

MARIAN ENGINEERING COLLEGE, TRIVANDRUM

Research and Development Cell

The quality of education in any educational institution is determined by the research that has been undertaken for the technological advancement and societal benefit. Research is essential for facilitating outstanding student education and training. It helps in providing a particular texture to the academic environment of the institution which further gives a distinctive and distinguishing educational experience to the students.

Objectives of Research and Development cell

- To develop research skills among the faculty and students
- To promote and to encourage the aspiring students and faculty members to carry out research in the field of science, engineering and technology and publish their findings.
- To create zeal among the students towards research and innovation
- To organize in-house exhibition, Innovation and technology contest for identifying entrepreneurial skills for our students.
- To identify potential projects/sources of funds for student and faculty.

RESEARCH AND DEVELOPMENT CELL MEETINGS

NO	DATE AND TIME	VENUE	MAIN AGENDA
1	7-2-2019	PRINCIPAL'S CONFERENCE ROOM	<ul style="list-style-type: none">• To convene MTIC 2019 contest• Discussion of the rules• Planned to conduct MTIC by May end
2	30-5-2019	PRINCIPAL'S CONFERENCE ROOM	<ul style="list-style-type: none">• Projects received were to be shortlisted by respective department• Dates for final presentation: 17-6-2019• HODS to decide external evaluator for evaluating department projects
3	6-6-2019	PRINCIPAL'S CONFERENCE ROOM	<ul style="list-style-type: none">• External evaluators ME – Prof Praveen A, AP ME CET ECE – Prof Kiran R, AP ECE CET CSE – Dr Tessy Mathew, HOD CSE MBCET

			CE – Dr Smitha MS, AP CE CET • Internal Evaluators ME– Prof TM Mohan, HOD ME ECE–Dr Vijayalekshmy,HOD ECE CSE – Prof SK Mohan, Prof, CSE CE – Prof Joisy, HODCE • Dates for evaluation – 17-6-2019
4	26-6-2019	PRINCIPAL'S CONFERENCE ROOM	• Handing over list of winners for MTIC 2019 to Principal
5	16-7-2019	PRINCIPAL'S CONFERENCE ROOM	• Discussion on quality of projects presented in MTIC 2019 • Announcement of Cash Prize for winners First prize – Rs10000 Second Prize –Rs 5000 • Cash prizes were to distributed during GENESIS 2019

The activities carried out under the Research and Development Cell in various departments in the college are listed.

1.Department of Computer Science and Engineering.

a) Research Proposals

E.Baburaj – Role of Machine Learning Algorithms in implementing Internet of Things in Real World Environment – Faculty Devolvement Program, Recommended for funding by the Expert committee, **AICTE**, NewDelhi.

b) Publications

1. Faculty

- E.Baburaj** (2018) “An Optimal Trust Aware Cluster Based Routing Protocol Using Fuzzy Based Trust Inference Model and Improved Evolutionary Particle Swarm Optimization in WBANs”, International Journal of Wireless Personal Communications, **Springer** Vol 101, no 1, PP 201-222.
- E.Baburaj** (2019) “Fuzzy enabled congestion control by cross layer protocol utilizing ABC in WSN: Combining MAC, routing, non similar clustering and efficient data delivery” Wireless Networks, **Springer**. <https://doi.org/10.1007/s1127>.

3. **E.Baburaj** (2018) “FABC-MACRD Fuzzy and Artificial Bee Colony based Implementation of MAC, Clustering, Routing and data delivery by cross layer Approach in WSN” Wireless Personal Communications, **Springer** Vol 103, No 2, PP 1633-1655.
4. **E.Baburaj** (2019)”Inventory Control in Health Care Supply Chain Management using Apriori and Gravitational Search algorithms” International Journal of Logistics Systems and Management, **Inderscience** Publishers. **DOI:** 10.1504/IJLSM.2020.10016185.
5. **E.Baburaj** (2019) “Data Analytics for Relative Ranking of Factors to Optimize Blood Bank Supply Chain”, International Journal of Mathematics in Operational Research, **Inderscience** Publishers. **DOI:** 10.1504/IJMOR.2019.10019464.
6. Jose Hormese, Chandran Saravanan, ***A Comparison of Convolutional Neural Network Architectures for Road Classification from Satellite Images***, IEEE International Conference on Inventive Research in Computing Applications (ICIRCA 2018), Coimbatore, Tamilnadu, India, 11-12, July 2018.
7. Jose Hormese, Chandran Saravanan, ***Convolutional Neural Network with Fourier Transform for Road Classification from Satellite Images***, 2018 International Conference on Computational Vision and Bio Inspired Computing (ICCVBIC), Springer, Coimbatore, 29-30, Nov. 2018. Best paper awarded.
8. Jose Hormese, Chandran Saravanan, ***A Convolutional Neural Network Approach to Road Classification from Satellite Images***, Journal of Theoretical and Applied Information Technology, Vol. 96, Iss. 23, pp.7917-7927, 15-12-2018, ISSN 1992-8645. SCOPUS. <http://www.jatit.org/volumes/Vol96No23/19Vol96No23.pdf>

2. Students

1. **Neeta Joy** (2019)“Fast image Dehazing Method based on Homomorphism Filtering and Contrast Environment”, International Journal of Scientific Research and Engineering Trends, Vol 5 No 2 PP 305-309.

2.Department of Civil Engineering

Talks arranged

1. A technical session was arranged for the Final year B-tech students on 'Development of Project Ideas' headed by Dr.Thrivikramji.K.P [Director, Geoinformatics Div.,Centre for Environment and Development(CED)], P. Reghukumar [Senior Design Engineer, CED],N.R. Chrips[Scientist, CED] on 10-9-2018.
2. An expert talk on Geology was conducted under visiting faculty programme by Dr. Ajith G Nair for the class S3 C2 was conducted on 05.10.18.
3. Prof. Dr. R. Shivasankar, Professor in Civil Engineering, NITK, Surathkal delivered a lecture on Basic & Advanced Geotechnical Engineering on 9-2-19.

3.Department of Electrical and Electronics Engineering

STUDENTS:

- The project “ Solar Powered Automobile incorporated with wheel chair” done by Aswin R, Febin Ansan, Niranjana Vijayan and Swathy Krishna of S8,EEE has been selected among top 100 projects by KPIT Sparkle 2019. It is a global technology company that accelerates its mission on next generation mobility technology. Through Sparkle , they provide a platform for young researchers to showcase their research and engineering skill.
- Students of fourth semester has done four different group project work, beyond their curriculum:
 - Tesla coil - Daniel a Pereira, Brightson basil
 - Motor Dismantelling - Abbin V R, Mhd. Rashid, Austin .S
 - Home Automation using Aurdino - H. Avinash Iyer , Unni Kamal
 - IR proximity sensor - Abhijith J S, Nabeel Mohammed.
- Brijesh B.R has completed the formalities of filling patent

STAFF:

- Ms . Geena suresh is presenting a paper on “ Power quality improvement using UPQC in Transmission” at , International conference on Recent

Scientific Research in Engineering and Technology ,organized by
TECHOWN ,John Cox Memorial CSI Institute of Technology.

- Ms. Valsa Basil and Ms. Nikitha Gomez has cleared the KTU Phd Entrance Examination held on January 2019.

Dr. Vijayalekshmy.s, Ms. Valsa Basil, Ms. Geena suresh , Mr. Deepu R S, Ms Nikitha Gomez has attended the research colloquium at Marian Engineering College

4.Department of Electronics & Communication Engineering

CONFERENCE & SEMINARS

- The Department organized a one day National Conference on ‘Emerging Trends in Electronics & Communication–NCEEC-19’, from 27th February to 28th February, 2019. Prof. Dr. K. G. Satheesh Kumar, Director of NISH, inaugurated the event. The main events were Paper Presentations by 10 batches of UG students from John Cox, St. Xaviers Chungakadai and Marian Engg. College and 5 PG Students from Marian Engg. College. The external judges were Dr.Sajitha, Avionics Division, VSSC and Prof.K.V.Janardhanan, Retd.VSSC.
- National Conference on ‘Emerging trends in Electronics &Communication -NCEEC -’18 was held from 27th to 28th March, 2018. The Chief Guest was Shri. Sukumaran N.K, GM, BSNL, Trivandrum.The main events were Paper Presentations by 10 batches of UG students from SCT College of Engg. and 5 from Marian Engg. College and PG Students from Marian Engg. College. The external judges were Dr.Sajitha, Avionics Division, VSSC and Prof.K.V.Janardhanan, Retd.VSSC .

FACULTY DEVELOPMENT PROGRAMS PARTICIPATED

- Ms. Vinitha B.Elza (AP,ECE) attended a one day workshop by IEEE-APS on 21st December, 2018 from 9:00 am to 5:00pm at Hotel SP Grand Days.
- Ms.Dhanya Mathew (AP,ECE) and Ms.Sreena V.G(AP,ECE) attended an FDP on “Advances in Machine Learning and Deep Learning held at Rajadhani Institute of engineering and Technology, Department of CSE , sponsored by KTU from 17th to 21st December , 2018.
- Ms.Simi M.S (AP,ECE), Ms.Minnu Jayan C.(AP,ECE) and Ms.Mary Sunitha (AP,ECE) attended a 3 day FDP on Engineering Mathematics and Research Methodologies from 13th to 15th December, 2018 organised by Department of EEE,MEC.
- Mr.Evan Kumar G. (AP,ECE) attended a 5 day FDP on Design Engineering from 3rd to 7th December, 2018 organised by Department of ECE, Sarabhai Institute of Science & Tecvhnology.
- Ms.Sreena V.G attended an AICTE/QIP sponsored Short Term Course on ‘Deep Learning & Applications from 16th to 20th April , 2018 at CET.

ACHIEVEMENTS OF FACULTY

- **Ms. Reshmalakshmi C. (AP – on leave , ECE)**, under the guideship of Prof. Dr.M.Sasikumar has completed her PhD. Open Defence on 25th February 2019 at CET.
- **Ms.Malini S.(AP- on leave ,ECE)** , under the guideship of Prof. Dr. R. S.Moni completed her PhD. Open Defence on 11th February 2019 at CET.
- **Ms. Sreena V.G (AP,ECE)** published a paper in Conference proceedings IEEE December 2018.

5.Department of Mechanical Engineering

1. Proposal/acceptance of project funding (both student & faculty)

(i) FDP proposal submitted in KTU in the title of “Emerging trends in IC engine combustion and emission” By Dr. C. R. Berlin Selva Rex

(ii) FDP proposal submitted in AICTE in the title of “Advances in engine combustion and pollution” By Dr. C. R. Berlin Selva Rex

2. Details regarding patents filed

(i) “Jackfruit bulb separation machine” By Robin Philip, Jabin V Biju , Jijos Joy, Jeffin T R of S8 Mechanical guided by Abhiroop V M (APME)

(ii) “Walker for uneven plain” By Akash R Nair of S6 Mechanical

2. Details regarding conferences and special talks conducted.

1. “National workshop on sustainable energy development” 2 to 6th July 2018 sponsored by KSCSTE, Trivandrum. Coordinated by
2. Prof. T M. Mohan, Prof. Abhiroop V M and Prof. Vinod M S
3. “One day work shop on Introduction to FEAST” By Mr. Raj Thilak, Scientist VSSC, Trivandrum (18-04-2018)
4. “Traffic awareness talk” By Mr. Pradeep Kumar, SI Traffic, Kerala Police to third year students. (01-08-2018)
5. “Recent advances in cryogenics” By Dr. Rijo Jacob Thomas, Professor, TKMCE. (05-11-2018)
6. ”Advances in Aerospace Engineering” By Mr.Senthil Kumar, Scientist (SE), LPSC, Trivandrum. (05-11-2018)
7. “National conference on advances in energy efficient technologies “
8. By Godwin Gilvin and it will be conducted during May 2019.

4. Details regarding expansion of lab facility for research facility

Following facilities are created in Thermal Engineering Lab

1. Thermal conductivity of Insulating Powder
2. Thermal conductivity of liquids
3. Heat Pipe
4. Calibration of Thermo couples
5. Calibration of Pressure gauges
6. Whirling of shaft
7. Gyroscope
8. Universal governor apparatus
9. Free and forced vibration apparatus

5. Papers published by faculty and students in conferences/journals

Following papers were published by our Faculty members

- i. V. Arun Kumar 'Evaporation of liquid droplet in the present of a nanoparticle' Journal of heat transfer (ASME) May 2018, Vol 140
- ii. Archana.B.Suresh, Vivek.R.I, Bindu.S.S, Abhiroop.V.M, Jesna Mohammed, K.E.RebyRoy."Experimental investigations on the transient cryogenic flow features of a typical ball valve under liquid nitrogen chilldown conditions".Asian Journal of Convergence in Technology,IISN No.:2350-1146 Vol. 3 (2017)
- iii. Abhiroop.V.M, R.I.Vivek ,K.E.Reby Roy."Numerical investigations on the pressure drop characteristics along a compact regenerator", Indian Journal of Cryogenics Vol.43,pp 114-118 (2018)
- iv. Abhiroop.V.M, R.I.Vivek ,K.E.Reby Roy. "Numerical investigations on chill down along packed spherical bed regenerator for sustainable utilization of energy". 2nd International conference on Sustainable Globalization Kochi, (10th -12th January 2019)
- v. Abhiroop.V.M, R.I.Vivek ,K.E.RebyRoy."Experimental investigations on chill down along packed spherical bed regenerator".Proceedings of 26th National symposium on cryogenics and superconductivity,VECC Calcutta.(22nd -24th February 2017)
- vi. K.E. Reby Roy, Jesna Mohammed,AbhiroopV.M., S. R. Thekkethil."Numerical investigations on the effect of slenderness ratio of matrix elements in cryogenic chill down

process".26th International Cryogenic Engineering Conference, (7th-11th March 2016).IOP Conf. Series: Materials Science and Engineering 171 (March 2017)

- vii. Sonia S Raj , P. Pradeep , J.Edwin Raja Dhas "*Parameter Optimization of Fiber Reinforced Polymer Composite by RSM Design Matrix*" Int. J. of Computer Aided Engineering and Technology.
- viii. Sonia S Raj, P. Pradeep "Enhancing the Flexural Properties of Concrete using waste PET bottle Firers for the Reinforcement" , International Journal of Emerging Technology and Advanced Engineering(IJETAE) , Volume 8, Special Issue 4(2), April 2018
- ix. C R. Berlin Selva Rex 'A comprehensive combustion kinetics modelling study of Iso-octane and air mixture' International journal of IC engines and Gas turbines, Vol.4: Issue 2

6. Awards/Recognition to faculty/students

(i) Mr. Abhinath J. of S6 M1 won third prize in the State level quiz competition conducted on 19-01-2019 by Navabhavana literary association.

Note: Data collection on this head is in progress.

Marian Technology and Innovation Contest

Research is essential for facilitating outstanding student education and training. It helps in providing a particular texture to the academic environment of the institution which further gives a distinctive and distinguishing educational experience to the students. When students engage in research, they get into a careful process of honing their skills and critical thinking abilities further. And in this way, they are best prepared for facing the future challenges and opportunities. In order to inculcate a spirit of innovation and to promote Research and Development activities among our students, The Research and Development wing at Marian Engineering College conducts Marian Technology and Innovation Contest (MTIC) every year. The contest is organized for B.Tech final year students of Marian Engineering College for all five departments (CE, CSE, ECE, EEE & ME). Each Department Head will shortlist FIVE innovative projects and forward to the Research and Development wing for evaluation by a

team of external experts. The short listed teams have to submit the project proposals to their respective Department heads and they have to present it before a panel of external experts. The best projects in each department recommended by the external experts will receive cash prize of Rs 10,000. This year the contest was on 18th and 19th of june.