NOTICE

TOMS INNOVATION CENTRE (TIC)

All the students and faculties are here by informed that our college has decided to organize a startup mission named Toms Innovation Centre (TIC). A meeting regarding for the constitution of the Toms Innovation Centre will be held on 21/12/2021 at 11.15 a.m at the Room No.314 (S3 CSE Classroom:8) of the college under the leadership of HOD, CSE. Those willing to take part in the program should meet attend the meeting.

Mattakara

20/12/2021

KOTTAYAM - 686 564

Principal
TOMS COLLEGE OF ENGINEERING
Mattakara P.O.
KOTTAYAM, KERALA - 686 564

TOMS COLLEGE OF ENGINEERING
AND POLYTECHNIC
Approved by AICTE | Affiliated to KTU & DTE

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TIC/001/2021/TCE

07/01/2022

NOTIFICATION

Subject: Constitution of Toms Innovation Centre

The Principal is pleased to constitute the Toms Innovation Centre (TIC) comprising of the following members for a period of one year for planning, guiding and monitoring innovation and Entrepreneurship Development activities of the College.

Sl. No.	*Name and Designation*	*Status in the committee*
1	Shijina B,HOD CSE	Innovation cell officer
2	Ambily C Panicker, HOD,EEE	Asst. nodal officer
3	Goutham Prenoj, Lecturer,AU	Asst. nodal officer
4	Arjun Raj, Lecturer,EEE	Member
5	Kurian Thomas, Lecturer, AU	Member
6	Besal Joseph,S4 EEE	Student Coordinator
7	Sreerag Rajendran,S4 AU	Student Coordinator
8	Anusree Sanalkumar,S8 CS	Student Coordinator
9	Adish k, S6 ME	Student Coordinator
10	Rohith Reghu, S4 CE	Student Coordinator

Principal

Principal
TOMS COLLEGE OF ENGINEERING
Mattakara P.O.
KOTTAYAM, KERALA - 686 564

Copy To:

1. *Chairman*
2. *Vice principal*
3. *Administrative Office*
4. *All the members of the Committee and Squad.*
5. *College Website*

TOMS COLLEGE OF ENGINEERING KOTTAYAM - 686 564

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TOMS INNOVATION CENTRE

PROJECT 1

PROJECT PROFILE ON LED BASED LIGHTNING SYSTEM

1. INTRODUCTION

LED bulbs are electric lamps that produce light through light emitting diodes and are used in lighting fixtures. These contain a cluster of LEDs, which are mounted on a single base and are packed in diffuser lenses in order to spread light across a defined space. LED bulbs produce light approximately 90% more efficiently than incandescent bulbs. These bulbs are based on solid-state lighting, which emits the light from semiconductor chip, thereby generating lesser heat than incandescent bulbs. The useful life of these lamps is defined differently than other light sources such as compact fluorescent light (CFL) or incandescent bulbs. LED bulbs do not fail or burn out, instead they face lumen depreciation in which the brightness of the bulb decreases overtime.

The global LED bulbs market is expected to expand at a significant growth rate owing to the strict regulation norms regarding the banning of inefficient light bulbs. In some regions, governments have passed laws that restrict the usage of incandescent bulbs for general lighting Purposes, thereby replacing them with modern system.

However, lower awareness and dominance of fluorescent bulbs amongst the users are likely to hamper the LED bulb market. LED bulbs have a higher purchase price than other lamps; however, they require less operational costs due to high durability and reduced energy consumption. The decreasing cost of energy-efficient lamps is prompting organizations to utilize these bulbs in large-scale projects. Therefore, several governments are supporting the manufacturing and sale of LED lamps by offering various subsidies at different levels. For instance, the Government of India has launched the UJALA scheme that provides these lamps at a lower price, thereby saving energy.

Numerous countries have initiated projects such as building of better roadways, smart citiesand flyovers for developing infrastructure. The adoption of LED bulbs in these projects has beenincreasing due to their benefits such as low heat, high efficacy, and longer life.

In terms of product, the global LED bulb market can be classified into general purpose LEDs, specialty LEDs, decorative LEDs, and others. Increasing demand for LED bulbs in general purpose lighting is expected to increase at a significant pace during the forecast period. Decorative LED lamps are employed primarily in residential lighting applications such as pools, gardens, statues, and fountains. These are also utilized for functional applications such as landscaping and building facades.

Based on application, the LED bulb market can be segregated into indoor and outdoor. The indoor application segment can be further sub-segmented into residential, commercial, hospitality, retail, healthcare, industrial, and others. The outdoor application segment can be further split into highways and public places. LED bulbs are utilized to provide similar aesthetics similar to those provided by traditional incandescent lamps accompanied by energy-saving capabilities. This, in turn, is propelling the demand for LED bulbs in the residential application segment. These lamps are widely adopted by numerous commercial spaces such as hospitality, retail, and healthcare, due to their dimmable color temperature capabilities and color temperatures, thereby delivering enhanced illumination capabilities and offering direction to end-users.

The LED lighting revolution has dismantled the competitive environment, which has prompted established bulb manufacturers such as Osram and Philips to recreate their strategic landscape and policies. Prominent vendors of LED lamps include Cree Inc., General Electric Company, Seoul Semiconductor, Syska LED, Sharp Corporation, Zumtobel Group, ASM Pacific Technology, and Everlight Electronics. The industry, which was primarily dominated by major bulb manufacturing companies such as Philips, Osram and GE is witnessing incredible fragmentation as various new manufacturers have entered into the business.

The report offers a comprehensive evaluation of the market. It does so via in-depth qualitative insights, historical data, and verifiable projections about market size. The projections featured in the report have been derived using proven research methodologies and assumptions. By doing so, the research report serves as a repository of analysis and information for every facet of the market, including but not limited to: Regional markets, technology, types, and applications.

LED based lightning system deals with :

- LED decorative Lights.
- LED SMD Circuit board
- LED SMD Bulb
- LED SMD torch and emergency lamp
- LED Flood light
- LED Down light

2. MARKET POTENTIAL

The global LED bulbs market is expected to expand at a significant growth rate owing to the strict regulation norms regarding the banning of inefficient light bulbs. In some regions, governments have passed laws that restrict the usage of incandescent bulbs for general lighting purposes, thereby replacing them with more efficient bulbs.

3. TECHNOLOGIES

LED is semiconductor Technology that emits light at the junction of oppositely charged materials when voltage forces electron movement. Led based lighting systems are devices consisting of many LEDs chips embedded on the LED fixtures base and fitted with rectifier circuit that provides regulated current output at the low voltage that makes them to be operated on AC Circuit because LEDs requires DC to operate. The whole PCB circuit board is fitted inside a plastic enclosure along with the metallic cap and Smokey reflector.

Conventional lighting systems represent mainly incandescent light bulbs and compact fluorescent lights (CFLs). LED lighting system provides advantages over conventional lighting systems in terms of better energy efficiency, better energy costs, longer lifetime, less temperature, Sensivity, higher light output. This leads them to be better Lighting substitute and good market prospect. Therefore the market prospect for LED based Lighting system is good and booming.

4. Technical aspect for LED bulb (commercial as well asdomestic)

I. Process of Manufacturing;

This project profile is made for the assembling of LED based Lighting system cum LED Lamp cum Bulb up to 60 W. The assembling of LED based Lighting system cum LED Lamp consists of the following steps:

The Led Commercial as well as domestics light has many variations such as:

a) LED SMD Circuit board
b) LED SMD Bulb
c) LED SMD torch and emergency lamp
d) LED Flood light
e) LED Down light

- Procurement/import of LED chips of MiliWatt rating, Procurement of Circuit and other mounting devices.
- Embedding of LED Chips of MiliWatt rating on the PCB board with the rectifier circuit, filter circuit etc.
- Fitting of PCB Board with the holder cap and plastic modules fitted with the Smokey reflector to form a compact unit.
- Testing of the assembled LED Lighting systems and packing

5. POLLUTION CONTROL

The Govt. accord utmost importance to control environmental pollution. The small – scale entrepreneurs should have an environmental friendly attitude and adopt pollution control measures by process modification and technology substitution.

India having acceded to Montreal Protocol in Sept.1992, the production and use of ozone Depleting Substances (ODS) like Chlorofluore Carbon (CFCs), Carbon Tetrachloride, Halons and Methyl Chloroform etc, need to be phased out immediately with alternative chemical/solvents. A notification for detailed Rules to regulate ODS phase out under the Environment Protection Act, 1986 have been put in place with effect from 19th July, 2000.

The following steps are suggested which may help to control pollution in electronic industry wherever applicable:

a) In electronic industry fumes and gases are released during hand soldering / wave soldering / Dip soldering, which are harmful to people as well as environmental and the end product. Alternate technologies may be used to phase out the existing polluting technologies. Numerous new fluxes have been developed containg 2 – 10 % solids as opposed to the traditional 15 – 35% solids.

b) Electronics industry uses CFCs, Carbon tetrachloride And Methyl Chloroform for cleaning of printed circuit boards after assembly to remove flux residues left after soldering, and various kinds of foams for packaging.

c) alternative solvents could replace CFC – 113 and Methyl Chloroform in electronics cleaning. Other Chlorinated convents such as tri – chloroethylene, Per – chlorethylene and methylene chloride have been used as effective cleaners in electronics industry for many years. Other organic solvents such as ketenes and Alcohols are effective in removing both solder fluxes and many polar contaminants.

6. ENERGY CONSERVATION

With the growth energy needs and shortage coupled with rising energy cost, a greater thrust in energy efficiency in industrial sector has been given by the Govt. of India since 1980s. The Energy Conservation Act 2001 has been enacted in year 2001, which provides for efficient use of energy, its conservation and capacity building of Bureau of Energy Efficiency created under the Energy conservation Act.

Following steps may help for conservation of electrical energy:

a) Adoption of energy conserving technology, production Aids and testing facilities.
b) Efficient management of process/manufacturing machineries and system, QC and testing equipment for yielding maximum energy conservation.
c) Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature controlled soldering and disordering station.
d) Periodical maintenance of motors compressors, etc.
e) Use of power factor The correction capacitors. Proper selection and layout of Lightning system, timely switching on – off of the lights, use of compact fluorescent lamps wherever possible etc.

ORIENTATION PROGRAM

An introduction to IEDC has been conducted by Technology and Business club in association with the National Digital Library. Our main resource person Shri. Goutham Prenoj (ex-CEO, IEDC AMAL JYOTHI) started the event by 11:15 am on 27th of April 2022. There were more than 30 student participants from different B. Tech streams to attend the event but unfortunately none of them was able to register in the site as the server was down at the time. The program was very informative and content rich in the area of the topic and students enjoyed the session. Vote of thanks to our speaker was proposed by Principal Joby Joseph. The program commerced before 1 o'clock in the afternoon and students were let to leave at lunch break.

SOFT SKILLS AND PROFESSIONAL DEVELPOMENT TRAINING

The training program, SOFT SKILLS AND PROFESSIONAL DEVELPOMENT TRAINING has been conducted on 29th April 2022 by NDLI club of TOMS College of Engineering (TCE) in association with the National Digital Library. Our main resource person Er. Joby Joseph (Principal TCE) discussed about the topics: Personal development, its benefits, what's meant by self-reflection, mindset, transferable skills and the ways to overcome failure. The major content of this program was on the Fear to Act , how we can develop professionally, about our mindset etc. Also discussed the importance of personal motivation, time- management, team work and leadership skills for a successful life. Overall, the program was very good and all the participants will definitely try to sharpen their skills and overcome their weaknesses.

HOW TO SET UP AN IEDC

Mr Ajin Omanakuttan, CEO of Aptinnov labs talked with our students helped them understand that entrepreneurship and product developments, patents are not distant from student life. This session enabled students to understand the importance of the solutions to most technical problems being simple. it was conducted on 5th May 2022 online via google meet. The college provided time for students to attend the event online while class time and offered students who were at home also to attend it online. about 50 students attended the event online and 20-30 students attended the event offline.

TECHNOLOGY AND BUSINESS CLUB

TECHNOLOGY AND BUSINESS CLUB ORGANIZING

INTRODUCTION TO INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTER

Goutham Prenoj

Resource person

TOMS COLLEGE OF ENGINEERING
MATTAKKARA

Date- 27-04-2022 | 11:00 to 1:00 | Venue- Adminstrative block

Coordinators

Ms. Shijina B
Mr. kalesh gopalan
Mr. Vineeth V

National Digital Library of India

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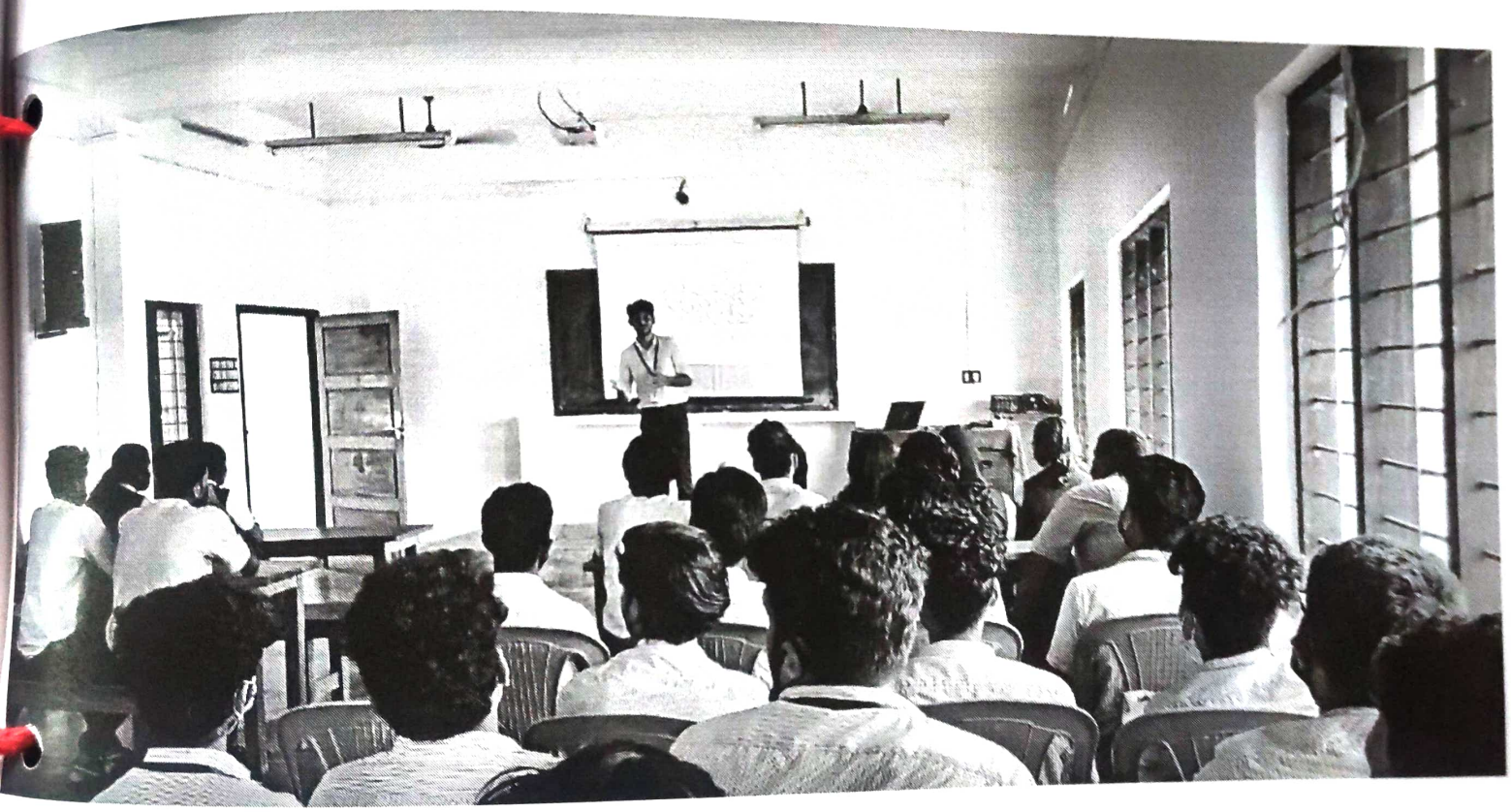

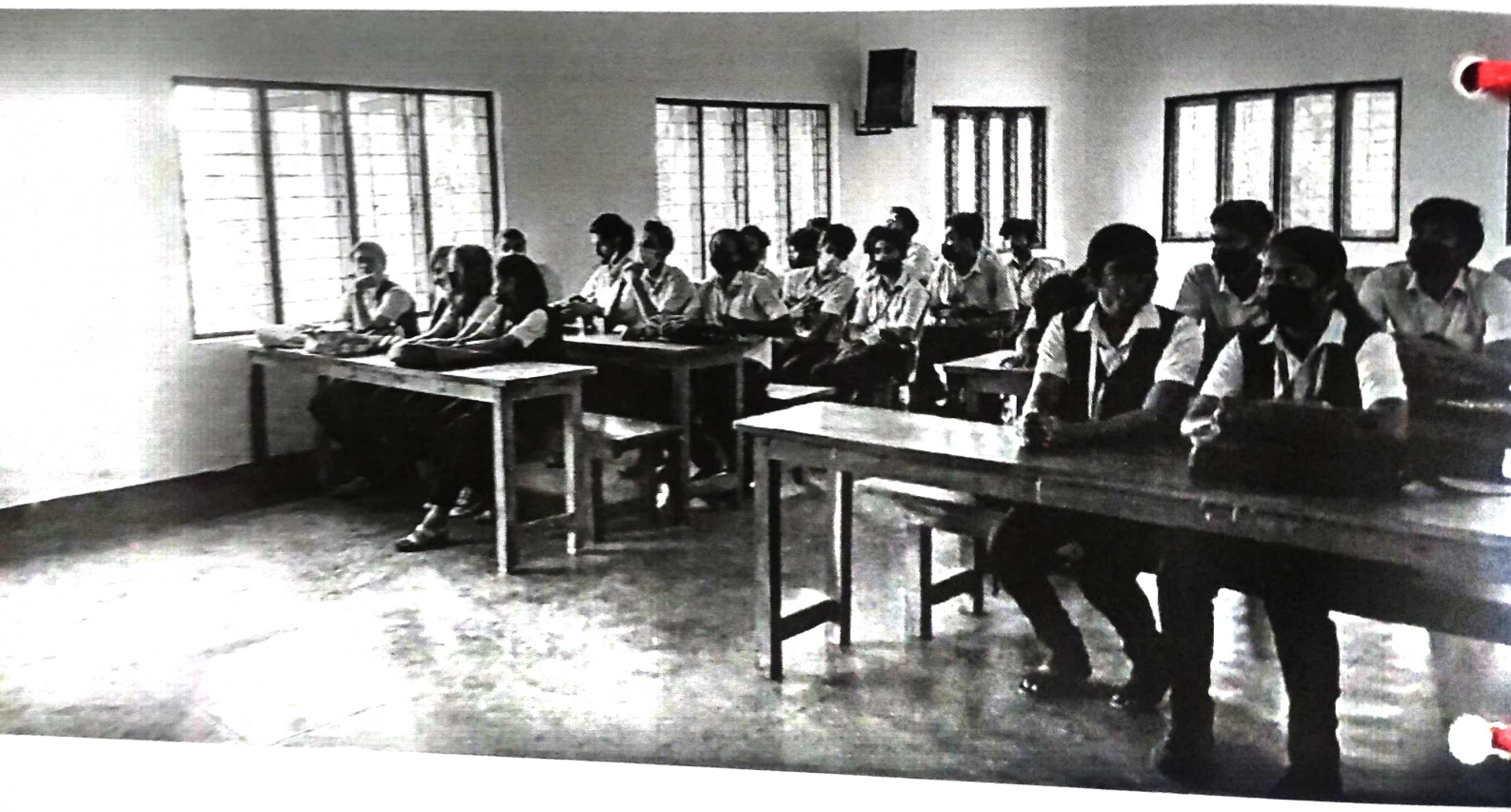

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TOMS College of Engineering

NDLI CLUB

Club Registration Number- (INKLNC4Y98QGXEC)

In association with

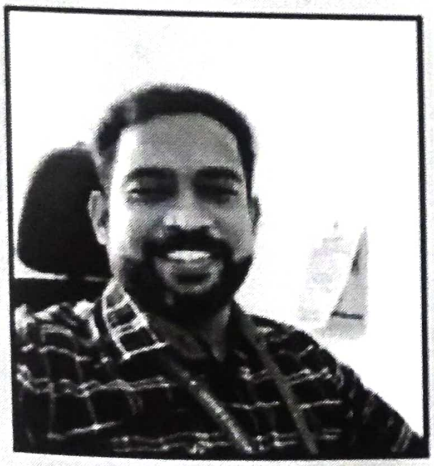
MoE, Government of India

Indian institute of Technology (IIT), Kharagpur

Organizes

SOFT SKILLS & PROFESSIONAL DEVELOPMENT TRAINING

Resource person:



Er. Joby Joseph
Principal
Toms College of Engineering

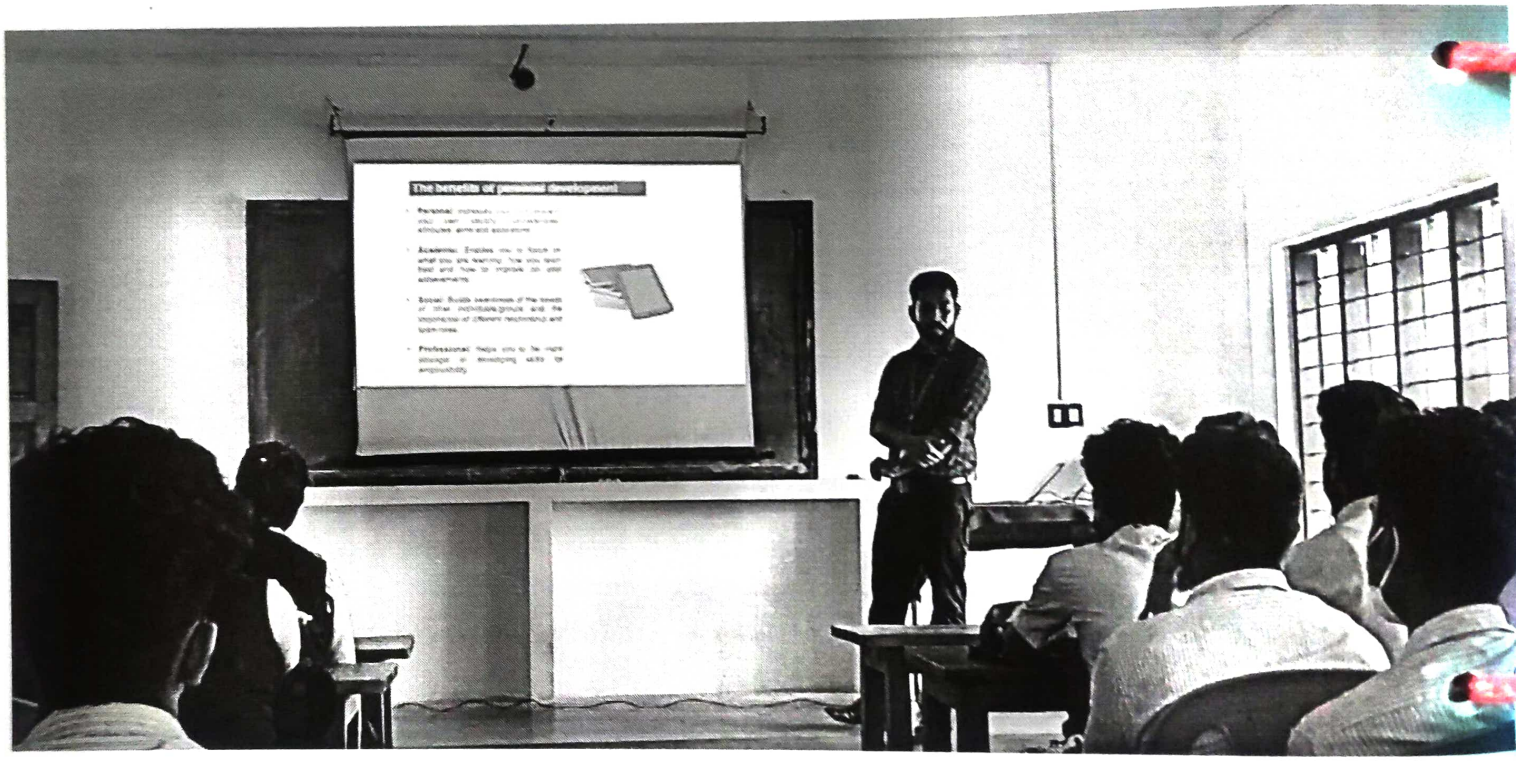
Date : 29-04-2022
Time : 3:00 pm
Venue: Seminar hall

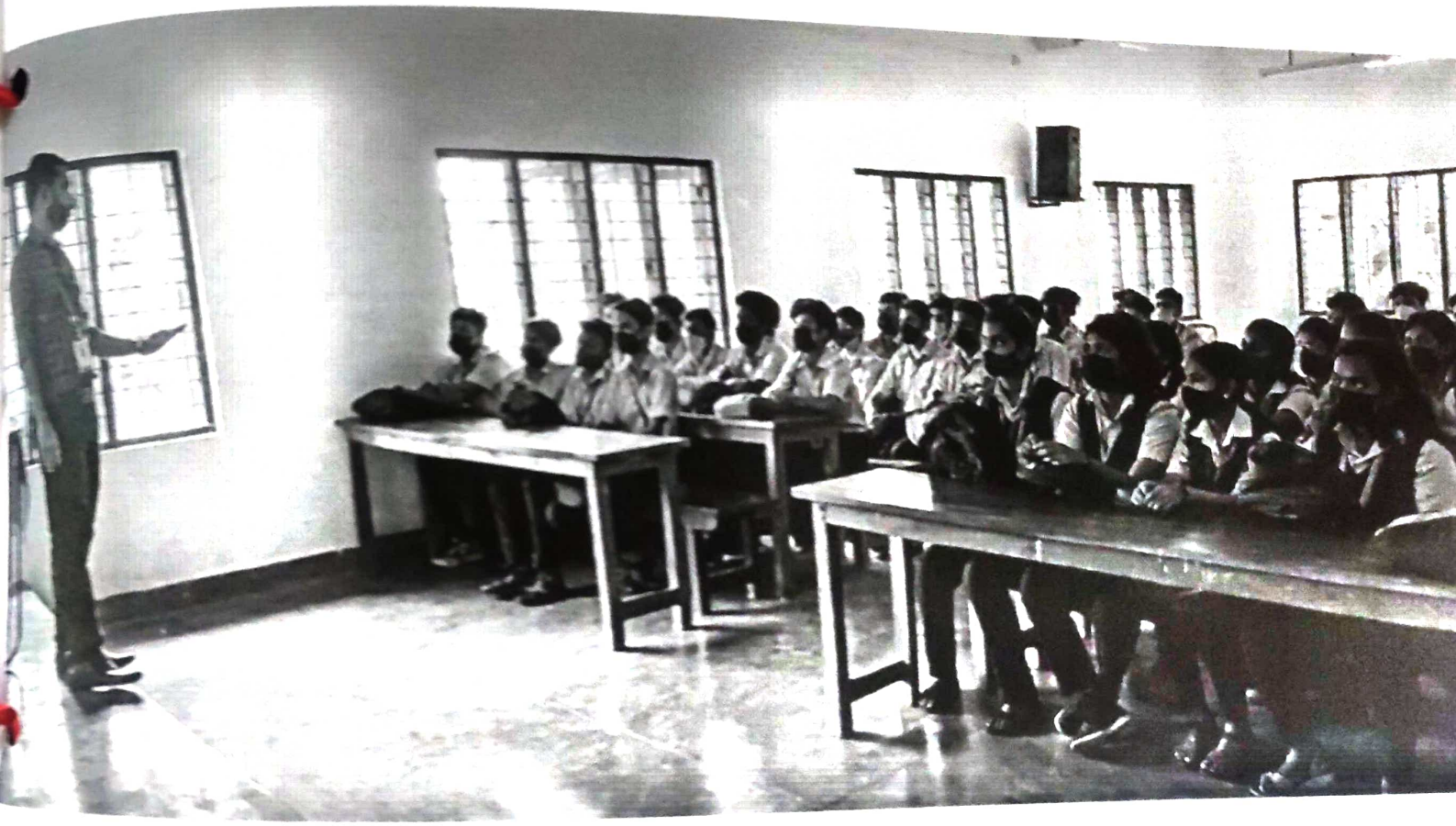
Coordinators

Ms.Erlin Antony
(Executive member, NDLI club TCE)

Ms. Shijina B
(Vice principal TCE)

Mr. Kalesh Gopalan
(Secretary, NDLI club TCE)


The benefits of personal development



TOMS COLLEGE OF ENGINEERING
FOR STARTUPS
Approved by AICTE & Affiliated to KTU

TECHNOLOGY AND BUSINESS CLUB
INVITES YOU TO PARTICIPATE IN

HOW TO SETUP AN IEDC

by
Ajin Omanakuttan
(CEO Aptinnov Labs)

MAY 5, 2022
2:30–4 PM
ON GOOGLE MEET

COORDINATORS:
Erlin Antony
Shijina B
Kalesh Gopalan

National Digital Library of India
-CLUB-

A HANDBOOK FOR IEDC NODAL OFFICERS

INNOVATION AND
ENTREPRENEURSHIP
DEVELOPMENT CENTRES

KERALA
STARTUP MISSION®

A HANDBOOK FOR IEDC NODAL OFFICERS

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INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRES

ABOUT THIS HANDBOOK

The concept of Innovation and Entrepreneurship Development Cell (IEDC) was formulated to promote innovation and entrepreneurial culture in educational institutions and to develop institutional mechanism to foster techno-entrepreneurship for generation of wealth and employment. The IEDCs are established in academic institutions across Kerala having requisite expertise and infrastructure.

Kerala Startup Mission has taken this initiative to create awareness, exposure and skills among the students and to enable and promote an environment to create entrepreneurial ventures by developing innovative products of social relevance.

IEDC plays a major role in identifying the potential entrepreneur, right from the college level. The Nodal Officer/Faculty is advised to nurture the talent and it undergoes multiple phases during its journey from identifying right students, right scalable idea and sustainability of the idea, team and IEDC.

This Handbook is for Nodal Officers of IEDCs of Kerala Startup Mission which highlights the major aspects of the preparatory and development phases of an IEDC and an innovator journey. Rather than being a theoretical discourse on process, this Handbook intends to be a hands-on guide for current and future IEDC Nodal Officers. Certain aspects of the existing mechanism had been re-defined and a practical framework that might help Nodal officers to plan their immediate actions has been put forward.

This Handbook also encourages new and existing IEDC to share their experience and suggest newer approaches.

Table of Contents

INTRODUCTION

Government of Kerala initiated the Startup movement through Kerala Startup Mission(KSUM) by forging and implementing forward-looking policies for creating a vibrant Startup ecosystem in the state primarily to foster the growth of innovation lead technology entrepreneurship by supporting all the strata of society to encourage them to come up with ideas and to turn it into business so that they may obtain gainful employment and can employ others as well.

Kerala is currently witnessing the rise of technology driven, innovation-led and knowledge-based enterprises right from the college level. KSUM put forward the concept of Innovation and Entrepreneurship Development Centre (IEDC) in the year 2014 and was formulated to promote innovation and entrepreneurial culture in educational institutions and to develop institutional mechanism to foster techno-entrepreneurs. IEDC aims to create awareness, exposure and technology skills among the students and to enable and promote an environment to create technopreneurial ventures by developing innovative products of social relevance. IEDCs will act as mini incubators enabling students to work on prototypes while studying.

Until recent times, the graduating students had two choices: get into world of work or pursue higher education. With the establishment of IEDC, a third option now emerges: to start a venture.

1.1. KERALA TECHNOLOGY INNOVATION POLICY

Government of Kerala introduced Kerala Technology Innovation Policy in 2014 with an ambitious objective to transform Kerala as an entrepreneurial State. Through the Technology Policy, Government of Kerala aims to bring a series of intervention to develop a conducive ecosystem where you of our State can reach his/her maximum potential. The policy envisages strategies to retain the best talents within the State of Kerala itself and encourages to pursue their dream in Kerala. Kerala Technology Innovation policy aspires to develop an entrepreneurial culture and recognises the skill development as the key characteristic of such an ecosystem.

1.2. KERALA STARTUP MISSION

Kerala Startup Mission (KSUM) is the State nodal agency for the promotion of innovation and entrepreneurship under Department of Electronics and IT, Government of Kerala. Kerala Startup Mission plays a pivotal role in developing a vibrant Startup ecosystem in the State of Kerala.

The primary objectives of KSUM is to undertake the planning, establishment and management of Technology Business Incubators/ Accelerators in Kerala and thereby promote technology-based entrepreneurship activities and develop a conducive environment required for promoting high technology-based business activities.

Being the apex body for the Startup activities in the State, Kerala Startup Mission supports incubators in the State of Kerala to achieve their full potential by extending financial, technological and mentoring support to incubated start-ups. Kerala Startup Mission helps Startup Founders to execute their vision and compete on the

in Colleges, Government aims to encourage talented youth to initiate entrepreneurship in technology sectors.

1.6. THE IDEA

The Innovation and Entrepreneurship Development Centres (IEDC) are platforms set up mainly in Engineering, Arts & Science Colleges and Polytechnics with an aim to provide students an opportunity to innovate and experiment. IEDC act as the first launch pad for a Student's entrepreneurial journey and expose them with the new age technologies.

The IEDCs are envisaged as a learning and innovation hub that creates innovation culture among Innovators by introducing them the State-of-the-art technologies and expert mentors. IEDC will encourage students to translate their innovative ideas into prototypes without the fear of failure. IEDCs will take earnest effort to upgrade the skill set of the students through the conduct of relevant workshops and seminars.

IEDC in short will bridge the gap between Industry and Academia by conducting skill development training programmes for the students and will act as an aggregator with three stages of growth in mind – Innovation, Technology and Entrepreneurship.

Kerala Startup Mission has set up IEDCs in 226 institutions across the State in 135 Engineering Colleges, 26 Arts & Science college, 52 Polytechnic colleges and 13 other colleges who are having requisite expertise and infrastructure which provides avenues for creative students to learn, collaborate and transform their innovative ideas into prototypes of viable products.

6.3. IEDC ACCREDITATION

KSUM has designed an Accreditation framework for IEDCs across the state. The accreditation framework will assess the IEDCs based on the following parameters

a.Evangelisation of Entrepreneurship
b.Promotion of Innovation
c.Supporting Innovation and Incubation
d.Alignment with Institutional Mechanism
e.Strengthening of Ecosystem

KSUM will strive to do the IEDC accreditation through an automatic process. IEDC nodal officers are required to update the details of the programmes, workshops and events on the IEDC portal as and when it over. KSUM will take all effort to do the accreditation process objectively and will not send any individual communication in this regard. The accreditation period shall be the academic year i.e. June to May.