



Vel Tech

Rangarajan Dr. Sagunthala
R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)



FRESHMAN ENGINEERING



2021-22 ANNUAL REPORT

Message from the **FOUNDERS**

The School of Sciences and Humanities is a vibrant community of knowledgeable faculty, accomplished students, and hardworking staff. When you visit the School of Sciences and Humanities, you'll find a team dedicated to exemplary research and teaching. Interdisciplinarity is at the heart of many of today's innovations. School of Sciences and Humanities provides an education that prepares students for a job market that requires critical thinking skills and the ability to adapt to change in an increasingly complex and global world.

The school aims to provide quality education in the traditional areas of Science and Humanities, as well as to develop into a center for teaching, learning and research with a goal to achieve excellence in the academic endeavor. As said by the philosopher Martha Nussbaum "Courses in the humanities, in particular, often seem impractical, but they are vital, because they stretch your imagination and challenge your mind to become more responsive, more critical, bigger."

School of Sciences and Humanities offers students a sandbox experience to become life-long learners and doers by providing them with a chance to develop essential skills such as critical thinking, creative problem-solving, and professional development. The department offers several elective courses to broaden the minds of the youngsters and provide a mentor-mentee approach to deal with the intricacies of the young mind. We are pleased to mention that the college is an authorized center for Cambridge English Language Assessment, bridging the gap between the technical skills and communication.

We wish the best for our students who have graduated this year, and hope that they would shower the institution with words of glory and praise by their endeavours and activities in the society.

We appreciate the entire department, faculty members, staff and students who have worked hard to bring fame and glory to the institution. The annual report would give an insight into the events, achievements and accolades of the institution and the department as well.

Col. Prof. Vel. Dr. R. Rangarajan
Chancellor & Founder President

Dr. Sagunthala Rangarajan
Foundress President



Message from the

CHAIRPERSON MANAGING TRUSTEE

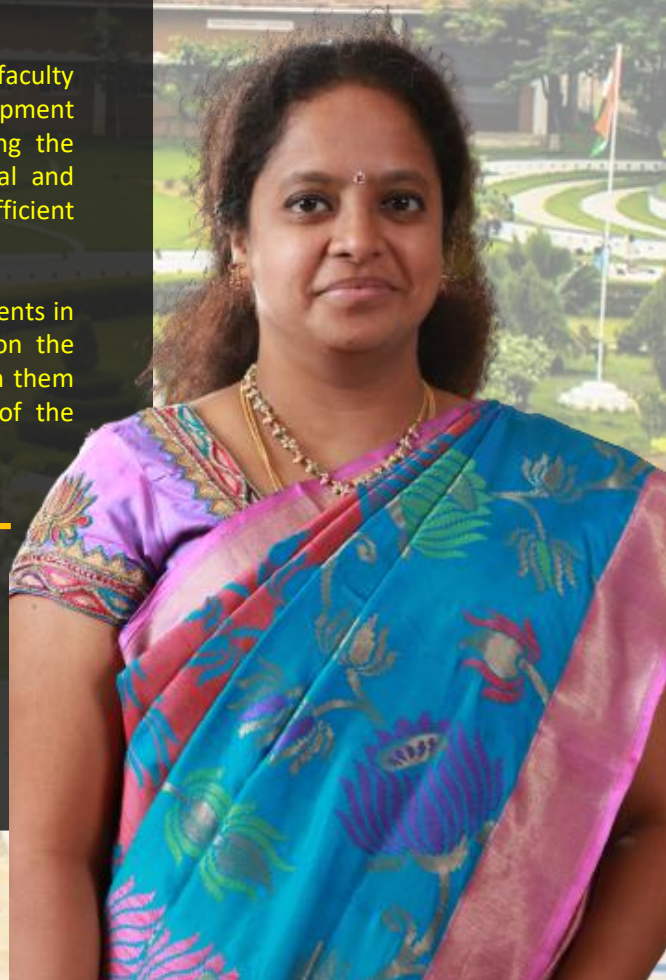
I take immense pleasure in introducing the Annual Report of the School of Sciences and Humanities, which throws light on the commendable commitment towards the development of student's learning and complex skills that are essential with the technical knowledge that they possess, helping them advance and open their minds to creativity necessary for innovation and strategic planning. This annual report showcases the multitudes of ways the School of Sciences and Humanities supports the vision and mission of the institution and its contribution towards the achievement of global level standards of education.

Undergraduate and graduate students who are exposed to the humanities and arts consider the ethical, aesthetic, and intellectual dimensions of the human experience, past and present, and are thereby prepared to make thoughtful and imaginative contributions to the culture of the future. With a broad range of graduate programmes, the School of Sciences and Humanities aims to train researchers and industry professionals to meet global demands for trained manpower, while also creating an environment of high professional competence to conduct basic and applied research.

I congratulate and wholeheartedly applaud the faculty members, staff and students for the sustainable development to reach new heights every year, thriving by chiseling the students and refining them in terms of ethical, moral and personality standards that would help them become efficient employers and employees.

I appreciate the faculty and students for their achievements in this academic year. The department always focuses on the holistic development of students with a vision to enrich them with the personality that is befitting to the makers of the society.

Dr. R. Mahalakshmi Kishore
Chairperson Managing Trustee



Message from the

VICE CHANCELLOR

Every university education prepares you for something, but the best one prepares you for anything that comes your way. School of Sciences and Humanities at Vel Tech is dedicated to fostering your intellectual curiosity and passion. Our mission is to provide historical and cultural perspectives to students and citizens of all ages. We also teach them how to communicate effectively through the use of various languages and critical thinking techniques. Besides offering high-quality academic programs, we prepare students to be industry-ready professionals who have a thorough understanding of their chosen fields of specialization. Vel Tech University's unique learning experience is complemented by strong ties with globally recognized knowledge partners like Cambridge.

Faculty at the school address classic questions about humanity and encourage new approaches about current pressing social issues in both their teaching and research activities. Students are engaged in intellectual debate, robust communication, skilled collaboration and creative activity as a result of the school's mission, charisma and spirit of inquiry. It is through these skills that our graduates can turn their talents and training into meaningful work that benefits their communities and the world at large.

Students' co-creation of their own learning environments is, in my opinion, a perfectly viable option. It is the school's goal to help students develop their unique talents.

From John Hattie's Visible Learning: "Motivation is at its highest when students are competent, have sufficient autonomy, set worthwhile goals, get feedback, and are affirmed by others.... Having a sense of control over one's learning is important – it is highly related to positive outcomes.... Interest in the work is highly correlated with achievement."

The annual report is a vigorous display of interest of the faculty and the students, portraying the innumerable activities conducted and the glorious array of achievements and accolades.

Prof. S. Salivahanan
VICE CHANCELLOR



Message from the **DEAN FME**

The School of Sciences and Humanities contributes to the University's mission by delivering excellent liberal arts guidance, inspiring artistic creativity, exploring ethical and philosophical values, and facilitating students' professional growth and influence the academic performance through the curriculum, preparing students to be transformative, socially perceptive world citizens.

The school encompasses a wide range of disciplines and methodologies, from highly statistical research. Besides being a physiological species, man is a social, psychological, and spiritual being who strives to maintain a balance with the economic, political, and cultural milieu around him, as well. Courses in the Social Sciences and Humanities are designed to develop socially aware individuals and responsible citizens, with the human being as central to all institutions that regulate his social life.

The curriculum is designed to meet the students' educational and developmental needs. We believe that every student has a right to learn and experience challenging and relevant learning opportunities. Student performance should be driven, and instruction should be tailored to individual learning styles and needs.

Seminars, conferences, workshops and training programs on a wide range of topics are regularly attended by the members of the faculty. For the most part, they are members of organizations that promote the professional and intellectual development of their colleagues. When it comes to students, the faculty has focused on guiding them towards the ultimate goal of applying their knowledge to real-life situations.

Prof. M. Siva Kumar
DEAN FME



TABLE OF CONTENTS

FME BY NUMBERS

STAFF COUNT

17	34	140	10	18	13
Professor	Associate Professor	Assistant Professor	Post-docs	NET/SET Cleared	Lab Assistant

STUDENTS COUNT

2256	115	75
FME	P.G.	Ph.D.

RESEARCH & DEVELOPMENT

74	129	35	69	07	11	51	59
SCI Articles	Scopus Articles	Conference Proceedings	Other Publications	Patents	Books Published	Ph.D. Guiding	PG Project Guidance

INFRASTRUCTURE

46	13	03	02	03	04	03	1699
Classrooms	FME Labs	PG Labs	Research Labs	CDIO Workspace	DRAWING HALLS	Engineering Hives	Books Available (Dept. Library)

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FME @ a Glance.....



Dr. D. Senthilkumar
HEAD-PHYSICS



Dr. C. Hazarathaiah Yadav
HEAD-CHEMISTRY



Dr. M. L. Suresh
HEAD-MATHS



Dr. M. R. Bindu
HEAD-ENGLISH



Dr. M. Sivakumar
DEAN-FME



Mr. M. Vijay Albert
HEAD-FME



Dr. R. Suguna
Coordinator-FME SoC



Dr. M. Valliammai
Coordinator - FME SoEC



Dr. C. Rajkumar
Coordinator - FME SoMC



Dr. Chandra Mohan
Coordinator - FME Bio

Freshman Engineering is an indigenous name given to first-year B. Tech. students of Vel Tech. FME division renders the service of meeting the demands, issues, and requirements in relation to the first year B.Tech. students. Since FME students are new to the institution, they get total support and guidance through a complete network comprising of the Dean-FME, Heads, mentors, and faculty members working for their betterment. It embraces four departments namely Physics, Chemistry, Mathematics, and English. It takes care of imparting the fundamental knowledge and skills that are required for first-year Engineering students.

FME support services is a set of services offered by the FME exclusively for Freshman Engineers. It comprises about 6 inter-related cells which make academics and other activities convenient for the first year students. As college life is new to first-year students, these cells extend extra support and guidance to them.



Dr. B. Ramesh Kumar

PG - Coordinator



Mr. D. Balaji

Asst. HEAD-FME



Dr. P. Narayanasamy

Grievance & Redressal Cell



Mr. M. Gokul

FME Attendance Cell



Mr. Jishu Chandran

FME Attendance Cell



Mr. Raja Berryl

FME Distribution Cell



Mr. K. Arun Kumar

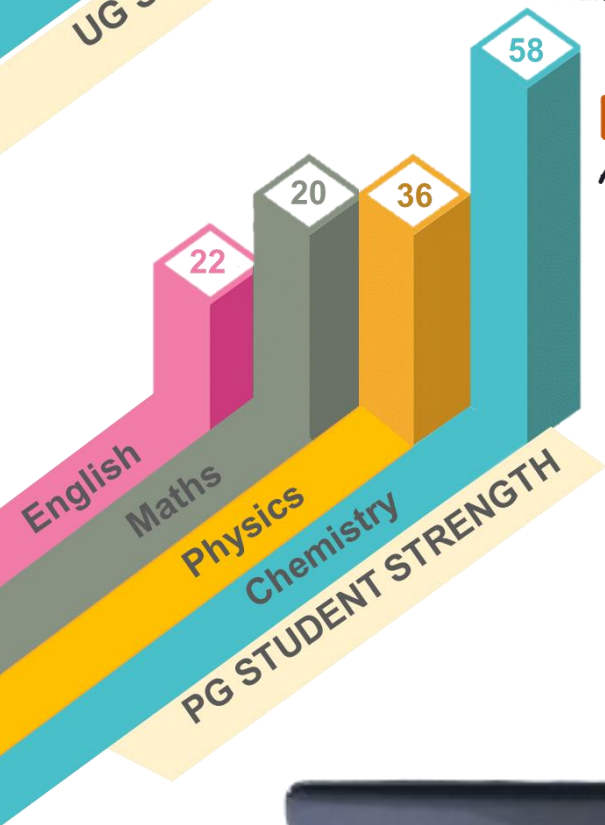
Exam Cell



Dr. S. Karpagam

Exam Cell

FME STUDENTS



AERONAUTICAL

Admitted: 34



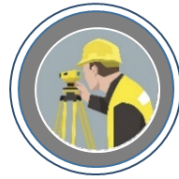
MECHANICAL

Admitted: 54



CIVIL

Admitted: 32



BIO-TECH

Admitted: 54



BIO-MEDICAL

Admitted: 23



AI & DS

Admitted: 69



WISE
ENT
GTH



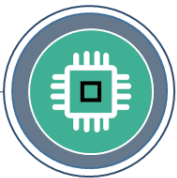
CSE

Admitted: 1104



IT

Admitted: 69



ECE

Admitted: 655



EEE

Admitted: 24



AI & ML

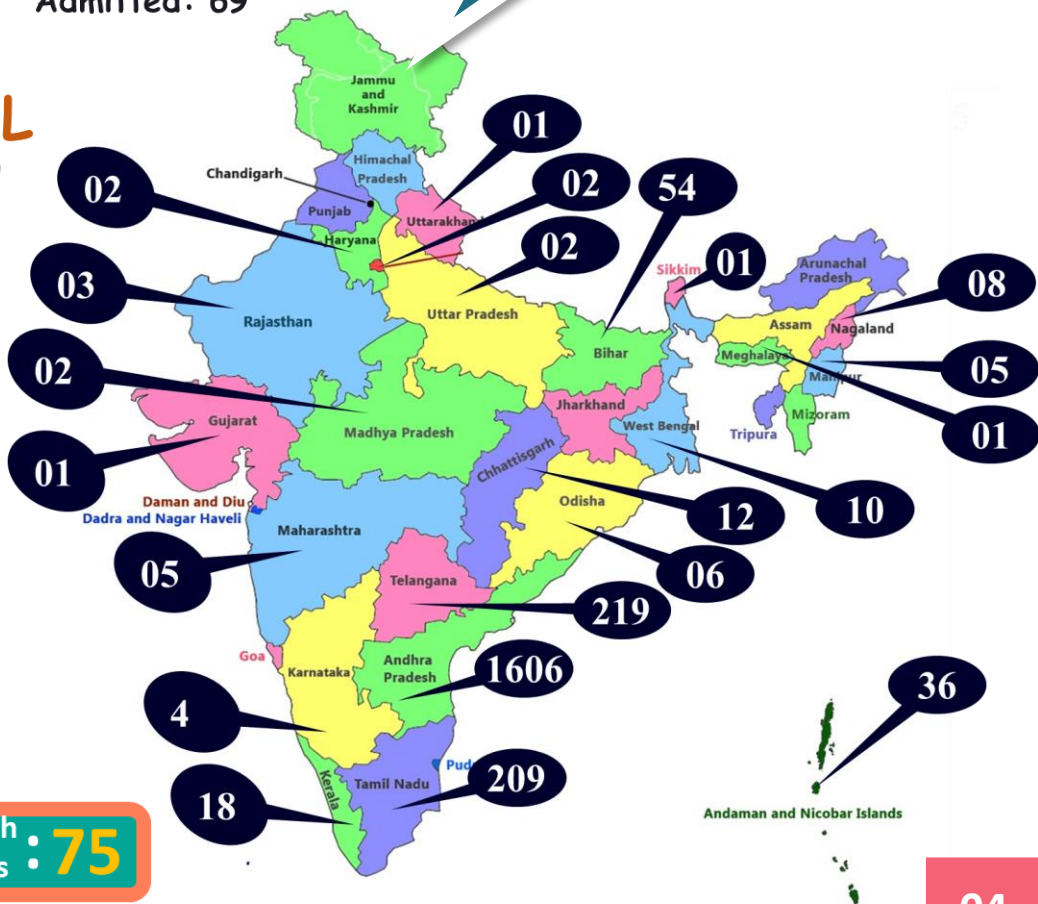
Admitted: 69



From
23 States
4 Countries

CSD

Admitted: 69



Student Diversity

Vel Tech is known as the holistic dynamic urbane campus, hosting students worldwide. The diversity in the classroom brings new perspectives for students' learning.

Students of different genders, backgrounds and races bring multiple insights and thoughts into a classroom. This enhances a classroom discussion and learning opportunities.



Research
Scholars : **75**

FME FACULTY

The Freshman Engineering division (FME) comprises the departments of Physics, Chemistry, Mathematics and English. The Professors of the School possess more than a decade-long experience in International teaching, postdoctoral Research exposure, high-quality teaching and are well-trained in Outcome-Based Educational methodologies to impart the knowledge for students to pursue a successful professional career. The professors also guide their research scholars towards Ph.D. and Post-doctoral programmes which are offered in the school.



Postdoctoral Experience

In addition to the doctoral accomplishments, some of the faculty members of the Freshman Engineering (FME) possess postdoctoral research experiences in Materials Physics, Health Sciences, Organic and Inorganic Chemistry from countries like France, Mexico, Japan, Korea, Taiwan etc.

National Institute of Materials Science
Japan

University of the Littoral Opal Coast
France

Universite Paris-Sud
France

University of Guanajuato
Mexico

Yeungnam University
South Korea

Feng Chia University
Taiwan

Universiti Teknologi PETRONAS, Malaysia

Dalian Institute of Chemical Physics
China

Konkuk University
Seoul

FME is equipped with diverse faculty from different parts of India which allows the students to be exposed to a wide array of ideas, cultures and individuals.

60% 40%



FME faculty members are well - trained in **Outcome Based Educational methodologies** to impart the knowledge, which not only forms the basis for further academic achievement of excellence in science and technology but also lays the foundation for faculty and students to pursue a successful professional career in research and higher levels of teaching. This school takes care of imparting fundamental knowledge and skills that are required for first-year engineering students through **Active Learning Methods, team projects, open-ended problem solving, experiential learning and engagement research** which are integral elements of engineering education. Vel Tech has established numerous active learning spaces. Faculty members have been facilitating students toward Collaborative and Cooperative Learning through different active learning methods. **MOODLE and MOOCs help the students to gain self/independent learning skills.**

Most of the courses, including the unique courses such as Introduction to Engineering, Design Thinking, Mathematics courses of integrated nature and Biology for Engineers, which fall under the foundation course category, are offered by this school under the **Choice Based Credit System (CBCS)** which enables the different category of learners to achieve mastery level. On the whole, incorporating active learning strategies into university courses significantly enhances student learning experiences.

One of the best practices of the University is the **Mentoring system** which redresses student-related issues. Through mentoring system faculty members provide the required support for their betterment. This system helps in reinforcing the sense of resilience among the student community. Students get the required guidance, confidence, and skills that are necessary for their career success in a friendly atmosphere. In turn, by nurturing the students, faculty members also try to enhance confidence and offer challenges to set goals in the minds of the students. On the whole, the mentoring system aids in providing individual recognition and encouragement. Every mentor (faculty) is assigned twenty students, who monitor students' academic progress keenly and mold the students with the cooperation of parents. The academic process in a semester is monitored through the indigenous Course Management System, under which, Course Coordinator of each course conducts a series of seven meetings with concerned faculty during the semester (two before the commencement of the semester, four during the semester, and one after the semester) and takes remedial measures for enhancing attainment of course outcomes.



190+
Faculty

9%
Professors

18%
Associate Professors

73%
Assistant Professors



1:20

Faculty – Student Ratio

10yrs

Average Teaching Experience



50%

With Ph.D.,

10%

**NET/SLET/SET/
GATE Qualified**





TEACHING & LEARNING

With the present technological advancements, the biggest challenge faced by the teaching fraternity is bringing and retaining Engineering students in conventional classrooms. The solution, pronounced by the learning scientists, is that Teaching-Learning should be transformed into Learning by facilitation which happens in a space wherein students will learn actively with peers. Vel Tech has established numerous active learning spaces. Faculty members have been facilitating students toward Collaborative and Cooperative Learning through different learning methods like Jig-Saw, Think-Pair-Share, Peer Instruction, Mud Card, and Flipped Classroom.

To cope with the revolutionary changes taking place in Engineering education worldwide, Vel Tech has adopted the new pedagogical process called “Conceive-Design-Implement-Operate” (CDIO) approach. The rationally developed CDIO syllabus helps the students to acquire professional, personal, and inter-personal skills systematically. As an initiative for this transformation, Vel Tech has established an Engineering Workspace to support and encourage hands-on learning of product, process, and system building, disciplinary knowledge, and social learning.

Teaching and Learning is organized to align with graduate learning outcomes. It has been done by monitoring and updating courses to be compatible with industrial requirements. The courses are meticulously designed by involving industries, research organizations, reputed international universities, and student employment agencies.

FME supports all the schools of the institution by offering Institute and Value-Education Electives. These courses enable the students to enroll in one and two-credit courses for speedy completion of the required credits. The four departments of Freshman Engineering namely Physics, Chemistry, Mathematics, and English shoulder the extra responsibility of offering various elective courses for the benefit of higher semester students. The courses offered are:

- Nanostructures
- Medical Physics
- Cryofuels
- Batteries and Fuel Cells
- Food Safety and Quality Management
- Academic Writing
- Soft Skills
- Passionate Leadership
- Creative writing
- Public Speaking
- Learning to Learn
- Advanced Vedic Mathematics
- Quantitative Aptitude
- Fundamentals of Fuzzy Mathematics
- Introduction to Number Theory for Engineers
- Yogasanas for Body and Mind Coordination
- Effective Group Discussion
- Grooming your Vocab
- Autobiography and Memoirs
- Athichudi
- Thirukurral
- Basic Tamil

Active learning methods (ALM) are innovative strategies to engage students in self-learning practices. ALM initiates essential skills like higher order thinking, investigating ability, and creating new ideas among students. Through ALM methods, students practice skills, solve problems, struggle with complex questions, make decisions, propose solutions, and explain ideas in their own words through writing and discussion. Timely feedback from either the instructor or fellow students is an important requirement for handling AML activities. Incorporating active learning strategies into university courses significantly enhances student learning experiences. Some of the most common ALM methods are,

- Jig – Saw
- Gallery Walk
- Crossword Puzzle
- Carousel Brainstorming
- Article Jump
- Catch and Speak
- Battleship
- Collocations through Flash Cards
- Debate
- Group Discussion
- Sorting Strips
- Small Talk
- Tell and Retell
- Catechize
- Flipped Classroom
- Think Pair & Share
- 3-2-1 format
- Peer instruction
- One minute paper
- Fishbowl
- Word search

The benefits of implementing ALM methods into the curriculum are, that it develops collaborative skills, increases engagement, ensures retention, enhances practical learning, sparks creativity, fosters real problem-solving abilities, builds self-confidence, makes learning more entertaining, motivates to learn, and many more.





RESEARCH & DEVELOPMENT

The research seeks to advance the existing body of knowledge in all disciplines. Faculty members of FME work in several domains and have good research records in the form of SCI & Scopus indexed journals, Indian patents, and International and National collaborations.

Faculty members are not only tasked with discovering and creating new knowledge but also shoulder the additional responsibility of sharing knowledge and carrying it over to the next generation. Faculty members who involve themselves in research gain the respect of their colleagues, stay at the forefront of their fields and are able to share their disciplines' latest developments with students in a better way. They tend to widen their knowledge by collaborating with scholars from other universities, considering new interpretations and methods, and bringing valuable grant funding to the university. They also uplift the accreditation scores of the institution. FME faculty seamlessly weave their teaching and research activities simultaneously to accelerate the growth of the institution.

Their publications have a high impact factor scoring up to 20.831 as maximum. The h-Index ranges from 13 to 105. Research collaborations with world-class institutes and laboratories across the globe enhance scientific publications in peer review journals (Sci indexed & Scopus Indexed journals). To add to the credit, some of the faculty members of the FME have been awarded patents for their research works. The books published by the FME faculty prove to be another feather on the hat.



Dr. Pradeep Reddy,
Assistant Professor,
Department of Physics
has published an article
in high impact factor
journal (IF: 20.831)

Shafi, P. M., Mohapatra, D., Reddy, V. P., Dhakal, G., Kumar, D. R., Tuma, D., ... & Shim, J. J. (2022).

Sr-and Fe-substituted LaMnO₃ Perovskite: Fundamental insight and possible use in asymmetric hybrid supercapacitor. **Energy Storage Materials**, 45, 119-129.

Research and development is an uncompromising requirement for any institution. The faculty members of FME have willingly involved themselves in various research activities such as publications with high impact factors, book publications, patents, funded projects, and so on. Their contributions have been recognised, appreciated, and awarded by institution time and again. Faculty members from FME have received cash awards in the year 2021-22.



Dr. Gowri Shankar Rao, Associate Professor, Department of Physics
Graphene Based Dome Shaped Phase Array Antenna for Space Communication

Patent No: 336136
 Application No: 3866/CHE/2014
 Filed on: 7-8-2014
 Granted on: 1-5-2020

Dr. Gowri Shankar Rao, Associate Professor, Department of Physics
Re-configurable Antenna with Adaptive Function

Patent No: 399931
 Application No: 3306/CHE/2014
 Filed on: 4-7-2014
 Granted on: 24-6-2022



Dr. S. Mani Naidu, Professor, Department of Physics
An automatic tumor detection system based on local linear wavelet artificial neural network with hybrid optimization

Patent No: 2021103132
 Country: Australia
 Granted on: 22-9-2021

Dr. S. Mani Naidu, Professor, Department of Physics
An automatic tumor detection system based on local linear wavelet artificial neural network with hybrid optimization

Patent No: 2021103132
 Country: Australia
 Granted on: 22-9-2021



Dr. S. Sivakumar, Asst. Professor, Department of Chemistry
Nature based biomaterials and their application in Biomedicine

Application No-202241025093A

Date-13/05/2022,
 Issue No-19/2022.



Dr. V. Kamalakar, Asst. Professor, Department of Physics
Multifunctional nanomaterials methods of photothermally heating a solution and catalyzing a reaction

Application No-202241000278 A

Date-04/01/2022,
 Publication date: 14/01/2022



Dr. N. Nagadevi Bala, Assistant Professor Department of Mathematics
Smoothing technique for square root exact penalty function in constrained optimization

Application No-202241029351 A

Filed on - 21/05/2022
 Published date:3/6/22



Dr. N. Edayadulla, Assoc. Professor, Department of Chemistry
Machine learning based approach to predict the various construction materials for understanding their stability and properties

Application No-202241042298 A

Date- 23/07/2022,
 Publication date: 29/07/2022



HIGHEST h-Index



Dr. V. Sundarapandian
 h – Index : 105



Dr. S. Monisha
 h – Index : 19



Dr. L. Venkataramana
 h – Index : 15



Dr. L. SivaramaKrishna
 h – Index : 13



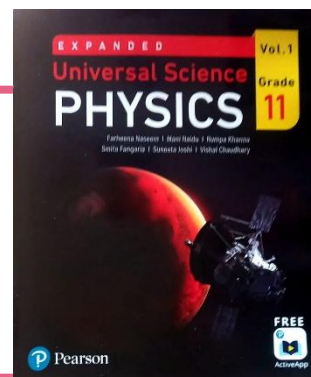
BOOKS PUBLISHED



Dr. S. Mani Naidu
Department of Physics

F. Naseem, **S. Mani Naidu**, R. Khanna, S. Fangaria, S. Joshi, V. Chaudhary (2022), Universal Science - Physics (Vol 1 & Vol 2), Pearson.

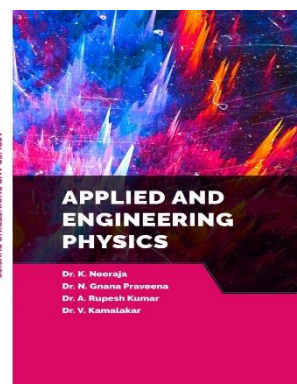
ISBN no: 978-93-544-9760-5



Dr. V. Kamalakar
Department of Physics

K. Neeraja, N. Gnana Praveena, A. Rupesh Kumar, **V. Kamalakar** (2022), Applied & Engineering Physics, Scientific International publishing house.

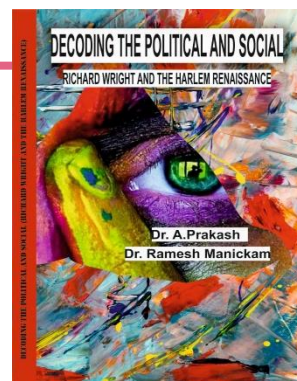
ISBN no: 978-93-5625-221-9



Dr. A. Prakash & Dr. Ramesh Manickam
Department of English

Prakash. A and Ramesh Manickkam (2021), Decoding the Political and Social - Richard Wright and the Harlem Renaissance, Kongunadu Publications India Pvt Ltd.

ISBN no: 978-81-953568-6-7





Dr. A. Kanni Raj
Department of Chemistry

A. Kanni Raj, Some Aspects of Research in Engineering Materials and Metallurgical Engineering: Worldclass Articles 1996-2022, Kindle Direct Publishing, Seattle, USA

ISBN No. : 9798819884379

Some Aspects of Research in Engineering Materials and Metallurgical Engineering

Worldclass Articles 1996-2022

A Kanni Raj



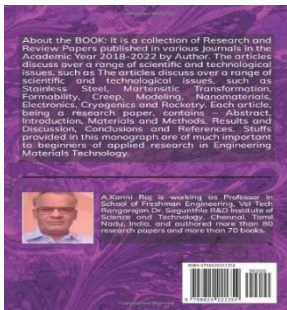
A. Kanni Raj, K. Uma Sudan, Some Aspects of Modelling and Simulation Works in Chemistry and Engineering Materials Technology: Research Works of Academic Year 2021-2022, , Kindle Direct Publishing, Seattle, USA

ISBN No. : 9798819072721

Some Aspects of Modelling and Simulation Works in Chemistry and Engineering Materials Technology

Research Works of Academic Year 2021-2022

A Kanni Raj & K Uma Sudan



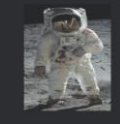
A. Kanni Raj, Some Aspects of Research in Engineering Materials and Mechanical Engineering: Indigenous Articles 2018-2022, Kindle Direct Publishing, Seattle, USA

ISBN No. : 9798820221354

Some Aspects of Research in Engineering Materials and Mechanical Engineering

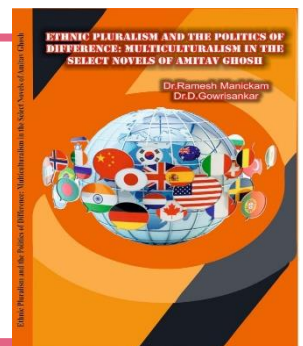
Indigenous Articles 2018-2022

A Kanni Raj



Dr. Ramesh Manickam
Department of English

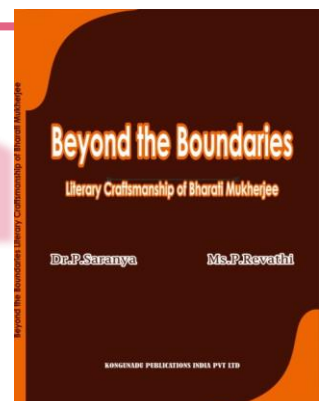
Ramesh Manickam, D. Gowrisankar, Ethnic pluralism and the politics of difference: multiculturalism in the select novels of Amitav Ghosh, Kongunadu Publications India Pvt Ltd.



Dr. P. Saranya & Dr. P. Revathi
Department of English

P. Saranya, **P. Revathi** (2021), Beyond the boundaries: Literary Craftsmanship of Bharati Mukherjee, Kongunadu Publications India Pvt Ltd.

ISBN No.: 978-93-92042-02-7



KEY PUBLICATIONS



Dr. S. Sridhar
Department of Physics
Impact factor: 8.943

Visible light photocatalytic and magnetic properties of V doped $\alpha\text{-Fe}_2\text{O}_3$ (VFO) nanoparticles synthesized by polyol assisted hydrothermal method.

Chemosphere (2022): 135575.



Dr. J. Gajendiran
Department of Physics
Impact factor: 5.532

Structural characteristics, optical, electrical and electrochemical sensing properties of graphene and multi walled carbon nanotube admixed bismuth iron oxide composite ceramics.

Ceramics International 47, no. 19 (2021): 28042-28049.



Dr. A. Saranya
Department of Physics
Impact factor: 5.190

Modeling and optimization of photovoltaic serpentine type thermal solar collector with thermal energy storage system for hot water and electricity generation for single residential building.

Environmental Science and Pollution Research (2022): 1-17.



Dr. G. Murugesan
Department of Physics
Impact factor: 4.939

Nonlinear optical studies on bioperine crystals grown by vertical Bridgman technique for photonic applications.

Optics & Laser Technology 149 (2022): 107639.



134

Total
Publications

28

Q1 Journals

34

Q2 Journals

37

Q3 Journals

35

Q4 Journals

420

Cumulative
Impact factor

129

Scopus
Indexed articles

74

SCI
Indexed articles

69

Other
Publications

35

Conference
Proceedings



Dr. L. Sivarama Krishna
Department of Chemistry
Impact factor: 5.8

Metal-Doped Graphitic Carbon Nitride Nanomaterials for Photocatalytic Environmental Applications—A Review.

Nanomaterials 12, no. 10 (2022): 1754.



Mr. J. Raja Berryl
Department of Chemistry
Impact factor: 5.518

Influence of silane functionalized nanoclay on the barrier, mechanical and hydrophobic properties by clay nanocomposite films in an aggressive chloride medium.

Colloids and Surfaces A: Physicochemical and Engineering Aspects 630 (2021): 127625



Dr. C. Shanmuga Sundari
Department of Chemistry
Impact factor: 4.68

Electrochemical and mechanical investigation into the effects of polyacrylamide/TiO₂ in polyurethane coatings on mild steel structures in chloride media.

Journal of Materials Science (2022): 1-23.



Dr. V. Sundarapandian
Department of Mathematics
Impact factor: 3.476

A 5-D multi-stable hyperchaotic two-disk dynamo system with no equilibrium point: Circuit design, FPGA realization and applications to TRNGs and image encryption.

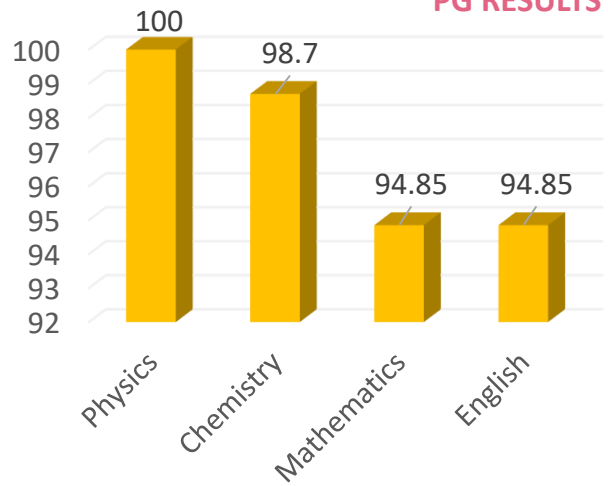
IEEE Access 9 (2021): 81352-81369.



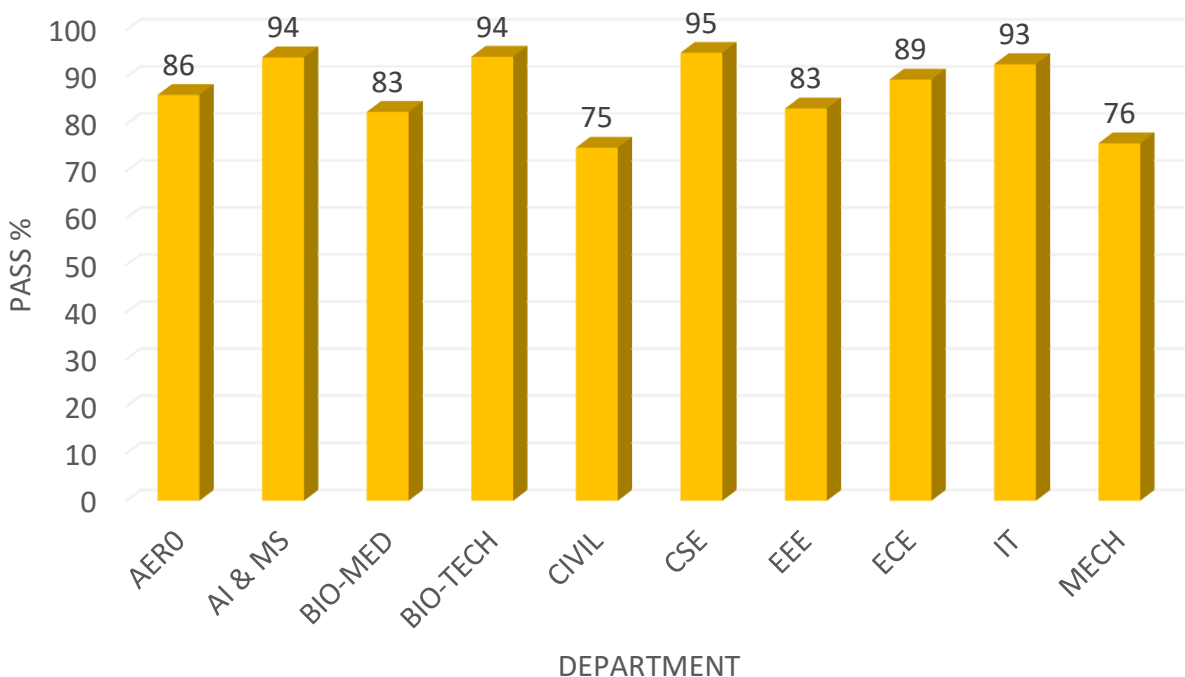
GRADUATE OUTCOMES

Academic excellence has proved to be the uncompromising motive of FME. The academics of FME comprises four major departments **Physics, Chemistry, Mathematics, and English**. In addition, the Engineering departments of **FME – CSE, FME - ECE, FME – Mech and FME – Bio-Tech/Bio-Med** are offering several subjects under the Foundation courses category. These departments focus on result-based teaching both qualitatively as well as quantitatively. Department-wise results during the academic year ranged from 75% to 95%.

PG RESULTS



UG RESULTS





PLACEMENTS & HIGHER STUDIES



Ms. Saraswathi Bhaskar
M.Sc. Physics

Got placed as
**Associate Content
Developer in Byjus**



Mr. Singaravel
M.Sc. Physics

Joined as **Robotics and science teacher**

**Bharathidhasanar Group of Schools
Arakonnam**



Mr. Arun Kumar
M.Sc. Physics

Got placed as
**Assistant Manager
Civic Communications**



Mr. S. Prakash
M.Sc. Chemistry

Got placed in
**Quality Assurance division
Chemical Factory, Chennai**



Mr. R.V. Sivakumar
M.Sc. Chemistry

Joined **Ph.D. in VelTech** under
the supervision of
**Dr. Haridharan, Chemistry
department**

Placement into reputed organizations is the primary motive of the higher education branches that function under the FME. We have been offering PG and Ph.D. courses in Science and Humanities streams like Physics, Chemistry, Mathematics, and English. The graduates who have earned their degree from Vel Tech have been placed in well-recognized organizations with attractive pay packages ranging up to 5 LPA. The Institution provides provisions for higher education after completion of their PG degree. A few of the aspirants have enrolled for Ph.D. in their respective domains in Vel Tech as well as in other Universities.

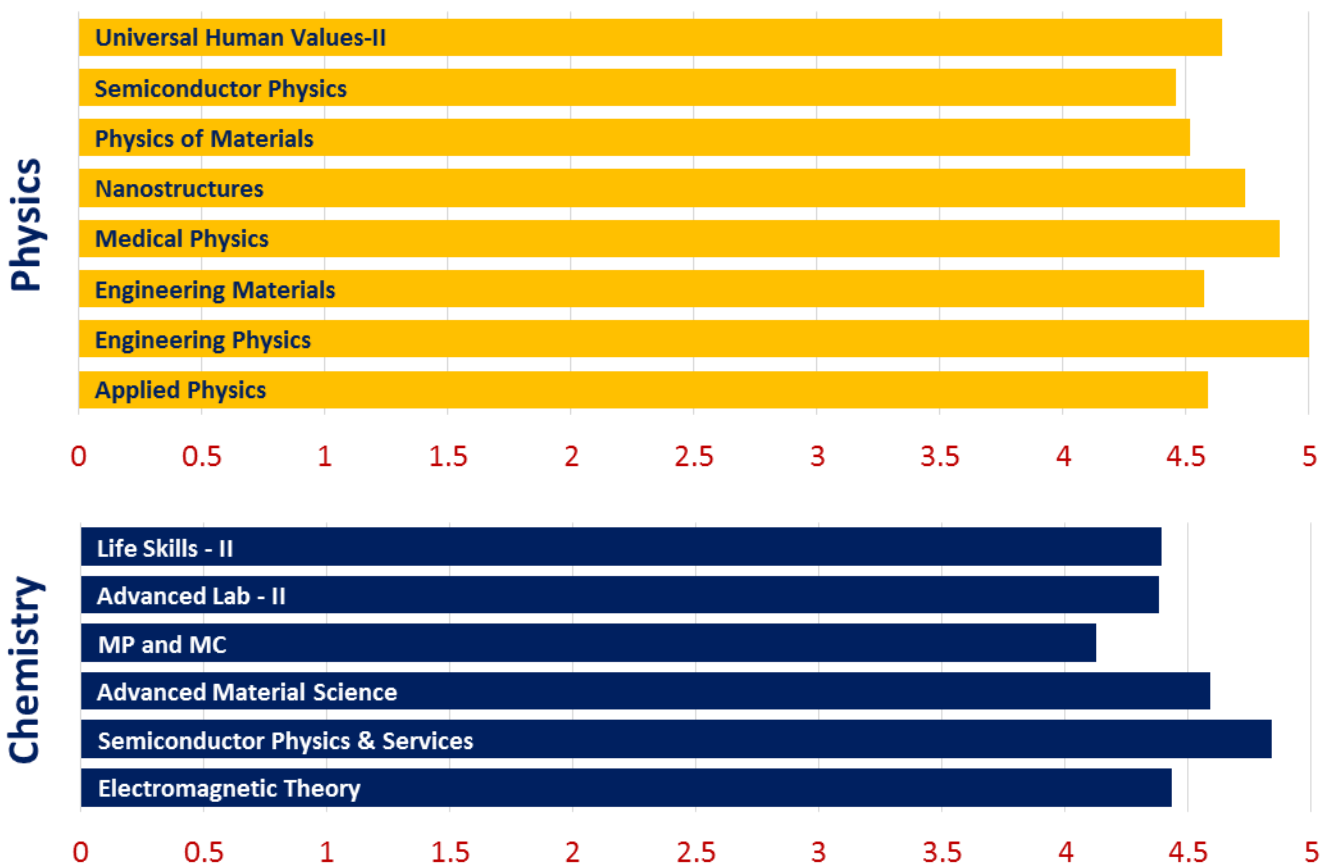


STUDENTS SATISFACTION

FEEDBACK ON COURSE DELIVERY

Feedback is considered an incredible tool in the process of teaching and learning. It is a two-way communication that gives a win-win result. Feedback is collected regularly from the students. Two feedbacks— interim and end semester— are collected from the students every semester. This system enables the identification of students' grievances and ensures timely action. Feedback collection facilitates an unbiased platform for the students to voice out their requirements, opinions, and difficulties. Feedback benefits the faculty too in many ways.

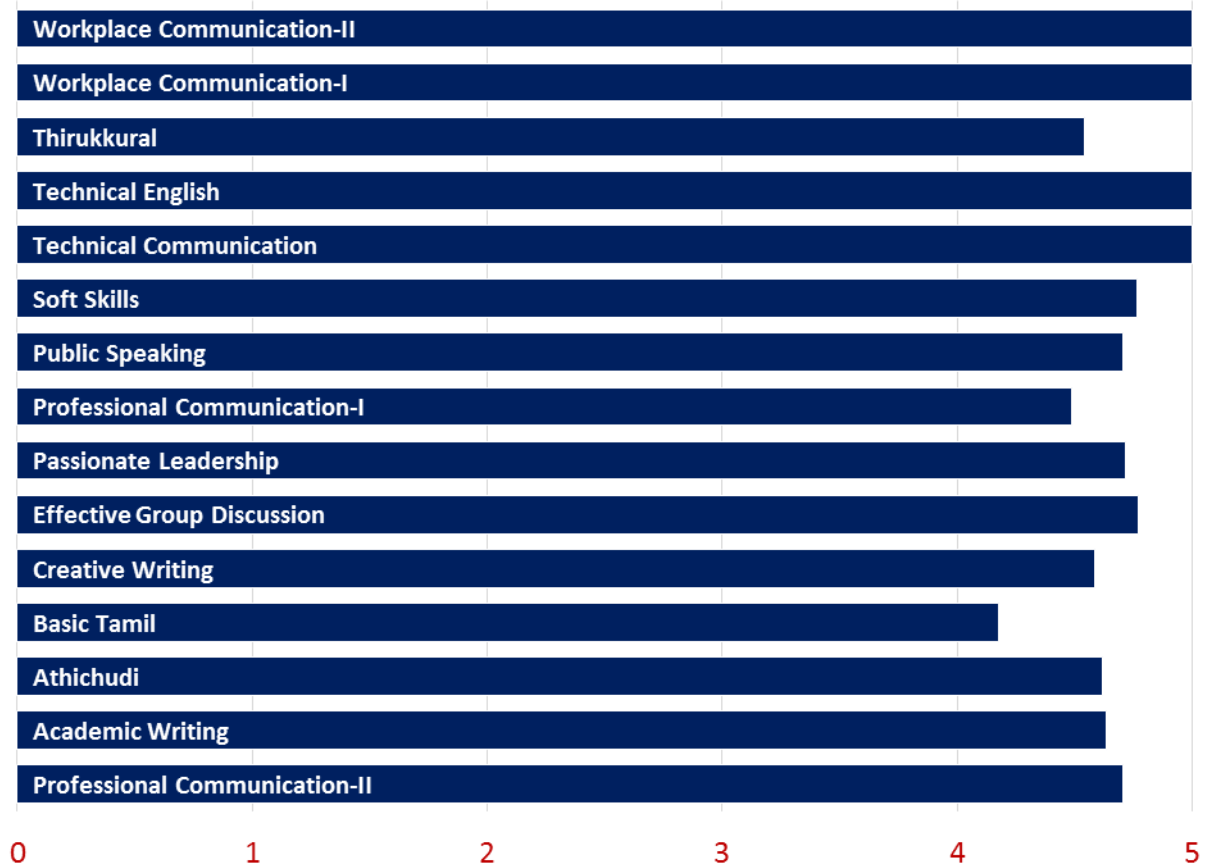
Receiving good feedback increases the morale of the faculty and encourages them to perform better. Receiving moderate or bad feedback helps the faculty to self-analyze their teaching strategies and redefine their methodologies. The Institution also benefits through feedback collection. It helps in creating and maintaining a good rapport between the faculty and students. It also helps the institution identify the potential of the faculty and reward or take adequate action accordingly.

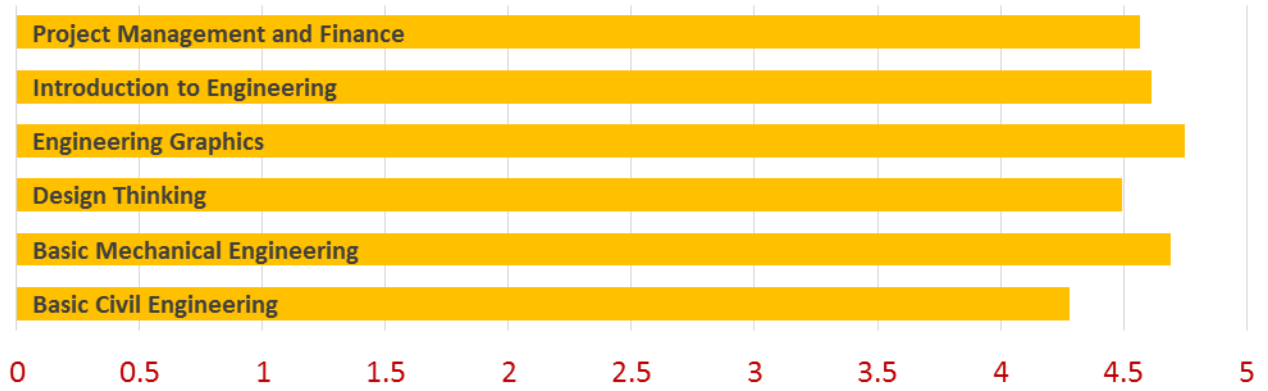
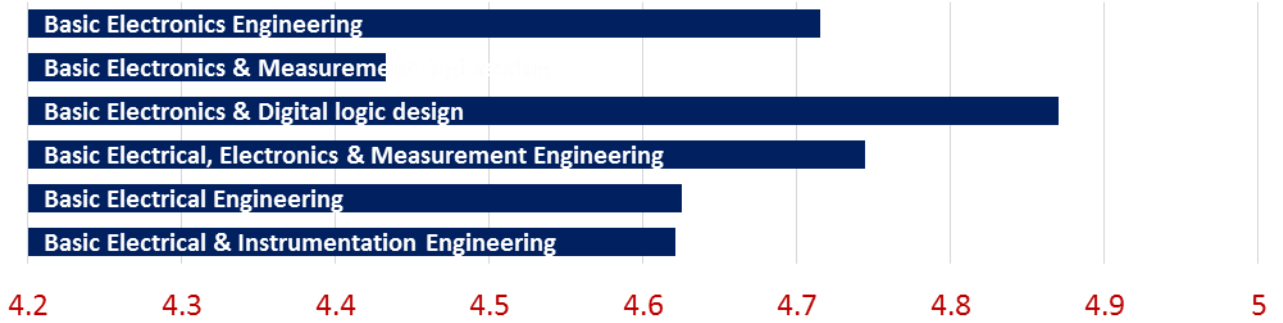
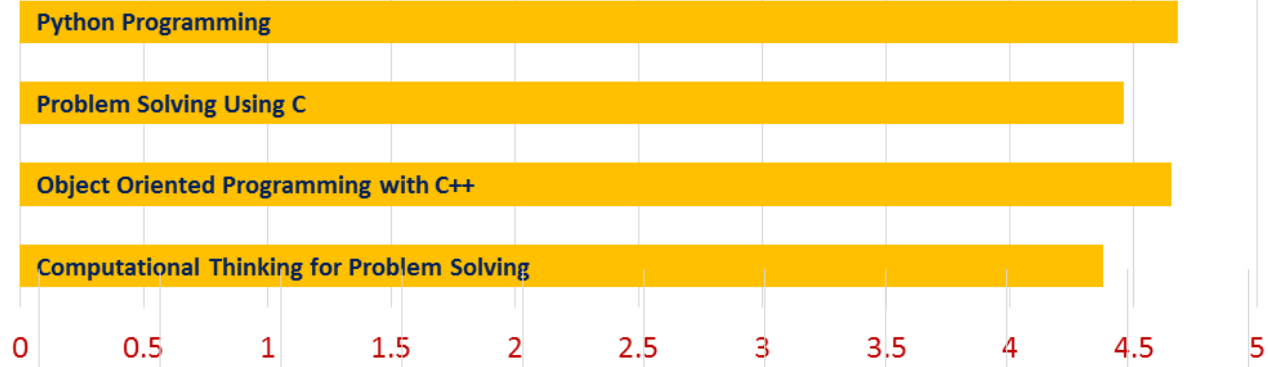
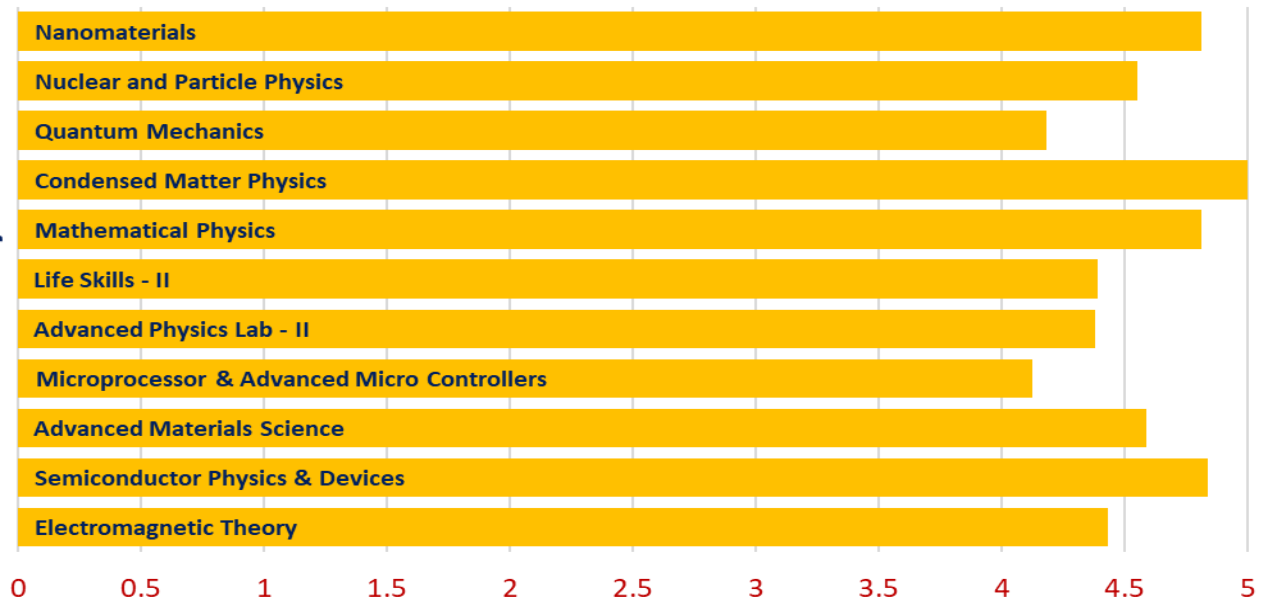


Mathematics

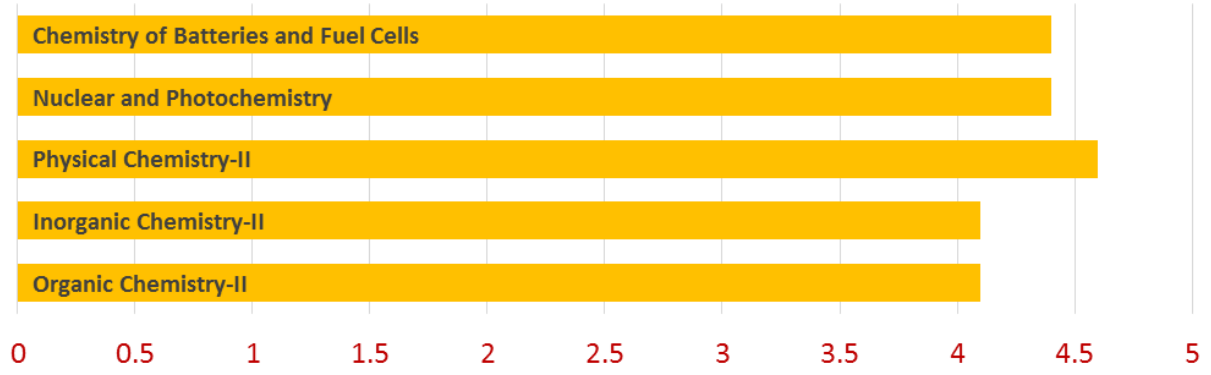


English



FME - MECH**FME-ECE & EEE****FME- CSE****FME- BIO****M.Sc. Physics**

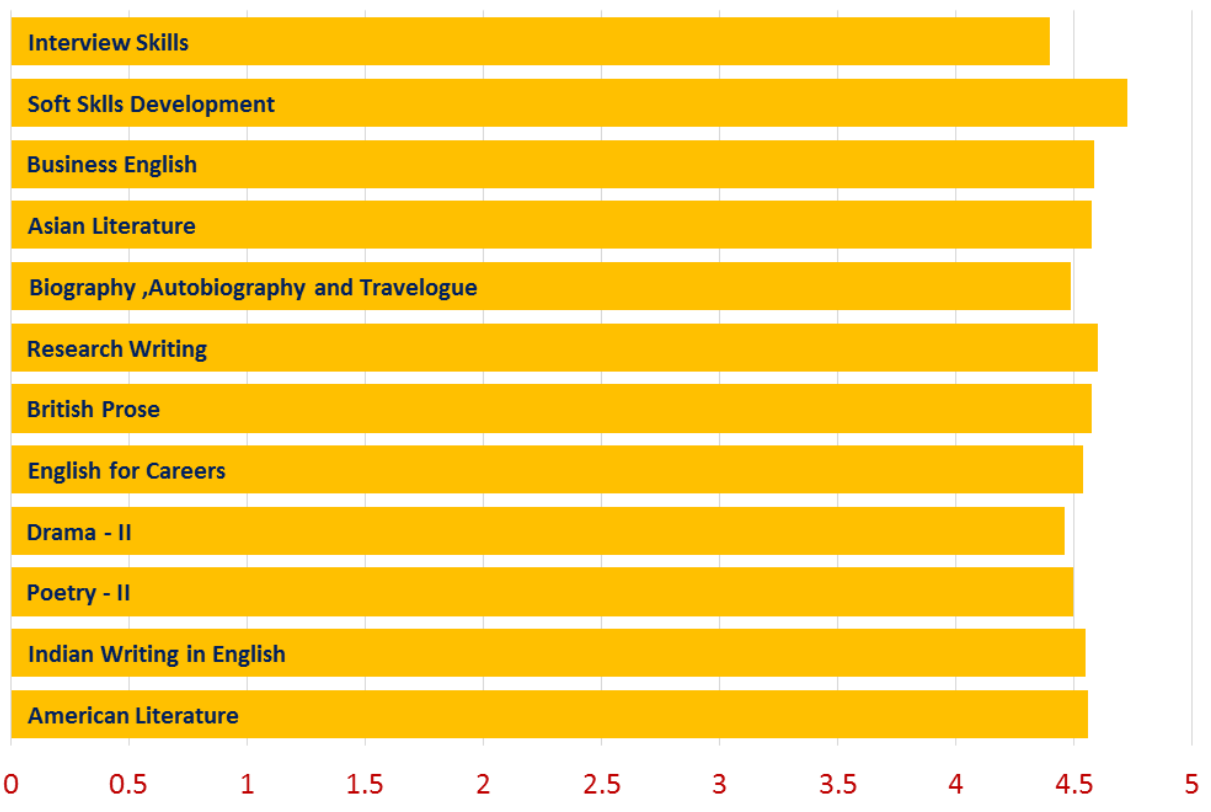
M.Sc. Chemistry



M.Sc. Mathematics



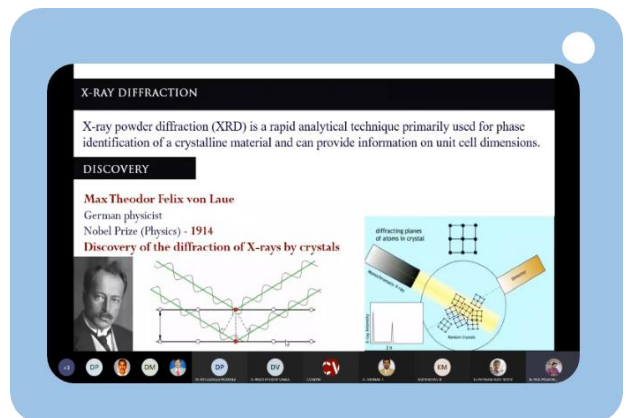
M.A. English





FACULTY PROFESSIONAL

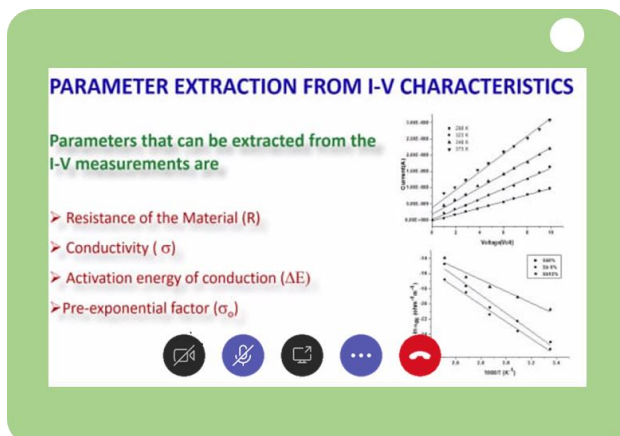
FME always encourages its faculty to participate in FDPs, conferences, workshops, etc for their career advancements. These activities ensure updating and sharpening the know-how of the teaching fraternity. FME takes pride in having conducted various FDPs, and webinars during the last academic year 2021-22. Faculty development programmes were conducted for subjects in various departments like Physics, Chemistry, Mathematics, and English. General FDPs on topics such as Active Learning Methods and Universal Human Values were also organised during this year. The departments under FME have organised National and International Conferences, FDPs, Seminars, and Webinars to facilitate knowledge-pooling. To add to the pride, some of the faculty showcased their expertise in their respective subjects by acting as the resource persons in various Conferences, FDPs, Seminars, and Webinars.



FDP on Physics of Materials

Date: 2/8/2021 to 6/8/2021

Organized by the Department of Physics



FDP on Semiconductor Physics

Date: 2/8/2021 to 6/8/2021

Organized by the Department of Physics



FDP on Engineering Chemistry

Date: 15/09/2021

Organized by the Department of Chemistry



Workshop on Design Thinking
Date: 26/10/2021
Organized by the Department of Chemistry



FDP on Active learning methods
Date: 28/03/2022
Organized by the Department of Mathematics



FDP on Active learning methods
Date: 12/04/2022
Organized by the Department of Physics



FDP on Active learning methods
Date: 29/03/2022
Organized by the Department of Chemistry



Workshop on "Descriptive Statistics Analysis using Excel" for MBA students
Date: 15th & 16th December 2021
Resource Person: Dr. M. Regan
Organized by the Department of Mathematics



FDP on Universal Human Values
Date: 21/02/2022
Organized by the Department of Physics



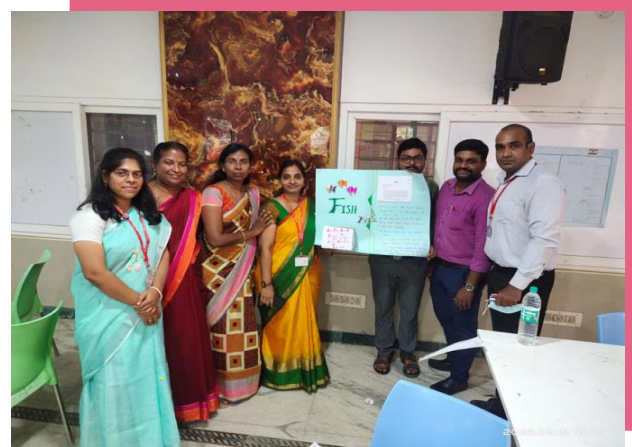
Dr. Vinothkumar (English Department) Served as a resource person and delivered a lecture on “The Evolution of Modern Theatres in Twentieth Century: A Study on Theatrical Techniques” on 25.03.2022 in Thiruthangal Nadar Arts College, Chennai.



Dr. R. Udhayakumar (English Department) served as a Resource Person for a Two-day FDP on Teaching Techniques, Methods, Strategies, & Techniques, Organized by Vel Tech Rangu Sanku Arts College, Avadi, Chennai – 600062 on 25 & 26th March 2022.



The Department of English coordinated with School of Science and Humanities in organizing a One day FDP on “Effective Teaching Through Active Learning Methods”. **Dr. P. Saranya and Dr. P. Revathi**, from department of English acted as resource persons of the day. More than 100 faculty members from FME benefitted through the same.



National Webinar on Advanced Materials for various technological applications
7th October 2021
Organized by the Department of Physics



National Webinar on Application of Composite materials in Defence and Stealth Technology
11th September 2021
Organized by the Department of Physics

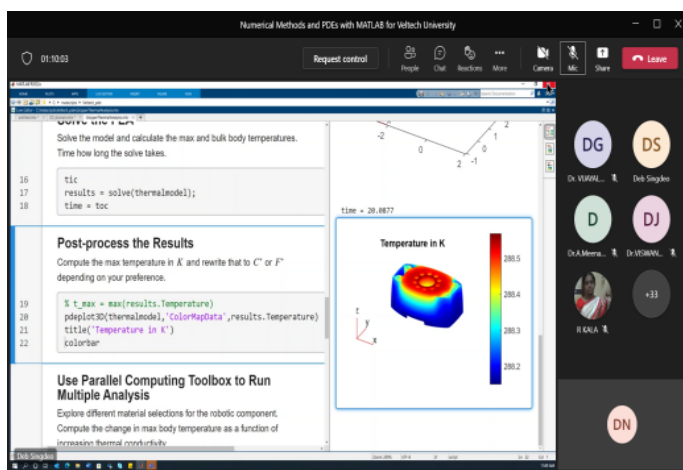
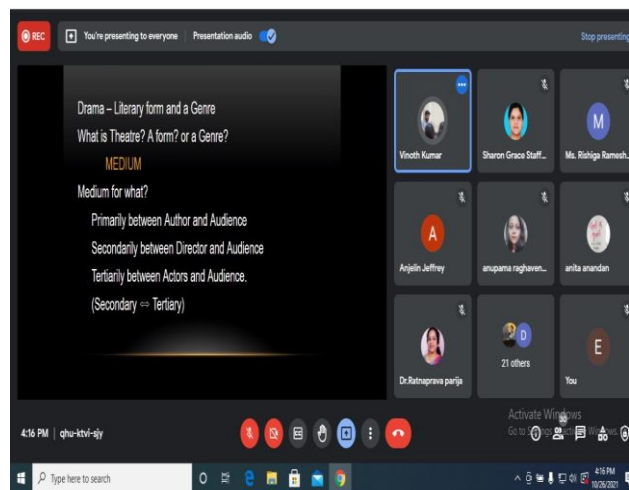
**International Virtual Conference on CRISA
(Crossroads an Intersectional Approach to English
Language and Literature)**

17th & 18th November 2021

Organized by Department of English

CRISA (Crossroads an Intersectional Approach to English Language and Literature) was organized by The Department of English, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology. The Two Day International Virtual Conference was conducted on the 17th and 18th of November 2021 in the presence of the Col. Prof. Vel. Dr. R. Rangarajan, Chancellor & Founder President, Dr. Sagunthala Rangarajan, Foundress President, and Prof. S. Salivahanan, Vice Chancellor. The conference was conducted over Microsoft Teams, with over 75 presenters and 200 participants.

CRISA - the conference's name (Italian) reflects the motto, emphasizing the ambition to push new undertakings, provide innovative ideas, creative outbursts, and rational comprehension in the field of English Language and Literature. The conference emphasizes an intersectional approach to the subject. CRISA 2021's definition of literature includes a diverse range of texts, forms, and genres. In addition to more traditional literature studies, CRISA 2021 welcomed entries dealing with film and television, visual art, spoken word poetry and other oral forms, hip-hop, comic books, graphic novels, children's literature, and historical records and events.

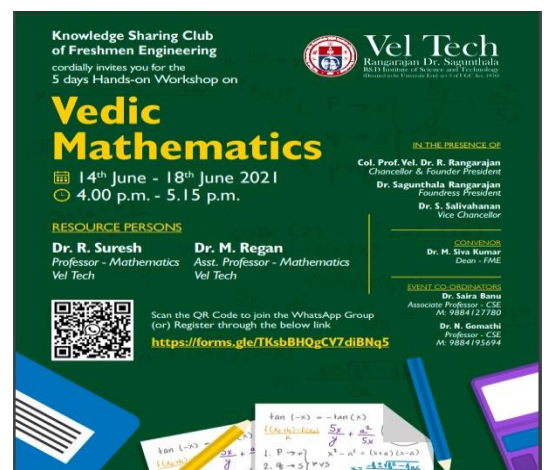


Three - Days FDP on “MATLAB Programming Techniques”

Date: 21/02/22, 22/02/22 & 13/04/22

Organized by Department of Mathematics

Eminent personalities from MathWorks Dr. Debannand Singdeo, Dr. Devarpita Sinha and Dr. Pratyush Roy delivered talk on various programming techniques useful in imparting engineering mathematics to the students. Nearly 65 participants including teaching staffs and research scholars got benefitted by the program.



Five-day workshop on Vedic mathematics was conducted from 14th June 2021 to 18th June 2021, by the Department of Mathematics. Dr. R. Suresh and Dr. M. Regan were the resource persons. Nearly 70 participants from various departments participated in the workshop and got benefitted by knowing the various short cuts of mathematics.



EVENTS ORGANIZED

Big things often commence from small beginnings, a good onset ensures half the job is done. Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology is proud to call itself the first institution in India for its holistic approach to initiate the Induction cum Acquaintance programme for its Freshman Engineers. While ICA programmes are gaining importance in many institutions around the country after being recommended by the AICTE, Vel Tech has been conducting this since 2015. The ICA programme is well-designed to enable the students to achieve the required level of assumed knowledge and skills. It is an endeavour to develop entrepreneurship acumen among budding engineers. **The ICA programme for the year 2021-2022 was inaugurated through online mode due to the pandemic situation. On 9th August 2021, the ICA programme was organized for the freshman engineers.** It comprises around 30 topics scheduled in a span of 21 days. ICA programme gives a brief knowledge of the various courses available so that the students get a clear idea of what and how to choose in the CBCS pattern of education. It is administered to ignite the potential of the students and to build their confidence and skills for the successful transition from school to college. It also assists students in their personal development of life skills including test-taking strategies. ICA familiarizes them about college and its resources. It fosters positive relationships with peers, faculty, and staff in the college. Every year the framework of the induction programme has been reviewed and updated. The approach to Student induction is the process of transition from secondary to higher education. The framework ensures that students are supported throughout their journey.

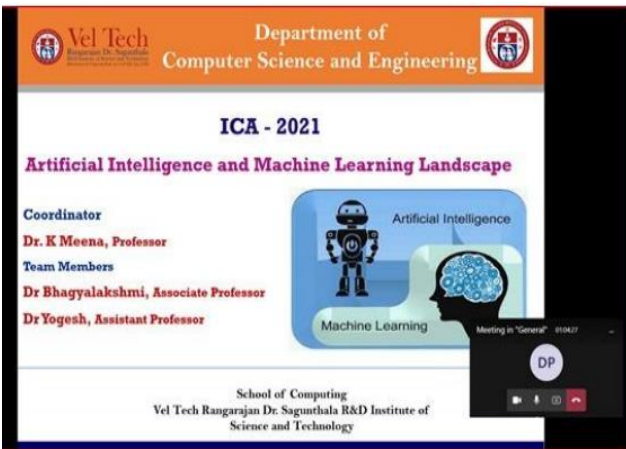
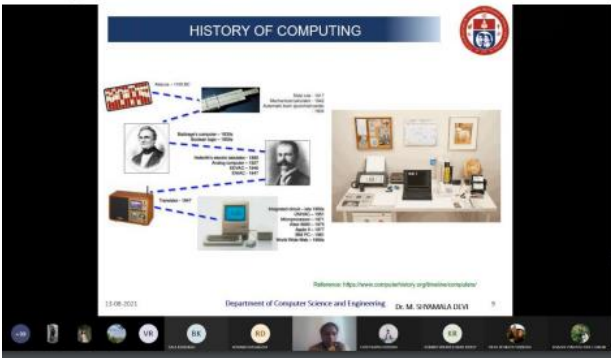
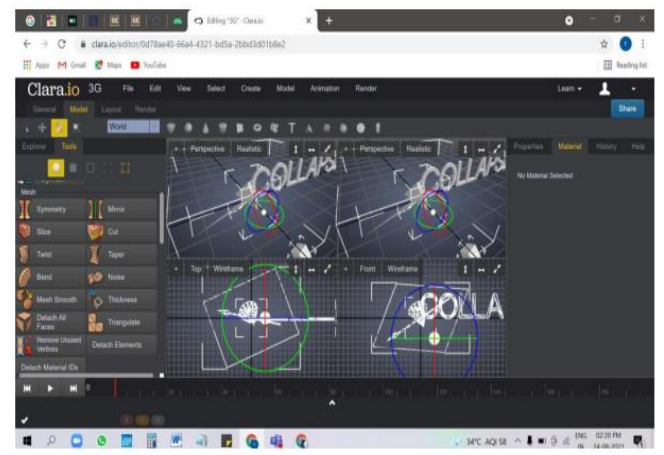
ICA INAUGURATION

Induction for new students will cover the breadth of the student experience including an academic induction that addresses the skills required for a degree and a university induction that will cover student support within campus and access to student services. Formal induction arrangements are coordinated by Freshman Engineering Cell. All academic departments and supporting departments contribute by organizing events that will exhibit their specializations.





GLIMPSES OF ICA ACTIVITIES



PG Inauguration

FME organised the inauguration of PG courses (M.A. English, M.Sc. Mathematics, Physics, Chemistry) on 22nd October 2021 with great zeal. Due to the pandemic situation, the inauguration was conducted via online. Students were highly motivated in the field of research and higher education. They were also made to realise the opportunities in their respective fields.

75th Azadi Ka Amrit Mahotsav

Freshman Engineering organized a special lecture session and exhibition as a part of “75th Azadi Ka Amrit Mahotsav”, on 25/11/2021, 10 am in the University ECE Gallery Hall. Mr.Y.S.T.Raju, Outstanding Scientist, Associate Director (IFCS), CVRDE was the resource person. Azadi Ka Amrit Mahotsav is an initiative of the Government of India to celebrate and commemorate 75 years of independence and the glorious history of its people, culture, and achievements. This Mahotsav is dedicated to the people of India who have not only been instrumental in bringing India thus far in its evolutionary journey but also hold within them the power and potential to enable Prime Minister Narendra Modi's vision of activating India 2.0, fuelled by the spirit of Aatmanirbhar Bharat. The inauguration was followed by an exhibition in the Engineering Hives 7001 and 7002. the Exhibition was open for two days (25/11/21 and 26/11/2021), first year students, higher-semester, and PG students were allowed to visit the exhibition. Around 2500 students visited the exhibition. Various models of heavy vehicles used by the Ministry of Defence such as MBT Arjun Mk1A, Arjun ARRV, Carrier command post tracked vehicle CCPT, Armoured ambulance Tracked Vehicle AAT, Aircraft products for LCA Tejas, etc were displayed in the exhibition. It was a new learning experience for the students.



FME TALENT SEARCH FORUM

The Freshman Engineering -Talent Search Forum (FME-TSF) which is conducted annually at Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology was yet another opportunity created for the FME students to showcase their talents. FME-TSF conducts various competitions throughout the year and the event concludes with the grand celebration of FME Science Fest. FME-TSF is celebrated every year at Vel Tech on 29th of February, however, this year it was pushed to 20.05.2022 due to lockdown in the month of February. FME -TSF 2022 was conducted in the offline/physical mode. The theme for the year was Integrated Approach in Science and Technology for Sustainable Future.

The **Literary and Life Skills Wing** came up with language developing events like **Essay Writing, Story Writing, Who Am I, Test Your Vocab, and Connexions**. Students participated in all the events with great interest and eagerness. Three winners viz 1st, 2nd, and 3rd prize winners were chosen for each of the events. Approximately about 50 students received the winner's certificates under the Literary wing. The students gave positive feedback that they expected this kind of event to be conducted very often.

Science & Sustainability Wing

Intellectual competitions such as **Quiz, Paper presentation, Collage, Space Exploration and Code Debugging** were conducted by this wing. It was an expedition on the IQ level of the students.

Cultural & Creative Arts Wing

Fun activities like **Vegetable Carving, Fireless cooking, Dance (Solo and Group), Song (Solo and Group) and Instrument Playing** were initiated by the Cultural & Creative Arts Wing.

Sports & Games Wing

Physical sports and games such as **Foot Ball (Boys), Volley Ball (Boys), Chess, Shuttle Badminton and Throw Ball (Girls)** were conducted by the Sports & Games Wing to encourage sportsmanship among the students.

FME-TSF came to a culmination with the grand celebration of **Science Day on 20th May 2022**. It was held in Vel Murugan Auditorium. The programme started at 2.00 pm with the usual agenda of Prayer, Classical Dance, Welcome address by the Dean-FME, Felicitation address by the Registrar, Felicitation address by the Vice Chancellor, Introduction of the Chief Guest by the Head-Department of English, Special Address by the chief guest, Certificate distribution to the winners, Vote of thanks and National Anthem. The special address was given by the vibrant Chief Guest, **Mr. M. Khader Basha, Scientist-G, Additional Director, CVRDE, Avadi**.

He enlightened the boisterous student gathering with his wide experiences. His speech was motivational with a lot of anecdotes from his own life. The prize- winners walked away with proud and happy faces for having received their first certificate from Vel Tech. The students gave positive feedback that they expected this kind of event throughout their four years of study.





ACHIEVEMENTS

The faculty members of various departments of FME go beyond the usual routine of teaching, evaluating, grading assignment etc. to contribute to their personal growth as well. They share their expertise in the forms of book publication, paper presentations, acting as resource persons FDPs, Seminars, Webinars, Workshops and conferences. They have also been recognized and awarded Young Academician Award, Most Innovative Educationist, Excellence in Teaching Award etc. The Management has appreciated their achievements and awarded cash prizes for their efficiency. Apart from academics, the institution conducts Intra-Collegiate sports event for faculty members. Faculty have participated actively in various competitions and won prizes. Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology received a Certificate of Appreciation from Pearson Publication in 2022 for maximum student enrolment for Pearson Mepro/Versant English Proficiency tests by B. Tech. Students. It is the teachers' responsibility to engage students in learning by tapping into intrinsic and extrinsic motivations.



Dr. M.R. Bindu
HoD - English

received the prestigious Academic Award in **Red Talks International** on the eve of International Mother Language Day 2022 on 28 February, 2022.



Dr. R. Udhaya Kumar
Dept. of English

received **Certificate of Appreciation** from Pearson Publication in 2022.



Dr. V. Sundarapandian
Department of Mathematics

TOP 2%
SCIENTIST
WORLDWIDE



Dr. Joseph Raj Xavier
Department of Chemistry



Dr. R Udhaya Kumar from English department was awarded 'Young Academician Award 2021' by ESN Publications.



Dr. P. Saranya
Asst. Professor - English

completed **International TEFL/TESOL Certification** from **APTTI**, Canada in 2021.

awarded "**Excellence in English Teaching-2022**" by **ARIO Group of Companies**, powered by **Ministry of Corporate Affairs and Ministry of MSME**.

awarded the "**Most Innovative Educationist -2022**" by **ESN Publications**.



Dr. M. Siva Kumar, Dean FME received a cash award for his publications.



Dr. V. Sundarapandian, Maths department received a cash award for his publications.



Dr. R. Suguna, CSE department received a cash award for her publications.



Dr. Kanni Raj, Chemistry department received a cash award for his publications.



Dr. N. Gomathi, CSE department received a cash award for her publications.



Dr. J. Udayaprakash, Mechanical department received a cash award for his publications.



Dr. Parthasaradhi Reddy, Physics department received a cash award for his publications.



Dr. Gowri Shankar Rao, Physics department received a cash award for his patents.



Dr. P. Revathi, English department received a cash award for her publications.



Dr. S. Paulraj, Physics department received a cash award for his publications.



Dr. P. Saranya, English department received a cash award for her publications.



Dr. J. Gajendiran, Physics department received a cash award for his publications.

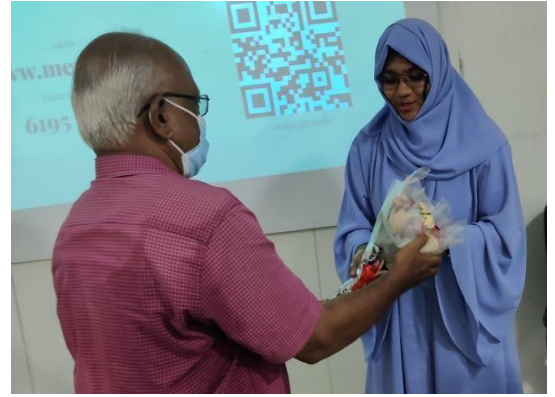


Mr. J. Raja Beryl, Chemistry department received a cash award for his publications.



Ms. Shaziya Fathima
Research Scholar
Department of English
Supervisor: Dr. P. Saranya

- ❑ **Best Oral Presenter Award** at an International Conference conducted by Eudoxia Research Center.
- ❑ **Best Poster Presentation Award** at an International Conference held by ISRA and ICLLR.
- ❑ **Delivered a speech** at an International Webinar held by WELLTTA on Cyberpunk Dystopia.
- ❑ Invited as a **resource person** by the company ITBMS to conduct an awareness program on mental health.
- ❑ Invited as the **resource person** for a national webinar on Cyber literature from Presidency University, Bangalore
- ❑ Invited as a **judge** for a poetry contest - Haiku as a part of their yearly cultural programme, from Chevalier T Thomas Elizabeth College for Women



FME students getting award during Science day for winning in various TSF events.





INFRASTRUCTURE

The administrative office and classrooms of FME are located in the 6th block. It is established over three floors of the 6th block. Nearly, 39 classrooms are allocated exclusively for the School of FME. Alongside there are labs for each department, hives, workspaces, drawing halls, libraries etc

CLASS ROOMS

Every classroom is equipped with necessary amenities like good LED light, Green Board, Furnished Desks, Projector, CPU and Faculty Desk.

ENGINEERING HIVES

The School of Freshman Engineering has two Engineering Hives namely Sri Ramanujan Hive (B7Ground Floor 7001) and Sir C V Raman Hive(B7Ground Floor 7001) exclusively for the first year students. The hives are used to practice Active Learning Methods. These hives are equipped with convenient infrastructure like movable tables and chairs, writable walls, good audio system with projectors and white board.

DRAWING HALLS

Spacious drawing halls located at Block -6 , 3rd floor and Research park 3rd floor for the first year students to practice engineering drawings on the unique drawing tables with provision for height and angle adjustment.

PHYSICS LAB

The Physics Lab with is equipped with advanced instruments like Semiconductor Laser, Ultrasonic Interferometer, Photo Voltaic setup, Spectrometer-Grating, Young's Modulus, Torsional Pendulum, Hall Effect setup, Dielectric Constant setup, Four Probe setup, Travelling Microscope etc to enhance the practical learning and conduct the experiments.

CHEMISTRY LAB

Engineering Chemistry Lab with equipment like Conductivity Meter, pH Meter, Flame Photometer, Potentiometer, Spectrophotometer, Deionizer, Electronic Balance, TDS Meter, Polishing Machine, Ultra Sonicator, etc., provides students with a practical approach towards various techniques used in Engineering application.

MATLAB

MATLAB integrates computations, visualization, and programming in an easily usable environment to obtain solutions to problems using mathematical equations. It is a multi-paradigm numerical computing environment. Using MATLAB, students can learn matrix manipulations, plotting of functions and data, implementation of algorithms, and creation of user interfaces.

CDIO

The Institution holds the pride of being the First Member from India in the Conceive-Design-Implement Operate (CDIO) worldwide initiative with an aim to produce the efficient engineers for the coming generations. These labs enable hands-on learning experience of engineering practices.

English Language Lab

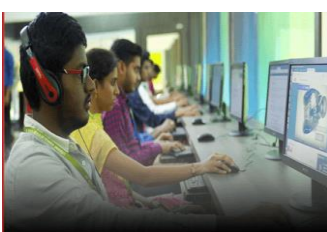
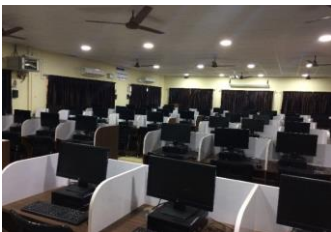
English Lab has been set up with the view of providing a workspace for practical learning and usage of the English language. The first-year students can make use of the lab to develop LSRW skills required for language improvement.

Programming Lab

Programming Lab provides a computing environment for student programming assignments and practice. Our cloud-based learning environment pairs an extensive fully-managed software library with a user-friendly and pedagogically effective workbench for creating, distributing, and grading coding assignments. Features include auto-graded assignments, in-line feedback on code, leader boards, etc.

Basic Electrical and Electronics Laboratory

BEEE Lab is devoted to the study of the principles of electricity to develop machines, devices, and systems. It covers all the basic devices that serve as the most basic building block of almost all electronic and electrical devices. This lab lays a firm foundation for what is to be learned throughout the Engineering curriculum. Some instruments used in the BEEE lab are: Function Generators, Step Down Transformers, Regulated Power Supply, Voltmeter, Ammeter, Solar Panel, Capacitor, and Integrated Circuits for Logic Gates, etc.



46

CLASS
ROOMS

02

ENGINEERING
HIVES

13

FME
LABS

03

PG
LABS

02

RESEARCH
LABS

03

CDIO
WORKSPACE

04

DRAWING
HALLS



Vel Tech
Rangarajan Dr. Sagunthala
R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)