Faculty Innovative Practices towards attainment of Programme Outcomes

MAHENDRA ENGINEERING COLLEGE

AUTONOMOUS NAAC 'A' GRADE

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Faculty Innovative Practices at Mahendra Engineering College

Engineering education envisages significant challenges as it needs to meet the growing demands of the industry. Recent studies depict that technical workforce requires universally preferred, yet challenging skills in areas like Science, Technology, Engineering and Maths (STEM), Statistics and Data analytic skills. As a part of the mission, innovation in technical education with paradigm shift is needed on the efforts for faculty empowerment to improve the teaching – learning process in the institutions. In this process, our institution has been in the forefront in implementing the best practices to enhance the quality of the faculty in all dimensions. These practices also enable students' outcome / programme outcome due to quality faculty and quality teaching learning environment.

Objectives:

The best practices for the faculty empowerment are to

- Develop boundary-crossing skills, such as inter-disciplinary thinking, synthesizing knowledge of different disciplines
- Ensure the knowledge sharing among the faculty members of various disciplines
- Foster in-depth learning of the concepts and understanding of varied topics
- Promote and enhance the inter-disciplinary learning by the faculty members as well as the students through inter-department lectures
- Identify the societal problems and provide solutions through real-time projects involving the students

Innovative practices (FIP)

FIP#1: TASKS – Teachers Acclaimed Seminar for Knowledge Sharing

FIP#2: InDeL- Inter Department Lecture series

FIP#3: FDLP – Faculty Deeper Learning Programme

FIP#4: FISHing – Faculty Idea Sharing

FIP#5: FACE-Faculty Academic Contributions towards Excellence &

FACTA-Faculty Academic Contribution towards Excellence-Target Achieved

FIP#6: NPTEL certification

FIP#7: NIT/IIT/Reputed institute interaction

FIP#8: T2P- Thoughts to Product

FIP#9: Industry Institute interaction

ICT Academy of Tamilnadu Award for Faculty Empowerment 2017


CERTIFICATE OF RECOGNITION

ICT ACADEMY

This is to certify that the practice on

Faculty Empowerment

by

Mahendra Engineering College, Namakkal

has been selected and published in

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M Sivakumar

Best Practices
Higher Education
Tamil Nadu 2017

FIP#1

TASKS – Teachers Acclaimed Seminar for Knowledge Sharing

This seminar is to provide an opportunity for the faculty members of all departments to share their knowledge with the peer group members. The schedule is prepared in advance for the faculty members to share the knowledge on inter-disciplinary fields and the interested faculty members participate in this programme. A record of the daily activity is maintained in the college with information shared and details of faculty attended. All the faculty members who have presented / shared the information are provided with certificates. The seminar is organized during 4th period on all working days.

Objectives:

- To enhance the presentation skill of the faculty members
- To improve the confidence of the faculty members since the participants are colleagues
- To share the advanced technologies of their own specialization so that others can also acquire the knowledge
- To ensure the improvement in teaching learning for the benefit of the students

Number of seminars conducted and the faculty Participations

Sl.No.	Year	No. of seminars	No. of participation by faculty members	Average no. of faculty members attended per seminar
1	2017-18	164*	5479*	33
2	2016-17	169	5423	32
3	2015-16	116	4309	37

Outcomes:

- Presentation skill of the faculty members is enriched
- Inter-disciplinary knowledge sharing among the fellow members are observed
- Class room teaching and content delivery are improved

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√				√	√		√	√	√		√

FIP#2

InDeL- Inter Department Lecture Series

It is organized to provide the opportunity for the faculty members to share the acquired inter-disciplinary knowledge with students of various departments. The schedule is prepared and provided to the faculty members to prepare and present the acquired information to the target audience (students) in consultation with the heads of the departments concerned. A record of the programme is maintained with information shared and the list of students benefitted.

Objectives:

- To motivate the members of faculty of various departments to understand and acquire the possibilities of learning and understanding in multi domain
- To enhance the possibility of inter discipline activities across faculty members and students
- To provide the platform to know the knowledge resources of the other departments
- To motivate the faculty to focus on inter disciplinary projects

Inter Departmental Lectures delivered and students' participation

Sl.No.	Year	No. of Lectures delivered	No. of students benefited
1	2017-18	160	6418
2	2016-17	133	4788
3	2015-16	123	4490

Outcome:

- Enabled the faculty members to understand the avenues for multi domain activities
- Increased the utilization of laboratory resources
- Good number of inter disciplinary projects done

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√		√	√	√	√		√		√

FIP#3

FDLP – Faculty Deeper Learning Programme

This programme is organized during summer and winter vacations to enable the faculty members to share the domain specific knowledge with interested faculty members through lectures, presentations, live and practical demonstrations. This helps the faculty members to understand the subject concepts in different perspective. It is also focused to make the complex problems as simple as possible..

Objectives:

- To provide a forum for senior faculty to share the knowledge and expertise with the entry level and junior faculty
- To motivate the faculty members to familiarize in their area of expertise

Number of Lectures arranged and faculty participation

Sl.No.	Year	No. of FDLP conducted	No. of faculty participation
1	2017-18	12*	237*
2	2016-17	25	340
3	2015-16	12	242

***ODD Semester only; EVEN Semester FDLP is planned for summer**

Outcomes:

- Knowledge level of the junior faculty members has enhanced
- Deeper learning improved the research collaborations and technical publications

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√	√	√				√			√

The experts share their expertise to the colleagues for enhancing the technical content delivery in the class.

FISHing – Faculty Idea SHaring

FIP#4

This practice enables the faculty members to motivate and guide the students to generate innovative ideas and implement the same as real time projects to provide solutions for the day-to-day problems of the society

Objectives

- To inspire the students to generate innovative ideas and implement the same as real time projects.
- To provide guidance on innovative ideas and social oriented projects with the support of Institution and industrial experts

Few innovative students projects are completed out of 86 innovative ideas

- Solar powered vehicle
- Solar tracking system
- Agriculture Crop Monitoring system
- Automatic Indication system
- Blue tooth controlled autonomous vehicle
- Pick and place Robot
- Obstacle detection in robot using ultrasonic sensor

Outcome:

- It is witnessed through several accolades in the competitions organized by the renowned industrial organizations like Infosys, Texas Instruments, Microsoft and many academic institutions

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√		√	√	√	√	√	√	√	√

FACE & FACTA-Faculty Academic Contributions towards Excellence & Target Achieved

FIP#5

The faculty members plan their activities for every semester and focus to achieve. In addition to regular academic activities, the publications, Interaction with eminent Professors, motivating the students for paper presentation/project submission/ other contests, preparation of learning materials on advanced topics, proposals submission for grants from funding agencies and visits to industries for collaboration are given due importance. Every activity is given credit points for evaluation. It is similar to Academic performance Index calculation.

Objectives

- To motivate the faculty for academic contribution towards excellence
- To improve the intellectual capability in their respective domain

Sl.No.	Year	Maximum No. of Credits	No. of faculty earned >175	% of faculty earned >175
1	2017-18	250	112*	35*
2	2016-17	250	169	52
3	2015-16	250	158	49

***Even semester 2017-18 to be calculated in May 2018. Faculty with less than five years given target points 200.**

Outcome:

- Faculty members improved their contribution
- Collaborative research activity with University enhanced
- Significant contribution in terms of journal publications is seen
- Students performance in paper presentation and project contest has increased

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√		√		√	√	√	√	√	√	√	√

In addition to POs, it fulfils research and enables better contribution from faculty members.

FIP#6

NPTEL certification

Faculty members and students are encouraged to take up the NPTEL certification courses offered by IITs and IISc through online. It provides opportunity to the faculty members and students to undergo courses of their choice to enhance the technical knowledge provided by the experienced professors.

Objectives

- To learn the concepts and understand with enhanced perspective
- To improve the technical skill in their respective domain
- To enhance the teaching learning process

Sl.No.	Year	No of faculty registration	No of faculty earned certification
1	2017-18	200	Waiting for the examinations scheduled on April 28 & 29, 2018
2	2016-17	50	30

Outcome:

- NPTEL certification course enhanced the concept learning and depth of knowledge
- Faculty members gained confidence on the subject
- Performance level of faculty members on teaching aspects improved
-

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√	√	√	√	√	√	√	√	√	√

FIP#7

NIT/IIT/Reputed institute interaction

NIT/IIT lecture series provides platform for the faculty members to interact with the professors and leads to collaborative research. The interaction in terms of facility utilization, knowledge sharing and curriculum design is envisaged. NIT/IIT lecture series enables the faculty members to share the ideas for enhanced teaching learning process.

Objectives

- To elevate the intellectual capability of faculty members
- To foster research environment in the institution
- To utilize their expertise for curriculum design

Sl.No.	Year	No. of Lectures arranged	No. of faculty benefitted
1	2017-18	**18***	109
2	2016-17	12	73
3	2015-16	7	34

Outcome:

- Enhanced the knowledge on advanced engineering concepts
- Improved lesson design and lateral thinking
- Created opportunities to work with IIT/NIT and University Professors.
- Students are given opportunities to visit them for collaborative work
- Projects are carried out in IIITDM Chennai

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√		√					√		√

T2P- Thoughts to Product

FIP#8

Team of faculty members and students of various disciplines propose their innovative ideas in the Mahendra underGraduate Innovation Contest (MaGIC). The best innovative and social relevant ideas are scrutinized by the team of faculty members and industrial experts. Financial and technical support are provided by the college to transform best innovative ideas into products.

Objectives

- To provide opportunity for exhibiting new ideas and thoughts
- To understand the complexity and intricacies in product development
- To provide scope for patent development

Sl.No.	Year	No of ideas received	No of ideas scrutinized and implemented
1	2017-18	86	51
2	2016-17	57	43
3	2015-16	52	22

Outcome:

- Created awareness among the faculty members to develop product on their own
- Need for the society is well understood in all perspective.

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
√	√	√	√	√	√	√	√	√	√	√	√

Industry Institute Interaction I3

FIP#9

The purpose of Industry-Institute Interaction is to have better understanding between industry and academia for developing engineering curriculum, exposure of industrial atmosphere to engineering students and for subsequent placement. The interaction supports for identifying the courses for Industrial Co-Teaching (ICoT) Course for the students.

Objectives

- To produce industry ready engineers
- To know the requirements of the industries through industry-institute interaction
- To enhance industry experts to participate in curriculum design which plays a significant role in preparing the students ready for the industry

Industrial expert visited

Sl.No.	Year	No. of industrial experts visited	No. of faculty benefitted
1	2017-18	75	96
2	2016-17	68	90
3	2015-16	56	75

Outcome:

- Familiarized with current industrial needs.
- Curriculum is developed with the inputs given by industry experts to attain the Pos of the programmes.
- Increased the MoUs with the industries
- Consultancy by the faculty members have increased
- Gap between industry and institution is reduced

Contribution for PO attainments:

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
				√	√		√	√	√	√	

Innovative Practices - Faculty - Contribution towards PO attainment

FIP	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
TASKS	✓				✓	✓		✓	✓	✓		✓
InDeL	✓	✓	✓		✓	✓	✓	✓		✓		✓
FDLP	✓	✓	✓	✓	✓				✓	✓		✓
FISHing	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
FACE	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
NPTEL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NI2T	✓	✓	✓		✓					✓		✓
T2P	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
I3					✓	✓		✓	✓	✓	✓	