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# INGENIUM

Volume 2, Issue 2, January – March, 2021

Department Newsletter

Department of Mechanical Engineering



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**A. J. Institute of Engineering and Technology**

(A unit of Laxmi Memorial Education Trust ®)

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# DEPARTMENT NEWSLETTER

## Message from Editor's Desk:

Welcome to the second volume, second issue of Newsletter from the Department of Mechanical Engineering. This newsletter is a digital way for us to communicate with our students, faculty members, alumni and industrial partners. It aims to showcase the glimpse of the departmental activities and achievements. It enlightens the readers about the latest happenings in the department, focusing about different activities like placement, industry-academia, club activities, student and faculty achievements.

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#### Mr. Prashanth Shetty

(Vice President, Laxmi Memorial Education Trust)

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A. J. Institute of Engineering and Technology)

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Dr. Sreejith B K  
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Mr. Prasad B G  
Mr. Sudheer Kini K  
Mr. Chirag P  
Mr. Harshith Shetty

## HOD's Message



Welcome to the second issue of the Mechanical Engineering Department Newsletter - 'IGENIUM' in its volume 2 series. It is about looking back and summing up every prestigious moment in the department. This newsletter is a bridge for us to communicate with our students, faculty members, alumni and industrial partners. It aims to showcase their achievements by which make them proud and self-motivated. We take the readers for a voyage of the latest incidence and happenings in the department. Any feedback will be greatly appreciated for the improvement of the next issue of the Newsletter.

### Dr. Rajesh Rai P

Head, Department of Mechanical Engineering  
A. J. Institute of Engineering and Technology

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## VISION

To create globally competent and self-reliant mechanical engineers adaptive to an interdisciplinary environment contributing to society through development, authority and entrepreneurship.

## MISSION

- To offer high quality graduate programme in the fields of Mechanical Engineering with value education to the students and make them responsive to societal needs.
- To nurture the students with a global outlook for a sustainable future with high moral and ethical values.
- To strengthen collaboration with industries academia and research organizations to enrich learning environment, thus enhance research and entrepreneurship culture.
- To create awareness about the need of interdisciplinary applications through alumni industry-institution interactions.

## PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

**PEO1:** Prepare graduates with mathematical, scientific and engineering skills to design and develop energy efficient systems for sustainable development.

**PEO2:** Excel graduates with high level of technical competency combined with research and complex problem solving ability to generate innovative solutions in Mechanical and multi-disciplinary areas.

**PEO3:** Equip students with modern tools, technology and advanced software's for deliberating engineering solutions.

**PEO4:** Inculcate graduates with strong foundation in academic excellence, soft skills, leadership qualities, professional ethics, and social concerns and understand the need for lifelong learning for a successful professional career

## PROGRAM OUTCOMES (POs)

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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**11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## PROGRAM SPECIFIC OUTCOMES (PSOs)

**PSO1:** Apply the knowledge of modern engineering tools to design and Analyse the products and processes related to mechanical engineering system.

**PSO2:** Develop technical and interpersonal skills pertinent to mechanical and allied engineering for careers in industry, academia and government organisations.

## RESEARCH

Domain Name	Domain Co-coordinator	Domain Members
MANUFACTURING	Dr. Rajesh Rai P	Mr. Prashanth D A, Mr. Nithin Shet, Mr. Prasad B G
THERMAL	Dr. Vighnesha Nayak	Dr. Sreejith B K, Mr. Prakhyath, Mr. Karthik A V
DESIGN	Mr. Sunil Kumar S	Mr. Sudheer Kini, Mr. Harold J D'Souza

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## PLACEMENT

### List of Companies Visited For Placements - 2021 BATCH

COMPANY NAME	DATE OF DRIVE	ELIGIBLE STUDENTS
Pin Click	12th Jan,2021	10
JARO Education Pvt Ltd	21st Jan,2021	10
Infosys- VTU CPC drive	12th Feb,2021	19
Silver Peak	1st Mar,2021	14

## MINI-PROJECT

SL NO	TITLE	GUIDE	STUDENTS NAME	
1	Robo- Soccer	Mr. Prakhyath	ASHISH H	4JK18ME009
			DEEKSHITH	4JK18ME013
			DHEERAJ	4JK18ME016
			HARSHITH SHETTY	4JK18ME018
2	Air Compressor Engine	Mr. Karthik A V	RAKSHITH ACHARYA	4JK19ME405
			ADITH AJITH KUMAR	4JK19ME402
			DEEPA A S	4JK19ME404
			DHARMIK ATTAVAR	4JK19ME403
3	Automated visitor counter with segment display	Mr. Prashantha D A	ABRAHAM MATHEW	4JK18ME002
			AKHIL K S	4JK18ME006
			AKHILRAJ E S	4JK18ME007
			ANIRUDH K	4JK18ME053

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4	Metal Bender	Mr. Prashantha D A	SHREEJESH K	4JK18ME048
			MOHAMMED SANEEN	4JK17CS031
			KAVAN K	4JK17ME028
			KAPOOR SAHIL DHIRENDRRA	4JK18ME020
5	360 degree flexible drilling	Mr. Sudheer Kini K	SHANTHANU SUDHAS	4JK18ME035
			VIGNESH	4JK18ME045
			AJAYRAJ M J	4JK18ME004
6	A study on Stirling Engine	Dr. Sreejith B K	PRANAV A P	4JK18ME027
			SARANG C M	4JK18ME032
			PRANAV T V	4JK18ME028
			ABHISHEK SASIDHARAN	4JK18ME049
7	River Cleaning Machine	Mr. Sunil Kumar S	LESTON LOBO	4JK18ME021
			PAVAN KUMAR	4JK18ME026
			RITVIK P SHETTY	4JK18ME030
			SAURAV C PADMASHALI	4JK18ME034
8	Beach Cleaner	Mr. Prasad B G	PRATHEEK B V	4JK18ME029
			ROSHAN D' SOUZA	4JK18ME031
			SARVESH S	4JK18ME033
			SHARAN CHANDRAHAS	4JK18ME036
9	Regenerative braking system	Mr. Nithin Shet	SRAVAN CHANDRASHEKHARAN	4JK18ME041
			VENKITESH RAGHAV R	4JK18ME043
			VISHNU K	4JK18ME052
10	Hydraulic Operated Lift	Dr. Vighnesha Nayak	YOJITH K	4JK18ME047
			SHRUJAN J RAI	4JK18ME040
			VIGNESH R PAI	4JK18ME044
			SHRAVAN P C	4JK18ME038
11	Agribot	Mr. Prakhyath Jain	MANISH ANCHAN	4JK19ME402
			MANISH M P	4JK19ME403
			MOHAMMED FAYAZ	4JK19ME404
			SHRAVAN K	4JK19ME405
12	Voice Control Car	Mr. Prasad B G	SHRAVANRAJ KAMBALI	4JK18ME039
			JAYAPRAKASH B N	4JK19ME401
			HARSHITH V SHETTY	4JK18ME019
13	Smart Bin	Dr. Rajesh Rai	VASANTHKUMAR T S	4JK18ME050
			VISWAJEET NAIK	4JK19ME406
			VAISHNAV BALIGA	4JK18ME042

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## STUDENT PROJECTS

Sl. No.	TITLE	GUIDE	STUDENTS NAME	USN
1	Mechanical pocket manuring	DR. VIGNESHA NAYAK	SHAILESH V AITHAL RAHUL P SUVARNA BHUVANESH R. M VIKAS P	4JK17ME061 4JK17ME051 4JK17ME014 4JK17ME059
2	Multipurpose farming machine	DR. RAJESH RAI P	CHIRAG S POONJA NIHAL LLOYD ADRIEL S MIRANDA KEERTHAN KUMAR	4JK17ME016 4JK17ME062 4JK18ME400 4JK18ME402
3	Computational Analysis of Pin-fin based Cross Tube Heat Exchanger using CFD	MR. HAROLD J D'SOUZA	SAURABH S ADDOOR GURUPRASAD G GURUPRASAD R MALLI LIKITH S RAJ	4JK17ME055 4JK17ME019 4JK17ME020 4JK18ME401
4	Automated drain cleaning machine	MR. NITHIN SHET	KARAN K KARTHIK RITHESH SANATH KUMAR M	4JK17ME026 4JK17ME027 4JK17ME052 4JK17ME054
5	Design and Fabrication of Corn De-seeding machine with Crusher	MR. KARTHIK A V	AHMED AMEEN M MUSTHAFA MOHAMMED AZVIL MOHAMMAD FARHAN	4JK17ME003 4JK17ME031 4JK17ME035 4JK17ME036
6	Influence of geometric discontinuity and thermal aging on mechanical behaviour of aircraft aluminium alloy	MR. SUNIL KUMAR S	MOHAMMED SHIYAN MOHAMMED RAZI MOHAMMAD AFEEZ HASSAN MUQSITH	4JK17ME041 4JK17ME040 4JK17ME033 4JK17ME022
7	Design & fabrication of solar refrigeration system	DR. RAJESH RAI P	CHARAN RAJ SHETTY NAVARAG K K PRITHVIRAJ A SHETTY MISS K THULASI S H	4JK17ME015 4JK17ME044 4JK17ME047 4JK17ME066
8	Design and fabrication of shredder machine for recycling of Polyethylene terephthalate (PET) waste	MR. PRASHANTH D A	ABIRAM PRAKASH ARJUN PRAKASH LANCE KURIYAN PRASOBH D V V	4JK17ME002 4JK16ME004 4JK17ME065 4JK17ME064
9	Design and fabrication of coconut dehusker with coconut milk and multiple oil extractor	MR. SUDHEER KINI	AKHIL SUDHEER ANIL RAJ T V ARJUN P P ANIRUDH E. T.	4JK17ME004 4JK17ME007 4JK17ME010 4JK17ME008
10	Performance Combustion and Emission Characteristics of Single Cylinder CI Engine with WCO Biodiesel and Nanoparticles With Oxygen Enrichment Process	DR. VIGNESHA NAYAK	PURUSHOTHAMA H S MANISH KULAL WILFRED MARSHAL V TEJESH	4JK17ME049 4JK17ME032 4JK17ME060 4JK18ME403
11	Motorized wheel chair	MR. PRAKHYATH JAIN	ABHIRAJ K U AKSHAY SUNIL K PRANAV K RAAFIH A Y	4JK17ME001 4JK17ME005 4JK17ME046 4JK17ME050

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12	Automatic solar powered railway track crack Detecting vehicle	DR. SREEJITH B K	NEHA S JAIN LIKITH S AMIN JACOB ANTONY JATIN KUCKIAN	4JK17ME045 4JK17ME029 4JK17ME024 4JK17ME025
13	Effect of corrosive environment on fracture toughness of aluminium 6061 alloy: An experimental approach	MR. HAROLD J D SOUZA	SHON TOM AMAL M N ASHOK KUMAR R G SUSHANTH JOGI	4JK17ME057 4JK17ME006 4JK17ME012 4JK17ME058
14	Waste segregation system in railway coach Pertaining to swach-Bharath	MR. PRASAD B G	M I SHIYAZ M GILCHRIST P D'SILVA HASSAN ZAHEER	4JK17ME030 4JK17ME018 4JK16ME007

## FDP/WEBINAR/SEMINARS/TRAINING ETC.

Dr. SREEJITH B K attended a five days FDP on “Recent trends in the application of artificial intelligence and machine learning in Engineering” organised by NMAM Institute of Technology, NITTE on 22-26 March 2021.

## STUDENT ACHIEVEMENTS

### CULTURAL EVENTS

Ms. Neha Jain, Student of 4<sup>th</sup> Year participated in Group dance Competition at “JAIN MILAN”, Bantwal on 21<sup>st</sup> March, 2021 and won 2<sup>nd</sup> prize.



## NATIONAL BOARD OF ACCREDITATION (NBA)

### What is accreditation?

Accreditation is a process of quality assurance and improvement, whereby a programme in an approved Institution is critically appraised to verify that the Institution or the programme continues to meet and/or exceed the Norms and Standards prescribed by regulator from time to time. It is a kind of recognition which indicates that a programme or Institution fulfills certain standards.

### Why accreditation?

The purpose of the accreditation by NBA is to promote and recognize excellence in technical education in colleges and universities - at both the undergraduate and post graduate levels. Institutions, students, employers, and the public at large all benefit from the external verification of quality provided through the NBA accreditation process. They also benefit from the process of continuous quality improvement that is encouraged by the NBA's developmental approach to promote excellence in technical education. Through accreditation, the following main purposes are served:

- Support and advice to technical institutions in the maintenance and enhancement of their quality of provision;
- Confidence and assurance on quality to various stakeholders including students;
- Assurance of the good standing of an Institution to government departments and other interested bodies;
- Enabling an Institution to state publicly that it has voluntarily accepted independent inspection and has satisfied all the requirements for satisfactory operation and maintenance of quality in education.

### Impact of accreditation

The purpose and impact of accreditation goes far beyond quality assurance of an Institution and its programs. Major impacts of accreditation system are summarized below:

- Encourages quality improvement initiatives by Institutions.
- Improves student enrolment both in terms of quality and quantity.
- Helps the Institution in securing necessary funds.
- Enhances employability of graduates.
- Facilitates transnational recognition of degrees and mobility of graduates and professionals.
- Motivates faculty to participate actively in academic and related Institutional / departmental activities.
- Helps create sound and challenging academic environment in the Institution, and Contributes to social and economic development of the country by producing high quality technical manpower.

## **Benefits and Significance of Accreditation**

Accreditation is a tool that stakeholders use to monitor, assess and evaluate the standards and quality of the education a student receives at a college, university or other institution of higher learning. Some of the major benefits enrolled students receive by attending an accredited institution / program are as follows:

- Accredited institution / program offers the highest quality education available;
- Accredited institution / program strengthens consumer's confidence, employers value degrees of an accredited program the most;
- Accreditation helps institutions to know their strengths, weaknesses and opportunities, pushes them to continuously improve their programs and give them a new sense of direction, identity and targets; and
- Accredited institution / program demonstrates accountability to the public, commitment to excellence and continuous quality improvement

## **Who Gets Accredited?**

Individuals, courses, and institutions are not accredited. NBA only accredits programs in Engineering, Computer Application, Pharmacy, Management, Hotel Management and Catering Technology.

## **Accreditation Policy**

### **General Information on Accreditation**

The following general policies are the guiding principles for accreditation of programs offered by various technical institutions:

- i) NBA accredits selected technical Programs of institutions and not the Institutions or its Departments / Centres as a whole.
- ii) Institutions are invited to apply for accreditation through eNBA portal as per norms prescribed by NBA from time-to-time.
- iii) Programs to be accredited should be offered by an educational Institution, which has been formally approved by the AICTE or the concerned regulatory authority.
- iv) Programs from which at least two batches of students have graduated are considered for accreditation. The program should continuously be running without break with approval of the

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concerned regulatory authority during the whole duration of last two batches (for example: 5 years for UG engineering, 3 years for PG engineering, etc.).

v) The institution is required to pay accreditation fee as prescribed by NBA from time-to-time. The application fee is payable in two phases – 10 per cent at the time of submission of Pre-Qualifiers and balance 90 per cent fee at the time of submission of SAR once the Pre-Qualifiers are approved.

vi) The institution must submit Self-Assessment Report (SAR) online through e-NBA portal in the prescribed format in respect of each program proposed for accreditation.

vii) The title of a program to be accredited must be the same as shown on the graduating student's degree and the approval letters of the concerned regulatory authority.

viii) Visiting Team, while evaluating the programs, should ascertain overlapping of resources and faculty for programs in an institution where AICTE has granted approval for 1st shift and 2nd shift.

ix) Part-time programs are not considered for accreditation.

x) Programs are evaluated in accordance with the accreditation criteria as specified by NBA.

xi) Institutions are required to represent the accreditation status of each program accurately and without ambiguity. If accreditation is withdrawn or discontinued or expires, the institution should no longer refer to the program as accredited.

xii) A two/three day's onsite visit is a part of the accreditation process. A Visiting Team appointed by the NBA carries out the evaluation of the program. The institution is required to propose such sets of dates for the visit when the regular classes and all academic activities of the program applied for, are going on.

xiii) Institutions have the option of withdrawing a program during the exit meeting of the visit. The institution shall handover a written request to the Team chair during the exit meeting. No communication regarding withdrawal will be accepted after the visiting team has left the institution. No fee would be refunded in such cases.

xiv) The final decision made by the NBA is communicated to the educational institution, together with comments detailing strengths, weaknesses and scope for improvement.

xv) In the event of non-accreditation of a program, reasons for the same are also communicated by NBA to the institution.

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xvi) If an institution is not satisfied with the decision of NBA regarding accreditation status, it may appeal against the decision to the Appellate Committee (AC) of NBA within 30 days of receipt of the communication.

xvii) Commencement of Accreditation Period:

- In case visit of the Expert (Visiting) Team to an Institution is conducted between 1st July - 31st December, the Period of accreditation would commence from the on-going academic year (i.e. with effect from 1st July of the on-going academic year).
- In case visit is conducted between 1st January to 30th June, the accreditation period would be from the next academic year (i.e. with effect from 1st July of the next academic year).
- Same rules apply for deciding the validity period of accreditation periods of programs in appeal cases also.

xviii) If a program is 'not accredited' or withdrawn during the visit, a fresh application for accreditation of the same program can be considered one year after the date of previous visit of the Visiting Team.

xix) If an institution requests postponement of the visit of the expert team after the team has already been constituted for the purpose, an additional fee of 25% shall be required to be paid before the visit is rescheduled. If the institution causes cancellation of the visit after the team has already been constituted for the purpose, there would be a cancellation fee of 25% deducted from the fees paid by the institution. In case, an institution requests for withdrawal of the program(s) applied by it after application has been approved by the NBA for further processing and the fee has been paid by the institution, 10% of the accreditation fee per program may be deducted while refunding the fee as per the request of the institution.

xx) For consideration of accreditation of Post Graduate program, it is mandatory that the corresponding Under Graduate program should have valid accreditation. However, this does not apply in cases for special PG programs that may not have a corresponding UG program. The special PG programs will be considered on case-to-case basis.

## **Outcomes-based Accreditation Criteria**

Outcome based education is targeted at achieving desirable outcomes (in terms of knowledge, skills, attitudes and behaviour) at the end of a program. Teaching with this awareness and making the associated effort constitutes outcome based education. This entails a regular methodology for ascertaining the attainment of outcomes, and benchmarking these against the program outcomes consistent with the objectives of the program.

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Initially, NBA accreditation used to be based on 'input – process – output' model with major emphasis on availability of resources / facilities and the outputs thereof. In the year 2009, NBA aligned its methodology with international benchmarks and started accreditation on the basis of outcomes. It believes that educational quality must be measured by outcomes rather than inputs, because inputs do not necessarily correlate with quality outcomes. Outcomes are dependent not only on inputs but also on the processes followed by an institution to convert inputs into defined outcomes.

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