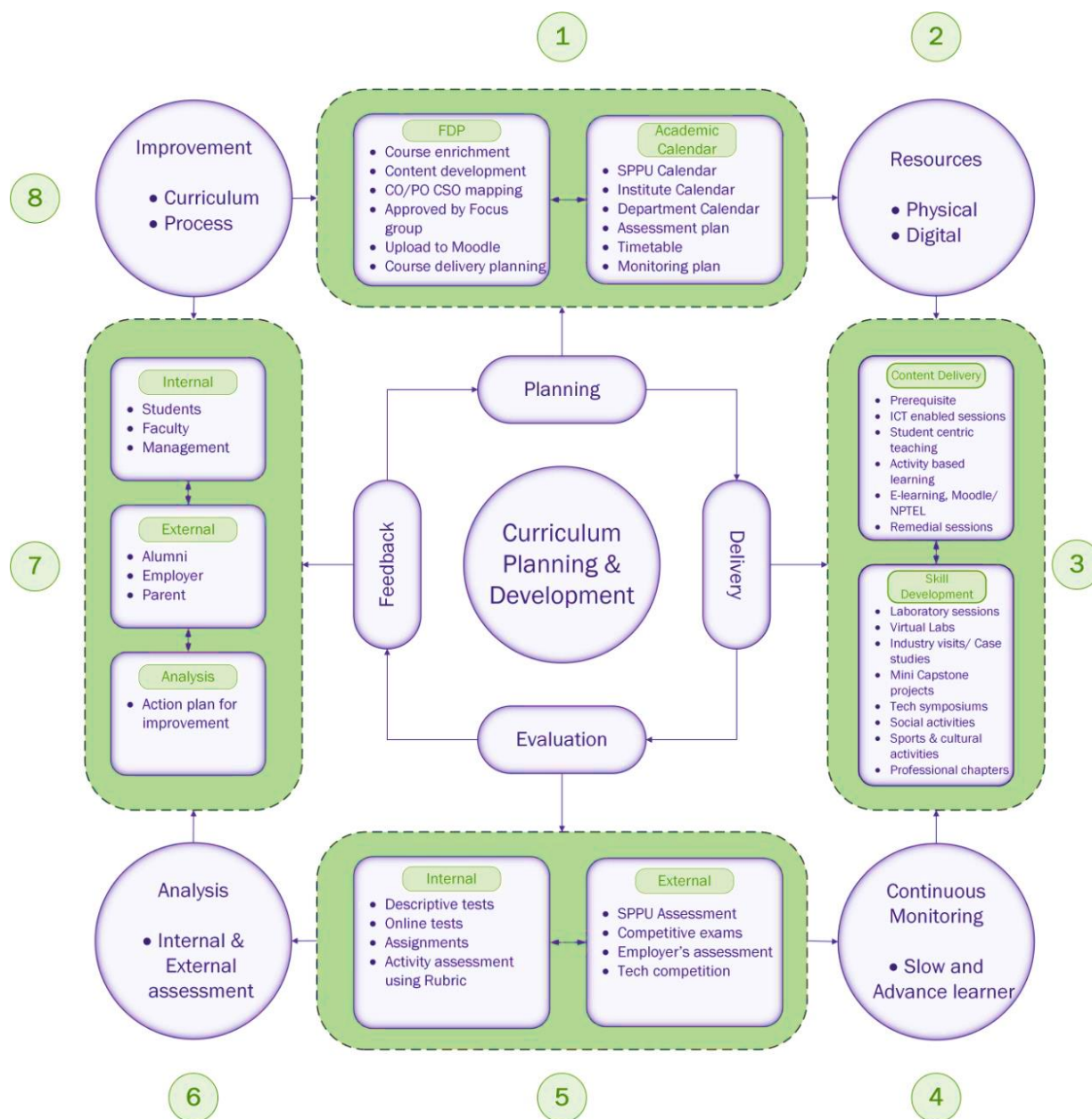


Figure 1: Teaching-Learning Process

Proper planning, execution of pedagogical initiatives, conduction of lab, mentoring, and action plans for assisting bright and weak students can all help to make teaching-learning more effective.



2.1 Adherence to Academic Calendar

The academic calendar is provided to students at the start of each academic session, and it is published on the college website. The purpose of the academic calendar is for smooth conduction of all the academic activities along with resource planning. A brief description and adherence to the academic calendar are illustrated below:

- Dean Academics prepares the college academic calendar at the beginning of each semester. It includes date of commencement and conclusion of the term, the Practical/Oral and Theory examination. A sample copy of the academic calendar is shown in Figure 2.1.1 (A-1)
- The Departmental Academic Coordinator (DAC) prepares the departments academic calendar in accordance with the institutes academic calendar before the semester begins. It includes the date of commencement of teaching, tests, assignment execution, and different activities like seminars, workshops, industrial visits, and cultural-social-technical events. Figure 2.1.2 (A-2) depicts a sample copy.
- All course coordinators adhered to the academic calendar by executing more than 90% of the activities. Department Academic Coordinator and program coordinator are responsible for monitoring the implementation of academic activities executed as planned. In certain cases, less than 5% deviation occurs due to external factors.
- During course delivery any lagging caused due to unavoidable reasons is immediately addressed by HOD and DAC by proposing an alternate solution.



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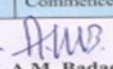


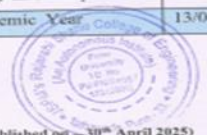
JSPM's
Rajarshi Shahu college of Engineering, Pune
 (An Autonomous Institute affiliated to SPPU)
 Academic Calendar for
S.Y. T.Y. and Final Year B. Tech. (All Programs)

Academic Year-2025-26, Semester- I&II

JSPM's Rajarshi Shahu college of Engineering, Pune (An Autonomous Institute affiliated to SPPU) Academic Calendar for S.Y. T.Y. and Fourth Year B. Tech. (All Programmes) S.Y. M. Tech. (All Programmes), S.Y. BCA, S.Y. MCA Academic Year-2025-26, Semester- I		
Sr. No.	Activity	Dates
1	Induction Program	14/07/2025
2	Commencement of Teaching	15/07/2025
3	Mid Semester Examination	08/09/2025 to 12/09/2025
4	MSE Open Day	13/09/2025
5	Conclusion of teaching	31/10/2025
6	Practical/ Oral Examination	06/11/2025 to 10/11/2025
7	End Semester Examination	17/11/2025 to 29/11/2025
8	ESE Open Day	02/12/2025
9	Result Declaration	08/12/2025
10	Commencement of Semester- II	15/12/2025

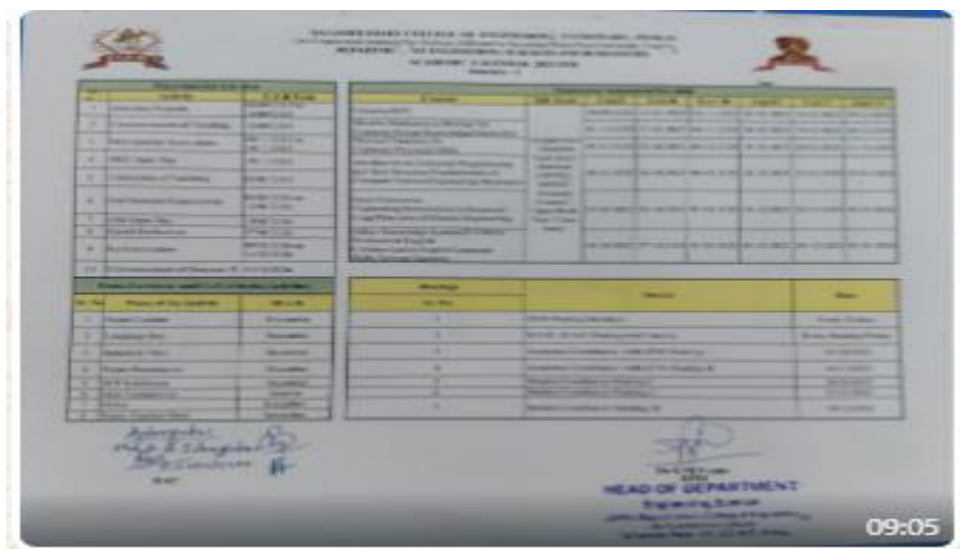
Academic Year-2025-26, Semester- II		
Sr. No.	Activity	Dates
1	Commencement of Teaching	15/12/2025
2	Annual Sports Activities	27/01/2026 to 02/02/2026
3	Annual TechFest- Innovision-2026	04/02/2026 to 05/02/2026
4	Annual Cultural Event – Gandharva-2026	07/02/2026
5	Mid Semester Examination	16/02/2026 to 20/02/2026
6	MSE Open Day	23/02/2026
7	Conclusion of teaching	11/04/2026
8	Practical/ Oral Examination	15/04/2026 to 18/04/2026
9	End Semester Examination	27/04/2026 to 09/05/2026
10	ESE Open Day	12/05/2026
11	Result Declaration	19/05/2026
12	Provision for Summer Training/ Internship	13/05/2026 to 12/07/2026
13	Commencement of Next Academic Year	13/07/2026


(Dr. A.M. Badadhe)
 Deputy Director & Dean (Academics)


(Dr. S. P. Bhosle)
 Director

(Published on – 30th April 2025)

Figure 2.1.1 (A-1) Sample College Academic Calendar



The image shows a sample departmental academic calendar for the Engineering Department. It is a multi-page document with a header containing the college name and logo. The main body consists of several tables detailing the academic schedule, including course distribution, lesson plans, and other relevant information. The document is signed by the Head of Department and dated 09:05.

Fig 2.1.1 (A-2) Sample Departmental Academic Calendar

2.2 Use of various instructional methods and pedagogical initiatives

The course coordinator is practicing outcome-based education and is actively utilizing OBE pedagogy to cater to the learning needs of students. One month before the start of the semester, course distribution is done based on faculty members preferences or expertise. After the courses are assigned, faculty members develop a complete lesson plan, Question bank, and other learning resources for each course. The course handouts and resources are created with the lesson plan and course outcomes in mind. Course manuals, lab manuals, and other associated materials are uploaded on resource-sharing platforms for students. For an efficient teaching-learning process, faculty members employ a variety of pedagogical strategies.

Pedagogical initiatives are taken by the course coordinator to improve the teaching-learning, as shown in Figure 2.2.1.



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Academic Manual (Pattern 2023)



The faculty members of the department adopt various innovative Teaching & Learning methodologies to create the best learning environment for the student. The faculty members use various ICT tools, audiovisual aids (animations, simulations, etc.), presentations, and simulations in teaching.

Students are encouraged to interact during the theory session by getting their doubts clarified by the faculty members. During lectures and practical, faculty members use hard and soft models for interactive teaching. The NPTEL videos, video lectures by faculty members, and PowerPoint presentations are shared for learning among students. Expert lectures, workshops, training, and other activities are organized by the course coordinator to assist students in learning more effectively. The domain experts from industry or subject experts from academics are invited to a resource person for such activities.

- **SMART Board**

The faculty members use the SMART Board to provide interactive sessions. The projector is used for demonstration, videos (NPTEL)/and audio.

- **Project-based Learning**

During the period of study in the 6th to 8th semester, many real-time projects are given to the students, and they are guided by the faculty. Final year project work starts with a literature survey in the 6th-semester project-based seminar course.

- **ICT supported learning**

The faculty members make use of various modern ICT tools effectively. Some of the tools are listed below:

- **Eduplus:**



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Faculty members course materials/resources are managed using a Learning Management System (LMS) or software tools such as Moodle, Eduplus. The students are encouraged to use it to improve student-teacher engagement.

- **Virtual Lab:**

Virtual Labs are conducted by faculty members for demonstration/simulation of practical assignments.

- **Virtual Classroom:**

The Institute provides a Virtual Classroom facility where the subject expert delivers the class in virtual mode for all institutes of JSPM Group.

- **YouTube Channel:**

Faculty members have created and shared video lectures and demonstrations of lab assignments, that are available online for student's reference.

- **Kahoot:**

Kahoot is a game-based learning platform used for creating an online quiz.

- **Eduskills:**

EduSkills is a Nonprofit organization in association with AICTE which enables Industry 4.0 ready digital workforce in India. Through their M OU they are providing following services to us.

1. Industry Center of Excellence

2. Industry-Institute Collaborations
3. AICTE - EduSkills Virtual Internship
4. AICTE ATAL- EduSkills FDP
5. Research & Publication
6. Tech Camp

- **What's app group:** Parents and Students WhatsApp Group for better communication with students and parents about teaching and learning activities.

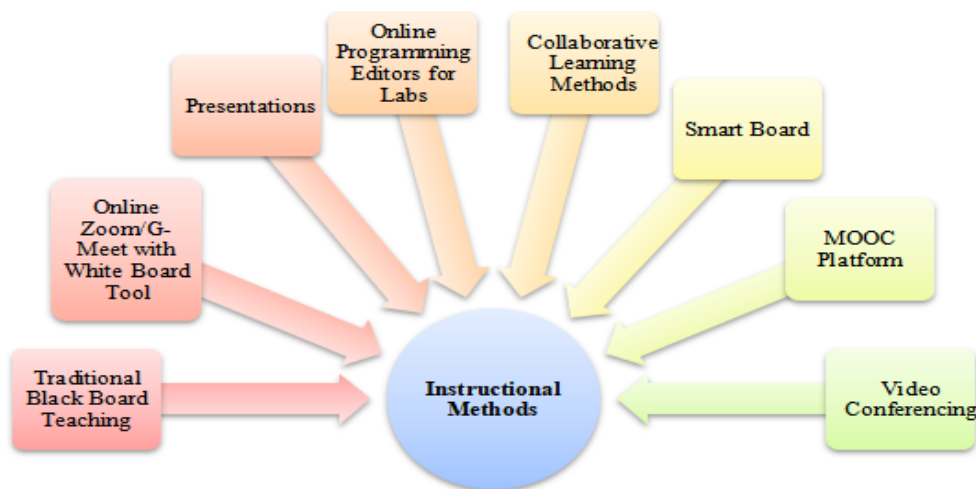


Figure 2.2.1 Various Instructional methods used by Course Coordinators

2.4 Quality of Classroom Teaching

The following innovative teaching methods are adopted by the faculty members:

- Smart Boards and LCDs are used in classrooms for improved audiovisual presentations.

- Interactive sessions are being conducted by faculty members using simulations and by adding Polling questions to a presentation

The regular monitoring of the teaching-learning process is done through the following activities:

- Each courses attendance register is kept by the course coordinator, and monthly attendance reports are generated to ensure that students are attending classes regularly.
- At the end of each month, the department head evaluates the progress of the course. Corrective action is taken if a course is running behind schedule.
- Workbook/assignment questions are supplied for students to practice and enhance their skills.
- Industry experts are frequently called to give seminars and technical talks on current developments.
- After the first internals, weak students are assigned remedial classes based on their performance.
- To ensure quality teaching, the teaching-learning feedback mechanism is followed.
- A sample photo of the smart classroom is shown in Fig 2.2.1(D-1)



Figure 2.4: Photo of a Smart-Classroom in action.



2.5 Conduct of Experiments:

The curriculum stipulates two to four laboratory courses per semester from the 1st to the 8th semester.

Essential hardware, software, and instructional manuals are made available in all laboratories.

The course coordinator is in charge of carrying out the practical assignments and keeping track of their progress.

- Laboratory manuals and practical demonstration videos are developed by faculty members.
- Simulation of practical also demonstrated thorough Virtual-lab platform of II-Bombay

Improving Quality of Laboratory Experiments:

- The department organizes inter-collegiate competitions to encourage students to demonstrate their programming skills and technical skills.
- Bright students are given additional lab assignments, implementation tasks, and mini-projects.
- Students programming abilities are enhanced by activities conducted in student clubs such as the Robotics Club and the Coding Club.
- Students are encouraged to work on real-world projects such as designing a college website, institution alumni portal, an alumni YouTube channel, and a mobile app for digital course content.
- Faculty members grade laboratories for 25 or 50 marks depending on their performance throughout the semester, attendance, internal tests, and term work submission.



2.5.1 Continuous Assessment in the Laboratory

- In the form of regular lab assignments, continuous assessment examines the students overall competencies. It gives a more accurate and comprehensive picture of the learners skill level and comprehension of what they have learned
- Continuous Assessment is used to assess practical skills. Various parameters, as listed below, have been used to create the Continuous Assessment format.
 1. Student performance/skill
 2. Understanding
 3. Involvement
 4. Presentation
 5. Attendance

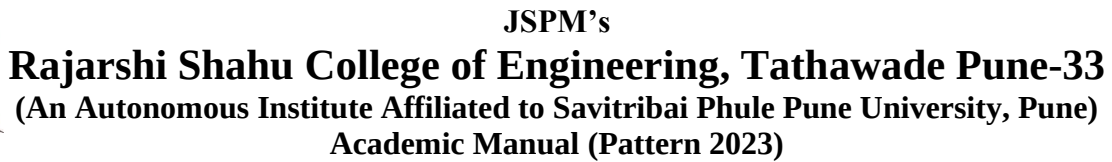
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Figure 2.6: Sample Continuous Assessment Sheet

Impact Analysis

- Improvement in analytical/logical abilities of students.
- Improvement in professional skills.
- Able to apply knowledge for implementing academic projects in multidisciplinary environments.
- Able to work as an individual or in a team.



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RAJARSHI SHAHU COLLEGE OF ENGINEERING



Address : JSPM's Rajarshi Shahu College of Engineering Ashok Nagar,
Tathawade, Pimpri-Chinchwad, Pune, Maharashtra 411033.

