

Best Practices of last three years:

Internship:

Purpose:

MITAOE recognizes the academic and professional value of student engagement outside the traditional classroom. In order to provide the students a platform to obtain hands-on industrial experience that would help them improve their career trajectory, MITAOE offers a Student Internship Program (SIP).

The main aim of SIP is to assist all B.TECH students to obtain internships at various centers of excellence in the academia and the industry or to promote them for life skills through internship as applicable. The ultimate goal is to imbue students with professionalism and networking capabilities using internships as a tool for providing comprehensive practical experience. Using SIP, MITAOE students will enhance their academic and professional skills, making themselves more marketable in today's competitive world. The students can harness this lucrative opportunity to apply the knowledge they acquired all through the academic career in the professional realm.

Objectives:

- To help students gain hands-on professional work experience prior to their graduation.
- To provide students possible opportunities to learn, understand and sharpen the real-time technical, managerial and life skills required at the job.
- To instill qualities such as confidence, maturity, responsibility, and social skills necessary for personal and professional growth.
- To familiarize students to the business environment, which cannot be simulated in the classroom; thus creating competent professionals for the industry.
- To expose students to state-of-the-art facilities, equipment and professional practices in their respective trades.
- To help students develop their own job search tools, networking capacities, and interview skills.
- To expose them for the current technological developments relevant to the subject area of training.
- To create conditions conducive to quest for knowledge and its applicability on the job.
- To provide the experience in writing Technical reports/projects.
- To expose students to the engineer's responsibilities and ethics.

Process of internship:

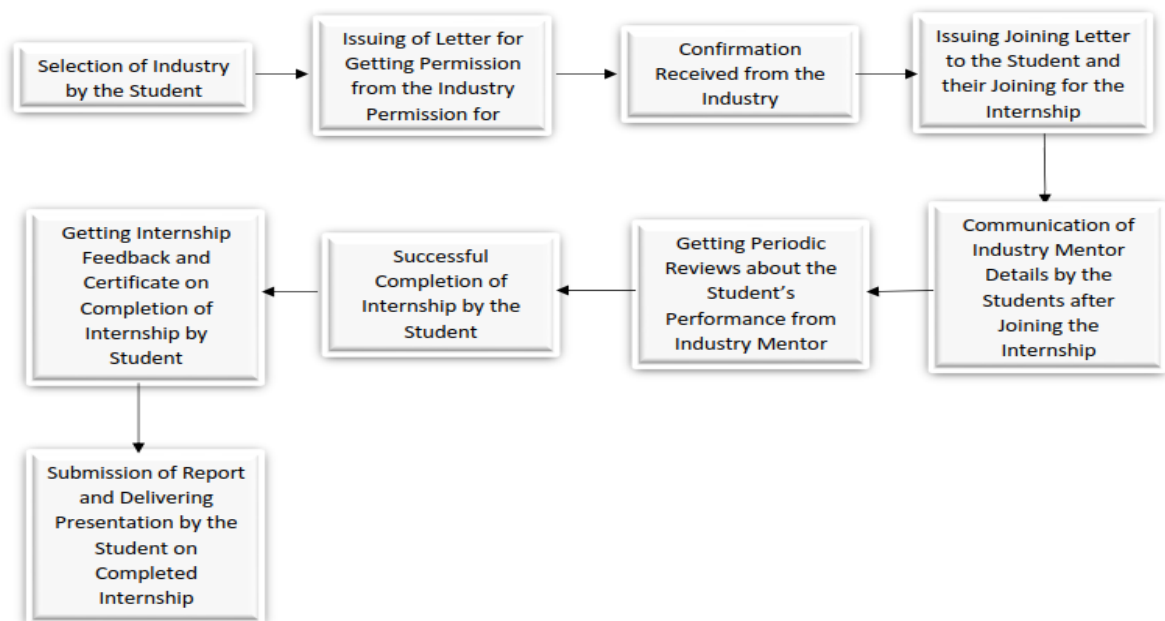
SIP is offered to entrants of SY B.TECH (after semester II), TY B.TECH (after semester IV) and final year B.TECH (after semester VI) that meet the eligibility criteria stated below:

SY B.TECH and TY B.TECH entrants should apply for 3 to 4 weeks' duration internships during June-July of every academic year. For these internships, REGULAR credits will not be awarded (non-Credit Based Internship). Although, REGULAR credits are not awarded, the internship is compulsory for all the students. After successful completion of the internship, a student will be awarded with 3 EXTRA credits and it will be incorporated / reflected in Additional Grade Card (AGC). Student has to work for 120 hours minimum as an Intern during the given period. (Compulsory Internship)

Final year B.TECH entrants should apply for 4 to 6 weeks' duration internships during June-July of every academic year. For this internship, REGULAR credits will be awarded. (Credit Based Internship - 4 Credits). This internship is compulsory for all the entrants of final year B.TECH. Awarded credits will be considered for the calculation of final year CGPA and will be reflected in REGULAR Grade Card. Student has to work for 160 hours minimum as an Intern during the given period (Compulsory Internship).

Final year B.TECH students may apply for 5-6 months (24 – 26 weeks) semester- long Industry Internship under SIP in their VII / VIII semester for Project Work. Equivalent credits will be awarded for the semester long internship. (Optional Internship).

Flow diagram of process



Program wise internship completed by students

Sl. No.	Name of program	No. of students completed internship as on date		
		SY	TY	B. Tech.
1.	Chemical Engineering	70	85	NA
2.	Civil Engineering	92	76	NA
3.	Computer Engineering	150	217	4
4.	Design	08	2+8	NA
5.	Electronics Engineering	10	51	NA
6.	Electronics & Telecommunication	50	132	NA
7.	Information Technology	68	NA	NA
8.	Mechanical Engineering	337	223	NA

Industry Wise Details of the Industry

Sr. No.	Industry Sector	No. of Organizations	No. of Students Joined there
1	Institutes like ICT and IISC	02	05
2	Research Institutes Like NCL and NEERI	04	08
3	SMEs and Startups	05	10
4	MNCs	29	132
Total		40	155

Feedback about mentors regarding student performance

Sl. No.	Description	2018-19
1.	Chemical Engineering	75
2.	Computer Engineering	76
3.	Information Technology	81
4.	Electronics Engineering	85
5.	Electronics Engineering	85
6.	Civil Engineering	73
7.	Mechanical Engineering	73

Challenges/Problems faced during internship and solution:

Challenges/Problem faced:

1. Number of students permitted by a company
2. Travelling and accommodation problems were faced by the students. Dealing with RTO and HR was problematic..
- 3..Technical problems such as handling the machines and understanding problems in coding and issues related to vehicle dynamics were certain time being problems for the students.
4. Job satisfaction and the period of internship offered by concerned institutes/ industries were also significant problems from students' point of view.

Solution: In core chemical company 2-4 students names have been forwarded. With the help of experts and detail discussion some of the issues were resolved.

Benefits of internship achieved:

1. Internships make candidates more competitive in the job market.
2. In addition to gaining exposure and experience in the field, they also provide an opportunity to see if the particular career field is the right one based on getting personal experience in the field.
3. Students have understood importance of professionalism and individual responsibility that is required.
4. Few industries have offered project work for group of students and students got a real time problem to work closely with industries
5. Six months internship/placement offer are also offered to some students.

Quality Management System (ISO)

Purpose:

QMS is an integral part of any MIT Academy of Engineering. It is implemented in the institute to ensure the quality as a whole. The main purpose is to bridge the gap between academia and industry and to satisfy not only the learners' requirements but also the external world by setting the mission and vision which will help in achieving the goals. By improving the processes at various levels such as administration, teaching-learning, trainings, etc. the QMS will lead to bring out the institute at par.

Objectives:

1. To get all the programmes NBA accredited.
2. To bring institute in the NIRF India Rank.
3. To get excellent grade in NAAC.
4. To bring more advanced ICT in teaching-learning processes for engaging students.
5. To achieve international accreditation.

Process of Quality Management System:

In order to enhance the quality at the institute level, following measure is to be taken:

- **Plan:** Identify and analyze the problem or opportunity and develop hypotheses and execute accordingly.
- **Do:** Test the potential solution, ideally on a small scale, and measure the results.
- **Check:** Study the result, measure effectiveness, authenticate the hypothesis.
- **Act:** Execute finally.

Challenges/Problems faced during Quality Management System and solution: Challenges:

- Constraints imposed by a quality culture
- Lack of employee commitment
- Improper Channel of communication
- Quality certifications-viewed as a bureaucratic exercise
- Problems in identifying customer needs
- Lack of knowledge about self-assessment mechanisms

Solution:

- The organizations should focus on developing a conducive organizational quality culture that provides a support in improving the quality of the operations or activities.
- The top management should seek the participation of all the persons working in the organization before taking the final decisions.
- A sense of belongingness among the employees can motivate to contribute their best efforts for the results of the business.
- A proper path for exchange of information should be developed. No piece of information shall be concealed on the part of top management.
- All the activities in the business are undertaken in the organization to serve the customer in best possible way. The methods of research that can provide maximum information and accurate data about customers taste and preference shall be used.
- Create Institutional and community awareness of the importance of quality in the field of higher education.
- To activate the mechanisms of student participation in assessment of academic programs and the application of quality systems at universities and take their opinions seriously.

Benefits of Quality Management System (ISO) achieved:

- Institute is certified by ISO 9001:2015
- Institute is accredited by NAAC
- Met the Learner's needs
- Improved the organization outputs,
- Controlled and well-defined process,
- Improved the academic efficiency
- Increased the effective use of resources

Research and Development (R&D)

Purpose:

Research is the extensive expansion of the existing stock of knowledge through high concentration of energy, effort and intellectual thought process that gives new dimensions to ideas, which produce far-reaching and everlasting results. It is the pursuit of novelty with the help of study that includes observation, comparison, experiment, collecting and analyzing facts or data, and reaching desired conclusions either in the form of solution(s) towards the concerned problem or in certain generalizations for some theoretical modeling/formulation. Precisely, the persistent quest for knowledge through objectives and systematic methods of finding solution(s) to a problem is research. In Research and Development, one does research for the development of new techniques/ methods for inventing and improving a product as per the requirements of industry / society in terms of quality, cost, manpower, energy consumption, time etc.

To facilitate all the R & D activities in our institute among students and faculty/staff members, the R & D cell is functional and is being steered by the Director, Dean (R&D) and active representatives from each department.

The Aim of R&D Cell is as follows:

- To inculcate the spirit and culture of research amongst all the stakeholders.
- To enhance interaction and cooperation between researchers for interdisciplinary and multidisciplinary work.
- To forge research collaborations with national and international universities, governments and industries.
- To establish links with various R&D organizations and funding agencies for sponsored and contract research.

Objectives:

- To enhance the research awareness by organizing national and international conferences, symposia, workshops on research methodology, IPR and patents, talks and discussions with eminent researchers.

- To encourage faculty to undertake research projects in, thrust areas in science and engineering funded by various national and international agencies.
- To explore new horizons of knowledge and ensure its practical implementation through collective efforts and quality research work.
- To provide a creative atmosphere, complemented by adequate facilities and resources in which research thrives amongst the faculty and students.

Process:

A. Research and Development Cell of MITAOE has well defined policies which are mentioned as follows:

- i. **R&D Manual:** This document caters the guidelines regarding Faculty/Students Journal Publications, attending conference, allocation and use of Seed money required for research projects and constituents of different Research Committees.
- ii. **Consultancy Policy:** This policy provides guidelines related to Industrial consultancy and training.
- iii. **IPR Policy:** Provides guidelines for Intellectual Property Rights.
- iv. **R&D Incentive Scheme:** This Scheme provides the eligibility criteria and Incentive Scheme to motivate faculty and boost research activities.

B. R&D cell has its own Quality System Manual which has information related to R&D Organization Structure, Quality Objectives, Responsibility and Authority.

Challenges/Problems faced:

- I Sensitizing faculty for writing skills required for Research Journal Paper, Drafting skills required for writing Research Proposals and Patents.
- ii. Time management: Faculty has to manage the time to maintain balance between Teaching Learning and Research.

Benefits of R&D achieved in Academic year 2018-19:

i. Research Fund fetched

Sr. No.	Principal & co-principal investigators	Project title	Funding agency/industry	Amount sanctioned (In Lakhs)	Duration (yyyy-yyyy)
1	Dr. Debashish Adhikari	AICTE – MODROBS	AICTE	797000	2018-20

ii. Research Publications and Patents

Year	Departments	Research Journal Publications	International Conference	National Conference	Research Funding (Lakhs)	Patents (Filed)
2015-16	Mechanical	1	2	--	--	1
	Computer	--	3	--	22.33	--
	IT	4	6	4	--	--
	EnTC	4	--	3	24.39	--
	ETX	2	--	3	--	--
	Civil	--	--	3	--	--
	Chemical	7	--	21	8.5	--
	Engg Science	1	--	1	--	--
2016-17	Mechanical	--	4	--	13.15	--
	Computer	--	3	--	--	--
	IT	--	1	2	2.12	1
	EnTC	--	33	4	--	--
	ETX	--	2	1	--	--
	Civil	6	--	--	--	--
	Chemical	--	10	4	--	--
	Engg Science	--	--	--	--	1
2017-18	Mechanical	1	1	1	--	4

	Computer	--		--	44.72	4
	IT	7	2	1	--	1
	EnTC	--	4	--	--	--
	ETX	1	--	--	--	--
	Civil	--	--	--	--	--
	Chemical	--	--	--	--	--
	Engg Science	1	--	--		--
2018-19	Mechanical	3	37	1--	--	02
	Computer	6	120	--	--	02
	IT			--	--	--
	EnTC	2	13	--	18.97	--
	ETX	--	--	--	--	--
	Civil	--	--	--	--	--
	Chemical	0	6	--	18.3	--
Engg Science	--	--	--	--	--	

Role of Engineers for society development through NSS:

Purpose:

It is a program for students to cater to the needs of the community, as and when required. It will also help the students to communicate with the society. The students joining this scheme develop many behavioral interactive skills.

Objectives:

The overall objective of this scheme is 'Education and Service' to the community and by the community. The goal is to strive to inculcate the bond of patriotism, national integration, brotherhood, communal harmony among these volunteers.

Process:

Students visit the rural areas as NSS volunteers during the campaign /camps organized by Institute. The NSS volunteers take initiative in developing a Technocratic Environment and also help the underprivileged people to develop themselves. The scheme promotes the ability to present them in a better way.

Challenges/Problems faced:

It is a challenge for the NSS volunteers to develop a Technocratic Environment and also help the underprivileged people to develop themselves as the rural people should also have the desire to change themselves and their surroundings.

Benefits of NSS achieved:

It helps in overall development of the personality of the students and creates the bond between educational institute and the villages. The students joining this scheme develop many behavioral interactive skills.

Enhanced teaching using ICT towards outcome based education

Purpose:

The purpose of using ICT tools is to evaluate and enhance students' performance.

Objectives:

- To enhance learning through self-assessment.
- To use collaborative learning using the discussion forum.
- To provide availability of instant study material anywhere and anytime.
- To ease assignment submission for students and evaluation by faculty.
- To conduct online lectures and make active participation in it by the students.

Process:

Moodle is a Learning Platform or course management system (CMS) - a free Open Source software package designed to help educators create an effective online course. With customizable management features, it is used to create private websites with online courses for educators and trainers to achieve learning goals. The course instructors can create the courses by using online platform like Moodle or Google Classroom where they can create and assess quizzes, assignments, discussion etc. They can share the student material and important notices, announcements etc. related to the course. This ICT tool helps to view the progress of students for the given task. GoToWebinar is an online platform for conducting the online lecture and allows the participant to actively participate in the course.

Challenges/Problems faced:

- Occasional problems of internet connection
- Problems in the website access
- Lack of knowledge in configuration the course or creating the activity.
- Unawareness of the availability of useful features

Benefits achieved:

- Active participation of students in the course.
- Collaborative learning.
- Student can see their marks and update own performance.
- Teacher can observe the performance of students and brings improvement.