

(A Unit of Hindustan Group of Institutions) Approved by AICTE & Affiliated to Anna University, Chennai

RESEARCH **BROCHURE**







INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)



Every Human Being has Infinite Potential. The Role of an Educator is to Bring out the Best in Every Individual; and that of an Educational Institution to Provide the Best Facilities and the Right Ambience



Late Dr. K. C. G. Verghese

Founder - Chairman, Hindustan Group Institutions (1940 - 2006)

"To Make Every Man a Success And No Man a Failure"

HINDUSTAN GROUP OF INSTITUTIONS



Hindustan Institute of Technology & Science

KCG College of Technology





Hindustan Institute of Engineering Technology







Hindustan College of Arts & Science







Hindustan First Grade College - Mysuru

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CHAIRPERSON'S Message

Dr. Elizabeth Verghese

Modern India has had a strong focus on science and technology, realising that it is a key element of economic growth. The advancement in scientific and technological research is proven to have a significant impact on the future of our nation. Ancient India was one of pioneers of Science in the world, be it in Medicine, Mathematics, Astronomy, Metallurgy, Agriculture or even city Planning. India was greatly ahead of the other countries. Modern India embarked on a journey of economic reform and progressive integration with the global economy that aims to put it on a path of rapid and sustained growth. India has several world-class centres for science and technology education. Research and innovation must be prioritized to address the myriad problems our country faces today. It is also imperative that industry and academia should operate in tandem to create the right synergies for promoting industrial growth and academic rejuvenation. Converting pure research into real world outcomes is undergoing a major transformation as new technology allows a freer approach for researchers to find the solutions needed to aid society, business and global sustainability.

KCG College of Technology is one of the premier institutions in the country focusing on outstanding academic engagement with an emphasis on fundamental and applied research to position itself as one of the leading research institutes in India.

It takes courageous strides in pioneering activities and producing research knowledge to serve humanity. KCG College of Technology established itself as one of the front runner institutions in India in the field of Engineering and Technology Education. It also keenly looks forward to become one of the best Research Oriented Institutions in the country in the near future. To expedite this process, a number of research projects have already been funded by various Government Funding Agencies such as Department of Science & Technology, Defense Research & Development Organization (CVRDE), National Institute of Wind Energy, ISRO, AICTE, DRDL, ICMR etc.

KCG College of Technology has already established various Centres of Excellence across the respective departments. The Centres provide cutting-edge facilities with rich content, and offers a wide range of opportunities to research scholars. Many of our faculty members are already undertaking scholarly activities and have more than 1000 publications records in multitude leading of Journals at various conferences. The institution so far filed 120 patents. This brochure reflects necessary information about various research activites, which will certainly enhane the quality of research output to benefit students, society and the nation at large.

The Journey Ahead

We, the Faculty members and Research staff of KCG College of Technology, Chennai, hold that our profession as scholars entails an unqualified commitment to the pursuit of truth, dedicated to the promotion of public good, and a sustained interest in mentoring students and fellow Researchers. We uphold the vision and mission of the institution to promote the interests of the greater community and invest efforts to maintain the ideals of scholarly integrity and academic freedom.

Motto

"To Make Every Man a Success and No Man a Failure"

Mission

- Disseminate knowledge in a rigorous and intellectually stimulating environment
- Facilitate socially responsive research, innovation and entrepreneurship
- Foster holistic development and professional competency
- Nurture the virtue of service and an ethical value system in the young minds

Vision

KCG College of Technology aspires to become a globally recognized Centre of Excellence for science, technology & engineering education, committed to quality teaching, learning and research while ensuring for every student a unique educational experience which will promote leadership, job creation, social commitment and service to nation building.

Value Statement

Integrity Innovation Internationalization

TOMORROW'S **Engineers**

BOLD AMBITIOUS PASSIONATE

Our Students will Become the Next Generation of World-class Engineers and Researchers, who will go on to solve the Grand Challenges of the Future.

BOARD OF **Management**



Dr. Elizabeth Verghese Chairperson, HGI



Dr. Anand Jacob Verghese Director & CEO, HGI



Governing Council

Dr. Elizabeth Verghese Chairperson, HGI

Dr. Anand Jacob Verghese Director & CEO, HGI

Dr. Aby Sam Director, HGI

Dr. Annie Jacob Director KCGTech

Dr. P. Deiva Sundari Principal, KCGTech

Dr. S. N. Sridhara Vice-Chancellor, HITS

Mr. Anand Sundaresan Vice Chairman & Managing Director Schwing Stetter (India) Pvt Ltd

Dr. A. Rajadurai Professor, MIT Campus, Anna University

Dr. J. Sreerambabu Asst Director (Planning) Directorate of Technical Education

Ms. Linu Sam Assoc. Professor, S&H, KCGTech

Dr. G Sambandan Professor — Advisor, EEE, KCGTech

Dr. Nandakumar. K Director-Research , HITS

Dr. V. Natarajan Director, RIC(DRDO), Indian Institute of Technology, Madras Research Park

Dr. R. Gopalan Assoc. Director, ARCI, Indian Institute of Technology, Madras Research Park

Research Head

Dr. Deepa Jose Professor and Head Research, KCGTech

Research Advisory Board

International

Dr. Borje Johansson Professor, Chairman, Selection Committee for Nobel Prize for Physics, KTH, Sweden

Prof. Tae Won Kang Director QSRC, Dongguk University, South Korea

Dr. Rajeev Ahuja Professor, Dept. of Physics & Astronomy, Uppsala University, Sweden

Dr. Venkat Sastry Professor & Head of Group Centre for Simulation & Analytics, Cranfield University, UK

Dr. Jonathan R. Searle Professor & Head, Modelling and Simulation Group, Cranfield University, UK

Dr. Kuriakose Athapilly Professor of Computer Information Systems, Western Michigan University, USA

Dr. Sabeer Husain Sr. Scientist, Air Force Research Laboratory Dayton, USA

Dr. Ajith Abraham Director, Machine Intelligence Research Laboratories, Washington, USA

National

Dr. Anil Kumar Bhadhuri Distinguished Scientist and Director Indira Gandhi Centre for Atomic Research

Dr. P. Sivakumar Formerly Distinguished Scientist and Director Combat Vehicles Research & Development Establishment

Dr. S. Gomathynayagam Former Director General, National Institute of Wind Energy, Ministry of New & Renewable Energy

Dr. G. Giridhar Deputy Director General, Head (SRRA), Ministry of New and Renewable Energy

Mr. V. Premkumar Director - Research & Marketing NELCAST

Prof. Dr. N. M. Samuel Project Director, International Health Group, (IHG), India

Dr. Mylaudy S. Rajadurai President & CEO & Head R&D, Sharda Motors Industries Ltd.

Accreditations & Rankings



Accreditations & Rankings



ABOUT KCG COLLEGE OF TECHNOLOGY

"To Make Every Man a Success...."

KCG College of Technology was founded in 1998 to fulfill the Founder-Chairman, Dr. KCG Verghese's vision of "To Make Every Man a Success and No Man a Failure". It is a Christian minority institution, affiliated to Anna University, Chennai and approved by AICTE, New Delhi.

KCG College of Technology, formerly known as National Institute of Technology and Science is approved by the AICTE, Government of India, New Delhi . The college has been certified as an ISO 9001:2015 Institution.

The college offers thirteen under-graduate and four post-graduate programmes. Four under-graduate programmes—Computer Science and Engineering (CSE), Electronics and Communication Engineering (ECE), Information Technology (IT) and Mechanical Engineering—are accredited by the National Board of Accreditation (NBA). Five departments - Computer Science Engineering, Electronics and Communication Engineering, Electronics and Electronics Engineering, Mechanical Engineering and Physics have been approved as Research Centres by Anna University to offer Ph.D programmes.

Under sections 2(f) and 12(B) of the University Grants Commission (UGC) Act, KCG College is listed among colleges eligible to receive central assistance (UGC grant) for various projects. The college has been accorded recognition as a Scientific and Industrial Research Organisation(SIRO) by the Department of Scientific & Industrial Research Organisation (DSIR), Ministry of Science & Technology. The college is an affiliated training center of Skill Council for Green Jobs (SCGJ) by National Skill Development Corporation (NSDC), Government of India. KCG College is one amongst the top 21 Institutes recognized in Platinum Category by AICTE-CII Survey of Industry Linked Technical Institutes.

These recognitions have enhanced funding opportunities from government and other agencies to conduct research and development that are of national relevance and importance.

The campus of KCG College of Technology is beautifully landscaped in a lush green stretch of land spread over 38 acres at Karapakkam, which is about 10 km from Adyar on the Old Mahabalipuram Road, the IT corridor of Chennai. The college operates a fleet of buses connecting all parts of the city for the convenience of the students and staff. Besides this, the college is well connected to different parts of the city by public transport buses.

KCG RESEARCH CENTRES APPROVED BY ANNA UNIVERSITY





ADMISSION TO Ph.D PROGRAMMES

KCG College of Technology encourages interdisciplinary research and exchange of ideas and knowledge in various related fields. Admissions to Ph.D. programs at KCG College of Technology - Anna University approved Research Centre are conducted twice a year, for January and July sessions. A Ph.D. program is offered in two modes- Full Time and Part Time. Coursework, participation in various interactions, submission of progress reports through presentations etc. on regular basis has to be carried out during the program.

The Centre is looking after the recognition of Departments and collaborative research with Industrial Units/ R&D centres. It is also providing a platform for the faculty members to interact with other experts in their area of specialization within India and abroad which provide an opportunity for others to understand the research quality of KCG College of Technology and also pave way for scientific collaboration. Research Center was established with the aim of accelerating research, publications, consultancy and to get funded projects in various areas. The college is actively involved in research and development. Funds have been received by the college from various funding agencies namely. All India Council for Technical Education (AICTE), Ministry of Micro, Small and Medium Enterprises (MSME), Department of Tamilnadu State Council for Science and Technology (TNSCST), National Institute of Wind Energy (NIWE), Department of Science and Technology (DST), Indian Council of Medical Research (ICMR), Combat Vehicles Research and Development Establishment (CVRDE), Defence Research and Development Laboratory (DRDL), India Space Research Organisation (ISRO) and from professional societies - IET, IEI, IEEE. Research collaborations with foreign universities is also being carried out.

Admission Procedure

Preliminary registration for admission to a course can be made online through www.kcgcollege.ac.in.

- Application for Admission to a Course under Management Quota may be made through Consortium of Self-financing Arts & Professional Colleges in the Prescribed Form, which will be sent along with the Prospectus
- For admission under Government Quota, Government Norms and Guidelines have to be followed.

General Eligibility for Ph.D Programmes

- 1.1. Master's Degree of the University or any other qualification recognized as equivalent thereto in the fields of study notified from time to time by the University. Specific educational qualifications are given in Clause 2.
- 1.2.Bachelor's Degree in Engineering/ Technology of the University or any other qualification recognized as equivalent thereto in the fields of study with a minimum of 15 years of R&D experience in National Research Laboratories / Public sector undertakings and with minimum of three publications in referred impact factor journals or two international patents in the last five years.
- 1.3.A minimum of 55% marks or CGPA of 5.5 on a 10 point scale in the qualifying examination. In case of SC/ST/ differently-Abled candidates, 50% marks or CGPA of 5.0 on a 10 point scale.
- 1.4. The Clause 1.3 does not apply, if the qualifying degree is M.S. (By Research) of the University or recognized as equivalent.

Educational Qualifications for Admission

- i. Ph.D. Degree in Engineering / Technology M.E. /M.Tech. I M.S. (By Research) in the relevant branch of Engineering or Technology
- Ph.D. Degree in Science and Humanities M.Sc./M.S. (By Research) in the relevant branch of Science and Humanities / M.C.A/ M.A. (English/Communication / Mass Communication /Journalism / Media Arts)

Ph.D. Programme

Two categories of Ph.D. programme available are: Full-time and Part-time. Candidates who satisfy the eligibility criteria as in Clauses 1 & 2 are eligible to apply for Ph.D. Programme.

3.1 Full-time Ph.D. Programme

- 3.1.1. Candidates under Full-time shall do research work in the University and shall be available during the working hours for curricular, co-curricular and related activities.
- 3.1.2. Candidates working in the projects undertaken from State / Central / Quasi Government and totally funded projects in the University Departments / University Colleges / Colleges affiliated to the University. If the Principal Coordinator / Investigator of such projects are recognized Supervisor of the University, the scholar shall register for research programme under such Supervisor only. The scholar should be appointed in a project sanctioned by a funding agency/organization atleast for a period of two years. Part employments in different spells or in different projects are not permitted. The Department/ Centre where the project is undertaken should be a recognized research centre of the University.
- 3.1.3. Candidates in employment, who want to pursue Full-time study, should be sponsored by their employer and should avail leave for the minimum duration of the programme (Clause

10) and should get formally relieved from their duty to join the research programme.

- 3.1.4. Candidates who are sponsored by AICTE under Quality Improvement Programme forteachers of Engineering Colleges and who satisfy the eligibility conditions shall apply for Full-time category only, in the Specializations as notified in the AICTE guidelines.
- 3.1.5. Candidates who are selected at National level Fellowship programmes or by any recognized bodies and who satisfy the eligibility conditions as per the regulations shall apply for Fulltime category in the respective Specialization.
- 3.1.6. Foreign Nationals sponsored by the Government of India on any exchange programme and who satisfy the eligibility conditions as per the regulations shall apply for Full-time category in the respective Specialization.

3.2 Part-time Ph.D. Programme

The following categories of candidates are eligible to apply under Part-time programme:

- 3.2.7. Full-time teachers of University Departments / University Colleges / Colleges affiliated to the University and Government /Government aided/ Self-financing Polytechnic Colleges within Tamil Nadu.
- 3.2.8. Candidates working in Industrial Units / R&D Departments / National Laboratories / Units of Government / Quasi Government or any other research laboratories which are recognized by the University to do research with the University and sponsored by the respective employer.

BUILDING **Partnerships**

Our academicians are working across discipline boundaries and collaborating with partners to tackle the biggest challenges facing the modern world.

Capgemini MoU

Industry Partners







EXTERNALLY FUNDED PROGRAMMES

No.	Project Title	Funding Agency	Amount (INR)	Year	Coordinator(s)
1.	Unequal Pay: Gender Discrimination at Workplace	National Commission for Women	30,000	2021	Dr. R. Jaya
2.	INAE-DVP Scheme	AICTE	1,00,000	2021	Dr. Deepa Jose
З.	ATAL Yuvak Scheme	AICTE	2,00,000	2021	Dr. Deepa Jose
4.	ATAL Faculty Development Programme (FDP) on AI and GIS in Surveillance of Infectious Diseases	AICTE	93,000	2021	Dr. V. Thulasi Bai
5.	ATAL Faculty Development Programme (FDP) on Block Chain	AICTE	93,000	2020	Dr. Dhanalakshmi R
6.	Incorporating the Techniques of Blockchain and Artificial Intelligence to face the Security and Privacy Challeges of IT Infrastructure (STTP)	AICTE	2,91,000	2020	Dr. Frank Vijay
7.	ATAL Faculty Development Programme (FDP) on Robotics	AICTE	93,000	2020	Dr. Shankar S
8.	Trends and Challenges in EV Echosystem	AICTE	4,42,000	2020	Dr. Deivasundari P
9.	STTP on AI and IoT Powered Solutions for Healthcare Innovations	AICTE	4,00,000	2019	Dr. Deepa Jose
10.	STTP on Cybersecurity and Resilience of Smart Grid	AICTE	3,00,000	2019	Dr. P. Deivasundari
11.	Deep Learning for Satellite Image Applications	ISRO	50,000	2019	Dr. Deepa Jose



No.	Project Title	Funding Agency	Amount (INR)	Year	Coordinator(s)
12.	Emerging Trends in Wearable Sensor for Health Care Applications	ICMR	1,00,000	2019	Dr. P. Deiva Sundari
13.	FDP on Analysis of Power System Protection and Automation: Current Scenario	AICTE	6,39,400	2017	Dr. P. Deiva Sundari
14.	FDP on Integrating Geographical Information System (GIS) into E Health and Telecommunication	AICTE	6,00,000	2017	Dr. V. Thulasi Bai
15.	Seminar on Latest Trends and Advances in Ultra Wide Band Antenna Design	AICTE	1,00,000	2017	Dr. V. Thulasi Bai
16.	Workshop on Medical Image Processing in Clinical Research and Healthcare	ICMR	50,000	2017	Dr. P. Deiva Sundari
17.	National Workshop on GIS into E-health Initiatives in India	ISRO	50,000	2017	Dr. V. Thulasi Bai
18.	FDP on Internet of Things for Ambient Assistive Living	AICTE	6,99,225	2017	Dr. Deepa Jose
19.	Seminar on Electric Drives and Challenges Of Electric Transportations in Collaboration with IR and ABB	AICTE	1,00,000	2017	Dr. P. S. Mayurappriyan
20.	Seminar on Medical Imaging for Health Care Assistance	ICMR	50,000	2017	Dr. Jose Anand
21.	SPDP for SC/ST students to develop a skill	AICTE	19,30,000	2017-18	Dr. J. Frank Vijay
22.	Hardware Verification Techniques	AICTE	2,56,000	2014	Dr.Ranganathan/ Dr. Subbaroyan



Undergraduate Programmes

- B.E. Aeronautical Engg
- B.E. Aerospace Engg*
- B.E. Automobile Engg
- B.E. Civil Engg
- B.E. Computer Science & Engg
- B.E. Electrical & Electronics Engg
- B.E. Electronics & Communication Engg
- B.E. Mechanical Engg
- B.E. Mechatronics Engg*
- B.Tech. Artificial Intelligence & Data Science
- B.Tech. Information Technology
- B.Tech. Fashion Technology

Postgraduate Programmes

- M.E. Communication Systems
- M.E. Computer Science and Engg
- M.E. Manufacturing Engg
- M.E. Power Electronics & Drives

Anna University-recognized Research Centres for PhD Programmes

- CSE
- ECE
- EEE
- Mech
- Physics



AERONAUTICA ENGINEERING

Research Activity

- Research Activities in the Department of Aeronautical Engineering are in the form of both academic and sponsored research. The latter is mainly utilized to upgrade laboratory research equipment and facilities. Industrial consultancy is also typically research-based (RBIC).
- In the department 45% of faculty are pursuing research.
- Research projects worth Rs. 15 Lakhs are ongoing, including that of CARS Scheme from DRDL-DRDO.
- Interaction with Sukrahelitek Private Limited , GMR, Capgemini and Hindustan Institute of Engineering Technology (AirCraft Maintenance) is being carried out



High Speed Jet Facility



Lear Jet Aircraft

Thrust Areas

- Computational fluid dynamics
- Vortex methods of fluid flow analysis
- Wind tunnel testing of Aerospace and Automobile models
- Jet mixing and impingement
- Fuel injection strategies
- Low-density flows
- Shock waves and hypervelocity flows
- Solid propellant combustion
- Structural Mechanics and analysis
- Analysis of plates and shells
- Composite structures
- UAV Design and Testing
- Design of Landing system for UAV
- Autonomous UAV and MAV

Laboratories

- Aerodynamics Laboratory
- Gas Dynamics (GD) Laboratory
- Aircraft Structures Laboratory
- Flight Integration system and control Laboratory
- Flight Simulator Laboratory
- UAV/MAV Laboratory
- Advanced Composite laboratory
- Aircraft Propulsion Laboratory
- Aircraft systems and Maintenance Laboratory

Facilities

- Low Speed Subsonic Wind
 Tunnel
- Supersonic wind tunnel
- Supersonic Free Jet Facility
- Cessna 1721
- Learjet 24D
- Flight Simulator Facility
- UAV and Fixed Wing aircraft
 Design facility
- Composite fabrication Facility

AUTOMOBILE ENGINEERING

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Research Activity

The Faculty members of the Department have been actively involved in Research and Development activities in the field of alternative fuels, heat transfer, new engine development, vibration analysis in vehicles etc. They had published their work in renowned National and International Journals, conferences and also filed patents in their area of research. The department has well developed infrastructures and laboratory facilities. The students are exposed to various relevant topics like design of automobile components, types of fuels used in automobiles with their property analysis, different types of energy losses in the vehicle, latest technology and standards used in engine design and manufacturing, air conditioning in the automobiles, dynamics of motor vehicles, vibration analysis, vehicle maintenance and auto electrical and electronics. Software such as ProE, MATLAB and ANSYS are being taught on workstations for design and development of vehicles.



Automotive Components Laboratory

Automotive Fuels and Lubricants Laboratory



Thrust Areas

- IC Engines
- Combustion and Emissions
- Alternate fuels
- Automotive materials
- Noise control
- New engine testing/ development
- Advanced vehicle system
 design
- Biodiesel Development and Characterisation
- Microsensor Development for IC Engines.

Laboratories

- Automotive components
 laboratory
- Automotive fuels and lubricants
 laboratory
- Computer aided engine and chassis design laboratory
- Engine performance and emission testing laboratory
- Automotive Vehicle
 maintenance laboratory
- Automotive Electrical Laboratory

CIVIL ENGINEERING



Research Activity

- The research activities in the department are actively performed by Senior Professors, Faculty of core specialization and also students under Faculty Mentors.
- The research activities are expected to produce efficient output that are beneficial to the society such as sustainable materials, energy optimization, environmental protection, conservation and rehabilitation of natural resources and more.
- Consultancy for Government organizations like 'Rural Development Department',
- 'Vellore Corporation', etc., and leading industries like Sundaram Clayton Ltd., Saint Gobain Pvt. Ltd., J. K. Geotech, Harinarayanan Structurals Pvt. Ltd. etc. were carried out by the Department.
- The Faculty Members actively submit proposals and receive funded proposals from various bodies such as 'Department of Science and Technology (DST), AICTE, etc., to promote the laboratory facilities in order to enhance research activity of the department





Thrust Areas

- Sustainable Concrete and building materials
- Precast Ferrocement Element
- Analytical models for storm water drains
- Soil stabilization using alternate and sustainable method
- Traffic Analysis and Pavement
 Evaluations

Laboratories

- Computer Aided Designing
 (CAD) Laboratory
- Concrete and Highway
 Laborator
- Soil Mechanics Laboratory
- Survey laboratory
- Environmental Engineering
 Laboratory

Facilities

- Compression Testing Machine
 Unconfined Compression
 Machine
- One Dimensional Consolidation
 Testing Machine
- Vane Shear Apparatus
- Atomic Absorption
 Spectrophotometers
- Gas Chromatography
- Ion Selective Electrode
- Oxygen Analyser
- Rotary Shaking Machine
- UV Spectrophotometer
- Flame Photometer



Research Activity

- Our line of research work continues to make its mark in industry as our Faculty members, Researchers and graduating students establish excellence through their knowledge and expertise in adapting to new technologies. The Department has grown its programmes to extend across business information systems, networking, cyber security, data science, programming and software development, web design and development, as well as game design and development. For those with wider interests, we also focus on innovation and entrepreneurship.
- The Department of CSE has been recognised as a nodal research centre by Anna University, Chennai from the academic year 2015. 60% of the Faculty are pursuing research in the Department.
- Supported by many inter-departmental collaboration and industry engagements, the Department of CSE at KCG campus is committed to continue providing endless opportunities in embedding innovation in research through the Centres of Excellence.



Thrust Areas

- Big data & Machine Learning
- Networking CISCO & CYBER Security
- Java Full stack
- Animation & Web Designing

Laboratories

- Bill Gates Computer
 Programming Lab
- James Gosling Software
 Development Lab
- Ada Lovelace Project Lab
- Alan Turing M.E Lab
- Charles Babage Computer
 Centre

Facilities

- Hadoop
- Oracle 12
- Visual Studio
- NS2
- Android Studio
- Net Beam
- Eclipses
- Adobe Reader
- Rational Rose
- JDK
- Dev C++
- Python
- OPNET

Major Servers

- Domain Server—Window Server
 2012
- Linux Server—Fedora
- Oracle Server—Oracle 12c
- FTP Server—Window Server
 2008
- Antivirus Server—K7

ELECTRICAL & ELECTRONICS ENGINEERING



- The Department of Electrical and Electronics Engineering is approved as a recognized research centre for doing Ph.D. and M.S. (By Research) programmes by Anna University. There are 3 Supervisors and 14 Scholars pursuing research in the Research Center, and 63% of Faculties are pursuing research in the Department.
- Research projects worth more than 2 Crores Rupees have been undertaken by our Faculty, including projects under Department of Science & Technology (DST) Fund for Improvement of S&T Infrastructure (FIST), AICTE, Newton Bhabha Scheme (UK University of LEEDS).
- The infrastructure and lab facilities are upgraded from time to time and they provide adequate opportunities for students and researchers to learn and innovate.
- The laboratories cater to the needs of researchers for pursuing research with latest state
 of the art equipment. It's objective is to be a vibrant research centre involved in creating an
 academic environment that is suitable for sustainable research activities, to have industrial
 tie-up for collaborative research in emerging areas, to deliver the latest research in the field
 and share the expertise from wind and solar power projects in industry.



DST supported power system laboratory under FIST Scheme



100KW Asynchronous Servo drive system for M/s Ashok Leyland for their Gearbox Testing

100KW Grid Connected Solar Power Plant

Thrust Areas

- Renewable Energy
- Smart Grids and Micro grids
- Energy management system
- Energy storage and battery
 management system
- Electric vehicles
- Electrical machines and industrial drives
- Power Systems
- Power electronics converters, Power quality

Laboratories

- AICTE MODROBS supported Advanced Power Electronics lab.
- DST Supported Power System
 Protection Laboratory
- Renewable Energy Laboratory with 100 kW Grid connected Soar Power Plant
- Power System Simulation
 Laboratory

Facilities

- MATLAB/ SIMULINK Software
- Lab VIEW Software
- ETAP 14.1.0 (R & D Version) Software
- AU Power Lab Software
- dSPACE Control Work Station
- AC & DC Motor and its Control
- Clamp Meters
- DC and AC Machines
- Stepper Motor and its Control
- BLDC Motor and its Control
- Voltage and Current Sensor Signal Conditioner
- Storage Oscilloscopes
- LCR Meter
- Converter / Inverter Modules
- UPS Training Module
- UPS Data Ac

ELECTRONICS & COMMUNICATION ENGINEERING



Research Activity

The Department has been recognized as a Research Centre for pursuing research under Ph.D. and M.S. (By Research) programmes. There are 11 part time scholars and 3 full time scholars pursuing research in the nodal research center.

- The Department has qualified and accomplished Supervisors in various domains of Electronics and Communication. Faculty members of this department have considerable academic, industrial and research experience.
- Research funds have been received from ISRO, Tamil Nadu State Council for Science and Technology and AICTE.
- The Department has specialists in the fields of Electronics, Communication Systems, VLSI Design, Wireless and Mobile Communication, Medical Electronics and in various other fields.


Optical Equipment



Spectrum Analyser



Thrust Areas

- Protocol for free space optical (FSO) - MANET networks
- Design of Digital circuits using Reversible logic
- Design of High performance Computing system
- Reconfigurable Triple Wideband Smart Antenna and Applications of Antenna
- Brain Computer Interface

Laboratories

- S. Chandrasekar EDC Lab
- Sir JJ Thomson LIC Lab
- Abdul Kalam DSP Lab
- Srinivasa Ramanujan MP&MC
 Lah
- Sir C V Raman Optical & Microwave Lab
- Dr. Jagadish Chandra Bose Communication Lab
- Dr. Gordon Moore VLSI Lab
- Amar G. Bose Research Lab

Facilities

- A separate research lab is there especially for research and projects
- CADENCE with IO User license
- ORCAD
- MATLAB
- LSIM, NSIM
- Xilinx
- MASM

FASHION TECHNOLOGY

Research Activity

- The infrastructure and lab laboratories in the department are adequate to cater to the needs of researchers and guide the students to do projects and to have industrial collaborative research work.
- The Faculty in the department are involved in research in the areas of automation and productivity improvement in garment manufacturing, product/process optimization and development, design interventions, textile material research, functional clothing, Technical textiles, textile value addition, and textile Testing and evaluation.
- Research publications and filing of patents are being carried out in the Department
- The Facilities also enable the Faculty to give consultancy services to garment start-ups, textile sector skill council etc.
- MoU's with garment manufacturers, Dyeing & Printing industries, Testing and Evaluation service centers strengthen the industry collaborations of the department.

Thrust Areas

- Functional clothing research and development
- Technical Textiles
- Value added product diversification
- Rapid prototyping
- Garment Fit and comfort
- Apparel product/ processoptimization and development
- E- prototyping
- Digital marketing and E-commerce
- UI/UX designing
- New apparel product design
- Fabric, apparel and craft Design interventions
- Dyeing, printing and finishing
- Natural dyes
- Functional and aesthetic value addition to textiles and apparels
- Improving sustainable apparel production process

Laboratories

- Joseph Marie Jacquard
- Fabric Analysis and Textile Quality
- Evaluation Laboratory
- Elias Howe Garment
 Construction
- Laboratory
- Ebenezer Butterick
- Pattern Making
- Laboratory
- Advanced Garment
 construction Laboratory
- Levi Strauss Computer Aided
 Garment Designing Laboratory
- Charles Frederick Worth
 Fashion Designing laboratory
- John Mercer Textile Chemical Processing Laboratory

Facilities

- Tenso meter
- Drape meter
- Air Permeability tester
- Bursting strength tester
- Abrasion and pilling tester
- SNLS
- Flat lock
- Button hole,
- Button sewing machine,
- Over lock machine
- Gemini CAD
- Adobe
- Marvellous
- Feed of Arm
- Chain stich
- DNLS
- Gemini CAD
- Adobe
- Marvellous
- Wacom Tablets
- HTHP
- Padding mangle
- Steamer
- Laundrometer
- Crock meter
- Hot air oven
- Perisprometer
- Screen, Block printing



INFORMATION TECHNOLOGY

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BAFOBRAC

ARRAY

98EB/80

Research Activitiesv

The faculty of Information Technology is an active and vibrant teaching and research centre with its focus strongly on obtaining the best possible career outcomes for its graduates. In an industry as dynamic as IT, students are placed at the forefront of modern technologies. Research is "creative and systematic work undertaken to increase the stock of knowledge". It involves the collection, organization and analysis of information to increase understanding of a topic or issue.

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- The Department laboratories are interconnected through a well-designed seamless network with a bandwidth speed of 100 Mbps to facilitate students' access to web resources.
- Received Rs.19,30,000 from AICTE under SPDP for SC/ST students to develop a skill development Lab during the financial year 2017-18.
- Received Rs.2,91,000 from AICTE to conduct of Short Term Training Programme (STTP) under AQIS 2019-20 during the financial year 2020-21.
- MoUs with NASSCOM, Virtusa, Guires, Pepgra, DELL EMC, Gavs and Servion have been signed to equip the Faculty with the latest cutting edge technologies for research and consultancy.
- Supported by many inter-departmental and industry projects, various research publications are being carried out in the Department.

Thrust Areas

- Artificial Intelligence
- Internet of Things
- Big Data and Data Analytics
- Cloud Computing
- Software Engineering
- Block Chain
- 5G
- Machine Learning
- Cyber Security
- Data mining
- Precision Agriculture
- Mobile Computing

Laboratories

- Steve Jobs Information
 Laboratory
- Watts S Humphrey Software
 Laboratory



Watts S.Humphrey Software Engineering Lab

The laboratory has 30 Systems with i3/i5 configuration installed with the following os/software/Tool/IDE/Security - Windows, Visual Studio/Rational ROse, Net Beans/Eclipse. Java/Dev C++, Adobe Reader/Ms-Office K7 Antivirus

Steve Jobs Technology Lab

The laboratory has 30 Systems with i3 configuration installed with the following os/software/Tool/IDE/Security - Windows, Fedora, Visual Studio/, Eclipse, JAVA/Dev C++, Adobe Reader/Ms-Office, K7 Antivirus

The following Course are handled in the Laboratory

- 1. Networks laboratory
- 2. Security laboratory
- 3. Project Development
- 4. Data Structures Laboratory
- 5. Object-Oriented Programming laboratory
- 6. Object-Oriented Analysis and Design Laboratory
- 7. Internet programming laboratory

MECHANICAL ENGINEERING

Research Activity

- Research projects worth nearly Rs. 20 Lakhs have been undertaken by our Faculty, including the project under the AICTE RPS Scheme.
- The Department of Mechanical Engineering has been recognized as a nodal research centre by Anna University, Chennai from the academic year 2015. At present there are 3 supervisors and 32 research scholars in the research centre.
- Research activities are carried out on Machining, Manufacturing, Metal Joining, Modeling, Artificial Intelligence, Characterization, Supply chain, Materials, Heat Transfer, Alternate Fuels, IC Engines, Solar Energy, Vibration and condition monitoring studies, Hybrid Systems, MRF Dampers, Polymer Composites and Metal Matrix Composites.





Hydrogen Dual Fuel Engine



Pot Erosion Tester

Aluminum Stircasting setup



Thrust Areas

The Department of Mechanical Engineering builds on the field's strong core disciplines to design solutions to modern engineering challenges and applies these core strengths to key thrust areas of highly relevant current and future need.

Major Field Areas

- Controls & Dynamics of Complex Systems
- Design Energy Science and Technology
- Green and Sustainable
 Technologies
- Energy Science and Technology
- Micro and Nano Engineering
- Biomechanical Engineering
- Materials
- Manufacturing
- Mechanics
- Dynamics
- Fluids

Facilities

- Aluminium Stir casting Furnace
 with Hydraulic power pack
- Slurry corrosion
- Erosion tester
- Hot extrusion die with furnace
 with Hydraulic power pack
- Computer controlled potentiostate Galvanostate & standard corrosion cell kit
- Hydrogen Duel fuel Engine
 Setup

MATHEMATICS

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Research Activity

- The Faculty of the Department carry out research in diversified fields and publish papers in reputed journals.
- The Department organized a two days National Conference on Fuzzy Sets and its Applications.
- Five Faculty members of the Mathematics department are doctorate degree holders. The department includes distinguished Anna University and Hindustan University research supervisors

Thrust Areas

- Functional Analysis
- Theoretical computer science
- Fuzzy Analysis
- Fuzzy Models
- Fuzzy Optimization
- Stochastic Models and Queuing Models
- Formal Languages and Automata theory
- Stochastic Models in Manpower
- Planning
- Operations Research
- Graph Theory

PHYSICS



Research Activity

- The department is approved as a recognized research centre for doing Ph.D. and M.S. (By Research) programmes by Anna University.
- The Faculty of Physics are equipped in various fields of research, publish papers in reputed journals and present papers in conferences.
- Multidisciplinary Research is also undertaken with inter-departmental collaborations.

Thrust Areas

- Computational Physics
- Laser
- Crystal Growth
- Weather Predictions

Facilities

- Non-Linear Dynamics
- Licensed software of Gaussian 09 and Gaussview 05

Findings

- Herbal Drug efficacy
- Laser Dyes



Research Activities

The Chemistry Division consists of research groups which involve in interdisciplinary research and educational activities. The division focuses on research thrust areas like environment, health, sensor and disease. Faculties are engaged in a wide variety of projects that involve

• The synthesis of nano materials with controlled compositions, sizes, shapes, structures, and properties;

• Investigation of the relationships between size, shape, structure, and property;

• The fabrication of electronic/photonic/sensing devices; and iv) the exploration of new applications in catalysis, photonics, information storage, energy harvesting/storage/ conversion, environmental science, imaging, and biomedicine.

•The exploration of new applications in catalysis, photonics, information storage, energy harvesting/storage/conversion, environmental science, imaging, and bio medicine

The rigors of chemistry at each level are balanced with a number of other related activities, which include guest lectures, science day celebrations and seminars. The division organized few two days National Conferences on important themes in the past to discuss and disseminate new and imperative research findings that alleviate global issues. The Faculty has published many research articles in various reputed peer reviewed journals. The Faculties with Ph.D in the division are recognized Anna university research supervisors.

Thrust Areas

- Nanoscience and technology
- Biofuels
- Materials Chemistry
- Biomaterials
- Polymer Composites
- Green Chemistry
- Environmental Chemistry

Facilities

Hydrothermal autoclave

Laboratories

- Environmental and synthesis laboratory
- Magnetic stirrer
- Oil Temperature Controller
- Heating Mantle
- Wet Synthesis equipments
- Hydrothermal autoclave

Findings

The following is a collage of the significant findings by our faculty in recent years

•Enhancement of heat transfer in automobile radiator Using CuAl2O4 Nanofluids Biogenic synthesis of metal nanoparticles for potential application.

•Temperature & pressure controlled steam inhalation kit with tube.

•Nitrogen doped NiCO2O4 impregnated porous carbon electrode development for hydrogen generation from waste water.

The Department is enthusiastically involved in various cutting-edge and exciting research areas. Our strong commitment to research is evidenced by publications in top most international journals leading to a total of 74 publications with + 765 citations. The impact of this research has led to the bestowment of, Editorship/ membership of Editorial boards of International Journals, as well as Institute teaching excellence awards on our Department faculty.

The Department is also actively involved in conducting Seminars, conferences, quiz competition and outreach activities for technological awareness among school children. The Department has also hosted two national conferences.







PATENTS

Intellectual Property Rights:

About the IPR Cell at KCG College of Technology

The IPR Cell of KCG College of Technology looks after the activities related to the Intellectual Property of the Institution and also to create awareness among faculties, research scholar and the students of the Institution. Workshops and seminars were conducted frequently to equip the inventors with skills to convert their ideas in to a patentable document. Also, external training on patent drafting, patent laws and acts were provided for the faculties to facilitate the patent filing process of the institution. The IPR cell promotes the novelty ideas of the faculty and students and fund them to file their patents and work on their inventions. About 55 patents have been filed by the faculty and students as the inventors.

Functions & Responsibilities

- To create an awareness about IPR among faculties and students
- To impart training on future endeavors regarding patent filing process
- To conduct workshops, seminars and training course on IPR
- To promote better understanding of IPR and to identify more IPs



Copyright & Patent Granted (Total: 34) Patent - 29

SI.No	Inventor Name(s)	Title	Year of Grant
1	DEEPTHI RAMESH DEEPA JOSE KEERTHANA R KRISHNAVENI V	DETECTION OF PULMONARY NODULES USING THRESHOLDING AND FRACTAL ANALYSIS	2021
2	R GAYATHRI P DEIVA SUNDARI	AN OVERVIEW OF ELECTRICAL AND THERMAL ANALYSIS OF INSULATION PROPERTIES OF DIFFERENT TRANSFORMER OILS	2021
3	S GOWTHAM M AMMAL DHANALAKSHMI P DEIVA SUNDARI	MODELLING AND EXPERIMENTATION OF MODIFIED CASCADED MULTILEVEL INVERTER WITH OPTIMIZED OUTPUT	2021
4	M PRATHIBA DEEPA JOSE R SARANYA S NANDHINI DEVI	AUTOMATED MELANOMA RECOGNITION IN DERMOSCOPY IMAGES VIA VERY DEEP RESIDUAL NETWORKS	2021
5	R.DHANALAKSHMI, SEENAIAH PEDIPINA	SENTIMENT ANALYSIS OF TWITTER POLITICIAL DATA USING GRU NEURAL NETWORK	2021
6	DEEPA JOSE PRAVEEN KUMAR S SANJAY S	IOT BASED VIRTUAL HEALTH MONITORING SYSTEM	2021
7	G. MOHAMED ZAKRIYA, M.TEC., (Ph.D)	JUTE-HOLLOW CONJUGATED POLYESTER FIBRE NONWOVEN FLEXIBLE COMPOSITE PADDING MATERIAL	2021
8	R.PATRICK PIOUS A.ANANYA S.RAJESH P.DEIVA SUNDARI	RENEWABLE ENERGY SUPPORTING DC CEILING GRID	2021
9	DR.G.RAMAKRISHNAN, DR.B.POONGODI, DR.C.VELUMURUGAN, G.MOHAMED ZAKRIYA	LOW WEIGHT JACQUARD HOOKS FOR HANDLOOMS	2021
10	MALARVEL, MUTHUKUMARAN AND KATHIRAVAN M.	A DEVICE FOR CONVERSION OF VISUAL GESTURES INTO HANDWRITTEN OF DEAF / PHYSICALLY CHALLENGED PEOPLE	2021
11	MUTHUKUMARAN, G.; RAMACHANDRAIAH, UPPU AND VIJAYABALAN, P.	A PATIENT ESSENTIALS TRANSPORT SYSTEM	2021
12	G. DINESH KUMAR; GOWRISHANKAR, D.; KRISHNAMOORTHY, VISHWAJEETH; CHIDVILAS, N. V.; SURAJ, V.; N., NITEESH; NEERAJ, VENKATA AND SRITHA, K.	A HALBACH TUGGING SYSTEM FOR AIRCRAFT	2021
13	V, AMUDHAN AND KIRUBAKARAN, P.S.B.	A PASSIVE VIBRATIONAL CONTROL SYSTEM FOR SEISMIC LATERAL SUPPORT SYSTEM OF STRUCTURES	2021
14	D. RAJA JOSEPH. AND T. LIBIN	A GAS TURBINE COMBUSTOR DEVICE	2021

SI.No	Inventor Name(s)	Title	Year of Grant
15	RAJESWARI, M, PROFESSOR, MBA	A SYSTEMATIC METHOD FOR CORPORATE FINANCIAL INFORMATION AS PUBLIC INFORMATION USING BIG DATA CLOUD	2021
16	SHANMUGAM, MARIYAPPAN; SHOWN, INDRAJIT AND SRIDHARA, S. N.	A PROCESS FOR DEVELOPING HIGHLY TRANSPARENT STICKABLE-PEELABLE SOLAR CELLS FOR BUILDING INTEGRATED PHOTOVOLTAIC DEVICE	2021
17	SELVAMUTHUKRISHNAN, B.; V., AMUDHAN AND SEBASTIN, KIRUBAKARAN	A DEVICE FOR CAPTURING VARIABLE ANKLE INJURY USING NFC	2021
18	SINHA, ANURAG AND SREEJA, P. S.	SINHA, ANURAG AND SREEJA, P. S.	2021
19	VALLIKANNU, AL.; VINOTH, M. AND DIDEROT P, KUMARA GURU	A LOW-PROFILE DESIRED BEAM ANTENNA DEVICE FOR V2X-5G COMMUNICATION	2021
20	M., SAMBATH; SUDALAIMUTHU, T.; J., THANGAKUMAR AND E., SANGEETH KUMAR	A PORTABLE DISHWASHER DEVICE	2021
21	PERUGU, PRATHUSHA; MADIWAL, SHWETA M.; SEKHAR, CH.PUNYA; ARJUNAGI, SHRAVANKUMAR; JOSE, DEEPA; BIRADAR, SIDDALINGAPPAGOUDA; CHANDNANI, NEERAJ; SETHY, ABHISEK; MEENA, MAMTA; SIRISHA, G.; MALATHI, P. SREE RATHNA; MANJUNATH, T.C.; G., PAVITHRA; RANJANI, R; URKUDE, ASHISH MANOHAR; URKUDE, SUREKHA ASHISH; H, GIRISH	AN ARTIFICIAL INTELLIGENCE BASED SYSTEM FOR DETECTION OF COVID INFLUENCE ON HUMAN SKIN	2021
22	SRINIDHI V, SRIVIDYA K, SANKAR S, DHANALAKSHMI R	DESIGN AND DEVELOPMENT OF KCG - AGILE MEETING DASHBOARD	2021
23	DR. MOHAMED ZAKRIYA.G, DR.ANDAL.V	A PORTABLE TEMPERATURE AND PRESSURE CONTROLLED STEAM INHALATION APPARATUS	2021
24	RANI V., KANPUR; A. L., VALLIKANNU AND MUTHU, T. SUDALAI	AIR POLLUTION MONITORING SYSTEM USING INTERNET OF VEHICLES AND POLLUTION SENSORS	2021
25	VISALAXI, MS. AND MUTHU, T. SUDALAI	A CONVOLUTIONAL NEURAL NETWORK-BASED SUSTAINABLE METHOD FOR CLASSIFICATION OF ENDOMETRIOSIS LAPAROSCOPIC IMAGES	2021
26	MANOJ, ALURI; AWARI, G. K.; SEKHAR PUHAN, PRATAP; BIKASH ACHARJEE, PURNENDU; BALAJI, B. SARAVANA; KUMAR SAHOO, KALYAN; HUSSAIN SHEIKH, TARIQ; MURAT SINGH, RAM; MISHRA, VIBHOR; BABBAR, ATUL; SHARMA, ANKIT; SANKAR, S.; DHALL SAMANTA, LOKANATHA	3D PRINTING OF COST-EFFECTIVE HUMAN SKULL MODELS AND SKULL IMPLANTS	2021

SI.No	Inventor Name(s)	Title	Year of Grant
27	THOMAS, S. JESUDASS; GOPAL, V.; KUMAR, M. VIGNESH; GOBIVEL, K.; KANNAN, S. RAJESH; K. V., ARUN; KUMAR, T. CH ANIL; ARSHAD, HAQQANI; B. R., VINOD; KOTEN, HASAN; BATIYAH, SALEM MOHAMMED; AJMAL, MOHAMMED	AN INVESTIGATION OF ABRASIVE WATER JET MACHINING ON GLASS FIBER REINFORCED POLYMERS	2021
28	JACOB, ANNIE; SUNDARI, P. DEIVA; ANURADHA, T.; MURUGAN, R. AND TONY, A. ARVIN	A PROCESS FOR DESIGNING OF CYBER PHYSICAL CONTROLLER FOR OPTIMAL DISPATCH OF VIRTUAL POWER PLANT	2021
29	CHANDRA PANDA, RAMESH; NAGPAL, NEELU; RAKSHIT, PRANATI; D., LAKSHMI; PANDIAN, P. PAL; NAGRATH, PREETI; MISHRA, AMARNATH; P. GANDHI, PRIYESH; SNEHI, JYOTI; KHURANA, JYOTI; PAL, SOUVIK; SANKAR, S.; VENKAT REDDY, R.; BHAVYASRI, K	AQUA LIFE A COMPACT DEVICE EXTRACTING DRINKABLE WATER FROM SEA WATER	2021
30	R, DHANALAKSHMI; I R, PRAVEEN JOE; M, THENMOZHI; T, JUDGI; C, DHAYA; B, PRAKASH; G, NIRANJANA; A, PUNITHA	PROFILE BASED DIGITIZATION OF MEDICAL RECORDS IN CLOUD	2021
31	K KARTHIKEYAN- ASSOCIATE PROFESSOR DEPT OF E&I, KCG KCG COLLEGE OF TECHNOLOGY, ETC	ELECTRIC VEHICLE CHARGE MANAGEMENT AND MONITORING SYSTEM BASED IOT	2020
32	V., BALAJI; S., KALIAPPAN; T., MOTHILAL; P., MURUGAN; R., KUMUTHA; D. S., EZHUMALAI; K., THANIGAVELMURUGAN; B., RAJA MOHAMED RABI; S., SOCRATES; R., RAVIKUMAR	AN APPROACH TO HETEROGENEOUS MULTIDESIGN BASED FLOOR PLANNING AWAR WITHTHERMAL POWER DELIVERY	2020
33	S., KALIAPPAN; V., BALAJI; T., MOTHILAL; S., SELVAKANMANI; S., ARUN; T., GODHAVARI; U., JAYALATSUMI; P., MURUGAN; G., VASUKIDEVI; K., TAMILARASI	DESIGN OF A COLLAPSIBLE AND PORTABLE LACTATION MODULE FOR MOTHERS	2020
34	T., MOTHILAL; S., KALIAPPAN; V., BALAJI; L., NALINI JOSEPH; S., ARUN; K., KARTHIKEYAN; G., MUTHU; R., KUMUTHA; K., THANIGAVELMURUGAN; S., SENTHIL KUMAR	DESIGN AND DEVELOPMENT OF SMART SUIT FOR ASSISTING THE PREGNANT WOMEN	2020

Patents Published

SI.No	Inventor Name(s)	Title	Year of Grant
1	GOWTHAM S, C H KARTHI, EDWIN EMANUEL RAJA, AARON PETER, JISHNU RAJA, GOKUL RAAJ	COST EFFECTIVE SEWAGE CLEANING BOT	2021
2	1. DR. S. SHAJUN NISHA 2 . DR.R.ABLIN 3 . R. RATCHANA 4 . DR.M.SURESH 5 . DR PRIYADHARSHINI BHUPATHI 6 . SURESHA D 7 . MR. J.S.PRASATH 8 . AKSHAY S 9 . DR.N.B.PRAKASH 10 . MR.S.PRATHAP 11 . DR. M.VIJAYA BHASKAR REDDY MOPUR 12 . DR.R.ATHILINGAM 13 . DR. VISHAL JAIN 14 . DR. MOHAMED JAFFER SADIQ MOHAMED 15 . DR. MAHALINGA V MANDI	DEVELOPMENT OF IMAGE PROCESSING BASED FRUIT SPOILED DETECTION SYSTEM	2021
3	P.S.ARAVIND RAJ, V.VANDHANA DEVI, R.DEEPAK	SHEAR WEB KEY FOR REINFORCED CONCRETE BEAM	2020
4	DR.R.T.SARATHBABU 2)DR.M.KANNAN 3)DR.S.SANTHANA KRISHNAN 4)DR. V. V. PRATHIBHA BHARATHI 5)V.V.NAGA DEEPTHI 6)MS. NILESHA UMRAO PATIL 7)NILESH VIJAY SABNIS 8)KONDRAGUNTA KOTESWARARAO 9)DR. KUNDAN KUMAR. D 10)RADHA KRISHNAN P 11)DR. MUKESH R 12)DR. K. KANTHA RAO 13)AKULA DHANA RAJ	METHOD AND COMPOSITION FOR REDUCING EMISSIONS FROM A COMPRESSION IGNITION ENGINE AND ENHANCING PERFORMANCE	2020
5	DR. S. BALAKRISHNAN 2 . MR. VINOTH R 3 . MR. JIMSON L 4 . MS. SYLVIA GRACE J 5 . MR. RANJITH KUMAR A 6 . MS. MENAGA D	A DESIGN AND DEVELOPMENT OF SMART AQUACULTURE SYSTEM IN A CLOUD ENVIRONMENT USING IOT	2020
6	DR. M. KRISHNAMURTHY, DR.G.CHARLYN PUSPALATHA, MR.SSRIDHAR, A.PRIYA, N.GAYATHRI,KARTHIK	INTELLIGENT BREAKING ASSISTANCE	2020
7	DR.S. JAYAKUMAR S, DR. R.ANAND, DR.S.PAPLIAPPAN, DR.RAMA PARVATHY, DR.SRIRAMYA, DR.KARTHIKA, DR.ANTONIRAJ	A SYSTEM AND METHOD OF BIOMETRIC IDENTIFICATION BASED ON DISTRIBUTED	2020

SI.No	Inventor Name(s)	Title	Year of Grant
8	G. PETCHINATHAN K. SRINIVASASRICHARAN R. R. BHARATH T. THIAGARAJAN S. SUSHANTH KUMAR	METHOD AND APPARATUS FOR THE TYRE PRESSURE INFLATING AND CONTROLLING SYSTEM FOR THE MOVING VEHICLE	2019
9	N. SIVAKAMASUNDARI M. LAVANYA	LIFE TIME MEASUREMENT OF FREE CHLORINE & OTHER RELATED COMPOUNDS	2019
10	GAYATHRI R ASHISH A ABRAHAM JOSHUA ABRAHAM THOMAS PRASANALAKSHMI V RAMYA R	SMART RAILWAY PLATFORM	2019
11	R. RAVI CHANDRAN VINOTHKUMAR M. VIGNESH MADHUBALAN SATHISH KUMAR KARTHIKEYAN. K S. ARAVINDAN	DESIGN AND FABRICATION OF ADAPTIVE LANDING	2019
12	NARESH A NATARAJ S EASU D SUMATHIPOOBAL	AUTOMATED LIFT SYSTEM	2019
13	M. ARUL INIGO RAJA ADITYANINAN OOMMEN' A ELVIS JONATHAN DAVID KURUVILLA ABRAHAM K	DESIGN AND FABRICATION OF COMPLETE WASTE REMOVAL SYSTEM	2019
14	D. MURALIKRISHNAN V. ANDAL SARAVANAMUTHU. A VIGNESH . S.K YUVARAJ. S	ENHANCEMENT OF HEAT TRANSFORMER IN AUTOMOBILE RADIATOR USING CUAL2O4NANOFLUIDS	2019
15	TAMILSELVI.S; SUMATHI.R; AMRUTHA.R	IOT INTEGRATED SOLAR RADIATION PREDICTION USING FIVE ELEMENTS OF NATURE	2019
16	EASU D SIDDHARTHAN A AMRUTHA R	SUSPENSION SYSTEM USING MRF AND HYBRID MAGNET	2019
17	P S MAYURAPPRIYAN B. BRINDHASAKTHI P NAVEEN HINEST RAJ S NAVEEN KUMAR J NIXON MANUEL	ENERGY EFFICACY USING RASPBERRY PI	2019
18	V. GOPAL R. BHARANIDHARAN SURYA.G	DESIGN OF FLEXURE HINGES TESTER	2019
19	P. SELVIRAJENDRAN	GESTURE SUPPORTING VIRTUAL BULLETIN BOARD USING AUGMENTED REALITY	2019
20	SUBASH CHANDRA BHARATHI P.DEIVA SUNDARI SAIAKSHAIYA S SANGEETHA D VISHALI.D	FAIL-SAFE PROTECTION SYSTEM IN VEHICLES USING SMART HELMET	2019
21	VIJAY C, BHARATHI N,SAMUEL EBENEZER	CONVICT SURVEILLANCE FOR SAFETY	2019
22	K VIJAYARAJA C AASISH	INTERACTION OF UNMANNED FLYING MACHINES WITH OBJECTS ON THE GROUND	2019
23	JOSE ANAND	IOT SENSORS FOR BIOMEDICAL PARAMETERS	2019
24	KAVITHABALAMURUGAN	LIFE VEHICLE COMMUNICATION USING LIFI	2019
25	B. THYLA	BHRTYARTANA - A PIPE CLEANING ROBO	2019

SI.No	Inventor Name(s)	Title	Year of Grant
26	MS. THANU JAMES M. BALAMURALI R. SHINTO M. VENKATESAN S. NANDHAGOPAL	WATER MANAGEMENT SYSTEM USING INTERNET-OF-THINGS (IOT)	2019
27	B. RAMMYAA; D.SUNDARASEKARAN C.VIJAY, ASWIN	AUTOMATIC IRRIGATION MONITORING AND CONTROL USING WIRELESS SENSOR NETWORKS	2019
28	DEEPA JOSE BABU. I	STENOGRAPHY TECHNIQUE FOR SECURE DATA HIDING CAPACITY IN MIMO-SFBC-OFDM (4G/5G) CODING CHANNEL FOR DEFENCE APPLICATION USING FPGA	2019
29	DR.V.ANANTHA KRISHNA, DR.T.K.S.RATHISH BABU , DR.M.RAMASUBRAMANIAN , DR.N.M.BALAMURUGAN , DR.V.BALAJI , DR.DASARI MADHAVI , PUTTA SRIVANI, DR.GAUTAMI LATHA ANGA , DR.G.KANNAN, PRASANTHI. GOTTUMUKKALA	AN APPARATUS AND METHOD OF ARTIFICIAL INTELLIGENCE SECURITY WEARABLE SYSTEM WITH INTERNET OF THINGS	2019
30	DR. V. BHOOPATHY, DR. SRIPADA RAMA SREE , DR. S. BABU, DR. SUDHAKAR PERIYASAMY, DR.T.PREM JACOB , DR. P. KUPPUSAMY, DR. R.C.KARPAGALAKSHMI, DR.R.ANAND	SYSTEMS AND METHODS FOR CONSUMPTION AND GENERATING POWER THROUGH THE FLOW OF WATER	2019
31	DR.R.ANAND KCG COLLEGE OF TECHNOLOGY DEPT OF IT	A SYSTEM AND METHOD OF BIOMETRIC IDENTIFICATION BASED ON DISTRIBUTED INTERNET-OF- THINGS LOCK AND UNLOCKING THEREOF	2019
32	1)K.S.SREENIVA SAN 2)DR.N.K.RAJAN 3) DR.S.BALASUB RAMANIYAN 4)DR.G.PRABHA KARAN 5) D.THANIKAIVE L MURUGAN 6)M.PRABA 7)V.KISHOR KUMAR 8)DR.S.SRIDHAR 9) K.ANITHA 10)S.BARATH	AN APPARATUS FOR TRASH COLLECTION WITH USER INTERFACE SYSTEM	2019
33	N. NIJANDHAN, K.PRIYATHARSHINI	EMERGEION	2017
34	S.THANIGAIARASU DHARMAHINDER SINGH CHAND R. ASAD AHMED	METHOD AND DEVICE FOR CONTROLLING SONIC UNDER - EXPANDED JETS	2017

CENTRE OF EXCELLENCE

KCG–BOSCH CoE in Medical Electronics

Objectives

- To create awareness at grass root level on eye problems
- To screen and prevent diabetic retinopathy at early stages
- To eradicate eye problems caused by diabetes mellitus
- To enable last mile connectivity thereby reaching the rural community
- To develop innovative devices for preventive healthcare and mass screening
- To explore research opportunities in futuristic technology like IoT, AI and Block Chain on healthcare applications
- To engage in technology dissemination to students and involve them in outreach programmes





KCG-DELL EMC CoE in Data Science

Objectives

- To enhance hands-on training for about 150 students every year
- To acquire consultancy works and research projects
- To train and produce students who are industry ready
- To motivate students and researchers to publish quality papers in the field of data analytics in reputed international journals and conferences
- To conduct a variety of events in the field of data science and data analytics

KCG–EFY Tech Centre

KCG College of Technology has launched a Technical Center by name EFY–KCG Tech Center, in collaboration with Electronics For You, a very popular technical magazine catering to the needs of Electronics hobbyists. EFY–KCG Tech Center will provide Hands-on technical training in the latest fields such as Arduino, Raspberry Pi, Embedded System, PIC Microcontrollers,



VLSI Design and Basic Electronics. On successful completion of the course, the trainees will be provided the coveted EFY Certificate, which is recognized by the industry all over India.

KCG–CDCE CoE in Factory Automation and Robotics

KCG-CDCE-MSME Centre of Excellence was inaugurated in 07th Feburary 2017 by Mr. S. Arunachalam Plant Head, IFB Automotives Pvt Ltd, Chennai. KCG-CDCE has a vision to provide budding engineers an opportunity for industrial exposure. This gives a regular theory-oriented rigmarole filled student a fresh perspective, the urge to build & the skill to achieve it. We provide



hands-on training from professionals in industrial automation & robotics.

KCG-CDCE product profile consists of Manufacturing of Special Purpose Machines, Test Rigs, Assembly Stations, Conveyor Systems, Work Stations, Electrical Panels, Automation Panels, LT Panels, PLC Panels, Robotics, Jigs and Fixtures. KCG-CDCE Centre of Excellence does Consultancy projects for Automobile Industry, Food Industry, ETP, STP, Engineering and Chemical Industries.

Objectives

- To build experimental knowledge about sensors, transducers, hydraulic, pneumatic and electropneumatic circuits.
- Identify the basic components of the PLC and how they function
- Develop the interfacing circuits necessary for various applications
- Explain the Barcode automation system and its function
- To build experimental knowledge about machine vision system and its function

KCG–NSDC CoE in Renewable Energy

Objectives

- To promote environment friendly power generation
- To train students with Solar PV
 Installation
- To give hands on training exposure to students in the area of Solar and Wind energy
- To support initiatives in Solar Energy and wind energy
- To fill the gap and helping our country to become a clean and green energy nation
- To design courses in green jobs





KCG CoE in Simulation Dynamics

Aircraft simulators or flight simulators try to replicate and reproduce the experience of flying an aircraft. They are now extensively used in the aviation industry for design and development and to train air crew in both civil and military aircraft. Aircraft simulators have proven to be an essential element of flight training for individual general aviation pilots and airline flight crew.Flight simulation involves the representation in a simulator environment of the flight and systems characteristics of an aircraft.

KCG—GE CoE in Substation Automation & Smart Grid



Substation automation and smart grid Centre of Excellence (CoE) exposes the art and science of latest protection engineering, substation operation and control to the engineering graduates, post graduates, research scholars, industry professionals and technicians. Substation automation offers an opportunity to increase the plant productivity with the aid of enhanced protection schemes as well as condition monitoring for generators, power transformers, bus bars, etc. Numeric relays and Intelligent Electronic Devices are an integral part of the substation automation system.

Under the CoE, the State of Art Power System Protection Lab facility is established. This lab is commissioned with the GE to make Numerical Relays viz., Distance Protection Relay, Transformer Protection Relay, Bus bar Protection Relay, Generator Protection Relay, and Motor Protection Relay.

Highlights of the Lab

- Numerical Relays are housed in four separate panels for various Protection Applications along with Backup Electromechanical Relays
- Bay Control Unit (BCU) for Remote control of Isolator/Breaker
- GPS system for time synchronization of all these numerical relays
- All numerical relays are connected to a common server through Ethernet & Fibre Optic cables for monitoring the relay operations
- OMICRON make computerised Relay Test kit for state of art testing
- Electrostatic Discharge flooring for safety of solid state components in relays
- ETAP software in a separate system provided for relay coordination, Power System Analysis & Fault Analysis studies

- The ambience of the lab gives the true feel of industry and substation control room environment
- Power Quality Analyser for studying harmonics

Objectives

- To collate resources and industrial expertise in order to upgrade knowledge and professional skills of students and industry professionals
- To provide opportunities for scholars to pursue research activities in the area of Power Systems, Substation Automation, Digital Protection and all Smart Grid components
- To facilitate expert talks, conferences and hand on workshops in the field of protection and substation automation in order to bridge the skill gap between the industry and academia



KCG—Intel CoE in IoT

KCG College of Technology is always at the forefront of innovation and entrepreneurship. As the traction is now towards IoT, the ecosystem in the institution nurtures student innovations through Special interest Group on IoT and IoT Club.

To fulfill the vision of our Founder Chairman Dr. K.C.G Verghese towards leading the institution towards global technology, the Centre of Excellence for IoT- an initiative of KCG College of Technology, Chennai in association with Intel Corporation is expected to promote an IoT ecosystem, which is vibrant and at the same time innovative, which will help our students and faculty to develop prototypes and products.

Objectives

- To collate resources and industrial expertise in order to upgrade knowledge and professional skills of students and industry professionals •
- To provide opportunities for scholars to pursue research activities in the area of Internet of Things(IoT), Industrial Automation, Edge Computing and Sensor Design
- To facilitate expert talks, conferences and hand on workshops in the field of protection and substation automation in order to bridge the skill gap between the industry and academia
- To prepare Electronics and Electrical Engineering students with the requirements of the job market in the field of Industrial IoT, Automation and Sensors.





KCG–Autodesk Centre of Excellence

Autodesk Centre of Excellence in the Department of Civil Engineering is intended to impart knowledge and skills on various Autodesk software to our young Civil Engineering graduates and prepare them for the real job market as required by the Engineering design industry. Our training courses focus on project based productivity enhancement training to augment employability of graduating students by meeting the demanding requirements of the engineering industry. Through CoE, the department has accomplished various programs like,

- Faculty Development Programmes on emerging technologies
- Workshops for students
- Student expert programs
- Student design competition by Autodesk
- Latest technology update for faculties

The CoE facilitates the Civil Students to be trained and certified by Autodesk according to Industry Standards and Industry Workflows. The design studio is provided with latest software updates, making it unique and offering a wide range of research and training for students and also assisting them with individual design projects. Autodesk Certified Trainers are deputed to handle the training for the students trained through CoE and also are provided with E-Books & Certificates from Autodesk. Periodical assessment of the students' progress is monitored during the training program. The focus of this centre being teaching, training, research, skill and technology excellence, it is possible to generate ignited and innovative talented students.

KCG–Virtusa CoE in Java

KCG College of Technology and Virtusa Corporation have partnered to launch a Centre of Excellence on Java and New-Age Technologies on 4th December 2018. Through this initiative the students and faculty of the college will get the benefit of industry-oriented training and exposure to new-age technologies that are soughtafter at today's workplace.

Virtusa Corporation, a global provider of digital strategy, digital engineering, and IT outsourcing services, will bring to the table its expertise in updating students of KCG College about emerging technologies that are trending in the IT Industry. Virtusa will do this by providing hands-on exposure and training to the students on these technologies thereby making them industry ready during their period of study at the institution. Virtusa will provide training to the faculty members of KCG in the areas of microservices, big data, machine learning, block chain, cloud computing, and artificial intelligence and this will help the Centre of Excellence to train students on Java-based current technologies creating a student talent pool with industry-ready skills.

Outcomes:

10 Students have received offer from Virtusa in 2019

KCG–Oracle Academy

Oracle Academy is an educational program that advances computer science globally to drive knowledge, innovation, skills development, and diversity in technology fields. The program supports continuous computer science learning at all levels by providing a variety of free resources including technology, curriculum and courseware, student workshops, educator training, and Oracle industry certification.



KCG, being an academic partner with Oracle, continues to offer Java fundamentals certification courses for the CSE and IT Students and has already given training certificates to more than 200 students. In addition to this, KCG and Oracle Academy organise different programmes including Student Day showcasing digital technological advances and IT related themes in which Oracle employees share their knowledge of the latest in technology as well as their personal career journeys within the IT industry. The students also get a chance to showcase their talents before industry veterans.

KCG - Bosch CoE in CARVE

The joint training centre established in the field of automobile technology is envisaged as a combination of hardware, teachware and courseware to impart industry oriented training to the undergraduate, post graduate and polytechnic going students, to meet the industry requirements by bridging academic gap and enhancing the competency levels of students. The training also increases the employability and provides an opportunity for students to pursue their entrepreneurial dreams in the field of fuel system testing.

Objectives

- To provide hands on experience on technologies that bridges the industryacademia gap
- To understand the Bosch auto product test equipments
- To gain knowledge and analyze various automobile sensors, actuators, diagnostics in vehicle injection systems through Bosch advance course model.
- To provide in depth training in Automotive Electrical Test Bench
- To provide training in Automotive Air-Conditioning System



Automotive Electrical Test Bench

Automotive Air-Conditioning System

KCG-CISCO Networking Academy

cisco Academy

Academy Years of Service



This award is presented to

KCG College of Technology

for FIVE YEARS of active participation and dedicated service in Cisco Networking Academy.

Award date: 2019

Omet Shat

Omar Shaban, Director of Global Operations Cisco Networking Academy

KCG College of Technology and CISCO have partnered through CISCO networking Academy, an IT skills and career building program since 2015. Cisco Networking Academy is the largest, longestrunning educational program of its kind offering courses and resources for the technologies that matter most, including networking, programmable infrastructure, and cybersecurity.

Cisco Networking Academy delivers a comprehensive, 21st century learning experience to help students develop the foundational ICT skills needed to design, build, and manage networks, along with career skills such as problem solving, collaboration, and critical thinking. Students' complete hands-on learning activities and network simulations to develop practical skills that will help them fill a growing need for networking professionals around the world.

Networking Academy helps students prepare to assume entry-level ICT jobs, pursue additional training or education, and earn globally recognized certification so they can maintain networks that form the backbone of today's and tomorrows global economy. Through this initiative the students and faculty of the college will get the benefit of industry-oriented training and exposure to new-age technologies that are sought after at today's workplace such as

- Networking
- Security CCNA Security, Cyber Security and Cyber Operations
- Internet of Things (IoT)
- Cloud Technologies
- OS & IT
- Packet Tracer
- Programming

KCG-CISCO Networking Academy

- CCNA GLANCE OF ROUTERS &
 SWITCHES
- CCNA GLANCE OF CYBER SECURITY
- CCNA GLANCE OF IoT

KCG-AWS ACADEMY

AWS Academy Certified Cloud Practitioner

KCG College of Technology and Amazon Web Services (AWS) have partnered to launch a Centre of Excellence on "AWS ACADEMY CERTIFIED CLOUD PRACTITIONER" Value Added Program from 09-12-2019 onwards. As part of additional skill training and certification program with AWS ACADEMY for our CSE and IT students under Cloud Computing Verticals. Skill development is a peak term these days and every organization is focused to hire skilled employees or train them to get good skills prior to hands-on jobs. The responsibility lies in the hands of higher education institutions, to equip their students with employable skills and knowledge to make them employable.

KCG-AWS offers curriculum for our students to develop in-demand cloud computing skills and prepare for industry-recognized AWS Certification. AWS Academy curriculum is designed to be delivered over a semester, and helps students develop technical expertise in cloud computing and prepares them for AWS Certification. The curriculum is taught through In-class instruction, hands-on labs, online knowledge assessments and project work.



The KCG-AWS Certified Cloud Practitioner course is for anyone looking to learn and understand core offerings of the Amazon AWS Cloud. It is intended for individuals who have no prior knowledge on Amazon AWS and who wish to progress their career by effectively demonstrating an overall understanding of the AWS Cloud, its services and how it can help deliver cost-effective IT solutions meet the demands of the business.

KCG-AWS Academy offers various benefits like:

- Integrate Technology into curriculum
- Can participate in faculty development and master training programs
- Facilitating industry partners in board of studies
- Eligible to participate in competitions, hackathons, webinars, events, seminars etc.
- Free online resources, pedagogy tools, lab access and credits
- Free enterprise license subscriptions and licensed software





The course is designed to teach:

- Core cloud computing concepts covering technology, cost, security and innovation
- Design concepts and architectural best practices
- The AWS Cloud value proposition
- Core foundation services to build your infrastructure in the cloud
- Security and Compliance concepts in relation to cloud computing
- Billing, Account Management and Pricing Model

KCG - CoE in Drones

Center of Excellence for Drones is to integrate this technology into the UAV, Avionics and Design and Control Courses in the Department of Aeronautical and Aerospace Engineering to provide students experience with realistic Guidance Navigation and Control (GNC) systems. The Remote Pilot Aircraft Systems Laboratory investigates and develops technology relevant to unmanned aerial vehicles. Many of the projects allow students to work closely with industry partners as they research unmanned vehicle technology and explore its future uses, leading the way as drone operations continue to increase across the globe. Investigations consist of applying advanced avionics, sensors, and other payloads to various platforms including offthe-shelf fixed wing and multi-rotor unmanned aerial systems as well as customized platforms.



KCG- CoE in ANSYS CFD

This Centre will impart education to undertake cutting-edge research in Computational Fluid Dynamics and to harness the power of CFD-based simulation tools for the development of efficient and innovative products/processes. Multiphysics simulation gives students the ability to explore and predict how products will work — or won't work — in the real world. It's like being able to see the future, enabling engineers to innovate as never before. Based on the fundamental principles of modeling, physics, mathematics and computer science, simulation gives engineers the power to see how their designs will behave in millions of real-world scenarios, while reducing or even eliminating the need for costly physical testing.

KCG - MATH WORKS ACADEMY

MATHWORKS ACADEMY has signed an agreement with our institute on Campus-Wide License. With the Campus-Wide License, all faculty and students on the campus have access to MATLAB, Simulink, and various toolboxes which help them for their research, course work and, other project works. The institute has allowed all the faculty, staff, and students to install the MATLAB software on their personally-owned computers which helped them for anywhere access.

As the MATLAB software is a multidisciplinary tool, the institute has launched these tools to all the faculties, students and, research scholars via a centralized license that keeps all the users at par with the industry standards. So the institute is technically equipped to solve industry-related problems which create opportunities for industry associations which in turn meets the vision of the institute with industry-ready graduates. The institute has signed the agreement in June 2020 and has made software installation available for all the faculty, students and, research scholars which will enable them real-time learning of the curriculum and do quality research.

Objectives

- To facilitate the students to design, analyze and model a real-time system with the help of various tools in the MATLAB software before actually developing it as the prototype.
- To help the faculty, students and, research scholars in Model-Based design, the live script for all the mathematical calculations, Apps for integrating real-time hardware components, etc. with different toolbox like Simulink
- To provide opportunities to all the faculty, students and, research scholars of the institute for accessing industry-standard tools even from remote places.
- To promote interactive learning by teaching the students through the MATLAB platform
- To motivate the students to participate in various competitions by the support extended by MathWorks Academy with a dedicated technical trainer for the students during the competition

KCG-HEXAWARE Technologies CoE

KCG College of Technology and Hexaware Technologies have collaborated and launched a Centre of Excellence namely Segue Foundation program which deals Java, Database/SQL, Agile, Soft skills and communication skills, Cloud basics, Web programming (HTML/Web programming/ Java script/CSS/Angular, Business speak up etc.

This COE benefits the students and faculty of the college to get latest trends, practical Knowledge, actual business case study and its problem statements on the industry which paves way for relevant training and exposure to the cutting-edge technologies that are demanded in today's IT giants for their day-to-day business needs.

Hexaware Technologies, an IT Service management company who transform how IT services are delivered; and are on their journey to be the first IT services company in the world where more than half of the workforce is digital.

COE tip-up will provide a holistic training experience for the KCG college in updating students' skills in the technologies ahead of times that are expected in the software service (Digital solution) Industry.

INVESTING IN THE EUTOPE

The world is constantly evolving. Our investment in new areas of research reflects our understanding of these changes and the need for asking new questions and finding new solutions.

INSTITUTIONAL AWARDS





































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PALO ALTO NETWORKS CYBERSECURITY ACADEMY












EXTERNALLY FUNDED PROJECT ABSTRACTS

Modeling & Simulation of NBC Inlet Valve Operations for Arjun MBT Mk-1

Sponsored by CVRDE

- The main purpose is to automate the existing NBC system completely and thereby reduce the burden of the crew members without compromising the safety.
- To fabricate the diode section, relay section and timer section on a Single Board Computer (SBC) under the control of μC
- To replace the classical electromechanical relays with Solid State relays (SSH) inside the NBC control box
- To automate the opening of the inlet valve using actuators
- To automate the filter to ventilation mode switching using actuators.
- Modelling & Simulation of NBC Inlet Valve Operations for Arjun MBT MK - I







Design and Development of Brain Computer Interface Applications for Locked In Syndrome Victims

Sponsored by Tamilnadu State Council Of Science And Technology

- To design and develop novel communication tools for Locked-in syndrome (LIS) victims who couldn't move any body part other than their eye.
- To explore different communication paradigms for LIS victims like P300, SSVEP, etc
- To compare, analyze and choose the best possible communication paradigm for LIS victims.
- To develop applications that will open up the world of communication to LIS victims.





Automatic Test System for Power Supply & Digital Test Kit for Sub-Station Control Panel Testing and Validation

DST–FIST Power System Protection Lab

The objective of the Lab is to undertake research work for graduate students and Industry Professionals in the areas of Protection Engineering/ Substation Operation & Control.

• The lab has the Numerical Relay from GE (Alstom) for various main equipments

like Generators / Transformers / Transmission Lines / Bay Control Units of Substation and has kept them in separate 1 Panels fully wired as would be in the real Substation.

• Computerised Test Equipment of OMICRON make is also a part of the Lab to test all the above relays.

Initial training modules will cover all the basic philosophy of Protection of various equipments and then the participants will be trained to test the relays and do the relay setting calculations. The relays are networked to the central SCADA unit to demonstrate the operation and control of Substation equipment.

The lab also has Automatic Test System for Power Supply & Digital Test Kit for Sub-Station Control Panel Testing and Validation



WSN For Automatic Irrigation Monitoring & Control

Sponsored by The Institute Of Engineers (India)

The purpose of the project is to develop an intelligent irrigation system to reduce the farmer's intervention in the field.

- This system increases the yield of the product by irrigating at proper and regular intervals by measuring the soil moisture with soil sensor.
- The system measures the moisture content in the soil that varies depending on the type of plant to be cultivated and helps to set the moisture set point.
 Fluctuations below the 'set point' will be read and an output will be generated

and transmitted from the field to the remote location for starting the water pump for dripping.

- The system also gives the indication of Soil Nitrogen value in the soil, so as to enable the farmer to use the appropriate quantity of fertilizer to be used.
- Additionally the WSN project in agriculture helps in distributed data collection, monitoring of the harsh environment, precise irrigation and fertilizer supply that will help the farmer to optimize crop production and diminishes cost.

Wind-Driven Air Storage System

Sponsored by The National Institute Of Wind Energy (NIWE)

The system has the following specifications:

- The rotor of the wind turbine drives the compressor and the excess energy from the wind turbine is stored locally as compressed air in a pressurised storage tank.
- Piston displacement air compressor is used to store and extract energy, which operates nearly at isothermal conditions to have maximum efficiency.
- A 5 HP oil lubricated compressor is mounted in the wind turbine nacelle which is located on the top of a 20 m lattice tower.
- A rotating union that is located in the nacelle couples the compressor and the storage tank of 10000 litres capacity that is situated within the tower and the stored air is regulated by pressure regulators for feeding required loads.

- The safety of the system is ensured as when the tank is full, the piston will not be able to compress further and the rotor is stopped.
- The rotor directly drives the compressor and when the pressure exceeds the tank set pressure, then the rotor will not spin. A heat sinks panel and a radiator (if required) for the compressor will be employed.
- To reduce the problems associated with thermal rise the compression chamber made up of Aluminium die castings with fins will be employed.
- An actual prototype of the following model is planned: 5 kW capacities [Class III] Wind Turbine for 5 HP Compressor. A 1 kW Generator is coupled to a 5 kW Wind Turbine for feeding lighting loads.



Base Drag Reduction Studies by Experiment and CFD at Low Speeds' Nozzle Base Configuration



Base Drag Reduction Studies by CFD

Sponsored by DRDO-DRDL

Base Drag, arising from flow separation at the blunt base of a body, can be a sizable fraction of total drag in the context of projectiles, missiles and after bodies of fighter aircrafts and is the major contribution of total drag for low speed regimes. Flight tests have shown that the base drag may account for up to 50% of the total drag.

With the above premise in mind, the experimental study was done for a simple hemispherical flight vehicle body of length 500mm and diameter 50mm for the purpose of investigating the base drag.



100kW Grid-Connected Solar Power Plant

Sponsored by KCG College of Technology

The objective of the project is to demonstrate and make people understand the technologies behind solar power generation along with the benefits of green and clean energy.

- With the challenging global climate situation in mind along with the need to cut down carbon emissions in mind, KCG college of Technology has taken the initiative of setting up a 100 KVi/Grid Connected Rooftop Solar PV Plant at the terrace of Aeronautical Block.
- The Solar PV system at KCG promotes green energy and clean energy and provides resources for the students for conducting study, research & development activities.



AICTE MODROBS—Supported Modernization of Power Electronics Drives and Renewable Energy Laboratory

Renewable Energy Laboratory aims

- To facilitate the engagement of Faculty / Students in practical project work that caters to the needs of the Industry.
- To facilitate the exposure of students to the working of Power Quality Analyzer providing all parameters like power, voltage, current, harmonics, dips, and sags which are otherwise measured manually, consuming time and manpower.
- To simulate different irradiance and ambient temperature levels to assess the output of PV cells in solar simulators. The P-V and I-V curves can be plotted directly to the PC through the USB interface.
- To simulate the wind turbine characteristics using the DC motor driven Induction Machine setup. The speed of the machine can be changed to simulate different wind speeds.
- To facilitate the exposure of Students and Staff to the latest lab test equipment used in industry currently. They will be able to independently study the solar and wind generation outputs for different ambient conditions.
- To create a research-oriented environment benefiting both Staff and Students. It will generate interest for students to do projects in the renewable energy sector and pursue a career in core industries.
- To conduct workshops and Training Courses/FDP as well as to deliver consultancy service for Industry, thereby upgrading the knowledge level of Staff to meet the Industry Standards.

Renewable Energy Laboratory





Hy-Qual Water Surveillance System

Sponsored by MHRD—Ministry of Environment

Thrust Area: Overall Architecture and Hardware Architecture

Focus Area: Water Quality Surveillance and monitoring of Wetlands by application of Engineering and Internet of Things.

Problem Definition: Water quality of Wetlands are threatened by untreated industry wastewater, climate change, poor agricultural practices, etc. that results in an excess of contaminants in freshwater sources and hence the need to come up with better ways to check water quality regularly through newer technologies that involves less human intervention and more cost efficient than the existing methods.

Solution Offered: IOT Based Water Surveillance System offers a viable solution that provides automated supervision over four different parameters about the water quality.

- Use of solar energy as the power source.
- Monitoring of the water quality by the concerned authority using a proprietary web site and a web server.
- Twitter alerts will be sent to the nearby people residing near the water source.
- Algorithm to check water quality on four parameters and generates the report that water is polluted or not and sends the suggestion for the required actions.
- Generate action reports and email the same to the concerned authority for further action.

Optimal Dispatch of Virtual Power Plant using Cyber-Physical Controller for Real-Time EMS

Newton–Bhabha Funded Project Sponsored by Royal Academy Of Engineering, UK

To develop a Virtual Power Plant (VPP) at the college so as to enable the institution to be primarily dependent on a basket of renewable energy technologies that helps in minimizing the utilization of power from the grid and to maximize the profits from selling extra electricity. The project also aims to set a platform for exchange of research ideas in the field of VPP and proposes collaborative research, knowledge sharing between universities, joint publications and joint workshops.

Experimental & Numerical Investigation of Co-Extruded Bimetal Macro Composite

Sponsored by AICTE

Focus Area: Bimetal is the process of extruding two or more materials from a single composite billet. During the extrusion process the materials are bonded under pressure and temperature so as to achieve a fully integrated and void free interface between materials.

- In this research project, copper rod is used as reinforcement in aluminium matrix. Specimen thus prepared is subjected to direct hot extrusion process and was extruded at 450 degrees
- Aluminium and copper are extruded in the ratio 2:1. Extrudate was characterized using optical microscopy

- Micro hardness, tensile, impact and compression tests were conducted and these tests prove the increase in the hardness significantly
- The copper used as reinforcement increases the hardness of aluminium which is confirmed through micrograph. The hardness profile revealed that the hardness at interface is higher than the parent material which confirms the physical bonding of coextruded components.



Multi-Functional Agro Gantry Machine Assembly

Sponsored by IIT Madras

Multi- functional Agro Gantry Machine Assembly (MAGMA) is an electrically powered agricultural machine that can help farmers with agricultural operations like tilling, sowing seeds etc.

- The project aims to offer a cheaper and cleaner alternative to the modern day tractor.
- Majority of the farmers in India own land areas less than one Hectare and cannot afford heavy duty machines like tractors and rely on manual / animal labor.



Modelling Spatial Intelligence of Pallikaranai -Muttukadu Micro-Watershed Of Greater Chennai Region

Sponsored by NRDMS–NSDI Division, Department of Science and Technology

Extended Chennai has a number of Micro Watershed Basins (CWB). The proposed project aims at exploring the possibility of managing the floods at the extended southern parts of Chennai by simulating 1 D, 2D flood models by selecting an urban micro watershed area.

- The urban micro watershed of Pallikaranai-Muttukaddu, catchment area of Kovalam minor drainage basin area is selected for the study.
- This project is sanctioned under DST NRDMS with the project cost of Rs.33, 10,000/. This project is sponsored by Sponsored by the NRDMS-NSDI Division, Department of Science and Technology, Ministry of Science and Technology Under the scheme of R&D Project Proposals on "Spatial Data Infrastructures (SDI) for Urban Governance Applications" Category-III

Design And Implementation of Countermeasure VLSI Chip against Side Channel kind of Attacks for IoT/Cyber Physical Systems

Sponsored by AICTE under AQIS Research Promotion Scheme

The aim of this research work is to develop a countermeasure VLSI chip that can be connected to IoT devices to protect the Cyber Physical systems from the side channel attacks. In this proposal the hardware realization of combination of Elliptic Curve Cryptography (ECC) with the chaotic sequence generator encryption algorithm is carried out to make IoT systems secure against side channel kind of attacks. The chip will be designed for Industry 4.0 IoT standards.

The funding amount sanctioned by AICTE is Rs. 15,33,601

AICTE MODROBS—Supported Modernization Of Microprocessor And Internet of Things Lab

- The project is aimed at Modernization of Microprocessor and Internet of Things lab with latest equipment related to Future Internet of Things (IOT) and to create a research and industry oriented environment for students, faculty and research scholars.
- Future Internet of Things platform is a set of complementary components that enable experimentation on innovative services for academic and industry users. This modern lab can also give students and researchers a way to experiment on mobile wireless communications to the network and on application layers,

IOT and Artificial Intelligence(AI), small wireless sensor design(MEMS & amp; NEMS) thereby accelerating the design of advanced technologies for the Future Internet of Things.

 This modernized lab can provide a infrastructure suitable for designing small wireless sensor devices and heterogeneous Artificial Intelligence based communicating objects. The Modernized Lab with state of art equipment will not only help students but also enhance faculty members to carry out Research and henceforth share their knowledge with students.

Experimental and Computational Investigation of Pressure Field over Inner Surface of Jet Tab fixed to the Supersonic Nozzle Exit sponsored by Aeronautics R&D Board/ DRDL

- The controls of the flying vehicle are achieved through various techniques. One is the conventional method is the use of control surfaces which are found to be easier but the surfaces contribute to increase in drag of the vehicles.
- The other methods includes use of Thrust vector control (TVC), movable nozzle etc. The TVC is achieved by the use of jet tabs fitted to the nozzle exit.
- The jet issued from the nozzle acts on the inner surface of the nozzle and thus creates a force on the surface. The force acting on the tabs can be used to control the flying vehicle in a required direction.

- The project focuses on the estimation of the force on the tabs due to the jet issued from the C-D nozzle. The test will be carried out at supersonic Mach numbers 2.0, 2.3 & 2.5
- The tab configuration will be varied based on tab lengths and tab sector angles. The tab lengths are considered to be X/D = 0.15, 0.3 & 0.5 and the tab sector angles are 600, 900 & 1200.



RESEARCH EVENTS



Dr. S. Ramesh, Professor, Department of Mechanical Engineering at (IMMT 2017) at BITS Pilani, Dubai



Proceedings release during the Inaugural Session of ICIDSET 2018



Valedictory Function of ICIDSET 2018



Proceedings Release during the Inaugural Session of ICICA 2015



Dr. Deepa Jose – Head Research at Fifth International Congress and Expo on Biotechnology London, UK



Dr. M. Krishnamurthy, Professor, Department of CSE at the International Conference on IHIS, Kuwait

KCG College of Technology

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