



# **Government College of Engineering Karad**

## **Internal Quality Assurance Cell ( IQAC)**

### **Best Practices I**

#### **Title of the Practice:**

Quality in Teaching and Learning Process

#### **Objectives of the Practice**

- To orient the faculty & students by imparting basics of outcome-based education.
- To involve expert academicians from reputed institutions, industrial experts in designing curricula & its implementation.
- To involve industrial personnel for to train faculty and students with advance tools and cutting edge technology by conducting on-line and off line courses, Guest Lectures, seminars and group discussion.
- To enable the students to compete at global level and create better opportunity for job employment.
- Increase exposure of the students in solving real life problems by participation of students in various competitions, industrial visits, internship etc. activities.
- Proposing dual degree or minor degree program in current trends of technology

The expected outcome is that the students should be able to complete their degrees with good academic grades and compete at national and international level.

#### **The Context**

Improvement in teaching learning process is planned through regular up gradation of syllabi, introducing addition of interdisciplinary courses in curricula as Professional Electives, Open Electives, NPTEL/MooC courses, and sponsored projects from industries.

## **The Practice**

1. Implementation of NPTL ,MOOC, E-learning facility with help of
  - a) Multimedia and smart board equipped classroom.
  - b) Additional coaching for slow learners through remedial classes,
  - c) Enrichment through interdisciplinary courses for advanced learners
  - d) Involvement of industrial personnel or renowned institutes faculties for additional study sessions in and off the classroom
2. Counselling the students having poor academic performance & guiding the students to boost their competency level in aptitude and gate examination.
3. Need based curricula structure strictly in adherence with AICTE guidelines with choice based credit system.
4. Purchase of high end equipment and software for the development of state of art laboratories with utilization of virtual lab facility having remote accessibility from IIT and other institutions
5. Implementing grade moderation in relative grading to result into efficient and effective practice for students' academic performance.
6. Internal quality audit for course planning, delivery of knowledge, evaluation, question paper setting and assessment, obtaining course attainment level, students' performance data collection, and records keeping. This will be done once/twice in year.
7. Student feedback on organization, assessment, and delivery of course contents, counselling and guidance, twice a year to rate course teacher individually and relatively with other course teachers of that class thereby providing an opportunity for teachers to address their strength/s and weakness.
8. Alumni feedback regarding usefulness of curricula learned during their stay at institute , need of curricula revamping , ways of enhancing placement of our students, enhancing sponsorship and internship activities, initiating start-ups, standing and branding of institute etc.

## **Evidence of Success**

1. There is always difference of opinion about process of CO-PO mapping and its measurement of direct and indirect outcome. With the help of HoD Mech. Dr. R.K. Srivastava, Prof. Sali N.V. IQAC cell is coming out with very nice document on CO-PO mapping and evaluation of achieving PEO of the course. It will be great helpful and guidelines to bring uniformity among the all teaching community. This process will be adopted uniformly to all branches. A link is provided for information [CO-PO Mapping process and Evaluation.](#)

## 2. Central Facilities for Students Facilities of Centre of Excellence

CNC Milling Machine 	CNC Lathe Machine 	Aristo Robot and AGV 	Automated Guided Vehicle 
Power 7.5kW, accuracy 10 $\mu$ , ATC with 20 tool magazine	Power 5.5kW, accuracy 5 $\mu$ , 8 station turret	Load capacity 3 kg, Horizontal reach 645mm	Payload 30 kg, Wire-guided, magnetic pickup
CNC CMM 	Kistler Dynamometer 9272 	SKF Microlog Analyser 	Sound Analyser 
Air bearings on all axes, Probing – MH20I TP 20	Measuring range 1) Fx, Fy kN –5 to 5 2) Fz kN –5 to 20 3) Mz N·m –200 ... 200	FFT analyser with analyser and FRF module.	Real-time analysis - 1/1 and 1/3 Octave Bands, 3 Hz - 20 kHz

**Lab In-charge: M. H. Yadav Lab Assistant: G. S. Chandane and A. S. Mane**

## 3. Utilization of Centre of Excellence Facility

PG and UG students from more than 15 institutes under Shivaji and Pune University have completed testing of their projects in Center of Excellence on CNC machines, CNC CMM, FFT analyser and roughness tester and on EDM machine.

UG, PG and Ph. D. students are benefited as the **curriculum includes laboratory practicals on the facilities available**. Also, major machining of PG projects of Mechanical Engineering Department is carried out free of cost here. Apart from this, machining of components of SAE club vehicle competitions such as, BAHBAJA, TIFAN is completed in CoE.

#### 4. Twining Activity

As per the guidelines from TEQIP Program twining activity is setup with REC Azamgarh.

A Batch of 10 students from REC, Azamgarh was given training on CNC machines for 10 days.



#### 5. Performance of students in competitive examination in UPSC,MPSC,

Sr. No.	Candidate Name	Branch	All India Rank
1	Mr. Harshal Bhosale	Mech. 2018	1 <sup>st</sup> In UPSC in year 2019-20
2	Mr. Prasad Chougule	Mech. 2017	1 <sup>st</sup> In MPSC Year 2019-20
3	Mr. Arun Patil	BE. Elect	Deputy Collector
4	Mr. Rajvardhan Patil	BE Mech.	Assis. Comm. of Sales tax
5	Mr. Raghunath Kadam	BE. Elect	Industrial Officer
6	Mr. Sushant Salunkhe	BE. Elect	Nayab Tahashildar
7	Mr. Rakesh Gidde	I.T.	Tahashildar
8	Mr. Diliprao Powar	BE Mech.	Education Officer

#### 6. Syllabus as per blooms taxonomy and at par with guidelines of AICTE model curriculum.

Number of credits offered to basic sciences, Engineering Sciences, Core and open elective meets the requirement of AICTE and are categorically mentioned and followed. There is flexibility that student can opt for interdisciplinary selection of courses. Also there is provision that the student can opt to drop the course , but he has to complete minimum 75 % credits in each semester and he will not enter to third year B. tech or final year B. tech unless he/she completes his all credits requirements from first year and

second year respectively. There is mandatory requirement internship/industrial training minimum of one month from second year onward. There is flexibility in new structure to undergo six month project internship in the industries called as Industry mode. This mode is going to give exposure to the students work on real life projects in the industries. One Sample copy is referred here.

[http://www.gcekarad.ac.in/uploaded\\_files/WEF19\\_Final\\_Year\\_B\\_Tech\\_Structure\\_Mech.pdf](http://www.gcekarad.ac.in/uploaded_files/WEF19_Final_Year_B_Tech_Structure_Mech.pdf)

- 7. There is flexibility that student can earn credits through NPTEL /MooC or any online course recommended by department committee.** As National Education Policy of India is starting from 2021, there will be more flexibility will be brought into the consideration while implementing further reforms in to the curriculum. During Covid -19 pandemic Situation all classes conducted online using ICT tools and examination were also conducted in online mode. All faculty members were instructed to keep difficulty level of questions in MCQ or numerical in the paper must be kept high and assessment need to be done carefully. This has resulted in slightly lower performance in grades or marks. **It is proposed to start either dual degree program or minor degree program from year 2021-22 after discussion & permission with university authorities.**

### **8. Gate Students performance**

Students were not taking initiative to appear for gate examination. After counselling and providing coaching to the students that qualified GATE score students percentage is increased 20 to 30 %. But it needs to be improved further. It is observed that placement in IT sector for other branches has reduced % of students' appearing for gate examination. Special effort need to be taken care off. It is also observed that very few students from IT, E & TC are appearing for gate sincerely because of availability of jobs.

Sr. No	Dept.	% of Success 2017-18	% of Success 2018-19	% of Success 2019-20
1	Civil	33%	48%	22%
2	Mechanical	22%	22%	20%
3	Electrical	29%	22%	20%
	Average	28%	31%	21%

## **Problems Encountered and Resources Required**

- 1) 24 X 7 access to archived study material, digital library in addition to dedicated set of text books through central library and off academic hours access to departmental library should be provided.
- 2) IT infrastructure is to be revised through funds from industries or grants to the enrichment and use of E Learning platforms more effectively, Best Audio-Video recording studio facility for content creation and management is essential.
- 3) Implementation of Effective Moodle teaching Management System at all department should be mandatory.
- 4) Strengthen Wi-Fi connectivity, Strong Data servers, web enabled systems, cloud based solution for data collection, analysis, statistic and its cyber security.
- 5) Converting laboratories to virtual platform using cloud based software platform.

# Best Practices II

## Title of the Practice

Research Development and Consultancy

## Objectives of the Practice

- To increase publications in reputed online and offline journals and conferences.
- To undertake the different projects from various funding Agencies
- To increase consultancy activity for generation of funds and effective utilization of resources available.
- To increase the sponsorship of projects and internship in industries.
- To arrange international or national conferences, workshops for interaction with eminent personals in field of engineering.

## The Context

This section of institution gives real picture of institutional strength and standing in outside world. Performance of this section is face value of the institution. Engineers are the problem solvers that power the modern world, activities in this section builds confidence among society about quality of education delivered in the institution, technical skill set acquired by stakeholder and the effective utilization of resources.

Impact this activity

- Confidence about technical writing skills.
- Enhances ability to work under pressure and Problem-solving skills.
- Displays creativity and innovation.
- Create commercial awareness.
- Increases Team working skills.
- Increasing the branding of institution in research Community.
- Identifying centre of excellence.
- Recognition to institution in National Importance Laboratories.
- Receiving Funding through Industries and R & D department DRDO, CSIR etc.

## The Practice

- 1) Arranging webinar/Conferences to enhance research skill and interaction among faculties all over world.
- 2) Imparting need based training to the faculties to enhance employability of students and entrepreneurship skills.
- 3) Conducting Guest lectures, workshops and seminars to encourage higher education within institutes.
- 4) Provision of advance technology lab, equipped with updated hardware and software to support the research and consultancy activities.
- 5) Extension of additional technical facilities such as open source platforms, software engineering codes and practices, plagiarism and grammar checks etc. to improve the best journal or conference paper writing.
- 6) Reimbursement of registration fees for paper publication
- 7) Arranging the special training programs on such AI and Machine learning.
- 8) Arranging programs for patent filing procedure and knowledge.

## Evidence of Success

### Patent Filed and awarded

Patent Filed and awarded	2017-18		2018-19		2019-20	
	Filed	Obtained	Filed	Obtained	Filed	Obtained
Civil department		1	9			
Mechanical Department	3		5	1	4	
Electrical Department						
<b>Total</b>	<b>3</b>	<b>1</b>	<b>14</b>	<b>1</b>	<b>4</b>	<b>0</b>

PPE kit has been developed in collaboration with Krishna Medical Institute and patent is filed.

## Revenue Generated

Testing & Consultancy Report upto 2017-18 to 2019- 2020				
Department	Actual Revenue generated	Actual Revenue generated	Actual Revenue generated	
	2019-20	2018-19	2017-18	Total
Civil	1,56,57,012	11053431	7193576	3,39,04,019
Mech	61,485	18,629	26,054	1,06,168
Electrical	33,600	6,92,659	25,000	7,51,259
IT	27844			27,844
<b>Total</b>	<b>1,57,79,941</b>	<b>11764719</b>	<b>7244629.8</b>	<b>3,47,89,290</b>



## Centre of Excellence Activity & Revenue Generated

### Completed and Ongoing Projects

Sr. No.	Projects	Status
1	PhD work on Investigations in dynamical behaviour of fixture-workpiece system	Completed with publication in <b>Taylor Francis book chapter and Procedia Manufacturing</b>
2	PG level collaborative project with NIT Goa	Completed with publication in <b>IEEE transaction in instrumentation &amp; measurement</b>
3.	No. of PG projects on CNC machines	More than 20 publications in conferences
4.	<b>Current Project- KIMS -Foot operated device for bed ridden patients</b>	Project completed, <b>patent work In-process</b>

Academic Year	Revenue generated	Training Conducted/ Testing carried out
2017-18	28,000/-	CNC Training Programme
2018-19	27,100/-	CNC Training Programme
2018-19	14,160/-	Testing on CMM and EDM
2019-20	47,200/-	CNC Training Programme
2019-20	3,540/-	Testing on EDM
2020-21	11, 000/-	Online CNC Training Programme and testing
2020-21	7,500/-	Testing on EDM



Foot operated device for bed ridden patient MoU with Krishna Institute of Medical Sciences, Karad

### Faculty Publications:

IC- International Conference, NC- National Conference, IJ- International Journal, NJ- National Journal.

Year	2017-18				Year	2018-19				Year	2019-20			
Type	IC	NC	IJ	NJ	Type	IC	NC	IJ	NJ	Type	IC	NC	IJ	NJ
Civil	7	4	18	3	Civil	5	3	15	2	Civil	2	5	9	2
Mech	8	5	11	1	Mech	4	6	18	1	Mech	2	3	11	0
Elect	5	5	14	0	Elect	5	4	9	0	Elect	3	2	13	1
ENTC	2	1	0	0	ENTC	1	1	0	0	ENTC	0	1	1	0
IT	5	3	1	0	IT	5	5	1	1	IT	3	4	0	0
G Sci.	1	4	1	1	G Sci.	1	3	0	0	G Sci.	0	2	1	0
MCA	4	1	0	0	MCA	2	3	0	0	MCA	3	3	0	1
<b>Total</b>	<b>32</b>	<b>23</b>	<b>45</b>	<b>5</b>	<b>Total</b>	<b>23</b>	<b>25</b>	<b>43</b>	<b>4</b>	<b>Total</b>	<b>13</b>	<b>20</b>	<b>35</b>	<b>4</b>

The H index, i Index etc. information is given in AQAR reports. Total 48 Guest lectures were arranged for students and faculties. There are 52 Training programs where **163** faculties were deputed through TEQIP funding in year 2018-19 and in 2019-20 total **33** training programs where **111** faculties were deputed to attend training.

### **Total FDP and STTPS conducted in the institutes by faculties**

<b>Year</b>	<b>Total FDP/STTP's Conducted</b>	<b>Number of Beneficiaries</b>
2017-18	9	666
2018-19	13	1092
2019-20	20	1402

### **Problems Encountered and Resources Required**

- 1) Development of strong linkages with other reputed Institutions National Importance, IIT, IISc, reputed industries is needed, which will be addressed and evolved. This may be due to locational disadvantages.
- 2) Training to faculties in advance AI & ML, Tools, Software's etc.
- 3) Foundation of applied advance mathematics courses is very essential.
- 4) Effective utilization of high end resources due to lack interest of industrialist to adopt new technology in their product or services.
- 5) More focus is needed on patent filing and start-ups innovation.
- 6) Mandatory Accreditation requirement to get funding from AICTE/DST etc is limiting further modernization of laboratories.
- 7) Lacking in maintaining Alumni data base and arranging frequent alumni meet or interaction meeting.

## **Best Practices III**

### **Title of the Practice**

Industry Interaction & Placement Activities

### **Objectives of the Practice**

- Increase Industry Institute Interaction with industry to understand their needs and accordingly groom students to make them employable
- Six month Internship Program for final year students.
- To increase the placement in multidisciplinary areas
- To create opportunity for multiple jobs to the students (UG & PG )
- To train the students in good communication , writing skills in English
- To train students to work in team with cooperation , positive attitude, thinking
- Counselling is offered to every graduating student for them to be confident and competitive in their choice of career and for inculcating entrepreneurial skills.
- Promote students to higher studies and competitive examination (MPSC, UPSC, Gate etc ).

### **The Context**

Understanding the importance of industry connects now the Training and Placement Department is renamed as Industry Institute Interaction Cell. Function of Industry Institute Interaction cell is to connect with industry to understand their needs and accordingly groom students to make them employable and see that the placement of students' choice will be assured after his graduation from this institute. There are many careers in engineering, but these principles guide the role of an engineer. Hence they need a wide skill set

Key skills for engineers to be employable

- Effective presentation skills.
- Positive and never give up attitude
- Interpersonal skills.
- Verbal and written communication skills.
- Aware of Creativity & Innovation in field of Engineering.

## The Practice

- 1) We have embedded employability skills in curriculum which help students for their bright future Industrial training and internship since second year of UG program
- 2) Imparting need based training to have exposure to different learning environments to the students to enhance interdisciplinary skills and entrepreneurship
- 3) Conducting guest lectures, workshops and seminars to encourage higher education within and outside the country
- 4) Arrange Industry Expert Board Meetings in IIC cell and in the department.
- 5) Offer internship in curricula in final year students for six months.
- 6) Arranging Industrial visits to the students from second year onward.
- 7) Extension of additional technical facilities such as open source platforms, software engineering codes and practices, plagiarism and grammar checks
- 8) Proctor system - each faculty member work as a proctor for a group of twenty students (five each from First year to final year B. Tech program) for counselling and better performance of students.

We train our students in,

### Language Skills

- Verbal Ability
- Reasoning
- Verbal
- Non Verbal
- Reading
- Comprehension
- Listening
- Writing
- Speaking

### Soft Skills

- Communication
- Teamwork
- Interpersonal
- Relationship
- Presentation
- Selling
- Management
- Leadership
- Group Discussion

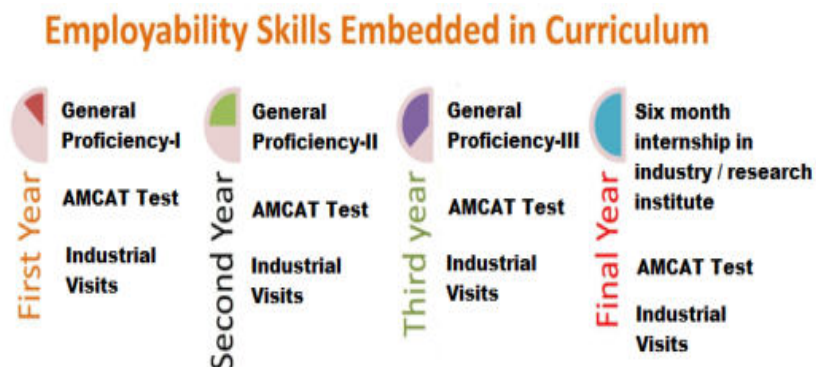
## INDUSTRY EXPERT BOARD



Unique feature of GCE, Karad is we seek guidance from industry experts through Industry Expert Board formed for each program. Eminent persons from renowned industry are member of this board

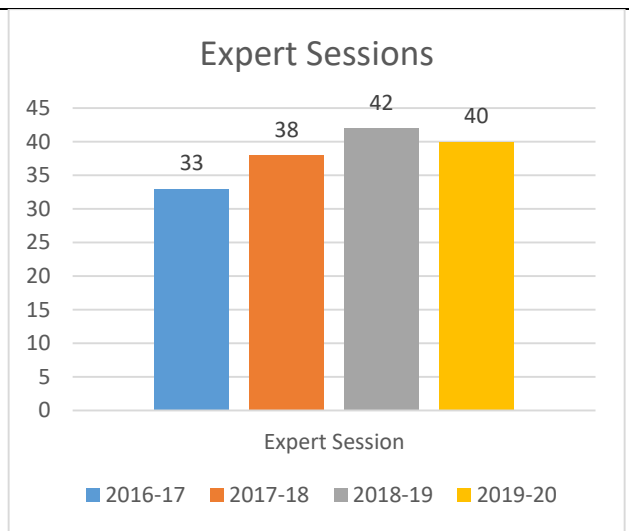
## Evidence of Success

1) Curriculum includes following Employability skills. IIC cell has all records of activities



2) Industry Expert Board Meetings & Guest Lectures

This is unique institute to form Industry Institute board to enhance Interaction. There are minimum 5 industry members who are having more than 20+ year of experience from industry of repute. The Board advises department about internship, curriculum, visits, expertise availability etc. This IEB meeting have helped us in arranging expert sessions, assisting in internship to students, allowing students for industrial visit. For project evaluation is done with help of Industry person which helps to improve industry academia relationship.

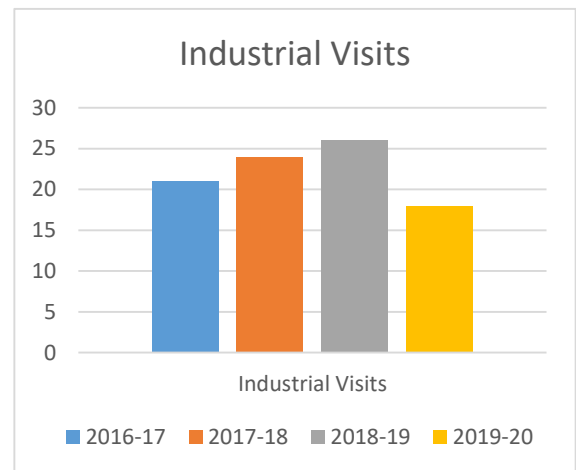
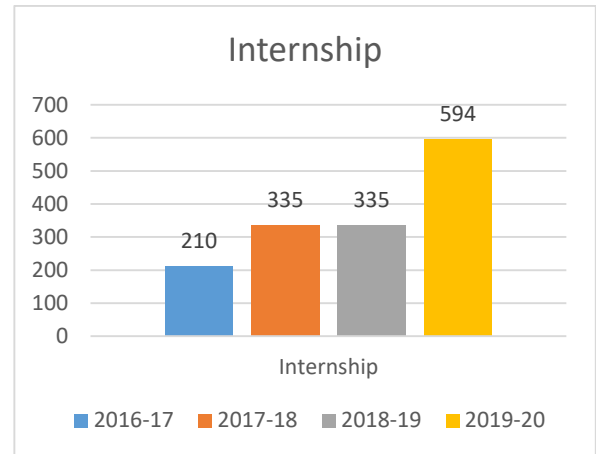


Many industry persons showed keen interest and shared their experiences with students giving updates about current practices in industry. Our alumni are also helping a lot for arranging expert sessions of their colleagues from company, HR Heads and persons they know well about expertise.

### 3) Internship, Industrial training and Industrial Visits

The students are encouraged to do internship especially in a good organization where their skill will be enhanced. In IT and ENTC there are few companies which are now allowing such internship. In such cases we are hiring services from expertise for skill-based training in the campus.

We are encouraging industrial training to all students from first to third year. This activity is helping us in giving internship to students. About 700+ students are registered on portal for internship related program. Departments are arranging industrial visits to industries and research institutes, laboratories of national repute. Students learn by observing good practices in industry which help them for enhancing their employability. Due to Covid-19 pandemic number of visits are reduced. Internship count is increased because it has become mandatory in curriculum. Apart from this institute has initiated Industry mode six month internship for final year students



### 4) HR Summit & Company Visits

On 3rd March 2018, IIC organized HR Summit 2K18 where HR Heads from TCS, Bharat Forge, Reiter, GenNext, Volkswagen, MAASS FLANGE and other companies participated. It was a day long program with panel discussions on Talent Acquisition and Talent Management. @400+ pre-final year students participated in this summit. Training and Placement portal inauguration was done by TCS HR Head Ms. M. Kalaa madam.



Total 150 companies visited for placement in last three years. The most important news is in 2017-18 year our two students bagged a package of 17.3 lakh per annum which is

the highest in institute history. Placement has always crossed 150 before end of semester. This achievement is due to our strong bond with industry in last 59 years and our alumni who prove by work the quality of GCE Karad. Companies like Principal, FIAT, Bizsense, TCS, Vyoms, BPCL, Faurecia, Sankey, KSB, e Zest, Greaves Cotton etc. are new additions in last three years with highest package of 17.3 lac per annum. Average package is also raised to 3.4 lac per annum.

## 5) Training & Its outcome

TPO conducts different programs for Personality Development, communication skill and professional skill development. For aptitude test training we conducted training of Globarena up to 2017. Thereafter O2 Breathing Brain is supporting us for such training. Additionally, online subscription for aptitude test is provided to students.

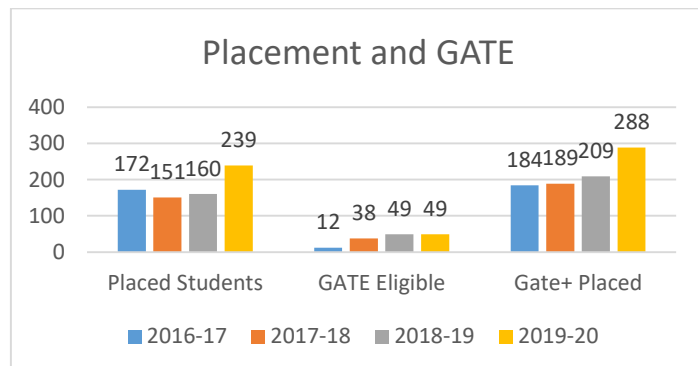
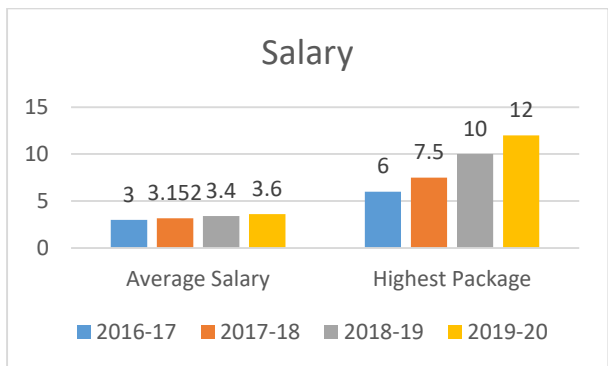
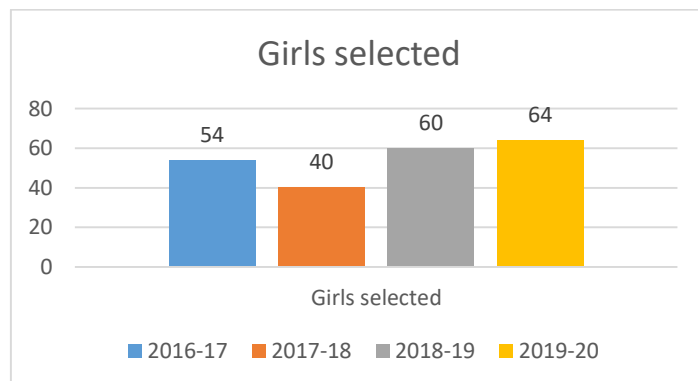
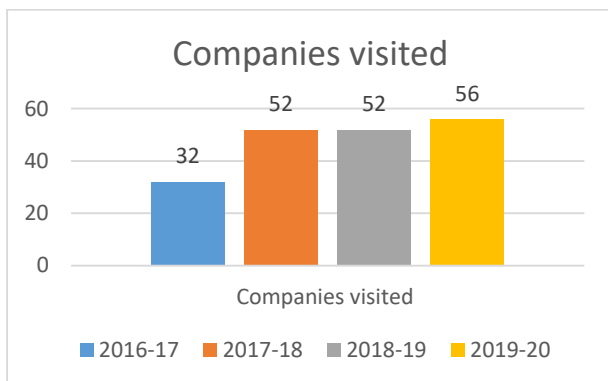
Online performance is monitored. All staff coordinators and TPO staff are engaged for the corporate training. Every department organizes expert lectures from industry person to understand industry requirements and industry expectations. Joint efforts and guidance is given by TPO and department to arrange training for Gate, MPSC, UPSC etc examination. Mr. Chougule stood first in Maharashtra for MPSC Examination. For mind stability we arrange yoga classes .Motivation and inspiration to the students we arranged TDEX –GCEK programs.






**Our efforts are to make them entrepreneur and they should participate in “Make in India program”.**

Sr. No	Type of Training Program or Test and Company	No of students Participation	Mode of Operation
1	Aptitude & Verbal : O2 Brain	All students	On Line
2	AMCAT Test	All students	Off line
3	Spoken Tutorial : Open Source software such as Linux, Scilab, Python, PHP , MySQL, Latex,	3087 (No of training 59)	ON line
4	NPTEL Local Chapter (2017-2020). No. of students enrolled 5458 and Registered for Examination-905	639 are certified	ON line
5	Virtual lab 2017-2020. Registered students:631,Trained students: 571,	5457 usage by students	ON line
6	Swayam Prabha : Group of 32 you tube channels 24x7 available in Institute Library	All Students	On Line
7	Gate Examination : All department Conducting Classes	Final Year Students	On Line



## OUTCOME





**Pragati Sharma**  
B. Tech. Information Technology

**In Year 2020-21 Miss Pragati Sharma got Job offer Rs. 25 Lacks highest Package. She got four Job Offers**



## **Problems Encountered and Resources Required**

- 1) Students register for company casually and are not attending without informing.
- 2) Students grooming should include corporate etiquettes. Some students join company and after 3-4 days leave job without informing company. Some students join company and after six months go to their competitor company breaking bond which is signed by TPO.
- 3) Student's interest varies as per market trends. Affecting core placement.
- 4) To increase placement and employability in core areas institute should for advanced software and technology in each department and provide hands on experience to the students
- 5) Audit, Credit courses online is to be encouraged for fast technology adoption and ensure that students had done the courses seriously just not for certification.
- 6) As internship is giving opportunity to employment, and many companies are demanding six-month undergraduate interns, it should be encourage by each department.
- 7) Data collection failure in time has missed good ranking in NIRF

# Best Practices IV

## Title of the Practice

Enrichment of Skill Sets of Student through Extra Curricular Activities

## Objectives of the Practice

- To promote the students for their involvement in co-curricular activities
- To enhance interaction of students with outside the campus
- To train the students for additional skills than academics
- Increase number of clubs to enrich skill set of students

## The Context

Engineers are the problem solvers that power the modern world. They need additional skill of interpersonal skills, presentation skills, high emotional quotient, minimal health issues, always motivate team members to full fill the tasks and innovate new things . Hence they need a wide skill set

Key skills for engineers

- Effective technical skills.
- The ability to work under pressure.
- Problem-solving skills.
- Creativity.
- Interpersonal skills.
- Verbal and written communication skills.
- Commercial awareness.
- Team working skills.
- Personality developments
- Sports awareness.
- Health awareness.

## Facilities created

- 1) National standard Holly ball Ground
- 2) Table Tanis Tables facility
- 3) Ground well maintained for Foot Ball, Cricket, and Hockey
- 4) Sports Budget has increased from 15 Lacs to 30 Lacs in three years.

## The Practice

Various Clubs activities are initiated some of them are listed here.

Students' Clubs for EXTRA CURRICULAR ACTIVITIES	
<b>Roboclub</b>	To learn conceptualizing, designing and programming of robots. To provide the integration of science, technology, engineering and math among students
<b>Brain Stromers</b>	To enhance mental ability of students through different puzzles likes contraption, mathematical puzzles, Rubik's cube, mirror cube, etc. and to improve aptitude knowledge from placement point of view
<b>Abhean</b>	Art and handcraft club
<b>Quest-Adventure Trekking and Wild Life</b>	Arrange trekking-wild life photography events, cleaning surrounding of location. To study geography, geology, biodiversity, human habitation and history of that location. To save wild life and make people aware about wild life
<b>Start Up Club</b>	Institute has start up cell in which interested entrepreneurs gathers and discuss their ideas
<b>The Dais Club</b>	To improve interpersonal skills of students
<b>Dhruva</b>	Event management club in GCEK (Activities based to develop Emotional Quotient, IQ and SQ)
<b>Defence Club</b>	Institute Platform for defence aspirant students in GCEK
<b>House of Art</b>	Club mainly associated for artists, sketchers, photographers etc
<b>SAE Club</b>	SAE Club is collegiate club of students of SAE India which is society of Automotive engineers. SAE conducts various competitions for makig automotives like Baja, Tifan, Efficycle, etc. in which GCEK students participates and wins national prizes.
<b>Yoga Club</b>	Mission of Club is to help the students to achieve inner peace and outer dynamism. The vision of taking students towards healthy lifestyle helped to get sharpened mind and fit body.

There are other clubs for student's development skills in extracurricular area such as Trekking & Wild Life Photography, Aerobic Open Source, Electro chasers, The Contriver, Words Worth, Cyber Security, GCEK Herald, SPICMACAY, MOOC, and Language Club etc. CESA, MESA, EESA, ETSA, ITSA are looking after technical events in the department.

Apart from club activities some of the initiative taken are Industrial training and internship since second year of UG program, Imparting need based training to the students to enhance employability and entrepreneurship, Conducting guest lectures, workshops and seminars to encourage higher education within and outside the country .Very good central library, Central Computing Facility with data centre and Wi-Fi networking, extension of additional technical facilities such as open source platforms, software engineering codes and practices, plagiarism and grammar checks Reimbursement of registration fees for paper publication, expenditure in club activities, participation in hackthon and exhibition.

# Evidence of Success



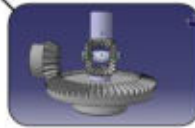
## SAE BAJA - TEAM DEMONS

AIR 9<sup>th</sup>

SAE BAJA  
2020 : AIR- 9<sup>th</sup>  
2021 : Pre-Round  
AIR- 4<sup>th</sup>(4WD)



Wheelbase- 1322mm  
Trackwidth- 1295.4mm  
Weight- 174kg  
Power- 10.5bhp



**SubSystem**  
Chassis  
Suspension  
Steering  
Braking  
Transmission



The BAJA SAE tasks the students to design, fabricate and validate a single seater four - wheeled off road vehicle to take part in series of events spread over a course of 3 days that test the vehicle for the sound engineering practices that have gone into it, the agility of the vehicle in terms of gradeability, speed, acceleration and maneuverability characteristics and finally its ability to endure that back breaking durability test.

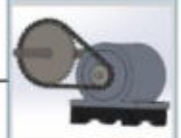
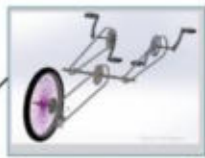


## SAE EFFICYCLE - TEAM HURRICANE

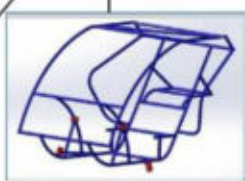
2018 : AIR- 33<sup>th</sup>  
2019 : AIR- 19<sup>th</sup>  
2020 : AIR- 3<sup>th</sup>



**Subsystems :**  
Chassis  
Transmission  
Braking  
Steering  
Suspension  
Electrical



95 kg weight.  
42 inches wheelbase.  
50 inches trackwidth.  
48 W BLDC motor



The SAE Efficycle tasks the students to design, fabricate and validate a 2-seater three wheeled vehicle to take part in series of events spread over a course of 4 days that test the vehicle for sound engineering practices that have gone into it, the agility of the vehicle in terms of gradeability, speed, acceleration and finally its ability to endure that back breaking durability test.



## SAE TIFAN TEAM PRATHAM

**Hydraulic cylinder**  
Double acting  
**Hydraulic motor**  
For lifting blade and rotating conveyor

**Hydraulic Circuit**

**Driver Front View**

**Steering System**

**3 Forward**  
**1 Reverse**  
**Rope start 8HP**  
**Diesel engine**

**Power Transmission**

**Steering Geometry**

**Worm and worm wheel gear**  
**Ackerman steering mechanism**  
**Camber, caster, Toe : 0°, 2°, 1mm**  
**Rear wheel drive**

**Material**  
EN42J(Spring Steel)  
**Blade Geometry**  
750\*265\*6(mm)  
**Rake Angle**  
17°- 20°

**Blade**

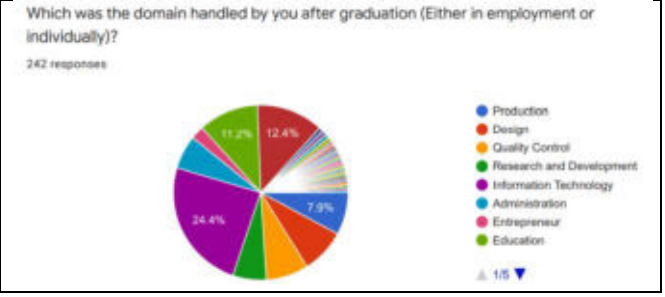
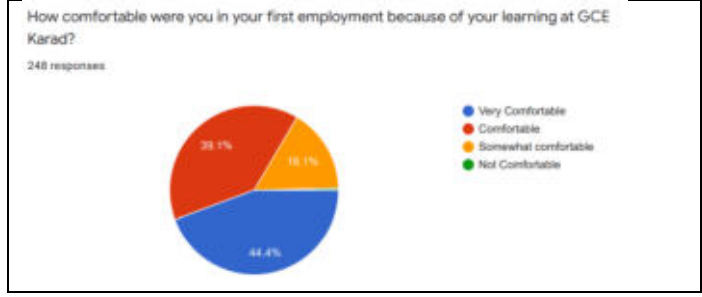
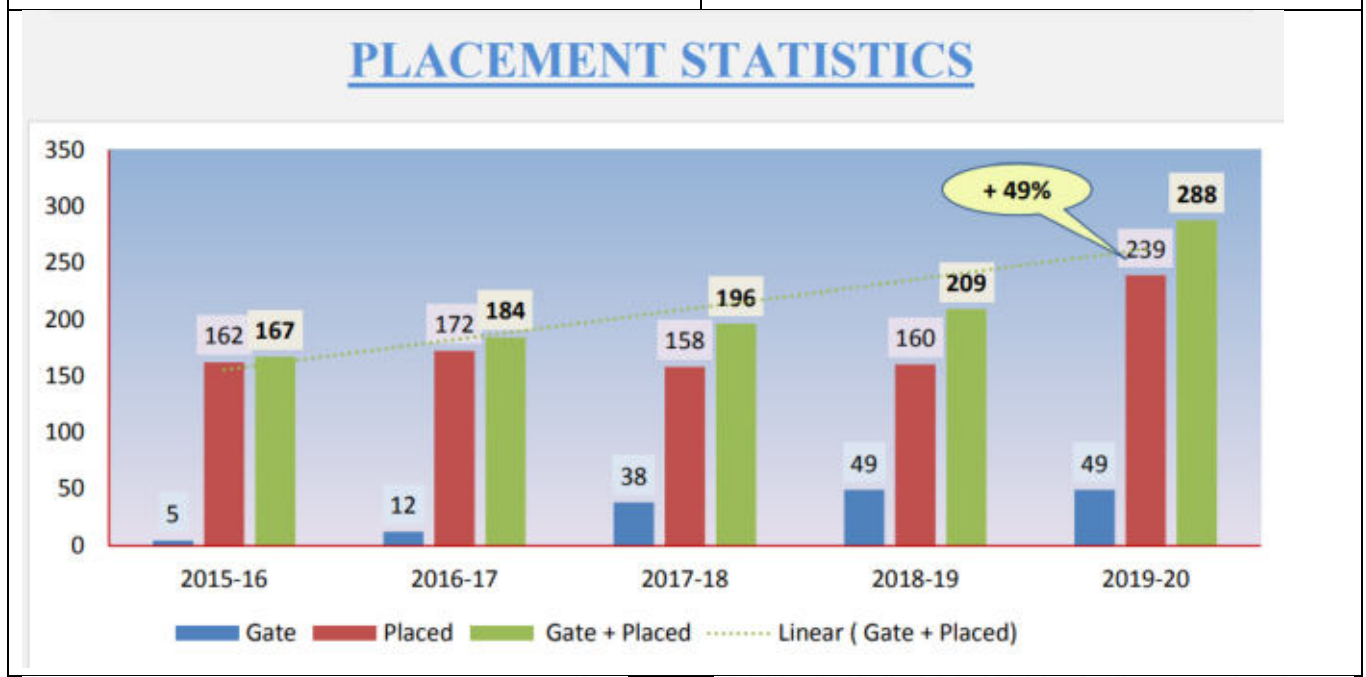
**SAE TIFAN 2019 : AIR-20<sup>th</sup>**

**Innovation**

**Conveyor**

**Coordinator: Prof. U.V. Pise**

**Co-Coordinator: Prof. K.S.Gharge**





# भंगार स्कूटरच्या मदतीने फवारणी यंत्र अभियांत्रिकी महाविद्यालयातील विद्यार्थ्यांचा शोध; चाचणीही यशस्वी



कऱ्हाड, ता. १९ : घरात बंद पडलेली किंवा भंगारातील स्कूटर असेल तर आता त्यावर फवारणी यंत्र बसवता येईल. हा शोध पेशील शासकीय अभियांत्रिकी महाविद्यालयातील विद्यार्थ्यांनी लावला आहे. त्यातून अवघ्या १५ हजारांच्या स्कूटरवरून सात लाख रुपये किंमतीच्या ट्रॅक्टर फवारणीचे उद्दिष्ट पूर्ण होण्यास मदत होणार आहे.

यांत्रिक विभागातील आशिष इतकर, सचिन कोल्हे, शामली झाले, अक्षय मुटकुळे, जुबेर मुल्ला यांनी त्याचा शोध लावला आहे. वाढत्या महागाईत शेतकऱ्यांना



कऱ्हाड : स्कूटरवर फवारणी यंत्राचा प्रकल्प साकारणारे अभियांत्रिकी महाविद्यालयाचे विद्यार्थी.

करावा लागणारा सामना व त्याची अवस्था लक्षात घेतल्यास स्कूटरवरील फवारणी यंत्र सुलभ आहे. त्यासाठी स्कूटरच्या इंजिनचा पॉवर वापर केला आहे. त्यात पिस्टन स्प्रेअरच्या मदतीने फवारणी केली जाते. गाडीवरच टाकीची रचना केली आहे. त्यातून ३५ गुंठे फवारणी होते.

त्यासाठी एक लिटर पेट्रोल लागते व ते काम फक्त एकाच माणसाच्या मदतीने होते. द्राक्ष, आंबा, फळे व अन्य पिकांनाही ते फवारणी यंत्र उपयोगी पडणार आहे. अन्य महागाईच्या फवारणी पद्धतीला हा स्वस्तातील मार्ग अत्यंत चांगला ठरणार आहे. आता ट्रॅक्टरचा खर्च शेतकऱ्यांना न परवडण्यासारखा आहे. त्यामुळे हा प्रकल्प शेतकऱ्यांसाठी खूपच फायदेशीर ठरणार आहे. प्रकल्पाला प्रा. एन. व्ही. साळी यांनी मार्गदर्शन केले. या फवारणी यंत्राची यशस्वी चाचणीही करण्यात आली आहे. यांत्रिक विभागप्रमुख डॉ. सुहास मोहिते, प्लेसमेंट ऑफिसर डॉ. अनिल आचार्य यांनीही प्रकल्पाचे कौतुक केले आहे.

## Problems Encountered and Resources Required

- 1) Effective Utilization of facilities by the students.
- 2) Time availability for students to participate in tournaments due to constrained of examination schedule.
- 3) Not possible to appoint skilled trainers in all kind of sports.
- 4) Participation cannot be enforced on each and every students.

## Sports Activities & Achievements



**1<sup>st</sup> Prize in Inter zonal Table Tanis**



**3<sup>rd</sup> Prize in Zonal Badminton**



**3<sup>rd</sup> Prize in Zonal Kho-Kho**



**2<sup>nd</sup> Prize in Zonal Chess ( Girls )**



**2<sup>nd</sup> Prize in Zonal Chess  
( Boys )**



**3<sup>rd</sup> Prize in Zonal Football**



# Best Practices V

## Title of the Practice

Enrichment of Computing Facility, IT and web enable Infrastructure

## Objectives of the Practice

- To facilitate the students , staff and Teachers for use of Internet resources
- To enhance interaction of students and faculties with international community
- To facilitate students and Faculties to undergo on line , web enabled courses such as NPTL, MooC, Courses , You Tube Channels to acquire additional skills train the students for additional skills than academics
- Increase usage of Library Infrastructure, E – Learning, Journals, Magazine using Wi-Fi,
- To Provide high Computing Facility for usage of High end simulation software
- To Increase the usage of MIS and other facilities and marching towards paperless environment.
- To provide high end tools such as Smart Board for knowledge delivery.
- Usage of Learning Management System ( LMS ) and WebEx Meeting
- To provide

## The Context










The world is changing very fast in all direction and dimensions. Scientist are trying to satisfy and caters need of customer to maximum extent. Now this changing world we needs many IT and web enable infrastructure to accept new challenges in new era of artificial inelegance and machine learning. Industry 4.0 is coming up and is going to change entire world. Every institution need to upgrade its IT Infrastructure and relevant facilities to accept the challenges in Industry 4.0 revolution otherwise they will be out of competition.

## The Practice

- 1) **Data Centre & Network Infrastructure:** The institute leaders had taken right decision to upgrade internet network infrastructure with proper bandwidth requirement right from 155 Mbps to 1 Gbps. Institution had invested approximately Rs. 1.5 Cr in 2016 to 18 for creating data centre, layer three and layer two manageable switches.
- 2) **Internet Bandwidth and User management System:** Due to lack in lease line supplier support and cost for bandwidth institute started internet with lease line of 155M bps along with CyberRoam bandwidth management, User management, Threat management software. It was effectively used by faculties, staff and students. Immediately in year 2018-19 up gradation of internet bandwidth up to 1Gbps is done along with up gradation of CyberRoam for 1100 user's management system. Cisco firewall is also installed. Every efforts is taken to provide smooth services of internet to all stake holders.
- 3) **Wi-Fi Connectivity in Campus & Hostels:** As technology is changing very fast, institute leaders had taken decision to switch over Wi-Fi Connectivity throughout the campus. The institute had made provision of Rs.30 to 35 lacs to make entire campus of 43 acers into Wi-Fi including all hostels, Staff Quarters, All departments etc. This has benefited a lot to all the stakeholder to get knowledge, learning from all teaching and industrial community.
- 4) **High End Software for research:** Matlab , CATIA, Anysis , Proteous, PSim, NS-2 , Xilinx, Ai – ML software , IoT software and hardware etc with all tools is purchased to augment facility for research and development. This has helped the student to do final year projects and m. tech dissertations.
- 5) **High End Computing Facility:** In year 2019-20 High Performance Computing servers with cloud computing environment is created. It is going to be used for AI – ML projects from students, faculties. Three number of 3D printing facility is created in the incubation centre and in mechanical department. This has facilitated students to build their own components required for projects.
- 6) **Smart Boards & Class Room teaching Environment:** There are 21 smart boards installed in classrooms. They are with multimedia capability with audio-Video storage. These are useful for presentation of power point, direct web access, you tube access and all kind of innovative presentations. Faculties have given training and they had started using it in the classroom. Even 15 Number of graphical tablets are purchased and distributed among department. Almost every class room is fitted with LCD projector.
- 7) **IoT Lab infrastructure:** Twenty Six different IoT kits (such as Mango-Green, Mango Red, Hitron Kits) are purchased and are being utilized. LORAWAN IoT prototyping kits are purchased for prototyping to product development. It is used in prototyping build during SAI-BAJA Competition. The student received 3<sup>rd</sup> Prize.

- 8) **Drone Camera:** Two drone cameras are available for application development in area of GIS, Aerial photography, Landscaping, Agriculture photography and new application development in AI- ML projects.
- 9) **ARVR headsets:** Facility made available to build projects in Virtual reality and augmented reality surgery applications. MoU is signed with Krishna Medical College and hospital in 2018-19.

### Evidence of Success

 <p>Data Centre Server Rack</p>	 <p>HPC Server</p>	 <p>Layer3 Switches and Cyberroam</p>
 <p>ARVR Head Set</p>	 <p>Drone Camera</p>	 <p>IoT Kit</p>
 <p>3D Printer</p>	 <p>360° Camera</p>	 <p>CIIS Center</p>