AMC ENGINEERING COLLEGE

18th KM, Bannerghatta Road Bengaluru 560083

AMCEC Best Practices

7.2

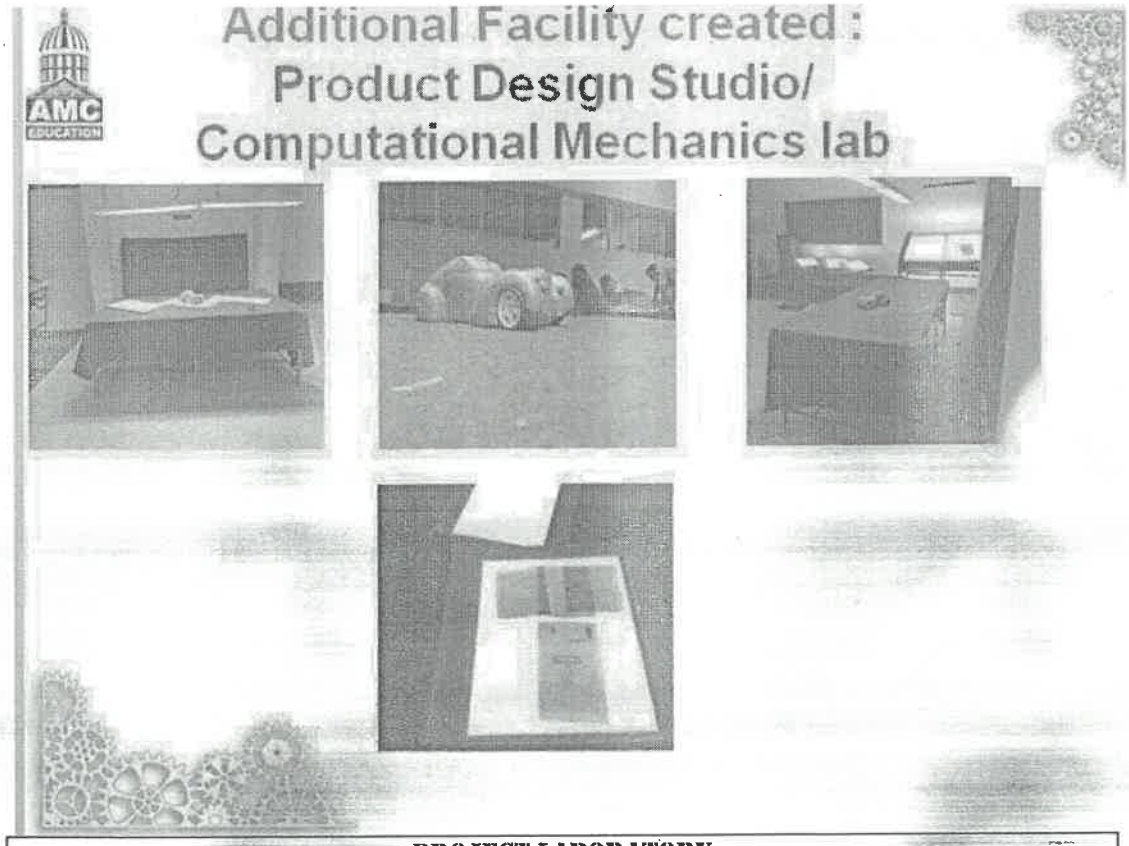
I-Inculcation/Infusion of Research Culture and Experiential learning among Faculty and Students

PRODUCT DESIGN STUDIO

(1)

The product design studio is an innovative thinking of the team. Energy and passion drives pushed the envelope to create cutting edge designs with the aim of approaching clients across several industries. It's young team's persistent attempt to create innovative design solutions that work for clients and helps them succeed.

Product design Studio aim to be a force to reckon with on the global platform and showcase work that acts as a true catalyst in the success of future clients and the concept follow a simple process of 3 steps- Analyze, Create, Develop. During Analysis we get a good understanding of our end users, target market and competitors. Which helps us in understanding what to achieve at the end before beginning. Based on that analysis we start to ideate and brainstorm small ideas which eventually are converted to complete concepts. In the development phase we take the concepts and bring them to life in the world of 3D.

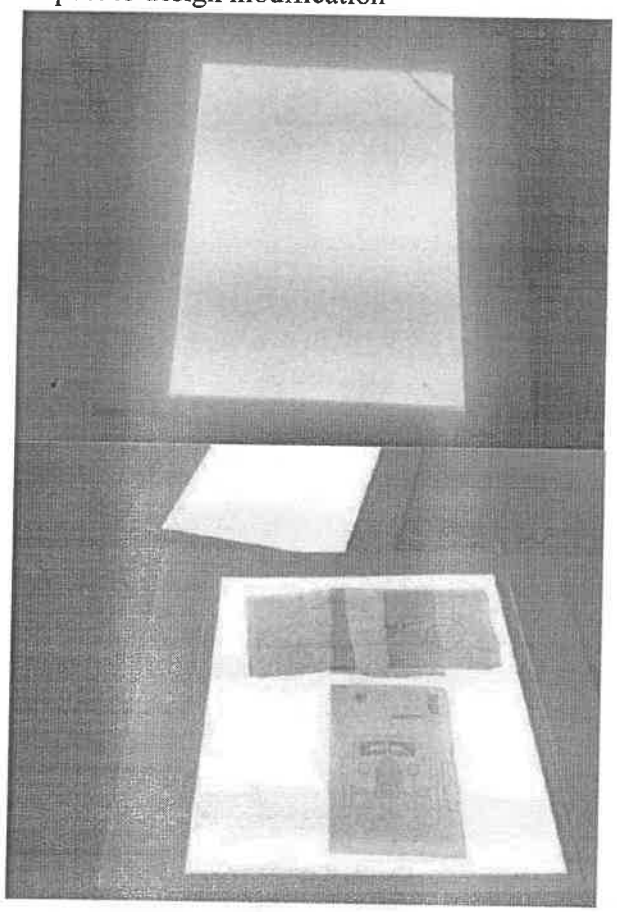


Product Design Studio consists of

Drafting Boards: It is the one where the student's ideas will be penned to pursue the existence towards the reality with respect to end user need.

Light Boxes

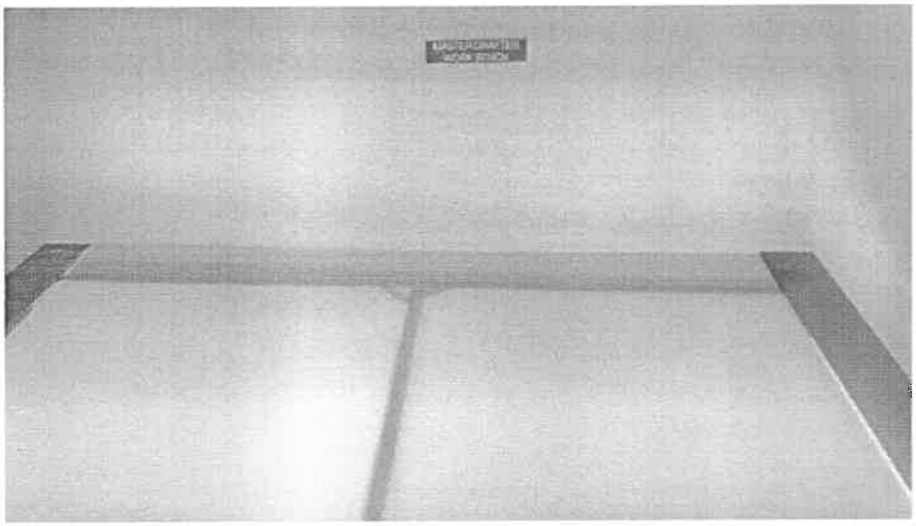
This is where the ideas of unregistered sculpture will be traced and reworked with respect to design modification



Light boxes

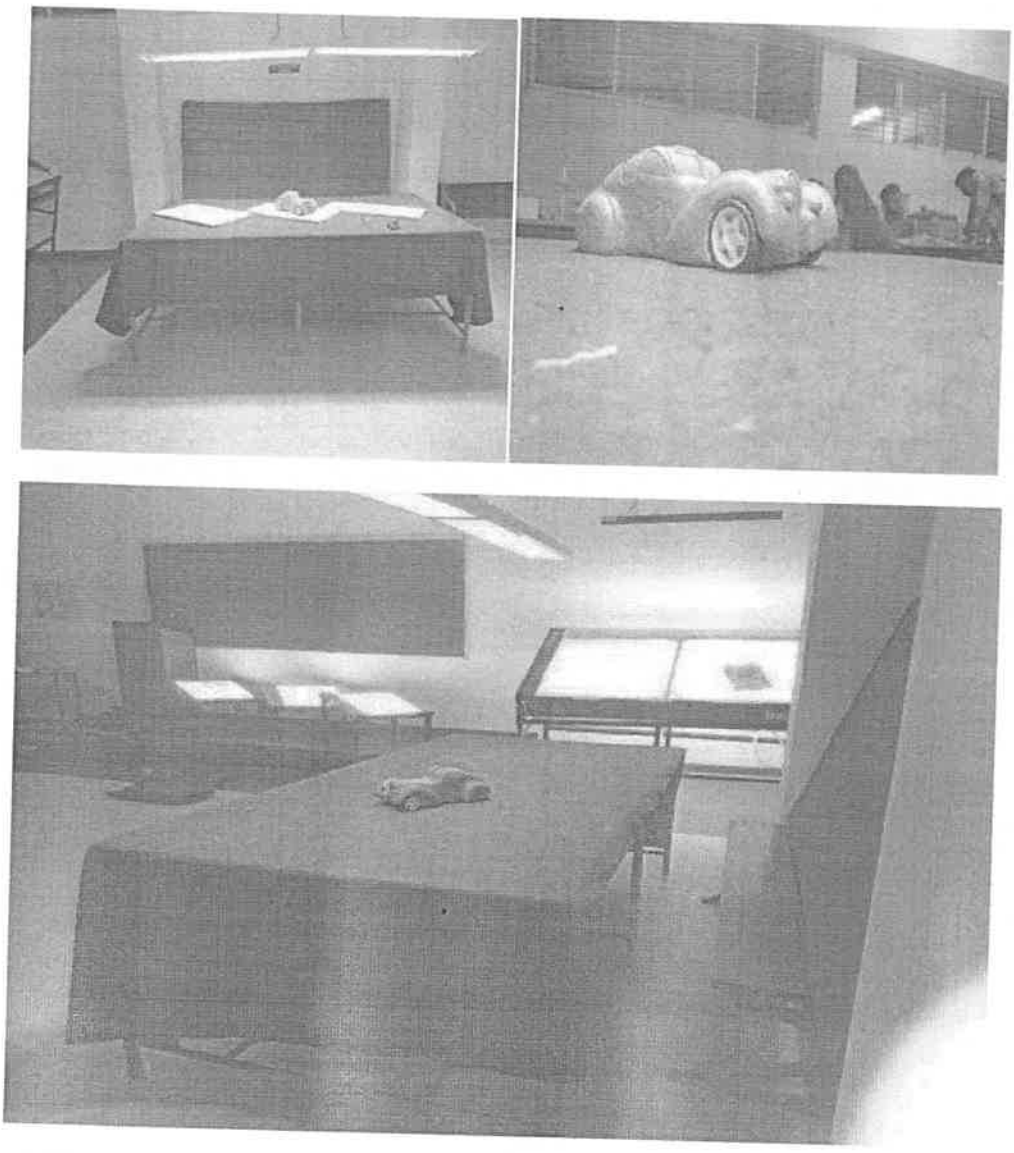
Master drafting Table

Once the ideas have passed through the initial stages the final scrutinizing and combination of design for the creation of sculpture will be done on the master drafting.



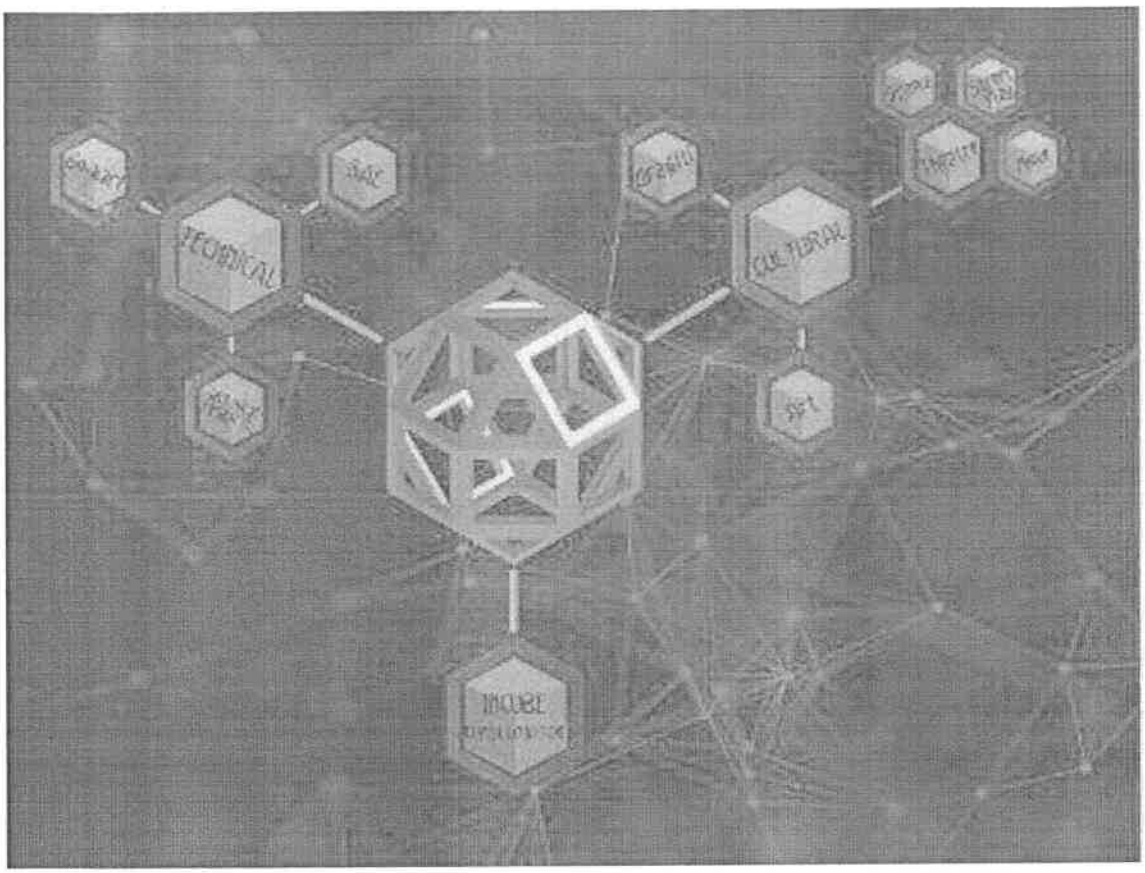
Master drafting Table Clay modeling work benches

Clay modeling is the realization phase of two dimensional concepts to 3 dimensional contours. Polymer clay of industrial standards are used and clay modeling is done as per scale realized in drafting of concepts.



Clay modeling work benches

INCUBATION CELL- INCUBE



Incube is a multifaceted club which concentrates on over all development of student nurturing them in every single aspect of their career. Nurture tender brains to think original towards inventions and discoveries. To follow new era of pedagogy to apply theories practically to form better society and in turn better world. Probe young minds to identify effective need statements, conceptual thinking and approach to opt apt solutions. Off the boundaries interdisciplinary engineers should unite and work together to come up for advanced solutions. Incubate and Assist good ideas to grow as ultimate reality.

The incube undertakes various consultancy projects catering to different walks of life including projects serving the cause of society at large. Some of the projects executed are purely with the intent of helping the needy and underprivileged.

Objectives

- To nurture the thinking and execution abilities of students
- To apply students engineering concepts and thoughts into ultimate reality of life
- To design and develop innovative products to reality and also to market addressing the right target crowd.
- To nourish students ideologies and ability to think creative, out of box and unique.
- To provide aid to industries organizations and needy people in society in order to increase their productivity and serve better to nation

- To provide internship opportunities for deserving students
- To bring in awareness in students about the recent trends in industry.
- To motivate students and faculties to transform themselves into an active researcher
- To enable and facilitate the research grants provided by organizations industries and institutions to researchers
- To establish the collaborations with industries, companies, and universities for research activities.
- To Convert novel ideologies of researcher to patent in order to secure researchers brain child's intellectual property rights.
- To make students feel the ownership and motivate them to be in charge for maintenance of center of excellence / incubation center/ consultancy activities and additional innovative labs under constant monitoring and able guidance of incubation head.
- To constantly conduct research meets and talks to enhance the knowledge and latest trends of technology.

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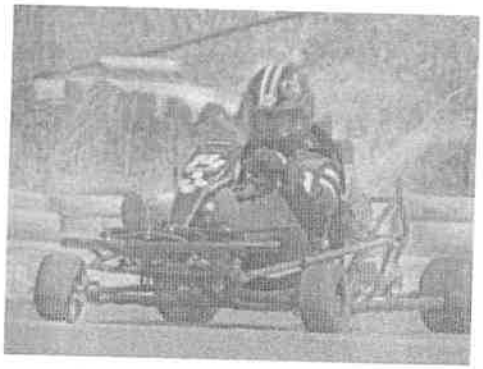
GO-KART



Team Greasemonkeys consisted of 17 students from various colleges. They participated in Elite Karting EK15, a national level Go-Karting competition held at RPM International GoKarting Circuit, Bhopal. The team won overall 3rd place among 168 teams nation wide, along with Best Build Quality and Best Design Awards with a cash prize of Rs.70,000/-.

SAE Collegiate Club of AMCEC

SAE club was given a green signal by the mechanical dept on August 3rd 2016.The recruitment procedure for SAE club members was finalized on 7th September 2016. The 1st round entrance was conducted on 21st Sept 2016, 28th Sept 2016 & 5th Oct 2016. The results of the same was announced on 7th Oct 2016 a meeting was conducted on 17th Oct 2016 & wherein students were briefed about the club & its functions.

TECHNICAL RESEARCH

DATA ACQUISITION FOR DIGITAL PLOTTING OF P-θ DIAGRAM IN AN IC ENGINE:

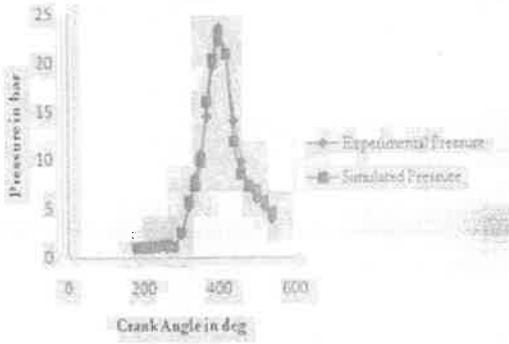


Figure 1: Pressure V/s Crank Angle for CR=4.63

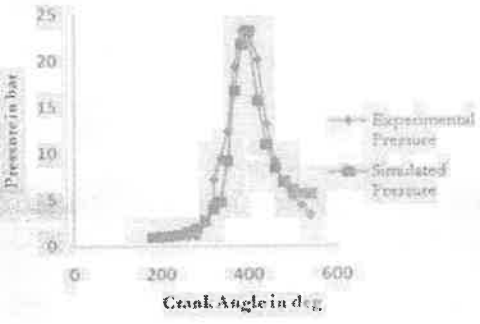
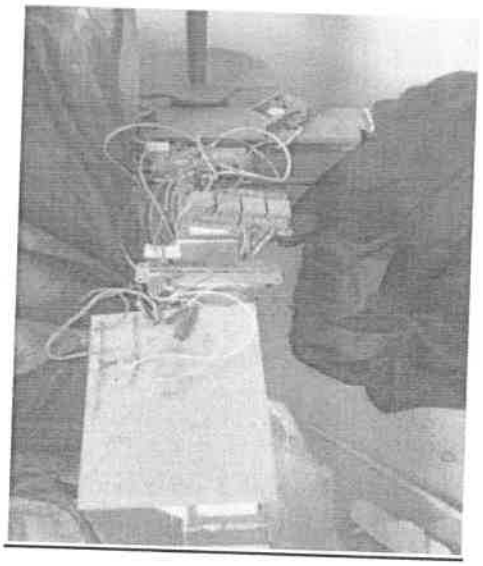


Figure 2: Pressure V/s Crank Angle for CR=5.03

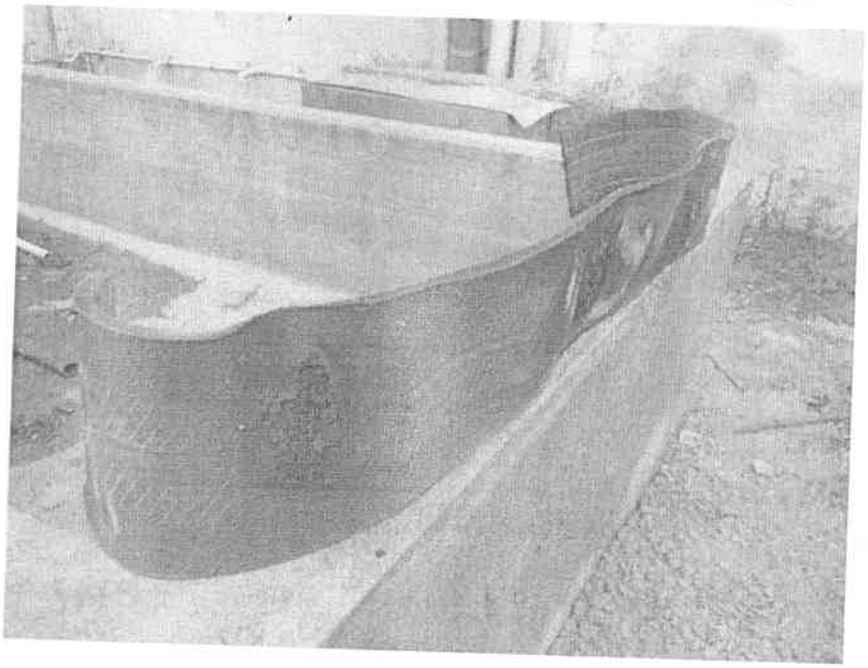
This project is based on enhancing the knowledge about pressure inside the engine and crank angle and how actually the graph of pressure versus crank angle looks like and displayed on the screen with the application of sensors. The main objective of this project is to digitally plot P-θ diagram in an IC engine.

Smart Turn Indicators:



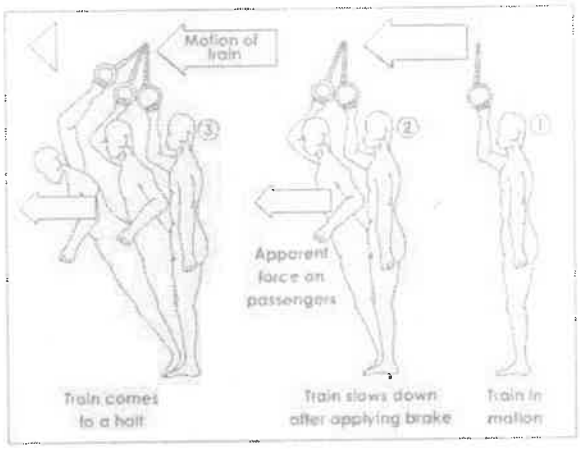
To assist the turning process by automatically turning on the indicators if the indicators are not manually switched on. To help minimize the number of accidents on road and ensure road safety. To help enforce lane discipline among drivers.

Design & Development of Sustainable Bumpers using Disposable Tyres:



Tyre recycling belongs to a field of sustainable development as the recycling of used products results in valuable raw materials that can be used for manufacturing products with a new value. The outcome of project yields components with increased refractive ability and possibly increases the impact force of the components which have a long life and resistant to lower level damages.

Design and Development of Anti-Inertia Seats:



The main objective is to nullify inertia acting on a body and to provide better comfort by avoiding motion sickness, nausea or dizziness. The system will reduce the inertia acting on the passenger up to an extent and reduce vibration which provides comfort to the passenger in the long run.

Prosthetic Limb:

This product is for obese people to reduce excessive amount of body weight acting on their knees. This acts a supportive add-on to reduce pain and help obese people walk without much strain.

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Question Paper Counting Machine:

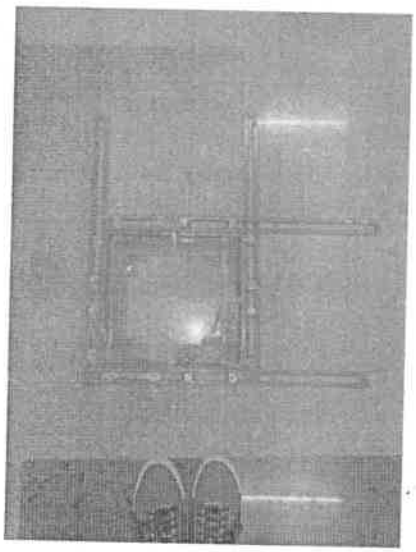
To reduce tiring job for teachers of manually counting the number of question papers to be sent to each exam hall, this system counts and separates question papers according to the count.

Blue Book Counting Machine:

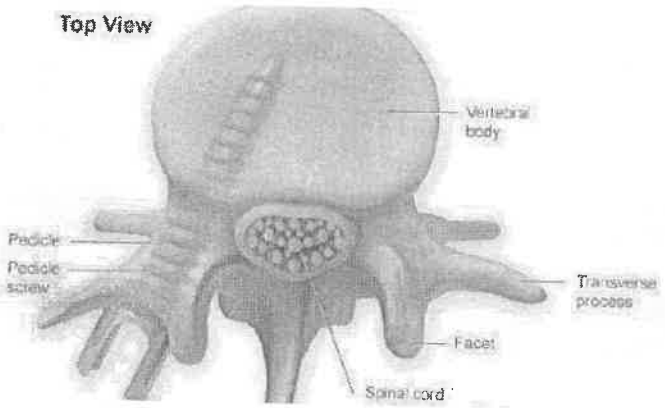
To reduce tiring job for teachers of manually counting the number of Blue Books to be sent to each exam hall, this system counts and separates Blue Book according to the count.

Adjustable Trolley:

This is a system that helps in reducing the burden of carrying blue books , records, data handbooks and other books by placing them on the adjustable trolley which can be adjusted to any size and height according to the requirement. It has a maximum capacity of 400kg.

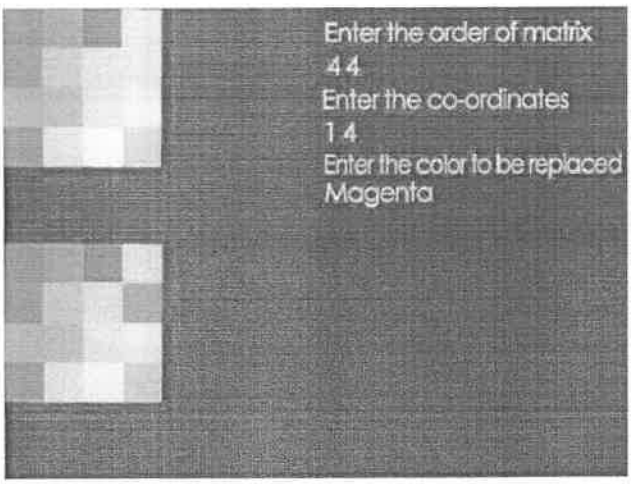


Pedicle Screw Implant:



To automate the pedicle screw implantment in the Lumbar region without puncturing the disc. The project is about to implant a screw with the help of image processing and rack and pinion mechanism.

Pick a Brick:

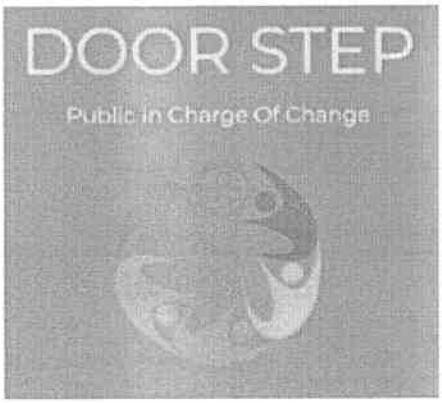


In a matrix of order specified by the user, there will be blocks of colours generated by the program randomly. During randomness, it happen so that two or more colours will appear consecutively. So if the user wants to change the colour of a particular position in the matrix it can be done by specifying the colour code and the co-ordinates.

Timetable Generator:

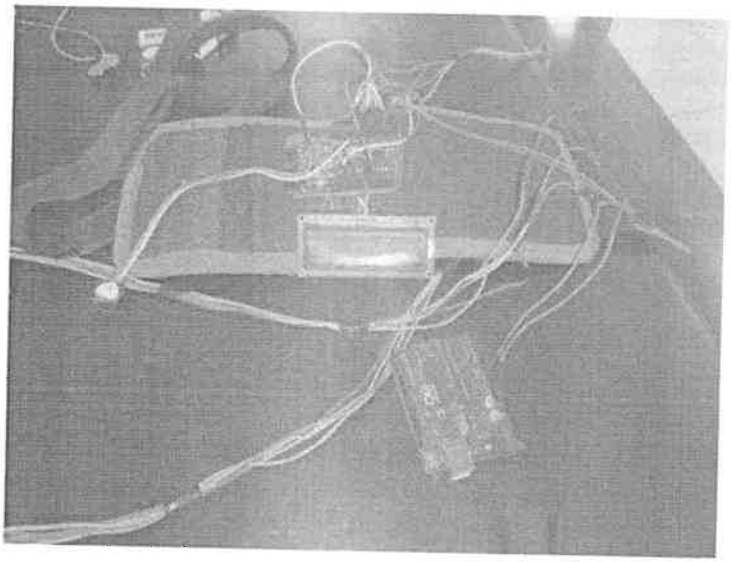
Using the concept of Pick a Brick project, Time Table generator was developed. To generate the Time Table for classes of a semester and for Teachers.. After getting the user input, the program generates a matrix of order number working days in week by number of classes per day with random numbers depending on the number of subjects.

Doorstep(Citizen Services Website):



A mobile responsive website was developed to tackle problems faced by citizens. This website notifies the government about problems coming under the boundaries of Bangalore that includes BESCOM, BWSSB, Pollution Control Board, BDA, Police, Senior Citizen & Child Help, Forest Department and Human Welfare.

Heart Attack Detector:



Monitoring patients pulse, sweat, temperature and dizziness level to detect early signs of heart attack. And if any mishap might occur there will be a alert message sent to the patience emergency contact/s about the patient's condition and current or recent location of the patient.

Projection of Solids:

SOLIDS

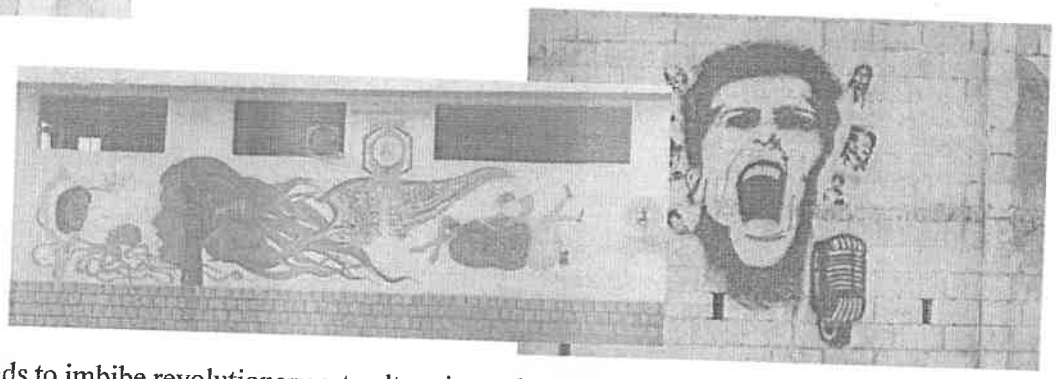
FRUSTUM OF A CONE	PYRAMID	PRISM
Enter the bigger dia	Enter Number Of Edges	Enter Number Of Edges
Enter the smaller dia	Enter The Base Length	Enter The Base Length
Enter the height of Frustum	Enter The Height	Enter The Height
SUBMIT	SUBMIT	SUBMIT

The program generates the necessary outline of shape required for development of cone and prism in the workshop lab based on the input criteria. The students can take a printout and paste it on the sheet metal and can start developing the required development.

Gratitude(Blood Donation Website):

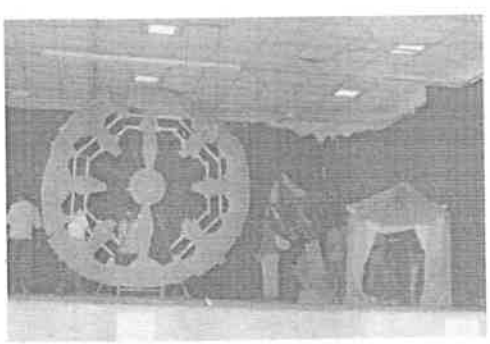
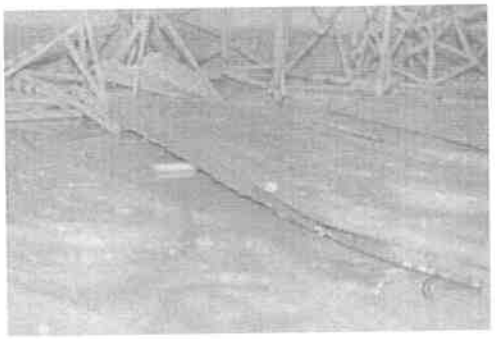
This is web application that helps users to find required blood groups in the user defined locations. And also a automated message will be sent to the registered donor phone number and also email about the requirement of the blood and the receiver details.

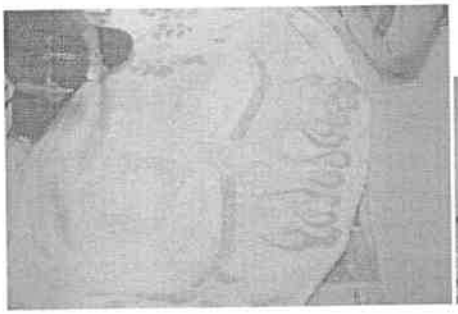
GRAFFITI CLUB

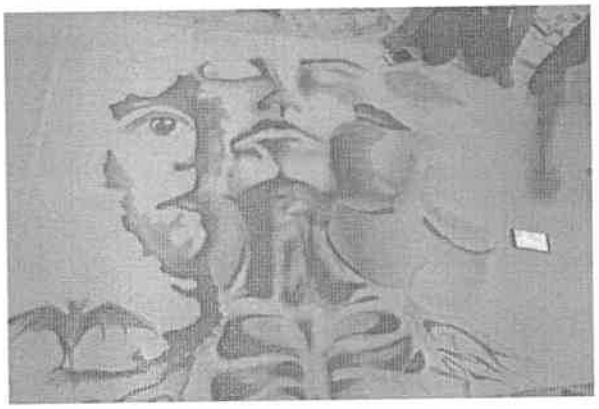


Incube graffiti club intends to imbibe revolutionary art culture in students to convey ethical values to society through creative paintings. This brings integrity among the students and artists of all branches and thus feel the ownership of the college campus to reform it into creative asset.

ART CLUB



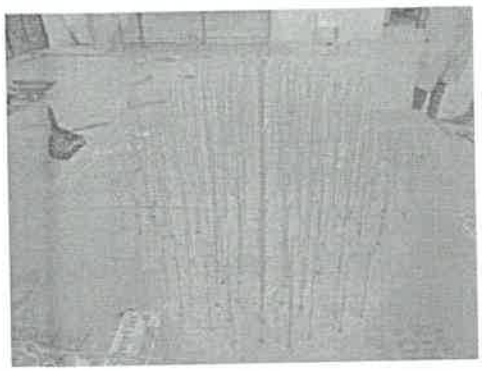


Artist always sees something which world fails to see, how about a group of artists ? incube art team will always be waiting to add up a tinge of creativity to every event in all aspect possible. They are extended support to provide props, costumes, backdrops to theatre teams for any event.

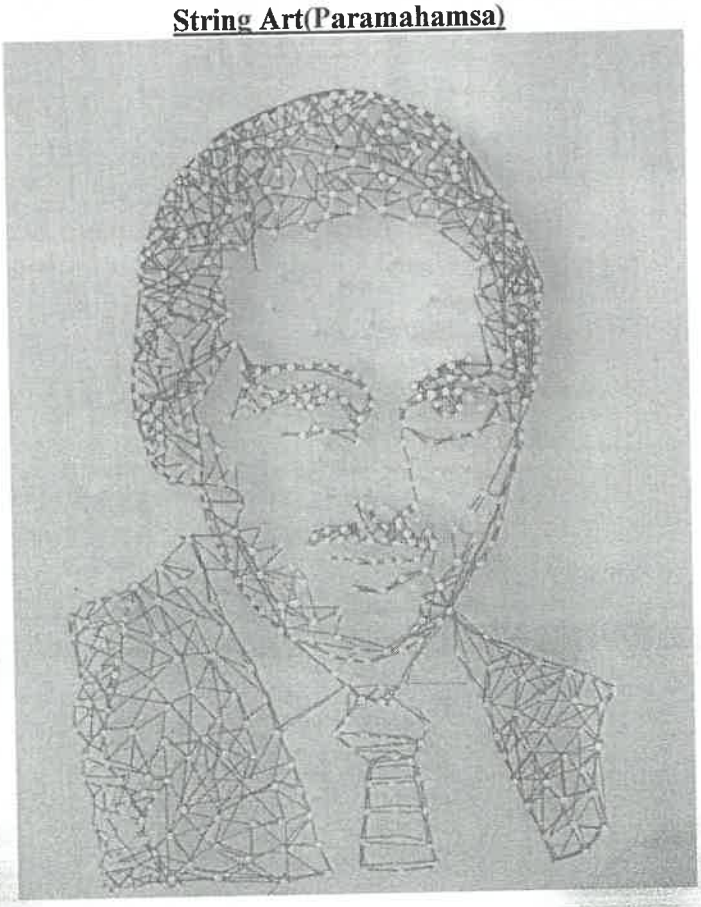
MIME

The Mime Team of AMCEC enacted a play about Dopamine & its variouseffects to the human mind.

STRING ART



String Art(Paramahamsa)



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Achievements of INCUBE Students

- Represented KSCST at IISc open day.
- Represented KSCST best project at NMKRV College on 11th annual conference of KSTA and DST 2019
- Winners of Prerana 2.0 Project exhibition
- Winners of Prerana 2.0 Paper presentation
- Runners up of coding event at state level ISTE students conference.
- Runners up of MECHANISMO at state level ISTE students conference.
- represented amc in National level motorsports event called Pocket Bike at MVJCE.
- Runners up in National Biomedical Research Poster Presentation AIIMS, Rishikesh
- Secured 6th place in National Biomedical Research Paper Presentation at AIIMS, Rishikesh
- runners up in hackathon at Christ University.
- runners up in state level coding event at IMPULSE organized by OXFORD Engineering College.
- represented amc in national level project presentation event organized by PESIT South campus, IEEE student chapter.
- Presented and published a research paper at International Conference on Recent Advances in Engineering Sciences, at MSRIT College
- Represented amc in project presentation at DrAmbedkar institute of Technology
- represented amc in project presentation at SSIT,. Tumkur

Been a part of following Products developed in incube

- 8 stroke engine
- Crash alert system for two wheelers
- Time table generator
- Prior Heart attack detector
- Electro magnetic stent
- Pocket bike
- P theta instrument
- Anti inertiaseatings
- Door step app
- Incube website

Commercialization ready products

- Advanced automated prosthetic limb in association with iisc
- Crash analytics for two wheelers
- Prior heart attack detector
- 8stroke engine

Patents applied

- 201941002450 - An Efficient Pedicle Probe
- 201941010607 - A Method and Device for Efficient Probing in Bone Region
- 201941011020 - "Economical Crossover of Bionic Limb and Prosthetics
- 315854-001 - Gokart
- 318797-001 - Mini street bike chassis
- 318796-001 - Mini chopper bike chassis

Patents Granted

- 315854-002 - Hybrid Tricycle Frame

Consultancy Projects designed and developed

- Copper Key - web and app development for event management company
- Lavaru - art gallery e-commerce website
- Aquarelle - 3x automation aid for global MNC industry
- Aspire - a college fest registration portal for Dayanandsagar college

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Visit of TOYOTA KIRLOSKER MOTOR delegates to AMCEC for the establishment of CENTER OF EXCELLENCE in Engine and Transmission System, 13th Dec-2018

Mr.Kiran.H.J , Manager, Toyota Kirlosker Motors Pvt. Ltd.

Mr.Parthasarathi , Manager, Toyota Kirlosker Motors Pvt. Ltd.

Mr.Ramesh.B.R , Dy. Manager, Toyota Kirlosker Motors Pvt. Ltd.

TEQUED LABS

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About Tequed labs

Tequed Lab is a Research and Development Center and Educational Institute based in Bangalore. They are focused on providing quality education on latest technologies and develop products which are of great need to the society. They also involve distribution and sales of latest electronic innovation products developed all over the globe to our customers. They run a Project and Internship consultancy, where they undertake live projects from a wide range of companies.

MOU with Tequed Labs:

AMC Engineering College has signed a MOU with Tequed labs to establish Centre of Excellence of Internet of Things(IoT) in Computer Science and Engineering Department. AMC Engineering College is recommending students Tequed labs for

Internship program. They have sponsored rupees 2 lakh worth components to establish Center of Excellence in IoT to support the Hobby projects and final year projects. Components includes 3D printer, various sensors, Raspberry Pi boards, Ardiuno boards, Xbees, etc.,.

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IoT Lab board unveiling

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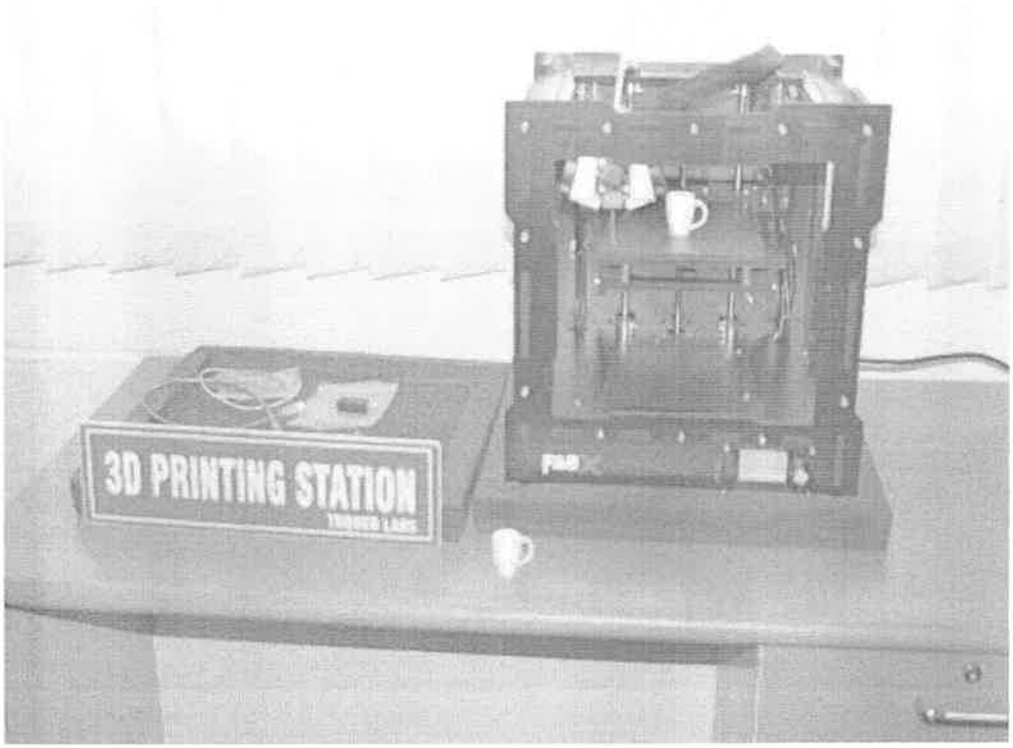
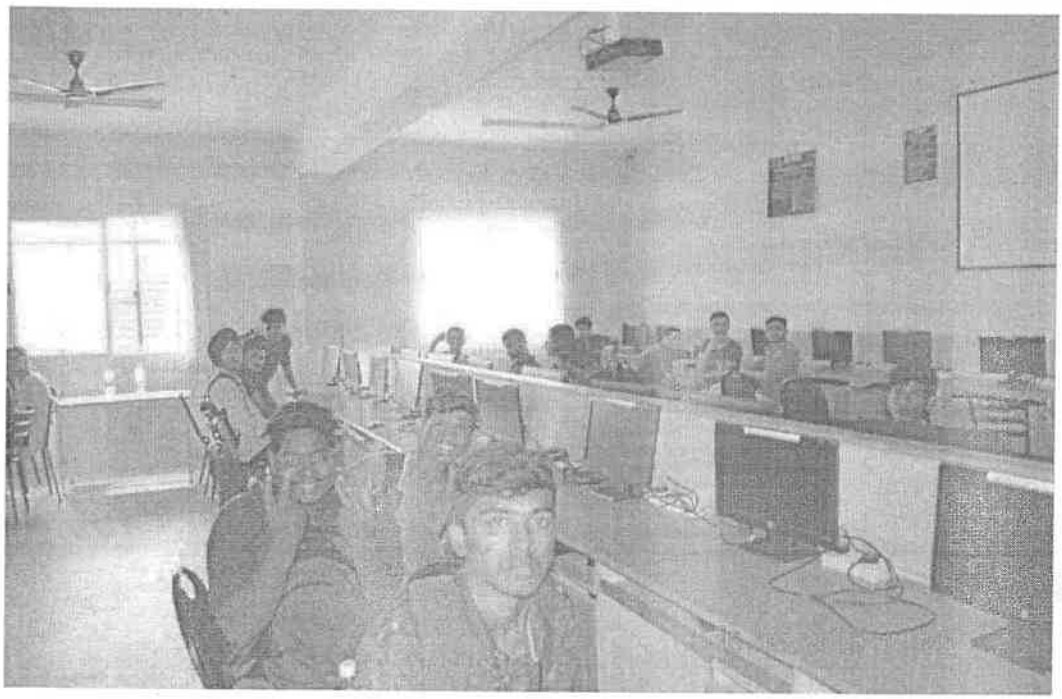
IoT LAB INAGUARATION

3D PRINTER IN IoT LAB



ARDIUNO AND RASPBERRY PI WORKSHOPS IN IoT LAB

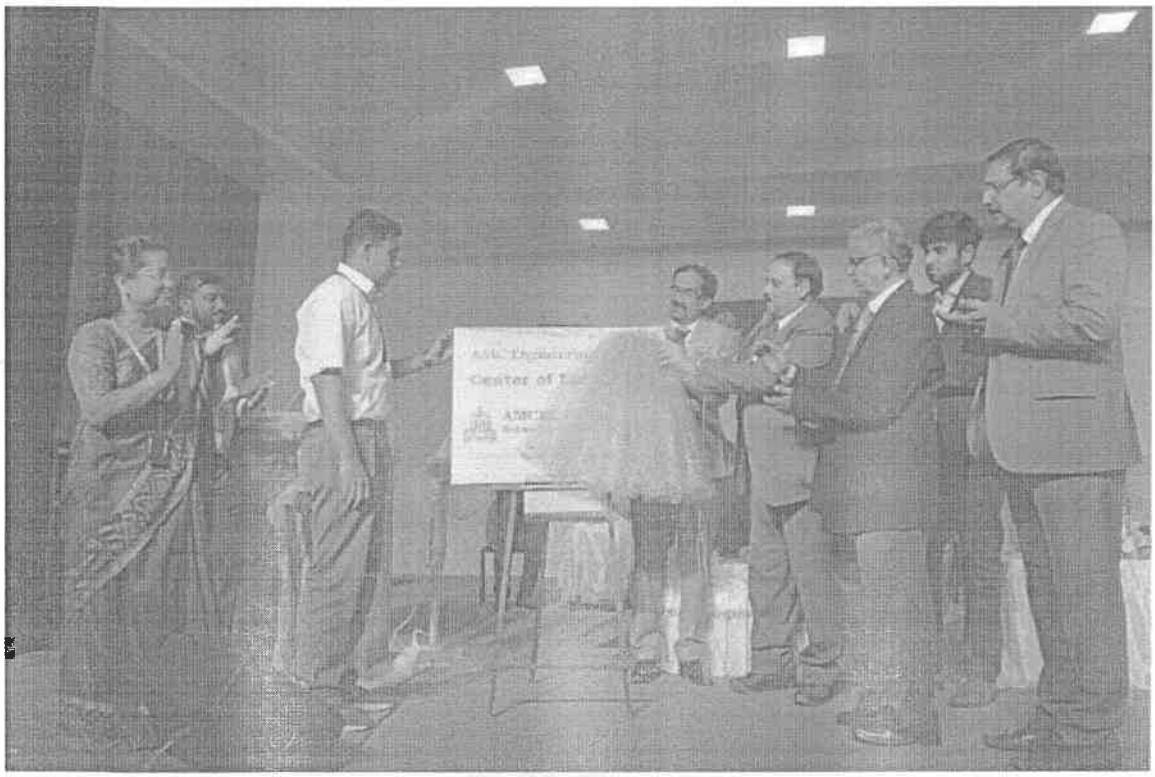
INDUCTION PROGRAM FOR FIRST YEAR STUDENTS IN IoT LAB



Centre of Excellence

AMCEC-CISCO Networking Academy

We have established a Centre of Excellence in our college through an MoU with renowned CISCO Networking Academy. Cisco is a pioneer in Computer Networking. CISCO Networking Academy is a world class academy which trains students to at par with the industry standards, with a common global syllabus. For 20 years, Cisco Networking Academy has changed the lives of 9.2 million students in 180 countries by providing education, technical training, and career mentorship. CISCO certified students increase their employability by 90%. CISCO certification is open for all branch students, during their 3rd or 4th year of B.E. We are proud that AMCEC is one of the only 3 colleges in Bangalore to have a CoE with CISCO. CISCO NetAcad offers CCNA, CCNP, CCNE certifications on networking. Once the student completes these 2 levels successfully, he can take up an online certification exam. Students who are certified will have the privilege of CCNA qualification, and they will be directly referred by CISCO for placements in top companies. Even otherwise networking has a huge scope in IT industry.



Unveiling of the AMCEC-CISCO Networking Academy by our Beloved Chairman and other delegates.

Inauguration of the AMCEC-CISCO Networking Academy Laboratory

Induction Program on CCNA course for 3rd and 4th year students of CSE, ISE and ECE

Mr.Anand Manikutty, Director-Marketing from Netalla, listening to the induction talk

Mr.Pradeep M., Director-Information Technology, Netalla, addressing the students

Audience of CSE, ISE and ECE listening keenly about the CCNA course

Department of ECE, AMCEC Bengaluru-83

Innovative Teaching Techniques

Teaching methods

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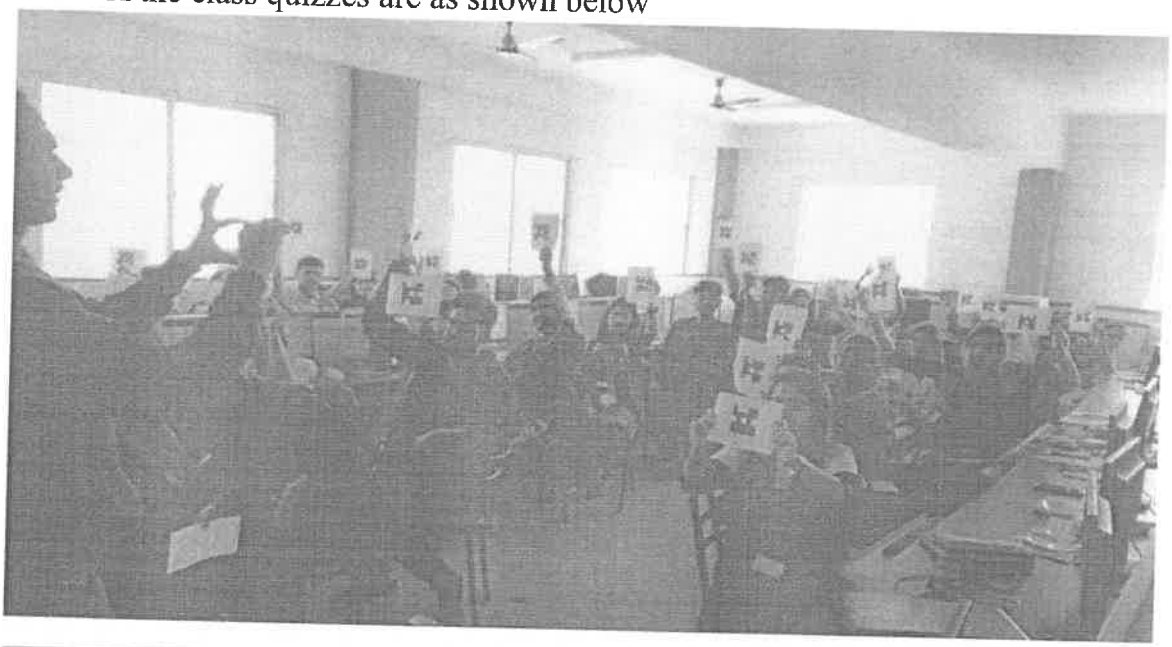
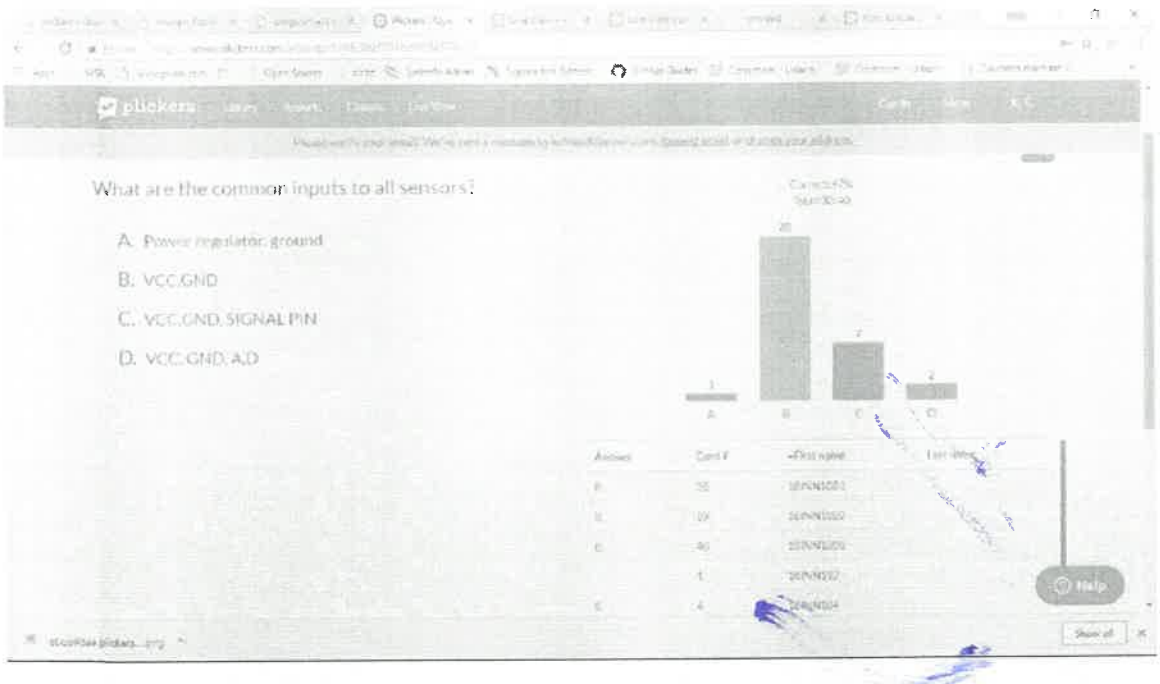
1. Plickers:

Plickers is a powerfully simple tool that lets teachers collect real-time formative assessment data without the need for student devices. Plickers lets us poll our class for free, without the need for student devices. Just give each student a card (a "paper clicker"), and use your smart phone to scan them to do instant checks-for-understanding, exit tickets, and impromptu polls. Best of all, your data is automatically saved, student-by-student, at plickers.com.

Plickers helps to check students understanding and gives quick feedback. Engages all students in critical thinking. Gives chance to all students in participation and helps to engage in learning without feeling self-conscious.

Some of the class quizzes are as shown below





2. Flipped learning:

Flipped learning is a pedagogical approach in which the conventional notion of classroom-based learning is inverted, so that students are introduced to the learning material before class, with classroom time then being used to deepen understanding through discussion with peers and problem-solving activities.

How does the flipped classroom work?

During class, teachers lecture and lead activities, then at home students **do** further enrichment and reinforcement activities. A **flipped classroom** turns that model on its head. Outside of class, students watch videos and other multimedia materials that explain concepts much as a teacher **does** during a lecture.

What Are The Benefits Of The Flipped Classroom?

Students can consume lecture materials at their own pace. In traditional lectures, students are bound to the pace that the instructor sets for the course the teacher is present while students apply new knowledge. Results from flipped classrooms show promise.