IIT PALAKKAD

POST GRADUATE ADMISSION
2026 - 2027

INFORMATION BROCHURE

ഭാരതീയ സാങ്കേതികവിദ്യാ സ്ഥാപനം പാലക്കാട്
भारतीय प्रौद्योगिकी संस्थान पालक्काड
Indian Institute of Technology Palakkad
Nurturing Minds For a Better World

IIT PALAKKAD

iitpkd.ac.in

CONTENTS

1. THE INSTITUTE

Main Entrance to the Nila campus

The Nila campus

Established in 2015, the Indian Institute of Technology Palakkad is dedicated to fostering a learning community committed to the pursuit of knowledge, one that re-imagines, ideates, experiments and innovates, thereby becoming a change agent for a better world. Having begun with just 120 students in July 2015, IIT Palakkad has since grown into an establishment with nearly a thousand five hundred students and appreciable human resources in key positions. IIT Palakkad aims to become a multi-disciplinary institution with

5000 students by its 15th year. The Institute recognizes the imperative for collective growth, in collaboration with industry and other academic institutions, and emphasizes blue-sky research and directed research as two essential pillars of technology development. The Institute embraces a vision to be a leader in cross-disciplinary inquiries and to contribute to the potential that India's current median age being 28.2 years represents for the country and the world, encapsulated in the Institute's motto, "Nurturing minds for a better world."

Aerial view of the Nila Campus

In 2023, IIT Palakkad commenced full-fledged operations on its permanent campus, located by the scenic foothills of the Sahyadri mountain range, after which it is named. The Sahyadri campus sprawls across 504 acres and houses facilities for a range of academic, administration, and research activities. The academic block 'Saraswati', features a classroom Complex for around 2000 students. It also has a digitalized Central Library with about 11000+ printed copies and many digital resources already accessible to the teaching and student fraternity.

The administrative block on campus is the Dr. APJ Abdul Kalam Block, Verghese Kurian Block is a Classroom cum Laboratory Complex, and the Sangraha Block features four precast buildings. Additionally, the campus houses cutting-edge laboratories and centers like the Smart AgriTech Centre for Advanced Research and Development (SATCARD), the Global Sanitation Centre of Excellence (GSCOE) lab, Environmental Engineering lab, and a Central Instrumentation Facility (CIF). The Institute is also in the process of setting up a sophisticated NMR facility.

Additionally, the campus has two hostels, 'Malhar' and 'Saveri', and a dining hall cum kitchen complex 'Kedaram'. To augment the gradually expanding facilities on Sahyadri campus, the transit campus in close proximity and functional since 2019, Nila, houses an academic space 'Samgatha', a laboratory complex 'Manogatha', essential facilities such as the Institute Clinic, an Amenity Center, the Csquare Innovation lab, and an Auditorium, besides the 'Brindavani' and 'Tilang' hostels and an Air Quality monitoring weather station.

The Institute offers an extensive range of programs, including five B. Tech. programmes, ten M. Tech. programmes, and three M. Sc. programmes, catering to a diverse student body of over nearly 1500 individuals. To ensure that graduates are equipped to thrive in an ever-evolving professional space, IIT Palakkad has been implementing a Credit Based Curriculum (CBC) since 2022-23. This revamped curriculum promotes interdisciplinary learning and offers students the flexibility to choose electives beyond the confines of their major discipline, enabling them to explore their full potential and diverse interests.

Saraswati Block, Sahyadri Campus

Research pursuits at IIT Palakkad prioritize areas of utmost significance to the local ecosystem, including Agricultural Engineering and Food Science, Water Resources and Hydrology, Geotechnical Engineering, Ecology and Sustainability, and Health and Biomedical Sciences & Engineering. The incubator arm of IIT Palakkad recognized as a Technology Business Incubator by Startup India, TECHIN, is dedicated to nurturing early-stage startups and aspiring entrepreneurs and guiding them on their journey to setting up successful and sustainable businesses. TECHIN's mission is to provide comprehensive support to innovators, including financial assistance, expert mentorship, skill development,

business support services, and access to state-of-the-art R&D facilities. IIT Palakkad has incorporated IPTIF (a section-8 company) as one among the 25 Technology Innovation Hubs (TIH) across India, backed by the Department of Science and Technology, Government of India under its National Mission on Interdisciplinary Cyber-physical Systems (NM-ICPS). IPTIF works to foster an innovation ecosystem conducive to advancing cutting-edge technologies and products, nurturing deep-tech startups and entrepreneurs, enhancing human resources through upskilling, and establishing top-notch R&D, prototyping, and testing facilities. The Centre for Renewable Energy (CORE) is a dedicated facility that drives research and development in renewable energy technologies.

Located just 14 kilometers from the Palakkad Railway Junction and approximately 60 kilometers from the Coimbatore International Airport, our institute offers excellent connectivity for students and visitors alike. IIT Palakkad is entering a new phase of expansion and creativity, thanks to its highly skilled professors, accomplished students in academics and extracurriculars, dedicated staff, and advanced research facilities.

2. ABOUT THE POST-GRADUATE PROGRAMMES

2.1 M. Tech. Programmes

The Four-semester M. Tech. Programmes are offered in ten specialisations at the institute. They are following a choice based curriculum and provide a student with a wide choice of courses. The curricula are drafted carefully to provide the students with realistic Engineering and Technological exposure with a strong theoretical foundation. Each programme comprises several core and elective courses and project work. The ten M. Tech. Programmes for the academic year 2026-27 and the minimum educational qualifications are given in the Table-1.

Table-1: Minimum Educational Qualifications for the M. Tech. Programmes

PROGRAMME	MINIMUM EDUCATIONAL QUALIFICATIONS
Computing and Mathematics	1. To be eligible for the regular category of admission, candidates must possess • A valid GATE score in CS/MA and • Either a four year bachelor's degree in Engineering/ Technology in Computer Science and Engineering/ Information Technology or a four year bachelor's degree with Mathematics as a major or a master's degree in Mathematics.

PROGRAMME	MINIMUM EDUCATIONAL QUALIFICATIONS
	2. To be eligible for other categories of admission where a GATE score is not mandatory as per the institute regulations (such as sponsored category, CFTI degree holders etc.), candidates must possess one of the following. • A four year bachelor's degree in Engineering/ Technology in Computer Science and Engineering/ Information Technology • A four year bachelor's degree with Mathematics as a major • A master's degree in Mathematics
Data Science	1. 4-year undergraduate degree (BE, B. Tech., or BS) in any discipline or MSc in Data Science/ Artificial Intelligence/ Machine Learning/ Mathematics/ Statistics/ Applied Mathematics/ Physics, along with 2. Valid GATE qualification in DA or CS.
Design and Automation	1. UG degree in Mechanical Engineering/ Civil Engineering/ Aerospace Engineering/ Production Engineering/ Industrial Engineering/ Manufacturing Engineering/ Automobile Engineering 2. Valid GATE qualification in ME/ AE/ XE-D
Geotechnical Engineering	1. UG degree in Civil Engineering 2. Valid GATE qualification in CE
Manufacturing and Materials Engineering	1. UG degree in Mechanical Engineering/ Production Engineering/ Manufacturing Engineering/ Metallurgical & Materials Engineering/ Metallurgical Engineering/ Manufacturing Technology/ Industrial & Production Engineering/ Material Science Engineering/ Materials Engineering. 2. Valid GATE qualification in ME/ PI/ MT
Power Electronics and Power Systems	1. UG degree in Electrical Engineering/ Instrumentation Engineering/ Electrical and Electronics Engineering and 2. Valid GATE qualification in EE
Structural Engineering	1. UG degree in Civil Engineering 2. Valid GATE qualification in Civil Engineering

PROGRAMME	MINIMUM EDUCATIONAL QUALIFICATIONS
System-on-Chip Design	1. B. Tech./ BE in one of the following branches: Electrical Engineering/ Electronics Engineering/ Electronics and communication Engineering/ Instrumentation engineering/ Instrumentation and control engineering/ Telecommunication engineering/ Electronics and Telecommunication engineering/ Electrical and Electronics Engineering/ Electronics and Instrumentation Engineering/ Computer Engineering and Information Technology/ Computer Science and Engineering/ Computer Engineering/ Computer Science and System Engineering/ Electrical Engineering and Computer Science/ Electronics & Computer Engineering/ Information and Communication Technology/ Information Science and Engineering/ Computer Science/ Electronic Instrumentation and Control Engineering/ Information Technology 2. Valid GATE Score in EE/ EC/ IN/ CS
Thermofluids Engineering	1. UG degree in Mechanical Engineering/ Aerospace Engineering/ Energy Engineering/ Automobile Engineering 2. Valid GATE qualification in ME/AE/XE-B/XE-E
Water Resources Engineering	1. UG degree in Civil Engineering/ Agricultural Engineering 2. Valid GATE qualification in Civil or Agricultural Engineering

Candidates must be Indian Nationals. Candidates should have a valid GATE score with qualifying marks (Qualified in GATE 2026/2025/2024).

2.2 M.Sc Programmes

The postgraduate programme of M. Sc. in the disciplines of Chemistry, Mathematics, and Physics, is intended to take the students to a higher and specialised realm in the respective disciplines. M. Sc. at IIT Palakkad is a Four-semester programme. The minimum educational qualifications for admission to the M. Sc. Programmes of IIT Palakkad are given in the Table-2.

Table-2: Minimum Educational Qualifications for the M. Sc. Programmes

PROGRAMME	MINIMUM EDUCATIONAL QUALIFICATIONS
Chemistry	• JAM (Joint Admission test for Masters) qualified in Chemistry (CY) • No restrictions at 10+2 level • Bachelor's degree
Mathematics	• JAM(Joint Admission test for Masters) qualified in Mathematics (MA) • No restrictions at 10+2 level • Bachelor's degree (with at least three Mathematics courses as a part of the bachelor's degree programme)
Physics	• JAM (Joint Admission test for Masters) qualified in Physics (PY) • No restrictions at 10+2 level • Bachelor's degree

2.3 Half-Time Teaching Assistantship (HTTA) for the students (of Indian origin only) admitted to the M. Tech. Programmes

Financial assistance in the form of a Half-Time Teaching Assistantship (HTTA) at the rate of Rs. 12,400/- (Rupees Twelve Thousand Four Hundred Only) per month, which is tenable for a maximum period of 24 months, will be awarded to the students of Indian Nationality joining the M. Tech. Programmes, as per the extant rules of the institute.

The student should have a valid GATE score with qualifying marks at the time of admission or have a B. Tech. degree from an IIT with a CGPA of at least 8.0 (on a scale of 10).

The candidates admitted under the Category-A of Section 3.1 below ONLY are eligible for HTTA. Such students are required to assist with the academic and curricular activities of the institute for at least eight hours per week. These activities could be related to activities such as laboratory demonstrations, tutorials, evaluations of assignments, test papers, seminars, research projects, etc.

HTTA is tenable for a maximum period of 24 months. Students availing HTTA are not entitled to avail any other scholarship/stipend during the period.

2.4 Scholarships and financial assistance for the students (of Indian origin only) admitted to the M. Sc. Programmes

The institute facilitates Scholarships through the National Scholarship Portal (NSP - *https://nsp.gov.in/)*, for the students admitted to the M. Sc. Programmes.

For more details on the scholarships and financial assistance, please visit
https://iitpkd.ac.in/scholarships-and-financial-assistance

2.5 Reservation of Seats

Reservation of seats for the Indian Nationals under the prescribed categories, SC/ ST/ OBC (Non-Creamy layer), PwD (Persons with Disability) and Economically Weaker Section (EWS) of the General Category, is followed as per the extant rules of the Government of India.

3. ADMISSION TO THE M. TECH. PROGRAMMES

3.1 Who can apply?

A. REGULAR CANDIDATES

(i) Candidates qualified in GATE 2026/ 2025/ 2024 and satisfying one or more of the qualifications given in Table-1. The following undergraduate degrees are considered for admissions.

    a) Bachelor's degree in Engineering/ Technology from educational Institutions approved by AICTE/ Government of India.

    b) Degrees obtained through Distance Education/ correspondence mode for the qualifying degree.

    c) Associate Membership holders of professional bodies (e.g. AMIE, AMAeSI) for admission into their parent disciplines.

- The Institute reserves the right to conduct a suitability test/ an interview for screening in the cases under the categories (b) and (c) above.
- The candidates who are in the final year of their qualifying degree, and who are yet to appear for or have already appeared in the final examination for the qualifying degree specified in [(i), (ii) or (iii)] above, shall also be eligible to apply, subject to their results being declared by the third week of July 2026 and their successful completion of the final examination.

- If the degree is issued by a university/ institution in countries other than India, the same must be recognized by Association of Indian Universities (AIU)/ Commonwealth Universities/ International Association of Universities (IAU), as equivalent to the corresponding Indian Degrees/ Certificates. Additional requirements of TOEFL/ IELTS are also mandated for such candidates in case the medium of instruction in the preceding degree is not in English.

(ii) B. Tech. Graduates from IITs getting a CGPA of 8 or above (on a scale of 10) are also eligible to apply for an M. Tech. programme as a regular candidate. GATE score is not required for such candidates.

B. SPONSORED CANDIDATES

Candidates sponsored by Industries/ established Academic Institutes/ R&D Organizations/ National laboratories/ public-sector Organizations/ Governments Departments, who are **fulfilling the educational qualifications listed in Table-1**, are eligible to apply, provided (a) the employer grants two years of study leave and (b) the employer undertakes to financially support the candidate for the entire duration of two years. **The candidates who seek admission under the sponsored category do not require GATE qualification.**

C. FOREIGN NATIONALS

Foreign nationals who have a bachelor's degree in Engineering/ Technology are eligible to apply. The bachelor's degree should have been completed with English as the medium of instruction; otherwise, the applicant is required to possess a valid TOEFL/ IELTS score. Foreign nationals who have done their Bachelors in India are not considered under the Foreign Admission category and will be given admission only based on a valid GATE score with qualifying marks. Also, foreign nationals who were born and secured OCI/ PIO card before 04.03.2021 shall be considered for seats in the unreserved category.

D. CANDIDATES SPONSORED BY THE MINISTRY OF DEFENCE

Candidates who are sponsored by the Defence Authority(Research & Training and Post Graduate Training), for admission to the M. Tech. Programmes are selected through a separate procedure, as followed by the Ministry of Defence. **The candidates who are sponsored by the Ministry of Defence do not require GATE qualification.**

3.2 How to apply?

Applications for the M. Tech. programmes should be submitted in **ONLINE** mode only. For submission of applications ONLINE, please click *https://pgadmit.iitpkd.ac.in.* Instructions and more details are available on this website.

Application Timeline	
Opening Date	**26th of March, 2026**
Closing Date	**25th of April, 2026 (23:59 hours)**
Application Fee	
SC/ ST/ Female/ PwD/ Transgender	**Rs.250/-**
All Other Candidates	**Rs.500/-**

4. ADMISSION TO THE M.Sc PROGRAMMES

4.1 Who can apply?

The candidates who have qualified in JAM (Joint Admission test for Masters) and who fulfil the minimum educational qualifications as in the Table-2 of Section 2.2 are ONLY eligible for applying to the M. Sc. Programmes.

4.2 How to apply

Application for admission to the M.Sc. Programmes of IIT Palakkad should be done through the JAM 2026 portal of IIT Bombay, the details of which can be viewed at
https://jam2026.iitb.ac.in/#

5. WHOM TO CONTACT IN CASE OF QUERIES?

PG Admission Committee
Indian Institute of Technology Palakkad,
Kanjikode West, Palakkad, Kerala - 678 623.

Please write to us in case of any queries to *pgadm@iitpkd.ac.in* or contact us at **+91-491-209 2035/36** [queries will be answered during office hours (from 9 AM to 5 PM) on all working days].

6. GENERAL INFORMATION AND IMPORTANT POINTS

1. The application fee should be paid in ONLINE mode only through the appropriate portal. Other modes of payment **will not be accepted** and will be subject to rejection of the application. **The proof of payment/ transaction shall be uploaded while filling up the application form at the appropriate place.**

2. The application fee, once paid, will not be refunded under any circumstances.

3. Incomplete applications and applications without proper supporting documents will be summarily rejected. The institute will not be responsible for any incomplete applications and will not seek or entertain corrections of any sort from the candidates once the applications are submitted by the candidates. It is the sole responsibility of the candidates to check thoroughly and satisfy themselves before submitting.

4. **Candidates should submit separate applications for each programme they are applying for and application fee needs to be paid for each such application separately and the transaction details should be cited and proof of payment should be attached while submitting the application. In case of receipt of multiple applications from the same candidate with the same payment reference and supporting document, only one application will be considered by the institute and the rest will be rejected.**

5. Candidates are advised to submit their applications well in advance and avoid last-minute rush. The dates for submission of the applications will not be extended for any reason.

6. While applying for the M. Tech. admission, **the candidates need to register in the Common Offer Acceptance Portal (COAP)**. IIT Palakkad is one of the participants in the Common Offer Acceptance Portal (COAP), which provides a common platform for candidates to make the most preferred choice for admission to an M. Tech. programme offered by the participating institutes such as the IITs and the IISc. It is essential and mandatory that the applicants register with the **COAP 2026 portal** *https://coap2026.iitr.ac.in/coap2026/.* before they apply to the M. Tech. Programmes of IIT Palakkad. Applications without a valid COAP registration number will be rejected outright.

7. Upon successful completion and submission of the online application for an M. Tech. programme, the PDF of the submitted application will be emailed to the registered mail address of the applicant for reference and records. Candidates are advised to have a valid email address for this purpose. There is **NO** need to send the hard copy/ printed version to IIT Palakkad.

8. Please have the following supporting documents (as applicable) ready in PDF format, while submitting the application.

   a. Proof of Date of Birth (Birth Certificate or Class X or equivalent Certificate)
   b. Community / Category Certificate (GEN-EWS/ OBC-NCL/ SC/ ST/ PwD)
   c. Nationality
   d. Qualifying Degree Certificate
   e. GATE Score Card (2026/ 2025/ 2024)
   f. Proof of Payment of Application Fee (Separate Fee Receipts in case of submission of multiple applications by the same candidate)

7. GENERAL INFORMATION AND IMPORTANT POINTS

7.1 Fee Structure

Sl. No.	Particulars	M. Tech. [Indian, OCI/ PIO/SAARC (INR)]	M. Sc. [Indian, OCI/ PIO/SAARC (INR)]	Other Nationals (INR)
A. ONE TIME FEES (For newly admitted students)				
1	Admission Fee	300.00	300.00	300.00
2	Grade Card / Thesis Fee	350.00	350.00	350.00
3	Provisional Certificate	200.00	200.00	200.00
4	Alumni Life Membership Fee	1,700.00	1,700.00	1,700.00
5	Modernization Fee	300.00	300.00	300.00
6	Student Welfare Fund	700.00	700.00	700.00
7	Publication Fee	250.00	250.00	250.00
8	Institute Caution Deposit (Refundable)	1,000.00	1,000.00	1,000.00
9	Library Caution Deposit (Refundable)	1,000.00	1,000.00	1,000.00
10	Convocation Fee	2,000.00	2,000.00	2,000.00
	Subtotal A	**7,800.00**	**7,800.00**	**7,800.00**
B. INSTITUTE FEES (per semester for all students)				
1	Tuition Fee (Statutory) #	5,000.00	3,000.00	100,000.00
2	Examination Fee $	700.00	700.00	700.00
3	Registration - Enrollment Fee $	300.00	300.00	300.00
4	Hostel Seat Rent *	6,500.00	6,500.00	6,500.00
5	Electricity, Water and SWD Charges *	1700.00	1,700.00	1,700.00
	Subtotal B (for day scholars)	**6,000.00**	**4,000.00**	**101,000.00**
	Subtotal B (for hostellers)	**14200.00**	**12,200.00**	**109,200.00**
C. ONE-TIME HOSTEL FEES (for students newly admitted to hostels)				
1	Hostel Caution Deposit * (Refundable)	3,500.00	3,500.00	3,500.00
	Subtotal C	3,500.00	3,500.00	3,500.00
D. STUDENTS' SECTOR FEES & ADVANCE DINING CHARGES (per semester for all students)				
1	Medical Insurance (revised every semester)	1,340.00	1,340.00	1,340.00
2	Wellness Fee (revised every semester as per the actuals)	1,200.00	1,200.00	1,200.00
3	Gymkhana Fee (revised every year)	1,600.00	1,600.00	1,600.00
4	Establishment A	5,500.00	5,500.00	5,500.00
5	Hostel Admission Fee *	200.00	200.00	200.00
6	Establishment B *	1,800.00	1,800.00	1,800.00
7	Advance Dining Charges * (settled against mess bills)	28,500.00	28,500.00	28,500.00
	Subtotal D (for day scholars)	9,640.00	9,640.00	9,640.00
	Subtotal D (for hostellers)	40,140.00	31,640.00	40,140.00

For hostellers only. Dining charges for M. Tech. are for six months and for M.Sc. are for four months.

 # Tuition fee is waived for SC/ST/PwD students (Indian Nationals only)

$ All students are required to remit the prescribed components to retain their on-roll status, even if they are off- campus for a semester on other assignments or circumstances

7.2 Seat Acceptance Fees

The Seat Acceptance Fees as indicated in the table below shall be paid by the candidates who are provisionally offered to join the M. Tech./ M. Sc. Programmes. The details of the mode of fee remittance will be indicated in the Provisional Offer Letter issued by the institute after each Round of the COAP 2026 admission process. This will be adjusted with the total fee to be remitted by the candidate at the time of final payment. For the candidates who have submitted applications for admission to the M. Sc. Programmes through the JAM 2026 portal will be required to pay the Seat Acceptance Fee as per the instructions laid down in the JAM 2026 portal.

SL. No.	Programme	Seat Acceptance Fee (INR)	
		GEN/OBC/EWS (INR)	SC/ST/PwD (INR)
1	M. Tech. / M. Sc. (Regular)	10,000.00	5,000.00
2	M. Tech. (Sponsored)	10,000.00	5,000.00
3	M. Tech. (Sponsored by Defence)	10,000.00	5,000.00

7.3 Refund Policy

If a candidate withdraws his/her admission on or before the official joining date, the amount paid by him/her will be refunded after deducting the Seat Acceptance Fee paid by the candidate.

Once the candidate is admitted, he/she is considered to be on the rolls of the institute. For such candidates, only the caution deposits will be refunded.

The Official Date of Joining is the Date of the Commencement of the Institute's Orientation Programme, which will be mentioned in the Welcome Letter.

8. MAJOR HIGHLIGHTS OF DISCIPLINES AT IIT PALAKKAD

8.1 Biological Sciences and Engineering (BSE)

Department of Biological Sciences and Engineering (BSE) at Indian Institute of Technology Palakkad aims at interdisciplinary biomedical research and biotechnology to improve human and animal health under 'One Health' concept.

The current focus of the department is on

i)   Human pathophysiology and Immunology
ii)   Host-pathogen interaction
iii)   Diagnosis of diseases
iv)   Biophysics
v)   Protein design
vi)   Molecular oncology
vii)   RNA biology
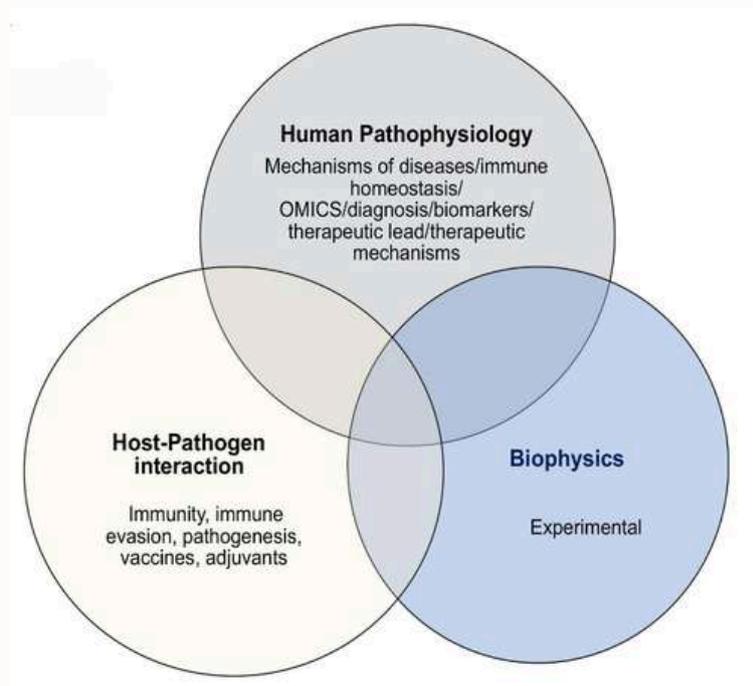
By integrating fundamental and translational research, we aim to identify biomarkers for immune response to immunotherapies, develop sensors for the diagnosis of diseases, design in silico-based novel drug molecules, create screening tools for therapeutic molecules. identify and validate lead molecules for vaccine development, and design therapeutic proteins, advanced molecular biology-based diagnostics, and nanotherapeutics. Additionally, we focus on phytotherapeutic molecules and their modifications for metabolic diseases and antibacterial therapies, as well as utilizing 3D culture systems to investigate disease pathogenesis.

The current faculty members and their main interests are,

Primary affiliation

1. **Prof. Jagadeesh Bayry:** MVSc, PhD (Sorbonne University, Paris, France): Immunology, Immunotherapy, host-pathogen interaction.
2. **Dr. Prasanna Bhat:** PhD (Indian Institute of Science, Bangalore): Host-virus interactions in RNA viruses, discovery of antivirals.
3. **Dr Prasun Kumar:** PhD (Indian Institute of Science, India): Computational biology, Algorithm development, Protein design, Structural biology.
4. **Dr. Sivakumar Vadivel Gnanasundram:** PhD (Heidelberg University, Germany): RNA biology; Translation control; Oncogenomics; Stress signalling; RNA structure.
5. **Dr. Abdul Rasheed P:** PhD (NIT Calicut) (DBT Ramalingaswami fellow): Biosensors, early stage disease diagnosis, nanomaterials, microbial corrosion.

Secondary affiliation

1. **Dr. Sushabhan Sadhukhan:** PhD (Case Western Reserve University, Cleveland, Ohio, USA): Chemical biology, proteomics, metabolomics, and development of small molecule inhibitors.
2. **Dr. Bibhu Ranjan Sarangi:** PhD (Raman Research Institute, Bangalore): Experimental biophysics and physics of cancer. We intend to develop a strong and dynamic scientific community that performs cutting edge research and educational activities through Academic-Industry-Health Care Systems partnerships to improve human and animal health under the umbrella of ONE HEALTH.

PROGRAMMES

PhD programme in Biological Sciences & Engineering

We are currently offering MS/PhD programme and 15 scholars are on roll. The members of the Department are engaged in cutting edge research in different domains of Biomedical Research as depicted above.

Research facilities

We have acquired excellent state-of-the-art research facility for the biomedical research and in the process of further expansion. Other commonly used instruments like confocal microscope, fluorescence microscope, fluorescence spectrophotometer, UV spectrophotometer, liquid chromatography–mass spectrometry,western blot units, thermal imager, Freeze dryer, Ultrasonic probe sonicator, real time polymerase chain reaction machine, biosafety level 2 cabinet for tissue culture work, CO_2 incubator, various centrifuges, chemidoc MP multiplex imager and others are already available either in the department or at the Institute central facility. The Institute Ethics committee for the research involving humans and Institute Biosafety committee are in place.

8.2 Chemistry

The Faculty

1. **Dr. Debarati Chatterjee,** PhD (IISc, Bangalore)
2. **Dr. Dinesh Jagadeesan,** PhD (JNCASR, Bangalore)
3. **Dr. Mintu Porel,** PhD (University of Miami, USA)
4. **Dr. Padmesh A**, PhD (Massey University, New Zealand)
5. **Dr. Rositha Kuniyil**, PhD (BIST, Spain)
6. **Dr. Supratik Sen Mojumdar**, PhD (IACS, Kolkata)
7. **Dr. Sushabhan Sadhukhan**, PhD (Case Western Reserve University, USA)
8. **Dr. Shanmugaraju Sankarasekaran**, PhD (IISc, Bangalore)
9. **Dr. Yugender Goud Kotagiri,** PhD (NIT, Warangal)
10. **Dr. Yuvaraj Kuppusamy**, PhD (IIT Madras)
11. **Prof. V. Haridas** (Visiting faculty from IIT Delhi)
12. **Prof. Viswanathan Kumar** (Honorary Professor)
13. **Dr. Debabrata Dhara**, PhD (TIFR, Hyderabad)
14. **Prof. C. S. Gopinath** (Visiting Faculty from NCL Pune)

In the initial years from 2015, the Discipline of Chemistry was involved in instructional work of the B. Tech. courses. In July 2017, the department took a leap to start its PhD programme. Currently, a total of 39 PhD scholars, 5 postdocs, 10 project staff are working in various areas of theoretical and experimental chemistry under the guidance of the highly motivated faculty of the department. Department of Chemistry is a young and vibrant community continuously aspiring to define success in terms of excellence in research and teaching. Well-equipped with state of the art facilities, we are engaged in teaching and research in theoretical and experimental areas spanning across the chemistry of life to sustainable living. Currently there are 13 faculty members and 4 staff in the department.

The department is engaged in research in the following areas:

- Fundamentals studies on Biophysical chemistry
- Molecular dynamics simulations
- Mechanochemistry
- Equilibrium and non-equilibrium statistical mechanics of soft matter
- Structure and dynamics of the biopolymers/ macromolecules
- Materials chemistry and Heterogeneous catalysis
- Organic macromolecules - design, synthesis and applications
- Self-assembly formation of discrete supramolecular ensembles and study of their functional applications

- Engineering mesoporous polymers for selective adsorption and sequestration of pollutants/ hazardous substances
- Fabrication of functional nano-structures for bio-medicine
- Design, synthesis and development of novel molecular entities for targeted therapy
- Bio-organic chemistry, Chemical biology
- Electro-analytical chemistry and Nano-biosensors
- Main group and Organometallic chemistry
- Computational Organic Chemistry
- Transition metal Catalysis
- Small molecule activation
- Insilico catalyst design and Machine learning
- Artificial Photosynthesis
- Green Hydrogen and Solar Energy Utilization

M.Sc Programme in Chemistry

Students with a bachelor's degree in basic sciences with Chemistry as a subject for at least two years are eligible for the M. Sc. in Chemistry in IITPKD. The curriculum of M. Sc. (Chemistry) of IIT Palakkad has been developed in a modern and effective format instead of following a traditional framework. The emphasis is to help students to have a sufficient breadth of knowledge on the different sub-disciplines in chemistry while delving deeper in their preferred area. This is a four semester programme with the courses designed around a common theme emphasising synthesis, structure, energetics and dynamics. Under this common theme, several important theoretical and experimental fundamentals of Physical, Inorganic, Organic and interdisciplinary topics shall be covered. The first two semesters consist of common core courses, whereas, the higher semesters will contain electives and projects as major components. The laboratory courses are designed to impart training in both theory and experimental skills. This curriculum will be helpful for the students who aspire to pursue their higher studies in future and will be crucial to get them exposed to basic research activities.

Facilities

The department has an undergraduate and a postgraduate chemistry which are well equipped with several basic Physical, Inorganic, and Organic experimental infrastructure such as,

- Analytical balance
- Benchtop conductivity meter
- Benchtop pH meter
- Digital colorimeter with micro control and 8 filters
- Ice flake machine
- Melting point apparatus
- spectrophotometer
- Ultrasonic bath
- UV-vis spectrophotometer
- Fluorescence spectrophotometer
- Microwave reactor
- Cyclic Voltammeters
- Physisorption
- Optical microscope
- Polarimeter
- Bomb Calorimeter
- Electrophoresis
- Two port Glove box

Sophisticated analytical facilities in chemistry for research and teaching
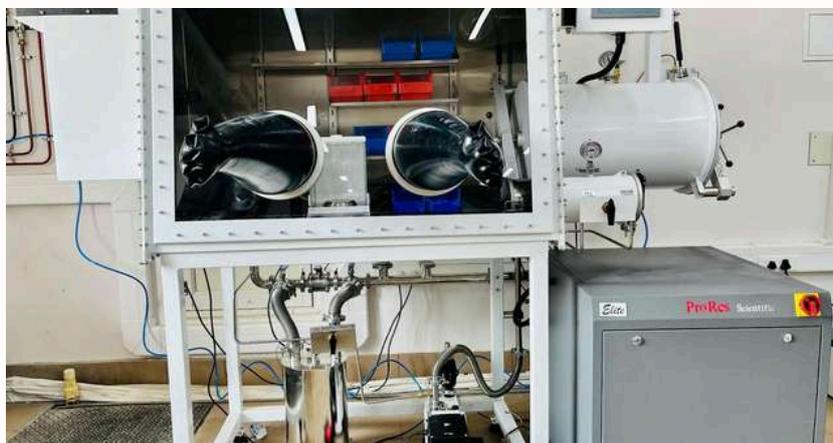
Glove box used for battery applications and to handle highly Air and Moisture sensitive compounds

A number of analytical equipment required for chromatography and spectroscopy such as TG-DTA-MS, Benchtop NMR, FT-IR, Chemisorption, UV-vis, and Fluorescence spectrophotometer are available. In addition to this, for conducting advanced research, IIT Palakkad has set up different central facilities for experimental and theoretical studies such as the Chandra High Performance Computing Cluster, Central Instrumentation Facility (CIF), and Central Micro Fabrication Facility (CMFF). As a part of the central facilities, sophisticated instruments (relevant to the field of chemistry) such as High-performance liquid chromatography (HPLC), Liquid Chromatography-Mass Spectrometry (LC-MS), Thermal Gravimetric Analysis, gas Chromatography, FT-IR, Raman and Fluorescence spectrophotometers, Automated Flow Chemisorption, Scanning Electron Microscope, X-ray diffractometer and a bench-top Nuclear Magnetic Resonance (NMR) spectrometer for analysis and characterization of samples are already set for use. For more details about the department of chemistry, you may visit *https://chemistry.iitpkd.ac.in/.*

Further details of the available central facilities at IIT Palakkad can be seen at *https://cif.iitpkd.ac.in/.*

The Institute is also in the process of setting up a sophisticated NMR facility.

UG / PG Lab of the discipline of Chemistry

8.3 Civil Engineering

The Faculty

1. **Dr. Ankesh Kumar**, PhD (IIT Delhi)
2. **Dr. Arun C. O**, PhD (IIT Madras)
3. **Dr. Athira Gopinath**, PhD (BITS Pilani)
4. **Dr. Athira P**, PhD (IIT Madras)
5. **Dr. B. Sridharan**, PhD (IIT Madras)
6. **Dr. B. K. Bhavathrathan**, PhD (IIT Bombay)
7. **Dr. C. V. Veena Venudharan**, PhD (IIT Kharagpur)
8. **Dr. Divya P. V.**, PhD (IIT Bombay)
9. **Dr. Gokulnath C**, PhD (IIT Madras)
10. **Dr. Anil Kumar M. V**, PhD (IIT Madras)
11. **Dr. Madhu Karthik M**, PhD (Texas A&M University, USA)
12. **Dr. N. Sai Surya Sree Aparna**, PhD (IIT Bombay)
13. **Dr. Praveena Gangadharan**, PhD (IIT Madras)
14. **Dr. Rakesh J. Pillai**, PhD (IIT Madras)
15. **Dr. Sanjukta Chakraborty**, PhD (IIT Kanpur)
16. **Dr. Sarmistha Singh**, PhD (Auburn University)
17. **Dr. Senthilkumar V**, PhD (IIT Madras)
18. **Dr. Subhasis Mitra**, PhD (Auburn University, USA)
19. **Dr. Subrat Kumar Mallick**, PhD (IIT Guwahati)
20. **Dr. Sudheesh T K**, PhD (University of Florida, USA)
21. **Dr. Deepak Jaiswal**, PhD (Pennsylvania State University, USA) – secondary affiliation

Civil Engineering is one of the five B. Tech. Programmes that are being offered at IIT Palakkad since its inception in 2015. PhD and MS Programmes in Civil Engineering, with specialisations in Structural, Geotechnical, Water Resources, Transportation, Construction Materials, Construction Engineering & Management, and Environmental Engineering started in July 2017. A total of 79 research scholars (71 at PhD level and 8 at Masters level) are currently enrolled in the research-oriented Programmes. The Discipline of Civil Engineering started offering a two-year M. Tech. programme with a specialisation in Geotechnical Engineering in the academic year 2019-20. The department has also launched two new M. Tech. Programmes, Structural Engineering and Water Resources Engineering, in the academic year 2025-26. Each M. Tech. programme has an annual intake of 15 students, with a curriculum designed to meet both industry and academic requirements.

In the last ten years, the Civil Engineering department has successfully set up all basic labs for the B. Tech. and M. Tech. Programmes. In addition, several advanced labs have also been set up for use by undergraduate and postgraduate students and to execute research projects.

Some basic UG/PG laboratory equipment

The twenty faculty members in Civil Engineering come with academic training and experience from various reputed institutes in India and abroad. The diverse background of the faculty brings different perspectives to teaching and research for Civil Engineering students.

The areas of research in Civil Engineering are quite diversified and include:

- Pavement materials -maintenance and rehabilitation, sustainable pavements.
- Characterization of construction materials and special concrete, fibre reinforced Concrete.
- Planning design phases and process management, lean construction, automation in construction, policy making in infrastructure projects.
- Bioelectrochemical systems for wastewater treatment, desalination, defluoridation, nutrient recovery from urine, metal reduction and recovery.

- Soil and rock mechanics, deep foundations, slope & embankment stabilisation, landslide mitigation, analytical methods in geomechanics, ground improvement, cyclic behaviour of soils, constitutive modelling in geomechanics, geosynthetics, green geotechnics, underground structures and slope stability.
- Predictions in ungauged basins, hydrological modelling and uncertainty analysis, hydroclimatology, water policy analysis, climate and anthropogenic impacts on surface and groundwater hydrology.
- Buckling and post-buckling behaviour of thin-walled open sections, reinforced and prestressed concrete, deteriorating structures, vibration control using passive and feedback control mechanisms, optimal control, and base isolation, stochastic mechanics, structural reliability, fracture and damage mechanics.
- Urban road networks, traffic flow modelling and simulation, network disruption, and transportation systems & simulation.

Some advanced laboratory facilities

The faculty members of Civil Engineering are also actively involved in executing several consultancy projects in various domains. Apart from the scholastic activities, the students, staff, and faculty members in Civil Engineering are actively involved in several outreach Programmes.

M. Tech. in Geotechnical Engineering

The major objective of the programme is to train and prepare students for a career in Geotechnical Engineering as per the current industrial needs. It is also intended that the programme develops a passion and a firm base for research at the doctoral level (PhD). The programme offers courses in various specialised areas of Geotechnical Engineering, such as soil mechanics, geotechnical investigation, foundation engineering, ground improvement techniques, environmental geotechnics, slope stabilisation, retaining structures, rock mechanics and underground structures, and soil dynamics to name a few. The coursework is broadly divided into core and elective courses. While the core courses are meant to provide a solid foundation to M. Tech. students in Geotechnical Engineering, the elective courses offer the students the flexibility to choose courses that best suit their future career aspirations. The elective courses include advanced topics that are relevant to current industry requirements. The programme has also been planned meticulously to have a good blend of theory and practice, wherein, in addition to the theory courses, students are exposed to experimental methods and the computational/modelling aspects of geotechnical analysis and design.

The Geotechnical Engineering laboratory is well equipped with all the basic equipment for the characterization of geomaterials and advanced testing equipment. The state-of-the art advanced testing equipment currently includes automated static and cyclic triaxial systems, computerised direct shear system, automated consolidation apparatus, computer-controlled flexible wall permeameter, large soil-geosynthetic interface resistance testing system, large pull out test set-up for geosynthetics, soil water characteristic curve (SWCC) apparatus, constant rate of strain (CRS) test equipment, rock triaxial test apparatus, rock creep testing equipment, split Hopkinson pressure bar (SPHB) etc. In addition, X-ray Diffractometer (XRD) and Scanning Electron Microscopy (SEM) are available in the Central Instrumentation Facility (CIF) of the Institute. The Institute is in the process of procuring additional advanced equipment and various sensors for model and large– scale geotechnical studies.

The institute has state-of-the-art High-Performance Computing Clusterss (HPCs) 'that are available to the students, research scholars, staff, and faculty. Computational facilitates for conducting studies in geotechnical engineering include ABAQUS, PLAXIS 2D, PLAXIS 3D, ANSYS, GeoStudio 2018 (SLOPE/W, SEEP/W, SIGMA/W, QUAKE/W, TEMP/W), FLAC 2D, FLAC 3D, PFC3D, etc. for finite element and finite difference modelling of geotechnical problems, LPile, FB-Multipier, and FB-Deep (educational version) for individual and group analyses of deep foundation and MATLAB and other programming software packages.

Photographs of some of the facilities in the Geotechnical Laboratory are given in the following pages.

Photographs of some of the facilities in the Geotechnical Laboratory are given in the following pages.

Automated Cyclic Triaxial System

Computerised Static Triaxial System and Flexible Wall Permeameter

Automated Direct Shear System and Consolidation Test apparatus

Large Soil-Geosynthetic Interface Resistance Testing System

Grout Pump and Sensors for Field Tests

Large Pull Out Test Apparatus for Geosynethetics

Rock Testing Apparatus

Freezer-Thaw Chamber and Split Hopkinson Pressure Bar (SPHB) Apparatus

M. Tech. in Structural Engineering

The M. Tech. programme in Structural Engineering is designed to,

- To equip students with strong foundational technical knowledge to practice structural engineering as a career.
- To give hands-on training to analyze and design various structures, thus develop a strong sense of self-confidence to solve challenging problems.
- To expose and teach skills that are relevant to the structural engineering industry.
- To lay a foundation to take up research as a career, and to develop a desire for lifelong learning.

The programme is envisioned to provide the students an excellent learning opportunity in different areas of structural engineering. The programme is devised to equip the students to handle various industry related problems in structural engineering, as well as take up high quality research projects. The students will be able to choose their career specialization during the programme, and will have the freedom to take a sufficient number of electives to achieve their career goals. The curriculum is designed such that there is a good mixture of core and elective subjects in structural engineering. The core courses will help the students to lay a strong foundation in the areas of structural mechanics, dynamics, analysis and design, all of which are essential for a successful career in structural engineering. These core courses build on the basic undergraduate knowledge of the students, or on courses that are taught as part of the programme. The programme offers a sample template of courses to guide the students through the four semesters, the details of which are discussed below.

In the first semester, Advanced Mechanics of Solids, Advanced Design of Metal Structures, Structural Dynamics and Finite Element Method in Structural Mechanics are the recommended core courses. The students are also encouraged to take one programme major elective, from a basket of electives offered by the department. In addition to the department core and elective courses, two general category courses, namely, Communication Skills and Technical Writing, which are designated as mandatory core courses for all the M. Tech. students are included. The students have to take a minimum of 17 credits in their first semester as per the designed template.

In the second semester, the template recommends two programme based core courses, namely, Nonlinear Analysis of Structures and Advanced Design of Reinforced Concrete Structures. The Advanced Structural Engineering Lab is also part of the second semester. The experiments in the lab are designed to give the students hands-on training to understand the behaviour of reinforced concrete and steel structural members, use of non- destructive testing methods, deformation and strain measurement techniques and other advanced concepts. The template allows the students to take two more programme based electives and one open elective during the second semester. Similar to the first semester, the students are expected to take a total of 17 credits in the second semester as well. By the end of the second semester, the students are well equipped with the basic courses in structural engineering, which will serve them well for the summer internship/ mini project that they are expected to do before the third semester. This is designed as a course without credits (CWC), to give the freedom to the students to explore industry and academic projects.

In the third semester, in addition to an open elective, the students have to enroll for a course on Structural Design Practice, which is a highlight of this programme. This course, with one lecture hour and 3 hours of practice session per week, is designed to prepare the students to be industry-ready, starting from the conceptual design of structures, to the production of final design drawings and detailing. They will get an exposure to the design of different structures such as buildings, bridges, and water tanks using different codal provisions. They will also be exposed to the various software packages that are popularly used in practice. It is also planned to have a comprehensive viva as part of the third semester, the primary object of which is to evaluate their fundamental knowledge, and prepare them for competitive interviews.

The students will also have the opportunity to choose their final year projects, from a basket of projects. The project is distributed over two semesters with a total of 20 credits. The students will be working closely with a project mentor within the Structural Engineering division, with co-supervisors from other specializations and departments (if required).

A student has to earn a total of 60 credits, to be awarded the M. Tech. degree in structural engineering, and is in accordance with the institute regulations. Overall the programme is designed with a mission to equip the students with the background knowledge that is required to practice structural engineering as a career, and also give them an opportunity to have strong fundamentals to take academic/ research careers. The structural Engineering Laboratory is equipped with state of the art equipment which meet the current industry and research standards. The lab has an in-house designed 3D self-straining test frame with a vertical load capacity of 4000kN and horizontal capacity of 1000kN. The lab features equipment such as static and dynamic material testing systems with 500kN and 100kN servo-hydraulic test systems, Structural Actuators of Capacities 100kN, 250kN and 500kN, Load jacks of capacities 100kN, 1000kN & 2000kN, UTM of Capacity 2000kN, Digital Image Correlation System, Rebound Hammer, Shakers, bi-axial testing machines, 5 kN MTS actuator with high frequency range, data acquisition systems, LVDTs, strain gauges etc. The lab houses an overhead crane of capacity 5 tons.

The institute has state-of-the-art High-Performance Computing Clusters (HPCs) 'that are available to the students, research scholars, staff, and faculty. Further students will be having access to most of the industry standard commercial packages such as ABAQUS, ANSYS, SAP2000, ETAB, STAAD Pro., Opensees etc. These tools allow students to perform structural analysis and simulations that reflect real-world engineering practices, ensuring they are job-ready upon graduation. The students will be exposed to the use of different programming languages like MATLAB, PYTHON, C++, FORTRAN etc which help them to develop their own computational algorithms to solve the real-world problems.

Photographs of a few facilities available in structural engineering labs are given below.

500kN Capacity Servo-hydraulic Static and Dynamic Testing System

100kN Capacity Servo-hydraulic Static and Dynamic Testing System
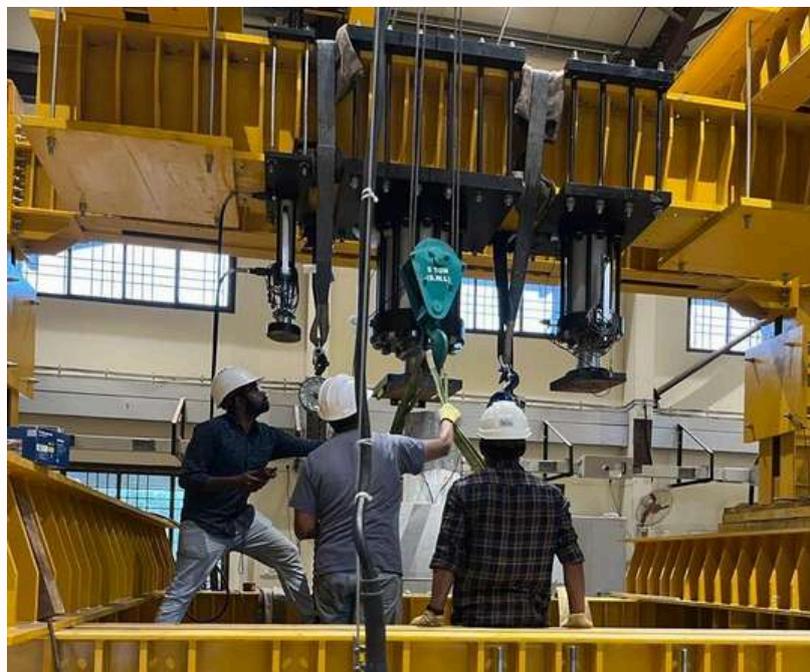
Test Facility Equipped with Digital Image Correlation System

2000kN Capacity Universal Testing Machine

Rebound Hammer

Self-straining test frame having a vertical load capacity of 4000kN and horizontal capacity of 1000kN with Load jacks

M. Tech. in Water Resources Engineering

The M. Tech. specialization in Water Resources Engineering at IIT Palakkad is committed to educating, training, and equipping the current generation of engineers to tackle future water-related challenges. As the challenges posed by global warming and climate change strain the natural water cycle, effective water resource management becomes ever more urgent.

The Water Resources Engineering curriculum is structured to include a well-balanced mix of core and elective courses with exposure and knowledge in theory, modeling and practice. Key components of the programme will cover understanding of advanced hydrologic and hydraulic principles, design of water conveyance systems and resilient hydraulic infrastructures, including dams, barrages, and levees. The programme is designed to train students to address key challenges in water resources engineering, including but not limited to flood forecasting, climate change impact assessment, policy development for enhancing national water and food security, and the design of climate-resilient hydraulic structures. In the second year of the two-year programme, students will undertake a project in their chosen area of interest within the broader field of water resources engineering. The projects are designed to address real-world challenges and will involve elements of experimentation, simulation and modeling, and the application of data science in water resources management. Graduates will have the option to pursue higher studies and build a career in academia or R&D labs, or enter the industry by working with consulting firms, design firms, contractors, or government agencies, gaining a balanced mix of office and on-site experience.

The institute features state-of-the-art High-Performance Computing Clusters (HPCs) available to the students, research scholars, and faculty. The water resources engineering laboratory is equipped with basic and advanced equipment essential to conduct post-graduate experiments. The state of the art computational facilities include softwares such as ArcGIS, ERDAS for geospatial data analysis, and hydrologic models such as MIKE, SWAT. Below are a few facilities available at the water resources engineering laboratory.

Experimental flume

Pipe network experiment

8.4 Computer Science and Engineering

The Faculty

1. **Dr. Albert Sunny,** PhD (IISc, Bangalore)
2. **Dr. Anish Hirwe,** PhD (IIT Hyderabad)
3. **Dr. Avirup Mandal,** PhD (IIT Bombay)
4. **Dr. Deepak Rajendraprasad,** PhD (IISc, Bangalore)
5. **Dr. Jasine Babu,** PhD (IISc, Bangalore)
6. **Dr. Koninika Pal,** PhD (Technical University, Kaiserslautern)
7. **Dr. Krishnamoorthy Dinesh,** PhD (IIT Madras)
8. **Dr. Krithika Ramaswamy,** PhD (IIT Madras)
9. **Dr. Piyush P. Kurur,** PhD (IM. Sc., Chennai)
10. **Dr. Pratik Ghosal,** PhD (University of Wroclaw, Poland)
11. **Dr. Sahely Bhadra,** PhD (IISc, Bangalore)
12. **Dr. Sandeep Chandran,** PhD (IIT Delhi)
13. **Dr. Satyajit Das,** PhD (University of South Brittany, France, University of Bologna, Italy)
14. **Dr. Srimanta Bhattacharya,** PhD (ISI, Kolkata)
15. **Dr. Unnikrishnan Cheramangalath,** PhD (IISc, Bangalore)
16. **Dr. Vivek Chaturvedi,** PhD (Florida International University, USA)

The Computer Science and Engineering (CSE) department in Indian Institute of Technology Palakkad offers undergraduate, graduate and doctoral Programmes. The CSE envisions imparting knowledge across depth and breadth of computer science and engineering. Our Programmes build a strong foundation in students and prepare them for both cutting edge technology industry jobs and higher education. We witness a very high percentage in placements every year and many of our students are pursuing higher studies in reputed universities in India and Abroad.

Undergraduate Programme

- Bachelor of Technology in Computer Science and Engineering

Graduate Programmes

- Master of Science (by Research)
- Master of Technology in Computing and Mathematics (MCaM), jointly with the Department of Mathematics

- Master of Technology in System on Chip Design (SoCD), jointly with the Department of Electrical Engineering
- Doctor of Philosophy

Research at CSE Department, IIT Palakkad

The core research areas and subareas of the CSE department are listed below.

1. **Theoretical Computer Science:** Algorithms, Complexity Theory, Cryptography, Combinatorial Optimization, Probabilistic Computing, Graph Theory, Combinatorics, Discrete Mathematics, Computational Algebra.
2. **Programming Languages, Compilers and Verification:** Programming Languages, Type Theory, Compilers, programme Analysis, Proof Assistants, Formal Verification.
3. **Computer Systems:** Computer Architecture, Electronic Design Automation, Cyber Physical Systems, Reconfigurable Computing, Low power SoC, Systems for AI, Operating Systems, High Performance Computing, Database Systems, Computer Networks, Distributed and Interconnected Systems.

Other associated research areas are Probability Theory, Machine Learning, Natural Language Processing, Computer Vision and Data Mining.

The CSE faculty members are active in research and continuously engage with industry and academia around the globe. They have active research collaborations with world class Universities such as Nanyang technological University Singapore, University of Alberta Canada, Aalto University Finland, University of South Brittany France and University of Bologna Italy to name a few.

Interdisciplinary Master's programmes

(i) M. Tech. in Computing and Mathematics

Computing and Mathematics have been tied together ever since the notion of computability was formalised. Algorithmic procedures accompanied by their well founded mathematical proofs of guarantees are integral components of computational problem solving. The focus of this programme is to cover some aspects of this interrelationship between Computing and Mathematics. The programme offers a unique mix of computer science courses with supporting mathematics courses that together cover theoretical and practical aspects of computation. The targeted audience come from two backgrounds (1) Computer Science and Engineering (2) Mathematics, thus providing an opportunity for diverse peer learning to the students.

The objective of the programme is to train students in areas which are integral to both Computing and Mathematics. To facilitate this goal, the first semester will comprise an appropriate set of bridge courses for the students depending on their background. That is, students from the Mathematics background will be trained in certain basic core courses from computer science and students from the Computer Science background will be trained in some core mathematics courses. This would make the advanced elective courses offered in both the domains accessible to all students in the subsequent semesters.

Major areas include Algorithms, Graph Theory, Combinatorics, Logic, Programming Languages, Computational Methods, Foundations of Data Science & Machine learning, Probability & Statistics and Linear Algebra. The programme culminates with a year-long project/dissertation in the second year that prepares students to pursue careers that require innovations involving sophisticated applications of mathematics in computer science.

For more information, visit : *https://cse.iitpkd.ac.in/mcam/*

(ii) M. Tech. - System on Chip Design (SoCD)

With deep-penetration of Intelligent Systems into our everyday lives through advances in the Internet-of-Things (IoT), there is an increased demand for highly-skilled engineers in both academia and industry who can take an idea and develop it into a fully-functional system. Developing such cutting-edge, state-of-the-art systems require deep expertise in a wide-range of fields such as system design, circuit design, physical design, device design, verification, testing and validation. M. Tech. in System-On-Chip Design (SoCD) is a programme that caters to this demand for highly-skilled and well-trained engineers.
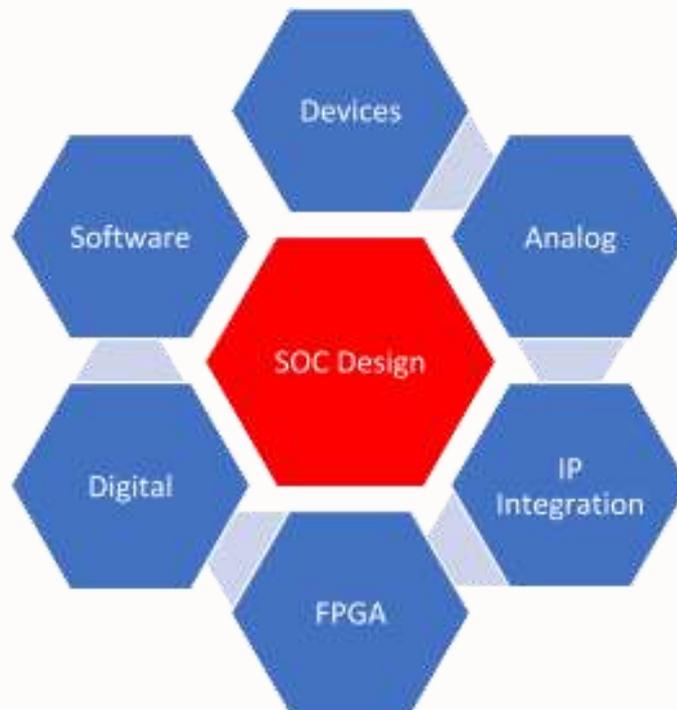
This is an interdisciplinary programme offered jointly by the Computer Science and Engineering (CSE) and Electrical Engineering (EE) Disciplines at IIT Palakkad. The curriculum of this course has been designed by experts from Industry and academia to cover both the fundamentals, as well as the engineering aspects of designing and developing IC based systems. The M. Tech. curriculum is well-balanced where every course has a companion lab component and prescribes a year-long project. This gives a firm platform for graduating students to excel in industry or academia. Infact, our students are doing internships at leading chip design and manufacturing companies such as Intel, AMD, Qualcomm, etc. For more information, visit : *https://iitpkd.github.io/msocd/*

The facilities at IIT Palakkad include latest boards and software from ARM, Cadence, Xilinx necessary for developing modern Systems-On-Chip. We also have a micro-nano device fabrication facility with class 1 lakh and 10000 cleanrooms, and a characterization facility.

For more details on the Department of Computer Science and Engineering, please visit *https://cse.iitpkd.ac.in*.

8.5 Data Science

The Faculty

1. **Dr. Garima Shakya**, PhD (IIT Kanpur)
2. **Dr. Koninika Pal,** PhD (Technical University Kaiserslautern, Germany)
3. **Dr. Mrinal Kanti Das**, PhD (IISc, Bangalore)
4. **Dr. Narayanan Chatapuram Krishnan**, PhD (Arizona State University, USA)
5. **Dr. Nikhil Krishnan M** (PhD: IISc Bangalore)
6. **Dr. Raghava Mutharaju** (PhD: Wright State University, USA)
7. **Dr. Sahasranand KR** (PhD: IISc Bangalore)
8. **Dr. Sahely Bhadra**, PhD (IISc, Bangalore)
9. **Dr. Swapnil Hingmire** (PhD: IIT Madras)

The Department of Data Science hosts Mehta Family School of DS and AI which is supported by the Mehta Family Foundation for enhanced research collaboration and establishing a state-of-the-art infrastructure to meet the international standards. The Department of DS aims to provide world-class education, pursue cutting-edge research, and develop data science & artificial intelligence technologies for societal benefit. The department offers PhD, MS (by Research), M. Tech. in Data Science, and B. Tech. in Data Science and Engineering. A major agenda of the department is to foster industry and academic collaborations. The Department of Data Science comprises young yet experienced researchers in various fields.

1. **Artificial Intelligence and Machine learning**
   a. Kernel Learning, Multiview Learning, Bayesian Models, Meta Learning, Explainable and Interpretable Machine Learning, Generative Modeling, Transfer Learning, Domain Adaptation, Zero and Few-shot Learning.
2. **Optimization**
   a. Robust Optimization and Convex Optimization for Large Data
3. **Application areas**
   a. Computer Vision, Plant Disease Recognition
   b. Remote Sensing
   c. Anomaly Detection in Time Series
   d. Climatology
4. **Information Retrieval and Natural Language Processing**
   a. Harvesting Knowledge from Text and Web Tables, Knowledge Base Curation, Knowledge Graphs, Question-Answering, Building Smart Indices for Efficient Similarity Search, Scientific Document Understanding, Text Recognition.
5. **Responsible AI**
   a. Fairness in Machine Learning
   b. Human-in-the-loop Learning
   c. Privacy-aware Learning
6. **Systems for Artificial Intelligence**
   a. Architecture for Deep Learning, Energy-efficient and High-performance Systems for Multimedia Applications, such as video compression, and imaging.
7. **Energy-aware Algorithms for Signal Processing:** Applications in Text Recognition, Information Retrieval and Natural Language Processing.
8. **Information Theory and Statistics: Statistical Learning and Inference**
9. **Federated learning. Multi-agent systems (Game theory and Mechanism design) for social good:** resource allocation
10. **Fair and Efficient matching**
    a. Low-Latency Communications, Distributed Learning, Distributed Storage, Quantum Error-Correcting codes.
11. **Neurosymbolic AI**

M. Tech. in Data Science Participation

The Department of Data Science offers an M. Tech. in Data Science. A major highlight of the programme is its interdisciplinary nature. Bachelors (BE, B. Tech., or BS) in any discipline or MSc in Data Science/ Artificial Intelligence/ Machine Learning/ Mathematics/ Statistics/ Applied Mathematics/ Physics, along with GATE qualification in DA or CS can join the programme.

Curriculum

The curriculum has been developed by leading data scientists in the country making it relevant for the current and future requirements of Data Science in the industry as well as in academic research.

Curriculum comprises of following courses:
1. **Core**
    a. Mathematics for DS
    b. Data Engineering
    c. Machine Learning
    d. Deep Learning
    e. Big Data
2. **Electives**
    a. Natural Language Processing
    b. Information Retrieval
    c. Mechanism Design
    d. Generative AI
    e. Responsible AI
    f. Statistical Learning Theory

Students will work on a year-long research or development project with state-of-the-art computational and experimental facilities that will likely lead to publications, patents, products, or software.

There will be ample opportunities for the students after graduation - enrolling in a doctoral programme at overseas top universities or a job within or outside the country. The students will get the opportunity to learn data science in a vibrant ecosystem around the area and actively contribute to the front line research.

Infrastructure

There are a sufficient number of GPU and HPC servers to enable large scale AI and ML system development and also to explore in various applied and research projects. This provides students required exposure to be ready for industry as well as academia.

Placements

Our M. Tech. in Data Science programme is well received in the industry with very high placement records. Our students have been hired in companies like: IBM, Arista Networks, Wabtec, Bosch, L&T, ICICI, Mahindra, and several other multinational companies. A significant number of students also joined for PhD programmes or joined as faculty members.

8.6 Electrical Engineering

The Department of Electrical Engineering (EE) at IIT Palakkad offers a vibrant environment for undergraduate, post graduate education and research in many areas of Electrical Engineering. We are a team of 19 faculty members, 260 students and 7 staff members engaged in cutting edge research and teaching in several frontier areas of Electrical Engineering.

The Faculty

1. **Dr. Anirudh Guha**, PhD (IISc, Bangalore)
2. **Dr. Anoop Thomas**, PhD (IISc, Bangalore)
3. **Dr. Arun Rahul S**, PhD (IISc, Bangalore)
4. **Dr. Arvind Ajoy**, PhD (IIT Madras)
5. **Dr. Attoti Bharath Krishna** (IIT Delhi)
6. **Dr. Birenjith Sasidharan** (IISc, Bangalore)
7. **Dr. Jobin Francis**, PhD (IISc, Bangalore)
8. **Dr. Manas Kumar Jena**, PhD (IIT Delhi)
9. **Dr. Naga Brahmendra Yadav Gorla**, PhD (NUS, Singapore)
10. **Dr. Nikhil Krishnan M**, PhD (IISc, Bangalore)
11. **Dr. Revathy P, PhD** (IISc, Bangalore)
12. **Dr. M. Sabarimalai Manikandan**, PhD (IIT Guwahati)
13. **Dr. Shaikshavali Chitraganti**, PhD (University of Lorraine, France)
14. **Dr. Sneha Gajbhiye**, PhD (IIT Bombay)
15. **Dr. Sreenath Vijayakumar**, PhD (IIT Madras)
16. **Dr. Subrahmanyam Mula**, PhD (IIT Kharagpur)
17. **Dr. Sukomal Dey**, PhD (IIT Delhi)
18. **Dr. Swaroop Sahoo**, PhD (Colorado State University, USA)
19. **Dr. Vijay Muralidharan**, PhD (IIT Madras)

Specialisation

- Antennas, Microwave Engineering and Radar Systems
- Biomedical Signal Processing and Imaging
- Communication and Signal Processing
- Sensors, Measurements and Instrumentation
- Nanoelectronics, Plasmonics and Semiconductor Devices
- Power Systems and Power Electronics
- Robotics, Instrumentation and Control
- VLSI Signal Processing Circuits and Systems

Laboratories

Electronics Technology Laboratory

Electronics Technology Laboratory provides an integrated environment for students to understand the working of analog and digital circuits, microprocessors, microcontrollers, and the interplay between computational tools and electronics hardware. Each desk is equipped with digital storage oscilloscopes, arbitrary waveform generators, power supplies and various prototyping boards (Field Programmable Gate Arrays, Microcontrollers, etc.) and a desktop PC. In addition, it houses the set-ups for control systems experiments such as ball and beam, rotary inverted pendulum, magnetic levitation and closed loop temperature controller. Digital Circuits, Analog Electronics, Computer Aided Design and Control Systems lab courses are also run in this laboratory.

General Electronics Lab, Left: 3D Printer, Right: Typical Data Acquisition Set Up
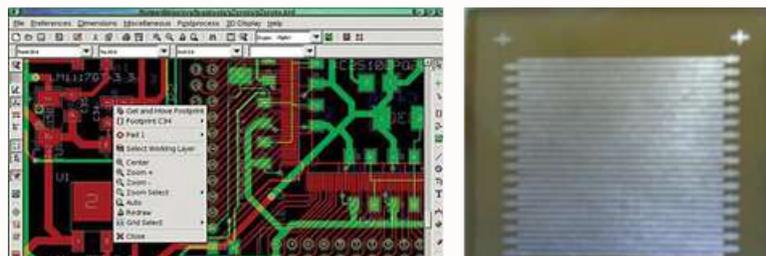
Computer Aided Design, Left: KiCAD for Layout, Right: Toner Transfer for PCB

Control Systems Lab, In Clockwise Order from Top: Temperature Control, Magnetic Levitation, Inverted Pendulum and Ball and Beam Balancing.

Measurements and Instrumentation Lab, In Clockwise Order from Top: Electro- oculogram EOG Data Acquisition, Analog Signal Conditioning (TI ASLK) and Data Acquisition (NI MyDAQ) and Linear Variable Differential Transformer (LVDT) setup.

Communications and Microwave Laboratory

Communications and Microwave Laboratory provide an environment for understanding and experiencing the signal chain of a typical analog and digital communication system and microwave systems. Typical facilities include optical fiber training kits that have a multi-channel multiplexing encoder and a corresponding decoder with demultiplexer, where one can perform various wired optical communication experiments. The laboratory also houses

software defined radios - national instruments 2901 and 2920 which are very versatile and reconfigurable radios that can operate in the range 70MHz to 6GHz and can be used to prototype various communication systems and new technologies for applications such as 5G and IoT.

Communications and Microwave Lab, Left: Software Defined Radio (SDR) Kit, Right: Microwave Communication Set Up.

Electrical Machines Laboratory

Electrical Machines Laboratory provides students with an opportunity to understand the working of various AC and DC machinery. Some of the facilities include: 14 machine beds each consisting of 2 DC machines coupled with induction machine and synchronous machine, fully isolated voltage and current measurement units, data acquisition systems for capturing real time data, a unique make your own electrical machines by integrating various parts and its testing facility, bidirectional power DC power supply, special machines like BLDC, SRM, single phase and 5 phase machines, single phase and three phase and multi winding transformers.

(Electrical Machines Lab, Left: Electrical Machines, Right: Advanced Human Machine Interface)

Sensors and Electronic Instrumentation Laboratory (SEIL)

Sensors and Electronic Instrumentation Laboratory (SEIL) is a complete sensor development, instrumentation and measurement research lab, which aims to design and develop various application-oriented sensors and signal conditioning circuits. Typical facilities of the lab include equipment such as Mixed Signal Oscilloscope (MSO44-Tektronix), Arbitrary Function Generator (AFG 31000- Tektronix), Digital Multimeter (DMM6500-Keithley), NI-ELVIS III, Smart Tweezers (ST5S-Ideal-tek), Infrared moisture meter, Soil moisture meters, Variable inductance and capacitance boxes.

Facilities available at SEIL

M. Tech. in Power Electronics and Power System

Our vision in starting an M. Tech. programme in Power Electronics & Power System is to "Develop and maintain a high quality teaching and research environment in Power Systems, Power Electronics and Control and to emerge as a centre of excellence for contributing towards the society".

Topics in power electronics are essential for key enabling technologies and understanding of the diverse disciplines encompassed by power electronics - semiconductor devices, power converter control and its application in power systems and motor drives - is therefore important to all power engineers. The M. Tech. curriculum is designed to train the students with adequate domain knowledge and skill-sets in Power Electronics & Power Systems and related subjects along with the flexibility to choose interdisciplinary electives. Thoroughly designed course contents and hands-on laboratory exercises enable students to pursue

successful career options in various research Programmes (higher studies) in Power Electronics / Power Systems/ Renewable Energy Systems and related areas, roles in design and development with government/ private organisations, employment in R & D organisations related to sustainable technologies etc.

The curriculum focuses on learning the concepts through design and development. Electrical engineering laboratories are well resourced with modern scientific equipment and platforms for design, development and testing. To provide exposure towards industry standard software tools, we also have both research level licenses and teaching and development licences of different tools.

In the previous years, students have found long-term internship opportunities to work on their projects. After graduation, students have found employment in R&D roles, Design, Development and Testing roles in the industry. Some of the students have also pursued research as PhD scholars at IIT Palakkad, and also in institutes of higher learning and repute in India and abroad.

Power Systems Facilities

Building expertise in Power Systems requires familiarity with different simulation software and tools. In this regard, licenses for PSCAD, PSSE DSA tools along with key packages are available. Facilities such as PMU, Power Quality Monitoring Equipment and Automation Controller are also available for experimental data collection and analysis.

From Left to Right: SEL – 751 PMU, SEL – 735 Power Quality Monitoring, SEL 3350 Automation Controller

Some of the other facilities include equipment/ kits for studying earth fault protection, different types of protection relays, solar simulator for studying PV array characteristics, alternator fault simulator and grid synchronization kit, earth resistance measurement unit, insulation testers, power quality analyzer.

From Left to Right: Alternator Fault Simulator and Grid Synchronization Kit, Solar PhotoVoltaic Array Simulator, Power Quality Analyser

Power Electronics Facilities

The Power Electronics Facilities provides students with an exposure to develop good practical expertise to help with research and development. In the teaching lab, experiments are designed to enhance the hands-on skills in power converter design and development, design and fabrication of magnetics, open loop and closed loop control of power converters, power converter design for various applications etc.

Software Facilities include Matlab, ANSYS, PLECS, Altium Designer. With regards to hardware, IGBT modules with isolated gate drive assembly, controller boards, FPGA cards. Measuring equipment such as both regular and high end oscilloscopes, differential probes for high voltage measurements and high current measurement, and hall effect voltage and current sensors for prototyping are available. Arbitrary waveform function generators, and programmable dc power supplies are also available for the typical experiments.

From Left to Right: IGBT stack with auxiliary electronics, Digital Controller Board, Arbitrary waveform generator, programmable power supply

From Left to Right: Oscilloscope, Current probe, differential voltage probe

Further equipment such as Bidirectional power supplies, solar PV emulator, programmable AC/ DC electronic load, solar array simulators, Motor-dynamometer setups are available.

From Left to Right: Bidirectional Power Supply, Solar PV emulator, Programmable Electronic Load

(Left: IGBT based Inverter Modules, DSO and Differential Probes, Right: Facility to Assembling and Test Various Machines)

Research Facilities

Laboratories / Research centres

### Central Instrumentation Facility (CIF)

Electrical characterization facilities include DC probe station, RF probe station, parameter analyzer, wire bonder, vector network analyzer and signal analyzer, signal generator, solar simulator.

CIF Electrical Characterization Facilities

Central Micro-Fabrication Facility (CMFF)

Facilities include class 10000 1 lakh cleanroom, class 100 wet bench, DI water, sputtering system and mask aligner.
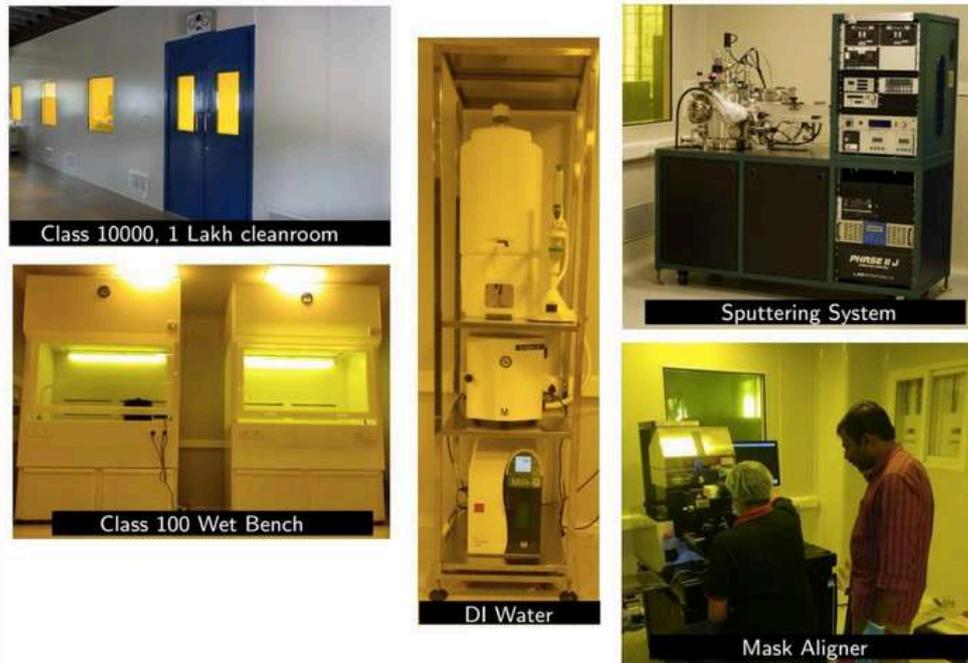

(CMFF Facilities)

Centre for Computational Imaging (CCI)

Facilities include 128-channel research ultrasound system, 128 channel 5-10 MHz piezo electric linear array probe, 256 channel 5-25 MHz CMUT linear array probe, tissue mimicking Doppler phantom with average flow velocity of at least between 3-60 cm/s and with possibility of pulsatile and constant velocity flow, Vitus Siu-3 portable ultrasound system and 64 channel 40 kHz airborne ultrasound system and Maxim 2084 16 channel ultrasound transmitter/ receiver analog front end.

Brain Machine Interface Systems Laboratory (BMISL)

Facilities include 64-channel Electroencephalograph (EEG) Amplifier, EMOTIV EPOC+ 14-channel Wireless EEG, Muse 4-channel EEG, Mobile Workstation Dell 3520.
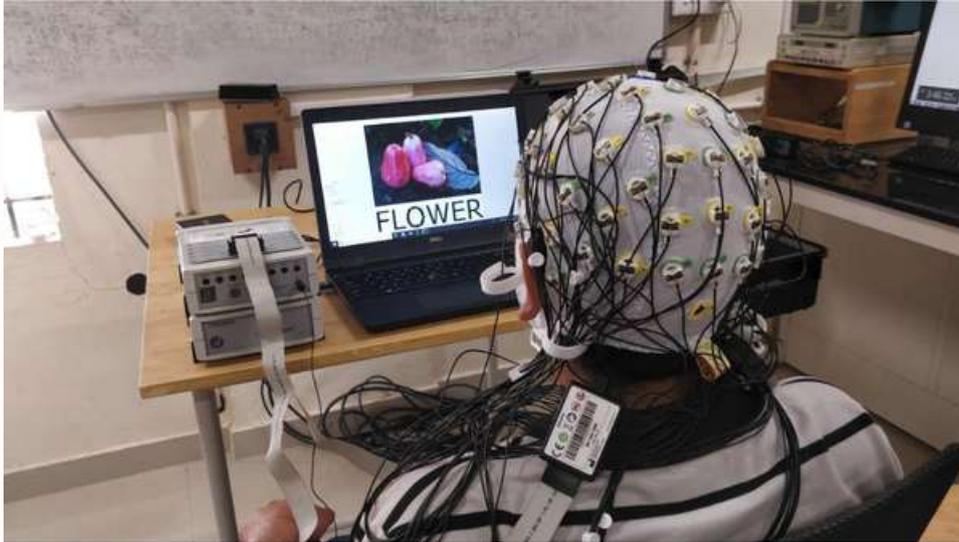
Microwave monolithic integrated circuits lab (MMICL)

8.7 Environmental Sciences and Sustainable Engineering Centre (ESSENCE)

Major themes

Vision

Bring science, technology, and policymaking together to develop and demonstrate sustainable solutions for pressing socio-enviro-technical problems.

Mission

- Develop sustainable technologies and innovations using locally available resources in the areas of energy, water, food, agriculture, ecology, waste management, and pollution mitigation.
- Evaluate the nature of technology and its social/ environmental impacts concerning the human modification of the natural world.

- Build and deploy computational resources to assess the impact of scaling up or developing new technologies on the three dimensions (economic, social, and environmental) of sustainability to appraise policy.
- Facilitate skill development and entrepreneurship to aid the deployment and scaling up of sustainable technologies.
- Collaborate with local communities to integrate and help sustain indigenous knowledge practices through language maintenance and revitalization.
- Become a credible nodal centre for exchanging scientific ideas, research, and innovation and evaluating the impact of deploying sustainable technologies at the local, regional, and national levels.

The Faculty

1. **Dr. Athira P.**
2. **Dr. Dinesh Jagadeesan**
3. **Dr. P. Gangadharan**
4. **Dr. Sunitha Nayar**
5. **Dr. Arun Rahul S.**
6. **Dr. Divya P.V.**
7. **Dr. M. Sabarimalai Manikandan**
8. **Dr. Veena Venudharan**
9. **Dr. Deepak Jaiswal**
10. **Dr. Mintu Porel**
11. **Dr. Sarmistha Singh**
12. **Dr. R. Venkataraghavan**

Resource Available

All the central facilities, such as SATCARD, CIF & CMFF, and HPC, are available for conducting research. Additionally, ESSENCE houses instruments for measuring leaf gas exchange rates and air quality.

Air quality measurement station

Portable Leaf gas exchange measurement

Academic Programme

ESSENCE currently offers Ph.D./ M.S. (by Research) Programmes.

Website:

For further information, please visit *https://essence.iitpkd.ac.in/*

8.8 Humanities and Social Sciences

The Faculty

Primary Affiliation

1. **Dr. Amrita Roy,** PhD (Jawaharlal Nehru University)
2. **Dr. Anoop George,** PhD (IIT Bombay)
3. **Dr. Biswajit Sarmah,** PhD (IIT Guwahati)
4. **Dr. Manav Khaire,** PhD (IIT Bombay)
5. **Dr. Reenu Punnoose,** PhD (Newcastle University, U.K)
6. **Dr. Rahul Choragudi,** PhD (Tata Institute of Social Sciences, Mumbai)
7. **Dr. Sujatha G,** PhD (University of Madras)
8. **Dr. Sudarshan R Kottai,** PhD (IIT Hyderabad)

Secondary Affiliation

1. **Dr. Senthilkumar V,** PhD (IIT, Madras)

The Department of Humanities and Social Sciences (HSS) at IIT Palakkad comprises a team of eight faculty members who work on diverse research areas in Philosophy, Economics, English Studies, Linguistics, Psychology, Sociology, History, and Political Science. Currently, there are nineteen PhD research scholars and two postdoctoral fellows at HSS. We offer a range of elective courses for undergraduate and postgraduate engineering and science students and PhD-level courses for doctoral scholars which encourage critical thinking, create awareness of real world issues and enable a comprehensive understanding of topics from multiple perspectives. The courses on offer include introductory level and advanced level courses (research courses) in the subject areas represented in the department. In addition, we also offer courses that aim to hone the soft skills of students and initiate pertinent conversations on ethical practices in research, in the workplace and life in general. In the long run, we hope to launch postgraduate Programmes within subject areas in the Humanities and Social Sciences and continue to engage in research at the intersection of subject areas within the HSS and between the HSS, science and technology.

8.9 Mathematics

The Faculty

1. **Dr. Arpan Kabiraj,** PhD (IISc, Bangalore)
2. **Dr. M. Ashok Kumar,** PhD (IISc, Bangalore)
3. **Dr. G. P. Balakumar,** PhD (IISc, Bangalore)
4. **Dr. Gopikrishnan C. Remesan,** PhD (IIT Bombay - Monash Research Academy)
5. **Dr. Jaikrishnan Janardhanan,** PhD (IISc, Bangalore)
6. **Dr. C. R. Jayanarayanan,** PhD (ISI, Bangalore)
7. **Dr. Lakshmi Sankar K,** PhD (Mississippi State University, USA)
8. **Dr. Parangama Sarkar,** PhD (IIT Bombay)
9. **Dr. Rohith Varma,** PhD (Chennai Mathematical Institute, Chennai)
10. **Dr. Sarath Sasi,** PhD (Mississippi State University, USA)
11. **Dr. Srijan Sarkar,** PhD (ISI, Bangalore)
12. **Dr. Subhankar Dey,** PhD (University at Buffalo, USA)
13. **Prof. Varadharajan Muruganandam,** PhD (IIT Kanpur)
14. **Dr. Tanmay Sahoo,** PhD (IIT Jodhpur)
15. **Dr. Priyanka Sen,** PhD (ISI Kolkata)
16. **Dr. Khot Rekha Mallappa,** PhD (IIT Bombay)

The Department of Mathematics

The Department of Mathematics at IIT Palakkad is strongly committed to excellence in research and teaching. The fields of research of the faculty members include Algebraic Geometry, Commutative Algebra, Differential Equations, Functional Analysis, Harmonic Analysis, Several Complex Variables, Topology, Numerical Analysis and Mathematical Biology, Operator Theory, Mathematical Statistics, Probability, and Information Theory. We envision to have a fast and steady growth leading to a strong and diverse Mathematics community at IIT Palakkad. The PhD programme of the department was started in 2017. There are currently 27 Ph.D students working in the department. The M. Sc. (Mathematics) programme was started in 2020. There are 14 and 10 students in the first year and second year respectively.

The M.Sc Programme

The M. Sc. Mathematics programme envisions to train the students to pursue careers in both academia and industry. Besides providing a firm mathematical foundation, the curriculum also provides excellent opportunities for the students to gain exposure to and specialise in pure/applied mathematics, data science, theoretical computer science among many other allied subjects.

The curriculum offers 14 core courses and several elective courses, the latter to be selected from a vast number of options which are being constantly upgraded keeping pace with the challenging developments in research and ever demanding requirements of the industry. Another attractive feature of this programme is that the students have an opportunity to do a project in lieu of some elective courses to acquire a wider knowledge and hand-on experience in a specific area.

The department strives to have a vibrant academic ambience through several academic initiatives like long-term and short-term visitors and student seminars. Apart from preparing students for academic pursuits, the Institute also has a placement cell to facilitate industry opportunities. There are 14 and 10 students in the first year and second year respectively.

8.10 Mechanical Engineering

The Department of Mechanical Engineering at IIT Palakkad is dedicated to academic excellence and cutting-edge research. With a strong foundation in fundamental and applied engineering sciences, the department strives to equip students with the necessary skills to tackle real-world engineering challenges. Our Programmes emphasize innovation, interdisciplinary learning, and industry collaboration to foster a holistic engineering education. The Department of Mechanical Engineering offers a four-year undergraduate B. Tech. Programme, two-year M. Tech. Programmes, and research (MS and PhD) Programmes. The undergraduate curriculum mainly integrates the fundamentals of mechanical engineering along with electives concerning allied and general topics, including professional ethics. M. Tech. at the PG level is offered in Manufacturing and Materials Engineering, Thermofluids Engineering, Design & Automation - emphasizing depth in fundamental and applied aspects with inquisitiveness. The Mechanical Engineering Department has three broad streams – Thermal and Fluids Engineering, Manufacturing and Materials Engineering, Design and Solid Mechanics.

The Faculty

1. **Prof. A. Seshadri Sekhar**, PhD (IIT Madras)
2. **Prof. T. Sundararajan,** PhD (University of Pennsylvania, USA)
3. **Dr. Afzaal Ahmed,** PhD (NUS, Singapore)
4. **Prof. Anand TNC,** PhD (IISc, Bangalore)
5. **Dr. Anoop Akkoorath Mana** (IISc, Bangalore)
6. **Dr. Arijit Hazra,** PhD (Max-Planck Institute of Multidisciplinary Sciences)
7. **Dr. Buchibabu Vicharapu** (IIT Bombay)

8. **Dr. Chaitanya Paramatmuni,** PhD (Imperial College London)
9. **Dr. D. Chakradhar,** PhD (NIT, Warangal)
10. **Dr. D. Kesavan,** PhD (IIT Madras)
11. **Dr. Dinesh Setti**, PhD (IIT Delhi)
12. **Dr. Ganesh Natarajan**, PhD (IISc, Bangalore)
13. **Dr. Kali Prasad,** PhD (IIT Madras)
14. **Dr. Kanmani Subbu S.,** PhD (IIT Kanpur)
15. **Dr. Krishna Sesha Giri**, PhD (IISc, Bangalore)
16. **Dr. K. V. N. Surendra**, PhD (IISc Bangalore)
17. **Dr. Nelson Muthu,** PhD (IIT Bombay & Monash University)
18. **Prof. Mayank Tiwari,** PhD (IIT Delhi) (Visiting Faculty from IIT Patna)
19. **Dr. Pramod Kuntikana,** PhD (IIT Bombay)
20. **Dr. Sagi Rathna Prasad,** PhD (IIT Madras)
21. **Dr. Samarjeet Chanda,** PhD (IIT Madras)
22. **Prof. Santhakumar Mohan,** PhD (IIT Madras)
23. **Prof. Sovan Lal Das,** PhD (Cornell University, USA)
24. **Dr. Soumya Mukherjee,** PhD (NIT Jamshedpur)
25. **Dr. Vineed Narayanan,** PhD (IIT Madras)

The department actively engages in research across diverse domains, including:

- **Thermal and Fluids Engineering:** Fluid Flow, Refrigeration & Air Conditioning, Renewable Energy, Alternative Fuels, Combustion, Droplets & Spray, CFD.
- **Manufacturing and Materials Engineering:** Ultra-Precision Machining, Metal Matrix Composites, Machining, Micro Machining, Non-Conventional Machining, Abrasive Machining, Metal Forming, Experimental and Computational Plasticity across length scales, Digital twins for manufacturing, Additive Manufacturing, Surface Engineering, Welding, Characterization.
- **Design and Solid Mechanics:** Robotics, Vibrations, Acoustics, Rotodynamics, Applied Mechanics, Fracture Mechanics, Elasticity, Nonlinear Elasticity and Viscoelasticity Contact Mechanics, Tribology, Underwater Vehicles.

The department is equipped with advanced instruments for research and teaching, including:

- Battery test system
- CNC Hybrid Micro Machine
- Compression Moulding Machine
- Computational Materials Processing

- Computerised IC Engine Test Set up
- Contact angle Measuring system
- Die sink EDM
- Dry Electro Polishing
- Environmental Chamber
- IR Camera
- Laser Diagnostic Equipment
- Laser marker
- LPBF 3D metal printer
- Micro Machining Center
- Micro Nano Indenter (Instrumented Indentation)
- Modular production system
- Piezoelectric Dynamometers (for Micro & Macro machining)
- Plasma Polishing Machine
- Precision Grinding Center
- Programmable Muffle Furnace
- Rolling Contact Fatigue Testing Machine
- Rolling Mill
- Stir Casting with Ultrasonic Cavitation
- Thermal Property measurement system
- Thermo Vacuum setup
- TIG, MIG Welding setup
- Ultra-precision diamond turning
- Universal Testing Machine (100 kN)
- Universal Tribometer
- Wire Arc Additive Manufacturing
- Wire Cut EDM

M. Tech. in Manufacturing and Materials Engineering:

The primary aim of this M. Tech. programme is to prepare graduate students with the skills needed to tackle challenges in research and industries focused on manufacturing and materials. Additionally, the programme emphasizes on enhancing research abilities and fostering a passion for pursuing doctoral studies. Core courses include Advanced Engineering Materials, Advanced Manufacturing Processes, Mechanics of Machining, Computer Integrated Manufacturing, Mechanical Behaviour of Materials, and Computer Aided Metrology-electives in the curriculum offer specialized knowledge tailored to individual interests. The first two semesters involve extensive coursework, while the third and fourth semesters are dedicated to project work.

M. Tech. in Design & Automation

The M. Tech. in Design & Automation within the Department of Mechanical Engineering at IIT Palakkad offers a well-structured curriculum that prepares students to become leaders in advanced mechanical design and automation. With a focus on innovative design solutions and industry readiness, the programme combines rigorous theoretical coursework, practical lab sessions, and project work to equip students with the skills needed to solve complex engineering challenges. In the first semester, students build a foundation in mathematics, solid mechanics, vibrations, finite element methods, and simulation techniques, using advanced computational tools like Ansys/Abaqus. The second semester advances into specialized subjects such as automation, controls, and dynamics, with laboratory courses that offer practical experience in instrumentation and control. This semester also includes electives, allowing students to tailor their learning towards their career goals. The electives are designed in such a way that students can choose to specialize in solid mechanics, dynamics/ vibration, product design, and design for manufacturing, etc.

M. Tech. in Thermofluids Engineering

The M. Tech. in Thermofluids engineering is intended to provide a deep understanding of energy conversion processes in mechanical and allied industries and to highlight the environmental issues associated with energy conversion. With carefully crafted core courses, the basic understanding, as well as advanced concepts on heat transfer, fluid mechanics and thermodynamics, will be strengthened. The programme will also train students in theoretical and experimental methodologies to find solutions to complex engineering problems dealing with energy conversion and related environmental issues. While the core courses provide a strong foundation on energy conversion and related solution methodologies, the elective courses attempt to develop a broad perspective on many upcoming energy technologies. Green and renewable technologies such as solar power, wind turbines, biomass utilization, nuclear power, and clean coal technologies will be covered, apart from describing newer fuel options such as hydrogen, CNG, and ammonia. With 10 courses covered in the first two semesters, the third and fourth semester curriculum involve completing a one-year industrially relevant project work. Options for carrying out the project in industry are also available.

In addition to this, for conducting advanced research in engineering, IIT Palakkad has set up different central facilities for experimental and theoretical studies, such as the High-Performance Computing Cluster, Central Instrumentation Facility(CIF), and Central Micro Fabrication Facility (CMFF).

8.11 Physics

The Faculty

1. **Dr. Ajeesh M. Omanakuttan,** PhD (Max Planck Institute for Chemical Physics of Solids)
2. **Dr. Akanksha Bhardwaj,** PhD (Physical Research Laboratory, Ahmedabad)
3. **Dr. Amit Kumar Pal,** PhD (Bose Institute, Kolkata)
4. **Dr. Bibhu Ranjan Sarangi,** PhD (RRI, Bangalore)
5. **Dr. Jayakumar Balakrishnan,** PhD (National University of Singapore)
6. **Dr. Kusum Dhochak**, PhD (TIFR, Mumbai)
7. **Prof. Manoj Gopalakrishnan** (IMSc, Chennai)
8. **Dr. Prithvi Narayan P,** PhD (TIFR, Mumbai)
9. **Dr. Projjwal Banerjee,** PhD (University of Minnesota, Minneapolis, USA)
10. **Dr. Resmi P K,** PhD (IIT Madras)
11. **Dr. Soham Manni,** PhD (Georg-August-Universitat Gottingen Germany)
12. **Dr. Uma Divakaran,** PhD (IIT Kanpur)
13. **Dr. Vishwas V,** PhD (JNCASR Bangalore)
14. **Dr. Moumita Nandi,** PhD (SINP Kolkata), Inspire Faculty
15. **Dr. Swaroop Sahoo,** PhD (Colorado State University, USA)
16. **Dr. Debarati Chatterjee,** PhD (IISc, Bangalore)

Overview

The Department of Physics, IIT Palakkad started functioning from August 2015, and has now grown into a vibrant part of the Institute with its creative and passionate teaching endeavours at the undergraduate and postgraduate level along with cutting-edge research components in the forefront of experimental and theoretical physics. There are currently 13 Faculty members, 1 Inspire Faculty, and 2 Post-Doctoral Researchers in the Department, engaged in various research projects in several topical and multidisciplinary topics covering the following areas:

- Astrophysics
- Experimental Biophysics
- Experimental Condensed Matter Physics
- High Energy Physics and String Theory
- Statistical Physics
- Soft-Matter Physics
- Many-Body Physics
- Quantum Information Theory and Quantum Computation
- Non-Equilibrium Dynamics and Quantum Phase Transitions
- Particle Physics

In July 2017, the Department started its dedicated PhD programme, and at present a total of 19 students are pursuing research in these exciting fields. Besides its thriving research activities, the Department also runs a two year M. Sc. programme in Physics, and supports in training young Engineering undergraduate students in basic sciences.

M. Sc. programme in Physics

Kick-starting from July 2019, the two years (four semesters) M. Sc. programme in Physics is now open to students with a Bachelor's degree. The selection process is based on the national level "**Joint Admission Test for M. Sc**." (JAM) conducted by the IITs. The four semester programme has core-theory courses in the first two semesters emphasising the fundamentals of the subject, and laboratory courses which allow the students to explore and familiarise themselves with classic experiments in the field. In the third and fourth semester, the students will get an opportunity to explore advanced electives (theory) and laboratory courses which are in the forefront of research, along with a possibility of a year-long project guided by faculty members experienced in the respective field. The elective courses and the projects offered by the Faculty are at par with the current worldwide trends in research and industry. The course structure has been formulated to enable students to pursue research in leading national and international universities and research institutions, as well as to explore jobs in research and development sectors.

Experimental Facilities

The Department has at present a teaching Physics laboratory to cater the needs of undergraduate/graduate students and is equipped with experimental setups that can boast of the latest technology. The M.Sc. Physics laboratories are categorised by different themes, namely, Mechanics, Electromagnetism, Thermal Physics, Atomic Physics and Spectroscopy, and Electronics and Instrumentation. The M.Sc. Physics laboratory houses state of the art experimental setups such as Eddy Current Pendulum, Thomson Tube, Michelson Interferometer, Nuclear Magnetic Resonance (NMR) Spectrometer, Electron Spin Resonance (ESR) Spectrometer, Liquid Nitrogen Cryostat, Scanning Tunneling Microscope, Epifluorescence microscope and Polarizing Microscope. Currently there are four technical staff in the Physics laboratory to manage experimental setups and assist students in experiments.

In addition to this, for conducting advanced research IIT Palakkad has set-up different central facilities namely Chandra High Performance Computing Cluster, Central Instrumentation Facility (CIF) and Central Micro Fabrication Facility (CMFF). Other Central facilities in Materials and Manufacturing, and Data Mining will be operational soon. Details of the available central facilities at IIT Palakkad are listed in section **"Central Research Facilities at IIT Palakkad".**
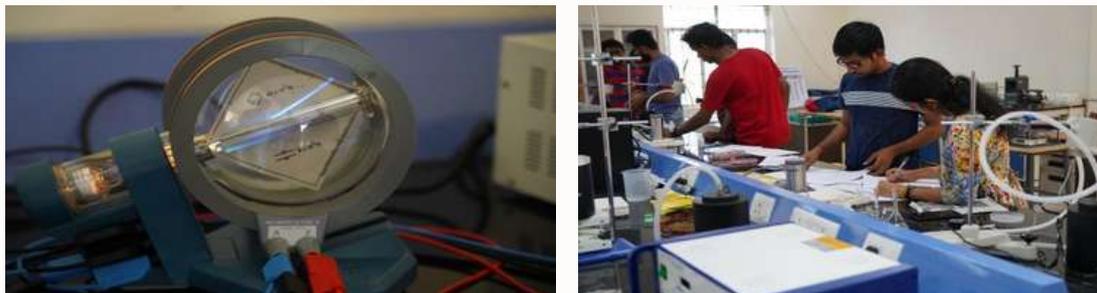
UG/ PG Lab of the discipline of Physics

9. OTHER FACILITIES

9.1 Institute Library

As the intellectual hub and informatics center of IIT Palakkad, the Central Library plays a pivotal role in supporting the academic and research activities of the Institute. Designed to foster an enriching and enjoyable learning environment, the library boasts a thoughtfully curated and continuously expanding collection of resources tailored to meet the diverse needs of students, faculty, and researchers.

Since its inception in August 2015, the Central Library has grown from an initial collection of 700 printed books (including textbooks, reference materials, popular science, and literature) to an extensive repository exceeding 11,000 books. Complementing this robust print collection is a vast array of digital resources, including numbers of e-books and more than 13,000 e-resources such as journals, standards, magazines, and newspapers, ensuring comprehensive access to cutting-edge knowledge and developments across various disciplines.

Recognizing the critical importance of up-to-date research materials, the library benefits from the Government of India's "One Nation One Subscription (ONOS)" initiative, which greatly enhances access to high-impact research journals. The library also houses valuable audio-visual materials such as CD-ROMs and scientific kits, enriching the learning experience through multiple formats.

Central Library

In line with its commitment to seamless and efficient service, the Central Library's operations are fully digitized and supported by advanced RFID technology. This allows for quick circulation processes and convenient self-service options through RFID-enabled kiosks for book check-in and check-out. For the safety and security of all users and resources, the library is monitored continuously via a 24x7 CCTV surveillance system.

To support uninterrupted academic work, the library offers Wi-Fi and LAN connectivity, providing unlimited high-speed internet access. Furthermore, its online facilities are accessible round-the-clock, allowing registered users to renew, reserve, or search for books anytime and from anywhere through the Online Public Access Catalogue (OPAC).

Beyond resource provision, the Central Library offers essential services such as reference assistance, personalized consultations, and current awareness updates to keep users informed of the latest academic and research trends. In addition, IIT Palakkad's library users are integrated with the National Digital Library of India, a prestigious initiative sponsored by the Ministry of Education and coordinated by IIT Kharagpur, expanding their access to an unmatched national repository of educational content.

For more detailed information, please visit the Central Library's website:
https://lib.iitpkd.ac.in/

9.2 High Performance Computing Cluster (HPC)

IIT Palakkad houses two large High performance computing clusters (HPC) which are used by faculty, research staff and students to investigate complex research problems in science and engineering. Some of the problems currently being studied are:

- Understanding and designing materials with novel physical properties by performing atomistic quantum mechanical simulations.
- Design of nanoscale transistors for next generation electronic applications.
- Design of novel bio-molecules with applications in medicine.
- Design of large structures such as bridges and buildings.
- Performing computational fluid dynamic simulations.
- Understanding the process of heat transfer in complex systems such as engines.
- Solving non-equilibrium dynamics in quantum Hamiltonians.
- Understanding mechanical properties of disordered solids and equilibrium properties of metastable liquids.
- Computational studies on the transition metal catalyzed reactions.

The Madhava HPC has a computing power of around 3000 cores and 200 TFLOPS (in CPU) and 8 latest NVIDIA H100 GPU cards with a combined performance of 360 TFLOPS. Combined with a total storage of half petabyte, this facility can handle a wide range of problems, including material design, drug discovery, protein folding, climate modeling, big data analytics as well as advancing fundamental understanding in science and engineering. This facility is named after Madhava of Sangamagrama, the brilliant 14th century mathematician from Kerala (near Irinjalakuda) who laid the foundation for series expansions; this facility honors his legacy as a pioneer of mathematical and computational methods.

The Chandra HPC has been operational since June 2017, and is extensively used for research in engineering and physical sciences. It consists of 64 compute nodes, each with a dual 12-core Intel processor. Each core runs at 2.2 GHz and has 4 GB of RAM per core. It is one of the first systems in India to use a 100 Gbps high-speed Omni Path interconnect. The system provides about 50 TFlops of computing power. Chandra also accesses 100 TB of disk space setup as a parallel file system running Lustre from Intel.

9.3 Central Instrumentation Facility (CIF) and Central Micro-Nano Fabrication Facility (CMFF)

Materials are the backbone of technological advancement. Often new technology is driven by design and discovery of new materials. To unfold the potential of new materials one has to investigate all its physical and chemical properties which may lead to fabrication of new devices using it. One of the thrust areas of research in IIT Palakkad is to develop new functional molecules and materials; fabricate nano-scale machines using them. In 2019, IIT Palakkad established the Central Instrumentation Facility (CIF) and the Central Micro-Nano Fabrication Facility (CMFF) to support high- quality research in design and development of functional molecules, materials and devices. In 2021, a material synthesis unit (MSP) was established in Nila Campus under CIF.

Functionally, the facility is grouped under the themes of Synthesis, Characterization and Fabrication.

CIF (Synthesis) – Materials Synthesis and Processing (MSP) Lab

The objective of this unit is to support the materials research by pooling in equipment meant for physical and chemical synthesis of materials at non ambient conditions e.g. high temperature (up to 1800oC), under high vacuum or different gas environment (O2, Argon, N2 and reduced atmosphere) and under high mechanical energy. Different kinds of high

temperature furnaces, ball milling, quartz tube sealing stations are installed in this facility. The unit started operating from Nila Campus in January, 2021. The facility is equipped to synthesize a wide variety of oxide, metallic, intermetallic compounds in single and polycrystalline form for different kinds of applied and basic research.

The equipment installed in the unit are listed below:

- High Temperature Chamber furnace with Programmable PID temperature Controller. (Tmax = 1700 oC)
- Mono Arc Melting Furnace.
- Ball Mill
- Rapid Thermal Processing Unit (Gas flow furnace, Tmax = 1100oC)
- Muffle furnace (Tmax = 1000oC)
- Quartz Tube Sealing Station

CIF (Characterization)

Different sophisticated equipment installed in the CIF (Characterization) unit facilitates chemical, structural and electrical characterization of the samples. This facility houses several characterization techniques to investigate complex mixtures of molecules produced during chemical reactions, bulk materials in single and polycrystalline form as well as in thin film form. A wide range of features also provides scope for conducting many interesting in situ and kinetic experiments.

Structural information of materials such as crystallinity, microstructure, surface morphology, roughness for powder and thin film samples upto 1500oC can be analysed using X-ray diffraction. For microscopy, the facility houses a state of the art High Resolution-Field Emission Scanning Electron Microscope (HR FEG - SEM) which can perform standard imaging, backscatter diffraction (EBSD) for studying the texture in single and poly-crystalline materials and energy dispersive x-ray spectroscopy (EDS) for studying chemical composition. E-beam lithography for fabricating micro-level devices for electronics/communications applications can be performed at high precision using the SEM. The facility has inducted a confocal optical microscope to study materials and biological samples under visible wavelength. For chemical characterization of materials different spectroscopic techniques at different wavelength ranges are housed in this facility e.g. NMR, Raman Spectrometer, FTIR, Mass Spectrometer etc. For studying thermal stability of the materials and reactions happening in the material a Thermogravimetric Analyzer is installed in this facility which is coupled with a Mass Spectrophotometer.

One of the necessary arms of device/material characterisation is electrical characterisation. This is essential to determine the electronic behaviour of diverse samples across multiple disciplines. To this end, we have the facilities to perform electrical characterization from low to high frequencies. CIF has a DC probe station and the semiconductor parameter analyser (SPA), using which high-precision measurement of different electrical characteristics (such as, current-voltage, capacitance-voltage, current-time, capacitance-time) at low frequencies, is possible. High-frequency measurements are possible using the RF probe station, vector network analyzer (VNA), RF signal analyzer, and RF signal generator. High-frequency signals can also be observed in time-domain on an ultrafast oscilloscope. Recently the facility has inducted a closed cycle cryostat to measure electrical properties down to 300 mK temperature under 12 Tesla magnetic fields.

The equipment installed in the unit are listed below:

- Fourier Transformed IR Spectrophotometer
- Automated flow Chemisorption
- Semiconductor Parameter Analyser
- Manual DC Probe Station
- Manual RF Probe Station
- Vector Network Analyzer
- Signal Analyzer
- Gas Chromatograph
- Analog Microwave Signal Generator
- Thermogravimetric Analyzer coupled with Mass Spectrometer (TG-DTA-MS)
- High Performance Liquid Chromatography

- Liquid Chromatography Mass Spectroscopy
- Nuclear Magnetic Resonance Spectrometer
- Non-Contact Optical Profilometry
- Universal Hardness Tester
- Raman spectrophotometer
- Scanning Electron Microscopy (SEM) with EDS, EBSD and Lithography attachment
- X-ray Powder/ Thin film Diffraction (XRD)
- Wire Bonder
- Mixed signal digital storage oscilloscope
- 64-channel Electroencephalograph (EEG) Data Acquisition System.
- Nuclear Magnetic Resonance Spectrometer
- Semiconductor device analyzerVTI
- PCB prototyping machine with PTH facility
- Confocal Microscope

CIF (Fabrication): Central Micro-Nano Fabrication Facility (CMFF)

The Central Micro-Nano Fabrication Facility has class 100000 and class 10000 cleanrooms, well-equipped for fabrication of devices. The cleanroom houses class 100 polypropylene fume hoods, a deionized water plant, an RF sputtering system, and a mask aligner. The RF sputtering system can deposit thin layers of metals and non-metals onto a substrate. The mask aligner can demarcate micrometer-scale patterns onto the substrate using photolithography. This system is capable of performing multilevel photolithography on top and bottom side of substrates, with minimum features in the sub-micron range. Realisation of microstructures is possible using wet-chemical methods performed inside the fume hoods. The deionized water plant provides the high-resistivity water needed during the processing. Recently, we have also added an optical microscope, a three-port glove box, and a critical point dryer (CPD) to this facility.

Broadly, research is proposed in areas including (but not limited to): (i) Design, fabrication and characterisation of 2D spin devices (including GMR devices), heterostructures of 2D materials and perovskites; (ii) Design, fabrication and characterisation of CMOS-compatible photodetectors; (iii) Fabrication and characterisation of RRAMS, non-linear selector devices for RRAMS, and one-time programmable memories; (iv) 2D material-based MEMS sensors,

and new strategies for design of MEMS-based structures that incorporate negative capacitance; (v) Design and characterisation of GaN- based mm wave devices and circuits; (vi) Fabrication and characterization of Perovskite solar cells.

The equipment installed in the unit are listed below:
- Mask Aligner
- Polypropylene Fume Hoods
- De-Ionized Water Plant
- RF/ DC/ Pulsed DC Sputtering System
- Spin Coater
- Optical Microscope
- Three-port glove box
- Critical point dryer(CPD)

9.4 Career Development Center (CDC)

The Career Development Center (CDC) of IIT Palakkad makes concerted efforts to enhance the capabilities, professional skills, personality, and work readiness of its students through structured placement training and career preparation workshops. To facilitate meaningful career opportunities, the CDC actively engages with industry through internships, industry visits, Industry–Academia conclaves, and by hosting industry experts on campus.

A rigorous yet flexible academic curriculum equips students to meet the challenges of a highly competitive industrial environment. IIT Palakkad has consistently witnessed successful campus placement outcomes year after year, with students receiving offers in diverse and rewarding roles from reputed multinational companies. In addition, several Public Sector Undertakings (PSUs) visit the campus annually for recruitment.

The statistics given below give a quick glimpse of the campus placement for both UG and PG students:

Batch	2021-2022	2022-2023	2023-2024	2024-2025
Batch Size (Both UG and PG)	251	293	325	292
Number of students registered in the CDC portal for placement	193	211	204	189
Number of offers secured (including dual offers)	208	206	185	191
Number of students placed	176	190	152	156
Number of companies participated in the campus recruitment process	215	158	168	204
Placement percentage (based on number of students placed)	91.19	90.05	74.51	82.54
Number of pre-placement offers	26	38	25	21
Average CTC INR (in lakhs)	13.93	13.95	13.89	13.92

Some of the notable organizations that have offered employment and internship opportunities to our students include L&T, Accenture India, Amazon, Texas Instruments, Turing, Arista Networks, BNY Mellon, VA Tech Wabag, BEL, CAT (Caterpillar), De Shaw, GlobalLogic, Google India, Infosys, HCL, LTI Mindtree, TCS – R&I, Mahindra Finance, Maruti Suzuki, MediaTek, Infineon, AMD, MathWorks, Versa Networks, Saint-Gobain, Delta Electronics, Hyundai Motor, HPCL, WSP, SEDEMAC, Switch Mobility, TVS, Daimler Truck, Flowserve, Atkins Realis, C-DAC, Alpha Wave Semi, Wafer Space (an ACL Digital Company), and Nation with NaMo, along with several leading startups, research organizations, and academic institutions across diverse sectors.

Industry Sector Wise Placement Distribution (2024-2025):
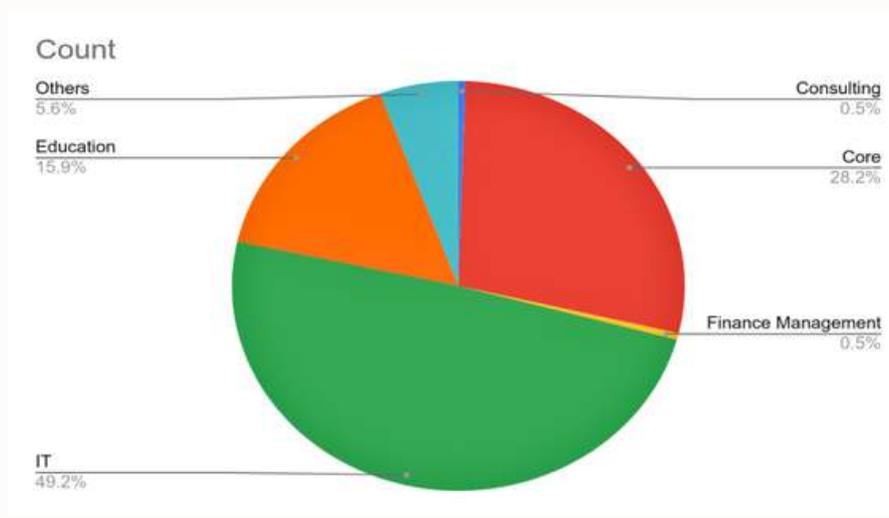
9.5 International and Alumni Relations (IAR)

The Office of International and Alumni Relations at IIT Palakkad is responsible for International collaboration, admissions, and Alumni related activities.

The activities of the Office of International Relations are,

- Initiating faculty collaboration and signing MoUs.
- Facilitating student exchange, research internships, and study abroad Programmes.
- Creating a welcoming and inclusive environment for international students through dedicated efforts.
- Supporting joint research and joint doctoral Programmes.
- Bringing global opportunities for students and faculty.
- Promoting IIT Palakkad's Programmes to the international community.
- Enabling direct admission for international students through ASEAN, SII, ICCR, embassies, and other channels.

- Hosting delegations from foreign universities and embassies.
- Maintaining a well-organized database for international collaborations.
- Ensuring smooth communication and support for international students and faculty.
- Strengthening global engagement through strategic partnerships.

The activities of the Office of Alumni Relations are

- Alumni-led mentorship Programmes for career guidance and academic support.
- Interactive sessions where alumni share industry experiences.
- Celebrating alumni achievements through newsletters, social media, and website features.
- Sending personalized greetings on milestones, achievements, and special occasions.
- Featuring alumni success stories and institutional updates in the annual newsletter.
- Showcasing career insights, internship experiences, and industry trends.
- Sharing off-campus job openings and internship opportunities with students.
- Encouraging alumni to contribute opportunities from their workplaces.
- Strengthening networking opportunities for professional collaboration.
- Hosting reunions, networking events, and informal gatherings.
- Encouraging alumni participation in campus activities and institutional initiatives.
- Enhancing student-alumni interactions for mentorship and guidance.
- Strengthening alumni relationships through recognition and engagement.
- Ensuring seamless interaction with alumni and students.
- Maintaining a well-organized and impactful alumni network.

9.6 TECHIN, IPTIF and CSquare Innovation

TECHIN - Technology Innovation Foundation of IIT Palakkad

Technology Innovation Foundation of IIT Palakkad (TECHIN) serves as the incubator arm of IIT Palakkad and is recognized as a Technology Business Incubator by Startup India. TECHIN is dedicated to nurturing early-stage startups and aspiring entrepreneurs, guiding them on their journey to becoming successful and sustainable businesses. The mission is to provide comprehensive support to innovators, including financial assistance, expert mentorship, skill development, business support services, and access to state-of-the-art R&D facilities. Through these resources, we aim to foster innovation and entrepreneurship, helping startups navigate the challenges of the business world and achieve their full potential. At TECHIN, we are committed to creating a thriving ecosystem where innovative ideas can flourish and transform into impactful ventures.

TECHIN organizes a variety of national events throughout the year, including pitch competitions, workshops, hackathons, and grand challenges, to nurture promising ideas and innovative solutions across India. These initiatives aim to achieve commercial success while also striving to create a positive societal impact.

Technology Verticals

- **SaniTech:** Dedicated to advancements in water, sanitation, and hygiene, aiming to develop innovative solutions that improve public health and environmental sustainability.
- **MedTech:** Focused on the biomedical technology sector, striving to drive innovations in healthcare and medical devices to enhance patient care and health outcomes.
- **Technology Innovation Center (TIC):** Encompasses a broad spectrum of technology domains, fostering innovation across various industries and supporting the development of cutting-edge technological solutions.

Support Offered to Startups

- Incubation & Acceleration
- Funding & Financial Support
- Technical & Business Mentoring
- Marketing, IP, Legal Support
- R&D, Labs & Testing Support
- Go To Market and Outreach
- Office Space & Infrastructure
- Training and Workshops
- Investors Connect
- Field Trials & Evaluation Support
- Market Research and Consultancy
- Commercialization & Technology Transfer

Dashboard

- Startups Incubated - 35+
- CSR funding Raised - 20 Cr+
- Revenue generated by startups - 15 Cr+
- Startup Valuation - 100 Cr+
- Jobs created- 100+

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- Startup Valuation - 100 Cr+
- Jobs created- 100+
- Startups' Geographical Distribution - 10+ States
- Personnel Skilled- 150 +
- Mentors/Experts - 50+
- Programmes & Cohorts Completed - 50+
- Innovations Evaluated - 500+

IPTIF - IIT Palakkad Technology IHub Foundation

IIT Palakkad Technology IHub Foundation(IPTIF) is a Section-8 company established in 2020 by IIT Palakkad as one of the 25 Technology Innovation Hubs(TIHs) supported by the Department of Science and Technology (DST) under India's National Mission on Interdisciplinary Cyber-Physical Systems(NM-ICPS). IPTIF's core purpose is to create a vibrant innovation ecosystem that accelerates technology product development, skilled human resource development, and tech-led entrepreneurship by leveraging IIT Palakkad's research expertise and infrastructure. It primarily focuses on advancing the domain of Intelligent Collaborative Systems(ICS)- integrating cyber-physical systems, robotics, automation and data science- with special emphasis on sectors like energy and safety, while also enabling applications in healthcare, automotives, agriculture and defense.

Guided by its vision of fostering cutting-edge research and industry-relevant upskilling, IPTIF works to translate innovative ideas into market-ready solutions, build partnerships with industry and research institutions, and support emerging entrepreneurs and startups. Its mission emphasizes enhancing India's competitiveness and sustainable growth by strengthening research, skill development, translational research and entrepreneurship in CPS and ICS technologies, providing academics, innovators and startups with the knowledge, skills and real-world experience needed to succeed in technology product development.

CSquare Innovation Centre

IIT Palakkad has put in place a strong ecosystem to encourage innovation and entrepreneurship activities among the students, staff and faculty. The Csquare Innovation Centre is a well-equipped facility for the fabrication of any prototype, proof-of-concept designs or project work in soft and hard materials in any interdisciplinary field. Facilities include:

3D printers, CNC Laser cutter, CNC Milling Machine, CNC Router, 3D Scanner, CNC Lathe, Power Hacksaw, Planner, Band Saw, Table saw, Plasma cutter and several hand tools. Software required like Fusion 360 are also available. Several new facilities for PCB fabrication, component assembly, reflow soldering, electronic workbenches and welding are in the process of being set up. Students are encouraged to develop new products and initiate startup activities. In addition, the Centre provides infrastructure for various courses and student-run technical clubs to conduct their activities. Several invited talks, workshops and short-term courses on innovation and entrepreneurship are conducted.

10. HOSTELS AND STUDENT WELLNESS

Hostels

IIT Palakkad houses six hostels: four in the tranquil Nila Campus and two in the serene Sahyadri Campus. Students are provided with double/triple sharing accommodation in Nila Campus, while rooms at Sahyadri Campus are either single or triple occupancy rooms.

Our hostels are equipped with well-appointed rooms, water heaters, RO-based drinking water systems, heavy-duty washing machines, and both WiFi and LAN network connections, ensuring convenience and connectivity. Additionally, a spacious dining hall, a well-equipped recreational area, an indoor games area, and a fitness centre are readily available for leisure and physical activities. Each room is equipped with either WiFi or LAN connectivity, offering seamless online access. Additionally, common rooms in every hostel provide a space for relaxation, equipped with a television, newspapers, and a selection of magazines chosen by the student body.

Student wellness

Anti-ragging measures

The motto of the Institute is zero tolerance to ragging. The students and parents are sensitised to this aspect through written documents and posters. A structured mechanism has been put in place to monitor ragging related issues and meet out the most stringent punishment to the wrong-doers, and enforce the anti-ragging regulations in letter and spirit.

Counselling Services

Institute Counselling Service(Mitra) has been set up in order to ensure that the students receive help when they face social/ emotional issues that require a professional approach.

The team comprises experienced counselors who are qualified Clinical Psychologists and available to support students as needed. Additionally, Amaha, an online mental health platform, offers therapy and self-care tools to students 24/7. Trained student volunteers on campus also provide peer support.

Life skill classes

Students are given a course in life skills to help them cope with stress, improve communication skills and manage conflicting objectives. This outbound training, conducted by experts, provides the students with a platform to discover new friends and develop new bonds. It enables them to come out of their shells and mingle with others. They are also taught the art of forming well-knit teams on whom they can lean when in need, without hesitation. This course is mainly aimed at developing interpersonal relationships, building confidence, and making the students comfortable while facing the public, interview boards and so on.

Health care

IIT Palakkad has an outpatient clinic with a medical officer, staff nurse and 24 hours ambulance services. The students are covered by a comprehensive medical insurance scheme for a nominal yearly subscription. IIT Palakkad has MOUs with Ahalia Diabetes Hospital, Athani Hospital, Malabar Hospital, Manomitra, Avitis, Palakkad Institute of Medical Sciences, Lakshmi Hospital, Trinity Eye Hospital and Thangam Hospital for cashless medical attention. Students can also go to the hospitals of the Ahalia Foundation for treatment as outpatients. Institute Clinic is operational in the Nila campus.

Sports facilities

IIT Palakkad is continuously improving its sports and games facilities. Good facilities exist for football, volleyball, basketball, table tennis, badminton and cricket. There is a resident Physical Training Instructor in the campus, who trains students in different games, physical fitness, weight lifting, etc. and takes care of the Institute gym. Other coaches are hired as and when needed.

11. THE STUDENT AFFAIRS COUNCIL (SAC)

The SAC of IIT Palakkad, established in 2016, is the supreme student-body council which takes all the pivotal decisions, in association with the institute, and suggests policies whenever necessitated, concerning the welfare of the whole of the student community of IIT Palakkad. The SAC, headed by the Student General Secretary, consists of eight student-elected representatives who passionately work together towards transcending the institute in a plethora of fields and enhancing the student life at the institute. With the aforementioned view, SAC consistently promotes the objectives of fostering curricular, co-curricular and extracurricular activities for the holistic development of the students of IIT Palakkad. SAC is an indispensable part of our institute and has been instrumental to the growth and development of the institute since its inception.

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