ANNUAL REPORT
2019-2020
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प्राक्कथन

आईआईटी पालक्काड के पांचवें वार्षिक बजट को प्रस्तुत किए गए मुझे हार्दिक खुशी हो रही है। इन विषयों पर यथार्थ बातें कहने में संस्थान ने भरपूर विश्वास किया है, जहां तक कि यह राजीवी महास अध्यक्ष के संकेतन से का प्राप्त हुआ है। विषय वर्तमान वर्ष के दौरान हमें नए उद्देश्य व्ययों के साथ काम करना है, जिन्हें हमें समाप्त करना होगा। विषय वर्तमान वर्ष के दौरान हमें नए उद्देश्य व्ययों के साथ काम करना है, जिन्हें हमें समाप्त करना होगा।

सभी मैं आईआईटी पालक्काड के साथ छात्रों एवं अध्यक्षों के साथ छात्रों के प्रभाव वैज्ञानिक एवं अनुसंधान को समीक्षित रखने के लिए अपने सार्वजनिक भूमिका के लिए अपनी सेवाएं प्रदान करेंगे।

वर्ष 2019 में हमें अपने शास्त्रीय अनुसंधान में नए उद्देश्य व्ययों के साथ काम करना होगा। हमें इस संस्थान के साथ भाग लेना है, जो अपने अत्यधिक प्रभाव वाले अनुसंधान क्षेत्रों में काम करता है। यह संस्थान के साथ काम करता है, जो अपने अत्यधिक प्रभाव वाले अनुसंधान क्षेत्रों में काम करता है।

प्रेमिकाओं के लिए श्रेष्ठ पदक्षेप लेने के लिए भी हमें अपने सार्वजनिक भूमिका के लिए अपनी सेवाएं प्रदान करेंगे। इस वर्ष के दौरान अपने संस्थान के साथ भाग लेना है, जो अपने अत्यधिक प्रभाव वाले अनुसंधान क्षेत्रों में काम करता है।

आईआईटी पालक्काड लाइवली संस्थान का सार्वजनिक प्रारूपित 'नीला' के रूप में स्वागत पाएगा, जो इस संस्थान के साथ समाप्त होने के लिए अपने अंतिम सेवाएं प्रदान करेंगे। इस वर्ष के दौरान अपने संस्थान के साथ भाग लेना है, जो अपने अत्यधिक प्रभाव वाले अनुसंधान क्षेत्रों में काम करता है।

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It gives me immense pleasure to present the fifth annual budget of IIT Palakkad. The institute has evolved immensely over the past five years, reaching to be considering a growing institute of National repute. During the past year, we have etched forward with this responsibility to forge a creative, multidisciplinary institution which delivers quality education, original research and practice.

Students and Scholars from across the country continue to choose IIT Palakkad as their learning space and we have onboarded excellent human resources to enable learning. During the year, we are happy to have initiated newer streams of study including M Tech in Geotechnical Engineering, Manufacturing and Materials Engineering and MSc programmes in Physics, Chemistry along with the B Tech, MS and PhD programme which we have been offering since 2015 and 2017. The student community has crossed 700 in number with 545 Students in the institute.

The placement season of the institute, 2019-20, saw over 70 companies participating across the sectors such as Research and Development, Information technology, Core Engineering, Analytics, Government, Consulting, etc to fill their full-time requirements and made 85 offers to students. The median CTC offered was INR 9.94 Lakhs with a 17.77% increase compared to the previous year. The students in their second and third years interned with the industry, some with fantastic exposure, to receive hands-on exposure on the application of their respective streams of study. With an aim to facilitate students with global know-how and exposure to the best in class, the institute has opened up avenues for them to take up their B.Tech projects outside of the institute including universities abroad. During the year, two Students have received International academic internships from Nanyang Technological University (NTU) - Singapore and three students took up their projects in AUT, Newzealand.

Over 30 industry experts, from organisations like Intel, Wipro, Ultratech Cements, ARM, GE, Bosch, Samsung, Sandvik,etc, participated in the first ever Industry-Academia Conclave on August 14, 2019. During the past year, we established a trans
disciplinary Centre for Research and Education in Data Science (CREDS) with the main objective to develop data science & artificial intelligence for the benefit of society.

As we confidently steer into unchartered waters, we have attempted to look at how our institution can be of intellectual relevance to the general public of this region of Kerala that hosts us. During the year, we initiated a Public Lecture Series, in association with the district public library of Palakkad, where Scholars from across the country deliver their engaging thought on themes of immediate importance to society. The Public Lecture Series has been named Pale Blue Dot. The first lecture in the series was delivered by Prof. Amitabh Joshi from JNCASR, Bangalore.

As part of the Science Outreach Programme, we organized events for the benefit of high school and higher secondary students. We conducted a 10 days residential workshop for 30 higher secondary students selected from schools across Kerala and Coimbatore district of Tamil Nadu. As a prelude to the National Science Day, IIT Palakkad organized a technical visit, sponsored by the District Employment office, for 50 chosen high school and higher secondary students from the district. Inorder to inculcate the culture of mathematical thinking among school students, IIT Palakkad started mathematical enrichment activities under its Palakkad Math Circle initiative. A pilot run of Math Circle sessions were conducted in a few selected schools by IIT Palakkad faculty members and research scholars during January-March 2020. The institute plans to continue these programmes in the coming years to motivate young talents to pursue their passion. We have an active initiative. A pilot run of Math Circle sessions were conducted in a few selected schools by IIT Palakkad

The above achievements of the institute was made possible by the exemplary qualities of practical intelligence, of courage, endurance, and above all innovation and devotion shown by the faculty staff and students of the institution. I thank them for their effort. On behalf of the institute, I wish to thank the Board of Governors of the institute and MHRD for all the guidance and support provided.

Prof. P. B. Sunil Kumar
Director
IIT Palakkad
Construction work at IIT Palakkad Permanent Campus

in Engineering, Chemistry, Mathematics, Humanities and Physics. The Institute also offers postdoctoral fellowships.

Approximately 504 acres of land bordering the Sahya Mountain range and adjoining the Coimbatore-Kanyakumari national highway at Palakkad, was identified as the site for the permanent campus on January 17, 2015. A vibrant campus with world-class sustainable green buildings has been planned. The first phase of construction consisting of infrastructure required to accommodate two batches of B. Tech. students started in 2017 and was completed in 2019. The mandate of the institute is to grow to 1200 students by 2021 and to 2500 students by 2027.

OBJECTIVES

1. To provide the best educational infrastructure for imparting high class education in science and technology and a creative atmosphere for interdisciplinary research both by the students and the faculty.

2. To increase the student capacity to meet the growing demands for industry.

3. To maintain global standards in student-faculty ratio, research output, publications in journals and placement of students.

4. To participate in and contribute to nation building through various flagship schemes of the Government of India/State Governments requiring technological interventions thereby spurring economic growth for the welfare of the masses.

5. To provide research and development consultancy, which will foster healthy industry-academia partnership, thereby providing a competitive edge to indigenous manufacturing.

उद्देश्य

1. विद्या तथा प्रौद्योगिकी में उच्च श्रेणी में उच्च शेषी शिक्षा प्रदान करने के लिए सवारीस्थितक अवसर सहित अंतर-शास्त्रीय अनुसंधान हेतु छात्रों एवं संगठन सक्षम बनाने के लिए एक अनुसंधान इंडस्ट्री की सहायता करना।

2. उद्देश्यों की बढ़ती ग्राहक की जितनी व्यावसायिक अवसंरचना में वृद्धि करना।

3. छात्र-संकार अनुपात, अनुसंधान-आउटपुट, जनताओं में प्रकाशन, तथा छात्रों के औसत में वैज्ञानिक मार्गों का अनुश्रुत करना।

4. आयोजनों के क्षेत्रावधार आर्थिक वृद्धि में प्रीलाग्राम द्वारा विभिन्न प्रौद्योगिकीय इनियोजन से भारत सरकार/उत्तर राष्ट्र सरकार की विभिन्न प्रौद्योगिकीय पोलिस के साथ से राष्ट्रीय नियाम में भागीदारी तथा इसके ग्राहक अवदान करना।

5. अनुसंधान एवं विकास परम्पराओं उपलब्ध कराना, जो एक सवारी-आधारित पार्टनरशिप सृजित करेगा, जिसके द्वारा वेतन उद्देश्यों को प्रतिस्पर्धी लथा उपलब्ध कराया जा सकेगा।
### 3.1 BOARD OF GOVERNORS (BOG)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Designation</th>
<th>BoG Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Shri. R. Subrahmanyan,</td>
<td>Secretary, Department of Higher</td>
<td>Chairman</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 13 December 2019)</td>
<td>Education, MHRD, New Delhi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shri. Amit Khare</td>
<td>(From 14 December 2019 till date)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Shri. Sukhbir Singh Sandhu</td>
<td>Additional Secretary (TE),</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 27 October 2019)</td>
<td>Department of Higher Education, MHRD, New Delhi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shri. Rakesh Sarwal</td>
<td>(28 October 2019 till 31 March 2020)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Prof. P. B. Sunil Kumar</td>
<td>Director, IIT Palakkad</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td>Prof. Bhaskar Ramamurthi</td>
<td>Director, IIT Madras</td>
<td>Member</td>
</tr>
<tr>
<td>5.</td>
<td>Smt. Darshana Momaya Dabral</td>
<td>Joint Secretary (FA), MHRD, New Delhi</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Dr. Prashant Agarwal</td>
<td>Director(IITs), MHRD, New Delhi</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td>Dr. L. S. Ganesh</td>
<td>Professor, IIT Madras</td>
<td>Member</td>
</tr>
<tr>
<td>8.</td>
<td>Dr. Subbiah Shanmugam</td>
<td>Professor, Kilpauk Medical College, Chennai</td>
<td>Member</td>
</tr>
<tr>
<td>9.</td>
<td>Shri. Raghu Verabelli</td>
<td>Managing Partner, GGK Technologies, Hyderabad</td>
<td>Member</td>
</tr>
<tr>
<td>10.</td>
<td>Dr. Usha Titus</td>
<td>Principal Secretary, Higher Education, Govt. Of Kerala</td>
<td>Member Secretary</td>
</tr>
</tbody>
</table>

### 3.2 FINANCE COMMITTEE (FC)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Designation</th>
<th>FC Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Shri. R. Subrahmanyan,</td>
<td>Secretary, Department Of Higher</td>
<td>Chairman</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 13 December 2019)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Shri. Amit Khare</td>
<td>(14 December 2019 till date)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Shri. Sukhbir Singh Sandhu</td>
<td>Additional Secretary (TE),</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 27 October 2019)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Shri. Rakesh Sarwal</td>
<td>(28 October 2019 till 31 March 2020)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Prof. P. B. Sunil Kumar</td>
<td>Director, IIT Palakkad</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td>Prof. Bhaskar Ramamurthi</td>
<td>Director, IIT Madras</td>
<td>Member</td>
</tr>
<tr>
<td>5.</td>
<td>Smt. Darshana Momaya Dabral</td>
<td>Joint Secretary (FA), MHRD, New Delhi</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Dr. Prashant Agarwal</td>
<td>Director(IITs), MHRD, New Delhi</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td>Col. S. Chakraborty</td>
<td>Registrar</td>
<td>Member Secretary</td>
</tr>
</tbody>
</table>
### 3.3 Building Works Committee

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Designation</th>
<th>BWC Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prof. P. B. Sunil Kumar</td>
<td>Director</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Shri. Pilli Bhagat Singh</td>
<td>Chief Engineer, CPWD, Zone-V</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 25 February 2020)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Shri. A. K. Raveendran</td>
<td>Deputy Chief Engineer, KSEB,</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 25 February 2020)</td>
<td>Palakkad</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Shri. S. Ramanujam</td>
<td>Retired Director, DCSEM, DAE,</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mumbai</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Shri. P. Soundararaj</td>
<td>Retired DDG, CPWD, Chennai</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Prof. K. Murali</td>
<td>Professor, IIT Madras</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(From 1 April 2019 to 25 February 2020)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Prof. G. Robinson</td>
<td>Asst.Professor, IIT Palakkad</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>(26 February 2020 till date)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Prof. Tom Mathew</td>
<td>Chairman, Engineer Works</td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department, IIT Palakkad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(26 February 2020 till date)</td>
<td></td>
<td></td>
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</tbody>
</table>

**Construction work at IIT Palakkad Permanent Campus**
### 3.4 Senate

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Designation</th>
<th>Senate Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prof. P. B. Sunil Kumar</td>
<td>Director</td>
<td>Chairman</td>
</tr>
<tr>
<td>2</td>
<td>Col. S. Chakraborty (Retd.)</td>
<td>Registrar</td>
<td>Secretary</td>
</tr>
<tr>
<td>3</td>
<td>Dr. Deepak Rajendraprasad</td>
<td>Assoc. Dean (Academic Courses)</td>
<td>Member</td>
</tr>
<tr>
<td>4</td>
<td>Prof. K. L. Sebastian</td>
<td>Dean (Academic Research)</td>
<td>Member</td>
</tr>
<tr>
<td>5</td>
<td>Prof. Vinod A. Prasad</td>
<td>Dean (Industry Collaboration and Sponsored Research)</td>
<td>Member</td>
</tr>
<tr>
<td>6</td>
<td>Prof. Tom V. Mathew</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>7</td>
<td>Prof. S. H. Kulkarni</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>8</td>
<td>Dr. Swaroop Sahoo</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>9</td>
<td>Dr. Sudheesh T. K.</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>10</td>
<td>Prof. P. S. Mehta</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>11</td>
<td>Prof. P. S. Mehta</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>12</td>
<td>Dr. Dinesh Jagadeesan</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>13</td>
<td>Dr. Lakshmi Sankar K.</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>14</td>
<td>Dr. Uma Divakaran</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>15</td>
<td>Dr. Anoop George</td>
<td>Assistant Professor</td>
<td>Member</td>
</tr>
<tr>
<td>16</td>
<td>Prof. Suresh Govindarajan</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>17</td>
<td>Prof. Harishankar Ramachandran</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>18</td>
<td>Prof. M. Suresh Babu</td>
<td>Professor</td>
<td>Member</td>
</tr>
<tr>
<td>19</td>
<td>Prof. K. V. Govindan Kutty</td>
<td>Dean (Students)</td>
<td>Special Invite</td>
</tr>
<tr>
<td>20</td>
<td>Prof. Krishna Sivalingam</td>
<td>Professor</td>
<td>Special Invite</td>
</tr>
<tr>
<td>21</td>
<td>Prof. K. P. Sudheer</td>
<td>Professor, IIT Madras &amp; Executive Vice Chairman, KSCSTE</td>
<td>Special Invite</td>
</tr>
<tr>
<td>22</td>
<td>Prof. Job Kurian</td>
<td>Professor</td>
<td>Special Invite</td>
</tr>
</tbody>
</table>
4.1 प्रशासन

प्रो. पी. शुभेंदु सुनिल कुमार, राज्यपाल
प्रो. वेल चक्रवर्ती, इतिहास
प्रो. जोज राजपूत, प्रोकॉर्पोरेशन प्रभाग, प्रशासन
प्रो. जी.पी. मुखर्जी, संघारशास्त्र
प्रो. रूबिन मेरोपे, कार्यालय प्रशासन
प्रो. क.ब. रूड, मुख्यालय, प्रशासन
प्रो. म. रमोट, विज्ञान एवं प्रौद्योगिकी
प्रो. रजित धर, विज्ञान एवं प्रौद्योगिकी
प्रो. आ.बी. गुप्ता, विज्ञान एवं प्रौद्योगिकी

4.2 संकरा

रसायनशास्त्र

प्रो. क.एस. कुमार, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: रसायन शास्त्र और जैव-कीर्तिकी, दानक \( \text{मैक्रोमोल्यूल्स की गरिशीली, बारोपॉरलमस्टि} \)

प्रो. रेवांदन गोयनक, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: पदा्षि कृतांजलि, रूढ़ि संबंधित केंद्रों के अधीन, रबगू और \( \text{रोज रबगू, रजरोरसं्ेरटक्स एवं ग्ाउंड सुधारकी} \)

प्रो. अवश्यक मुखर्जी, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: भयू-िकनीकी एवं भयू-पराषिविण अरभरांरत्रकी, \( \text{जल संसाधन प्रबंधन, लैंडरयूज / लैंडकवि} \)

प्रो. देवीदेवी नायक, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: भयू-िकनीकी इंजीनियरिंग: डीप फाउंडेशन; मृदा ब्स्िीकिण; औि मृदा-संचारण सहभारगिा

प्रो. राजीनामा भरुङ्ग, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: रसायन शास्त्र, रजरोरसं्ेरटक्स एवं ग्ाउंड सुधारकी, बारोपॉरलमस्टि, \( \text{सेंटेक्स फ्यूज मॉडरलंग औि इमेज रवश्े्ण} \)

प्रो. अनिल कुमार च, पीडी.एच.डी. (आई.आई.एससी, पूर्वी बंगाल)
अनुसंधान क्षेत्र: इस्पाि संिचनाएं
डॉ. संजुक्ता प्रकाश, पीएचडी (आईआईटी कन्नूक)  
अनुसंधान क्षेत्र: निक्षेपक और प्रशिक्षण नियंत्रण । तंत्र द्वारा संचालन श्रेणी के कंप्यूटर कंट्रोल, जेव आईआईटी, सांद्रबुध और शिक्षण द्वारा हेल्थ टेक्चर

डॉ. शमीता सिंह, पीएचडी (आईआईटी, लुकास, पुरातत्व)  
अनुसंधान क्षेत्र: इंटीडॉक्युमेंटेशन, नव मध्ययुगीन नियंत्रण, जलवायु अनुक्रम और जलवायु परिस्थिति, प्रभाव अध्ययन, आपड़ा प्रविष्टी व रिपोर्ट और विश्लेषण, जल निति विश्लेषण

डॉ. सी. म. निरुक्ता कुरू, पीएचडी (आईएिएससी चेन्नई)  
अनुसंधान क्षेत्र: प्रोग्राम भाषा, टाइप विशेषज्ञ

डॉ. केमेन जे. किसां, पीएचडी (आईआईटी मद्रास)  
अनुसंधान क्षेत्र: आकृति का क्षेत्रात्मक व्याख्या, भौतिक समर्थन में रचनात्मक मॉडलिंग, पेमेट अनुभूतियों हेतु भौतिक समर्थन

डॉ. शेरिफ़ कुस्तारा और, पीएचडी (आईआईटी बैंगलोर)  
अनुसंधान क्षेत्र: परिवहन इंजीनियरिंग, पेवमेंट इंजीनियरिंग

डॉ. अल्बर्ट्स सनी, पीएचडी (आईआईटी बैंगलोर)  
अनुसंधान क्षेत्र: वारिलेस नेटवर्क, सोशल नेटवर्क, परिवहन नेटवर्क

डॉ. चंद्रशेखर लक्ष्मनरायन, पीएचडी (आईआईटी मद्रास)  
अनुसंधान क्षेत्र: परिशोधन एलॉरिडम, डीप लर्निंग, बारेर्सरन मॉडल

डॉ. संदीप चंद्रन, पीएचडी (आईआईटी वदल्ली)  
अनुसंधान क्षेत्र: उच्च प्रदशोधन कार्यालय, पोस्ट-रसरलकॉन सत्ता, कंप्यूटर आरक षिटेक्चर
डॉ. अविनंद नीराय, पीएचडी (आईआईटी मद्रास)  
अनुसंधान क्षेत्र: नैनोइलेक्ट्रॉनिक्स कंप्यूटेशनल, सैद्धांतिक और प्रौद्योगिक पहलु,  
वैज्ञानिक अनुसंधान के लिए इंदुस्ट्री रेसर्च

डॉ. अशोक केसरी, पीएचडी (आईआईटी बॉम्बे)  
अनुसंधान क्षेत्र: स्वास्थ्य के लिए संयुक्त, सांस्कृतिक और सार्वजनिक उत्ति औपनिवेशिक का अध्ययन

डॉ. अवनरुद्ध गुर्जर, पीएचडी (आईआईटी बॉम्बे)  
अनुसंधान क्षेत्र: गैस-सेरायर रेडर फ्लाइटिंग समीकरण, ज्यारमिीर रांग्ट्री, अनुकूल रेडर रनरंग

डॉ. श्रीनाथ गूढ, पीएचडी (आईआईटी मद्रास)  
अनुसंधान क्षेत्र: श्रवण रेडर फ्लाइटिंग समीकरण, माइक्रोवेव और माइक्रोवेव उपकरण और घटक, माइक्रोवेव डेटेक्शन, रेडरो फ्रीकेंसी माइक्रोइलेक्ट्रॉनिक्स रसस्तम

डॉ. ऐशवन रामनूजस, पीएचडी (आईआईटी बॉम्बे)  
अनुसंधान क्षेत्र: वर्तमान रुप में वायरल संचार, रेडरजेल वीएलएसआई सरक्षित और रसस्तम, अनुकूलता रसस्तम प्रबंधन

डॉ. श्रीनाथ गूढ, पीएचडी (आईआईटी मद्रास)  
अनुसंधान क्षेत्र: सेंसर और इंस्ट्रुमेंटेशन, वेबसिटी और समाध्योक्त, ज्यारमिीर रांग्ट्री, अनुकूल रेडर रनरंग
डॉ. वी. आई. एस. (आईआईटी, बॉम्बे) अनुसंधान क्षेत्र: कम्यूटर बीजगरण

डॉ. ए. एक्स. सुनील (आईआईटी, बॉम्बे) अनुसंधान क्षेत्र: निम पदार्थ और जैवविज्ञान

डॉ. स. ए. एन. सुईद (नेशनल यूनिवर्सिटी ऑफ वेस्टर्न गोवलगंगा, बैंगलौर) अनुसंधान क्षेत्र: आपने परासिल, मेकोसेंसर के साथ साझेदारी का सहभाग

डॉ. श्री. दी. सुंदर (बॉस इंटिट्यूट, कोलकाता) अनुसंधान क्षेत्र: अमित कुमार भाट, पीएचडी (आईआईटी, बॗटल) अनुसंहान क्षेत्र: प्रथित रूप तथा पदार्थ (क्रिकल पुनिचर्स्टी)
4.3 कर्मचारी

<table>
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<tr>
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<td>1.</td>
<td>के. म. उन्नी परिरोजना सलाहकार प्रशासन</td>
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4.4 संदर्भाग्रत कर्मचारी

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<td>6.</td>
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4.1 ADMINISTRATION
Prof. P. B. Sunil Kumar, Director
Col. S. Chakraborty, Registrar
Prof. Job Kurian, Professor in-charge, Administration
Prof. K. L. Sebastian, Dean - Academic Research
Prof. P. S. Mehta, Dean - Academics (till 19.09.2019)
Prof. K. V. Govindan Kutty, Dean - Student Affairs
Prof. Vinod A. Prasad, Dean - Industry Relations and Sponsored Research
Dr. Deepak Rajendraprasad, Associate Dean - Academics (from 20.09.2019)

4.2 FACULTY
CHEMISTRY
Prof. K. L. Sebastian, PhD (IISc Bangalore)
Research Area: Quantum Chemistry and Statistical Mechanics

Dr. Debarati Chatterjee, PhD (IISc Bangalore)
Research Area: Theoretical Chemical Physics, Biophysical processes, Soft Condensed Matter, Equilibrium and Nonequilibrium Statistical Mechanics, Dynamics of Macromolecules, Biopolymers

Dr. Dinesh Jagadeesan, PhD (JNCASR, Bangalore)
Research Area: Materials Chemistry, Heterogeneous Catalysis, Environmental Catalysis

Dr. Mintu Porel, PhD (University of Miami, Florida, USA)
Research Area: Design, Synthesis and Application of novel organic materials, Supramolecular and Macromolecular Chemistry, Photochemistry

Dr. Padmesh A., PhD (Institute of Fundamental Sciences, Massey University, New Zealand)
Research Area: Computational chemistry, Molecular Simulations, Advanced Sampling Techniques

Dr. Supratik Sen Mojumdar, PhD (Indian Association for the Cultivation of Science (IACS))
Research Area: Protein folding, misfolding and aggregation using single molecule fluorescence and force spectroscopy
Dr. Shanmugaraju Sankarasekaran, PhD (IISC, Bangalore)
Research Area: Inorganic Chemistry, Organometallic Chemistry, Supramolecular Material Chemistry, Polymer Chemistry

Dr. Sushabhan Sadhukhan, PhD (Case Western Reserve University, Cleveland, Ohio, USA)
Research Area: Chemical Biology, Development of Small Molecule Inhibitors, Metabolomics, Proteomics

Visiting faculty
Prof. K. V. Govindan Kutty, PhD (IIT Madras)
Research Area: Materials Chemistry

CIVIL ENGINEERING
Dr. Athira. P., PhD (IIT Madras)
Research Area: Predictions in Ungauged Basins, Hydrological Modelling and Uncertainty Analysis, Watershed Management, Landuse/Landcover change modelling, Climate change impact analysis

Dr. Divya. P. V., PhD (IIT Bombay)
Research Area: Geotechnical & Geoenvronmental Engineering, Geosynthetics and Ground improvement techniques, Reinforced earth walls and embankments, Engg. behaviour of soft clayey soils, Centrifuge Modelling and Image analysis

Dr. Anil Kumar M. V., PhD (IIT Madras)
Research Area: Steel Structures

Dr. Madhu Kirthik M., PhD (Texas A&M University, USA)
Research Area: Reinforced and prestressed concrete structures, Structural evaluation of deteriorating structures, Non-destructive testing and evaluation, Bridge engineering

Dr. Subhasis Mitra, PhD (Auburn University, USA)
Research Area: Climate and Anthropogenic Impacts on Surface and Groundwater Hydrology

Dr. B. K. Bhavathrathan, PhD (IIT Bombay)
Research Area: Transportation Systems

Dr. Sudheesh T. K., PhD (The University of Florida, USA)
Research Area: Geotechnical Engineering: Deep Foundations; Soil Stabilisation; and Soil-Structure Interaction

Dr. Praveena Gangadharan, PhD (IIT Madras)
Research Area: Microbial Fuel Cells, Water/Wastewater treatment, Metal reduction/recovery, Electrochemical water/waste treatment

Dr. Sanjukta Chakraborty, PhD (IIT Kanpur)
Research Area: Vibration control of structures using passive and feedback control mechanisms, Optimal control, Base isolation, Substructure shaking table test

Dr. Sarmistha Singh, PhD (Auburn University, Auburn, USA)

Dr. C. V. Veena Venudharan, Ph.D (IIT Kharagpur)
Research Area: Transportation Engineering, Pavement Engineering

Dr. Rakesh J. Pillai, PhD (IIT Madras)
Research Area: Cyclic behaviour of soils, Constituitive Modelling in Geomechanics, Ground Improvement for pavement applications

Dr. Senthilkumar V., PhD (IIT Madras)
Research Area: Construction Engineering and Management

Prof. Tom V. Mathew, PhD (IIT Madras)
Research Area: Traffic Flow Modeling and Simulation

Visiting faculty
Dr. Sunitha K. Nayar, PhD (IIT Madras)
Research Area: Physical and mechanical characterization of construction materials and systems, Characterization of special concretes, Fatigue characteristics of concrete, Long-term performance of FRC, Design of FRC systems, Modeling mechanical performance parameters for construction materials and systems

Adjunct faculty
Dr. R. Venkataraghavan, PhD (IISC Bangalore)
Research Area: Product Design & Engineering, Materials Science and Environmental science

COMPUTER SCIENCE AND ENGINEERING
Dr. Deepak Rajendraprasad, PhD (IISc Bangalore)
Research Area: Combinatorics, Graph Theory

Dr. Jasine Babu, PhD (IISc Bangalore)
Research Area: Theoretical Computer Science - mainly Graph Theory and Algorithms

Dr. Sahely Bhadra, PhD (IISc Bangalore)
Research Area: Machine Learning, Optimization, Bioinformatics
Dr. Piyush P. Kurur, PhD (IMSc Chennai)
Research Area: Programming languages, Type theory

Dr. Albert Sunny, PhD (IISc Bangalore)
Research Area: Wireless Networks, Social Network, Transportation Networks

Dr. Chandrashekar Lakshminarayanan, PhD (IISc Bangalore)
Research Area: Reinforcement Learning; Stochastic Control; Deep Learning

Dr. Krithika Ramaswamy, PhD (IIT Madras)
Research Area: Parameterized Algorithms, Graph Theory and Algorithms, Approximation Algorithms

Dr. Mrinal Kanti Das, PhD (IISc Bangalore)
Research Area: Machine Learning, Data Science, Privacy Aware Learning, Bayesian models

Dr. Sandeep Chandran, PhD (IIT Delhi)
Research Area: High Performance Computing, Post-silicon Validation, Computer Architecture

Dr. Satyajit Das, PhD (University of South Brittany (UBS), France, and University of Bologna (UniBo), Italy)

Dr. Unnikrishnan Cheramangalath, PhD (IISc Bangalore)
Research Area: High Performance Computing, Domain Specific Languages (DSLs), Graph Analytics, Language Based Security, Internet of Things

Dr. Vivek Chaturvedi, PhD (Florida International University, Miami, FL, USA)
Research Area: Power and thermal efficient task scheduling strategies for multi/many core processors, Cyber security, Cyber Physical systems and IoT

ELECTRICAL ENGINEERING

Prof. Vinod A. Prasad, PhD (NTU Singapore)
Research Area: Digital Signal Processing, VLSI Signal Processing for Wireless Communications, Brain Computer Interface Systems

Dr. Arun Rahul S., PhD (IISc Bangalore)
Research Area: Power Electronics, Motor Drives, Power converter topology and control, Multi level power converters, Grid integration of solar energy, Pulse Width Modulation and switching techniques, Power Electronics and Power Systems

Dr. Arvind Ajoy, PhD (IIT Madras)
Research Area: Computational, theoretical and experimental aspects of nanoelectronics, Instrumentation for Scientific Applications

Dr. Lakshmi Narasimhan T., PhD (IISc Bangalore)
Research Area: Wireless communication, Signal processing, Information and coding theory

Dr. Revathy P., PhD (IISc Bangalore)
Research Area: Micro/Nanoelectronics

Dr. Swaroop Sahoo, PhD (Colorado State University, USA)
Research Area: RF and Microwave, Weather Radar, Microwave Remote Sensing Microwave Radiometer

Dr. Mahesh R. Panicker, PhD (NTU, Singapore)
Research Area: Digital Signal Processing, Embedded Systems, Ultrasound Imaging

Dr. Sukomal Dey, PhD (IIT Delhi)
Research Area: Microwave and Millimeter wave Devices and Components, Radio Frequency Microelectromechanical System

Dr. Jobin Francis, PhD (IISc, Bangalore)
Research Area: Area of wireless communication, Design, analysis, and optimization of 5G cellular networks

Dr. Anirudh Guha, PhD (IISc Bangalore)

Dr. Manas Kumar Jena, PhD (IIT Delhi)

Dr. Shaikshavali Chitraganti, PhD (University of Lorraine, Nancy, France)
Research Area: Stability/control/estimation in networked control systems, Control theoretic approach to Cyber physical systems security and privacy, Event triggered state/parameter estimation, Stochastic receding horizon control

Dr. Sneha Gajbhiye, PhD (IIT Bombay)
Research Area: Nonlinear control, robotics, geometric mechanics, adaptive control

Dr. Sreenath Vijayakumar, PhD (IIT Madras)
Research Area: Sensors and Instrumentation
Dr. Subrahmanyam Mula, Ph.D (IIT Kharagpur)

Dr. Vijay Muralidharan, PhD (IIT Madras)
Research Area: Robotics and Control

Adjunct faculty
Dr. Venkata Vanukuru, PhD (IIT Madras)
Research Area: Solid State Devices

Humanities
Dr. Anoop George, PhD (IIT Bombay)
Research Area: Phenomenology and Existentialism, Philosophy of Technology, Continental Philosophy

Dr. G. Sujatha, PhD (University of Madras)
Research Area: Gender, cultural and postcolonial studies; language and modernity; modern Tamil literature, translation studies, cinema and folk religious cults

Dr. Reenu Punnoose, PhD (Newcastle University, United Kingdom)
Research Area: Phonetics, Sociolinguistics, Bilingual language acquisition, world Englishes

Dr. Armita Roy, PhD (Jawaharlal Nehru University)
Research Area: Trade and Development, Economic Growth

Mathematics
Prof. S. H. Kulkarni, (IIT Bombay)
Research Area: Functional Analysis

Dr. Ashok Kumar M., PhD (IISc Bangalore)
Research Area: Information, Statistics, and Probability

Dr. Sarath Sasi, PhD (Mississippi State University, USA)
Research Area: Partial differential equations

Dr. Lakshmi Sankar K., PhD (Mississippi State University, USA)
Research Area: Differential Equations, Nonlinear Analysis

Dr. G. P. Balakumar, PhD (IISc Bangalore)
Research Area: Several Complex Variables

Dr. Jayararayanan C. R., PhD (Indian Statistical Institute, Bangalore)
Research Area: Functional Analysis, Geometry of Banach Spaces, Approximation Theory

MECHANICAL ENGINEERING
Prof. Pramod S. Mehta, PhD (Loughborough University, UK)

Dr. K. V. N. Surendra, PhD (IISc Bangalore)
Research Area: Fracture Mechanics, Elasticity

Dr. Krishna Seshagiri, PhD (IISc Bangalore)
Research Area: Combustion and laser diagnostics, Combustion modeling, Novel laser and optical diagnostic techniques

Dr. D. Chakravarthi, PhD (NIT, Warangal)
Research Area: Non traditional machining, Machining

Dr. Kanmani S. Subbu, PhD (IIT Kanpur)
Research Area: Micro Manufacturing, Laser Surface Treatment, Additive Manufacturing and Composite Fabrication and Machining

Dr. D. Kesavan, PhD (IIT Madras)
Research Area: Surface Engineering, Welding Technology, Industrial Tribology, Additive Manufacturing

Dr. Samarjeet Chanda, PhD (IIT Madras)

Dr. Ganesh Natrajan, PhD (IISc Bangalore)
Research Area: Computational Fluid Dynamics - Immersed Boundary Methods Sports aerodynamics and mathematical modelling

Dr. Sovan Lal Das, PhD (Cornell University)
Research Area: Theoretical and Applied Mechanics, Contact Mechanics of Thin Structures, Lipid Bilayer Membrane

Dr. Jaikrishnan Janardhanan, PhD (IISc Bangalore)
Research Area: Several Complex Variables, Complex Dynamics, Complex Geometry

Dr. Parangama Sarkar, PhD (IIT Bombay)
Research Area: Commutative Algebra

Dr. Rohith Varma, PhD (CMI)
Research Area: Algebraic Geometry
Dr. Santhakumar Mohan, PhD (IIT Madras)
Research Area: Robotics, Motion Control, Mechanism Design and Analysis, Service and Field Robots, Underwater Vehicles and Manipulator Systems

Dr. Afzaal Ahmed, PhD (National University of Singapore)
Research Area: Non-conventional machining processes, Hybrid machining methods, Micro and nano machining, Deep hole drilling, Laser surface alloying, Laser based additive manufacturing processes, Wear and tribology studies of modified surfaces

Dr. Anand T. N. C., PhD (IISc Bangalore)
Research Area: Droplet and Spray Processes, I.C. Engines, Laser Diagnostics, CFD

Dr. Buchibabu Vicharapu, PhD (IIT Bombay)
Research Area: Welding Science and Technology, Additive Manufacturing, Fundamental modeling of manufacturing processes, Analysis of residual stresses and distortion, Structure and property correlations in welded and 3D metallic builds

Dr. Prithvi Narayan P., PhD (TIFR, Mumbai)
Research Area: Quantum Field Theory, String Theory

Dr. Pratik Kumara Banerjee, PhD (University of Minnesota, Minneapolis, USA)
Research Area: Nuclear Astrophysics, Stellar Evolution, Nucleosynthesis, Galactic Chemical Evolution, Big Bang Nucleosynthesis

Dr. Vishwas V., PhD (JNCASR, Bangalore)
Research Area: Metastable and out of equilibrium systems, Phase behaviour of metastable liquids, Rheology of dense disordered solids

4.3 STAFF

<table>
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<tr>
<th>Sl. No.</th>
<th>Name of the Employee</th>
<th>Designation</th>
<th>Department</th>
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<tr>
<td>1.</td>
<td>Col. S. Chakraborty</td>
<td>Registrar</td>
<td>Administration</td>
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<td>Dr. B. Thiagarajan</td>
<td>Deputy Registrar</td>
<td>Purchase and Stores</td>
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<td>Muralee Krishnan U. Nair</td>
<td>Assistant Registrar</td>
<td>Finance and Accounts</td>
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<td>4.</td>
<td>Biju K. V.</td>
<td>Technical Officer</td>
<td>CFET</td>
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<td>5.</td>
<td>Dr. Soumya G. Rajan</td>
<td>Assistant Registrar</td>
<td>Human Resources</td>
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<td>Thasni Harish C. M.</td>
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<td>Anitha Mani D.</td>
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<td>Academics</td>
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<td>Darsana Nair V.</td>
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<td>Junior Superintendent</td>
<td>Engineering Works</td>
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<td>Civil Engineering</td>
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<td>Sanil Sharahudeen</td>
<td>Junior Technical Superintendent</td>
<td>Electrical Engineering</td>
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<td>24.</td>
<td>Rhushana Hassen</td>
<td>Junior Library Superintendent</td>
<td>Library</td>
</tr>
<tr>
<td>25.</td>
<td>Shailesh Kumar</td>
<td>Junior Library Superintendent</td>
<td>Library</td>
</tr>
<tr>
<td>26.</td>
<td>Sumesh K. S.</td>
<td>Junior Technical Superintendent</td>
<td>CFET</td>
</tr>
<tr>
<td>27.</td>
<td>Veena P.</td>
<td>Junior Technical Superintendent</td>
<td>Physics</td>
</tr>
<tr>
<td>28.</td>
<td>Vinu D.</td>
<td>Junior Technical Superintendent</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>29.</td>
<td>Visant P. V.</td>
<td>Junior Technical Superintendent</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>30.</td>
<td>Sreejith A.</td>
<td>Junior Library Superintendent</td>
<td>Library</td>
</tr>
<tr>
<td>31.</td>
<td>Chandra Sekhar S.</td>
<td>Junior Engineer</td>
<td>Engineering Works</td>
</tr>
</tbody>
</table>
32. Vineesh Kumanan M.  
Junior Engineer  
Engineering Works
33. Abdul Rahoo A. R.  
Junior Assistant  
Accounts
34. Ahana V. S.  
Junior Assistant  
Accounts
35. Ajay Ram Krishna  
Junior Assistant  
Academics
36. Arun S.  
Junior Assistant  
Purchase and Stores
37. Arun U.  
Junior Assistant  
ICSR
38. Praseeda T. P.  
Junior Assistant  
Accounts
39. Prethusha P. M.  
Junior Assistant  
Faculty Matters / ICSR
40. Rohit M.  
Junior Assistant  
Purchase and Stores
41. Sagaya Raj L.  
Junior Assistant  
Faculty Matters
42. Sai Prasad S. S.  
Junior Assistant  
Administration
43. Vivek K. S.  
Junior Assistant  
Human Resources
44. Shibin S. B.  
Junior Library Technician  
Library
45. Aadith Gopi  
Junior Technician  
CFET
46. Abdul Rahees M. P.  
Junior Technician  
Civil Engineering
47. Ananthu Sasikumar  
Junior Technician  
Electrical Engineering
48. Anoop V. K.  
Junior Technician  
Mechanical Engineering
49. Asish Chandran  
Junior Technician  
Electrical Engineering
50. Babu Kumar B.  
Junior Technician  
Civil Engineering
51. Daniel Jerald M.  
Junior Technician  
Engineering Works
52. Ganesha K.  
Junior Technician  
Mechanical Engineering
53. Jithin Thomas A.  
Junior Technician  
Civil Engineering
54. Lidyhal Leena A.  
Junior Technician  
Physics
55. Mejo A. J.  
Junior Technician  
Instrumentation
56. Karthikeyan M.  
Junior Technician  
Physics
57. Namitha V.  
Junior Technician  
Civil Engineering
58. Rahul P.  
Junior Technician  
Mechanical Engineering
59. Sarath T. K.  
Junior Technician  
Innovation Lab
60. Somasundaram S.  
Junior Technician  
Mechanical Engineering
61. Sukanya K.  
Junior Technician  
Chemistry
62. Vinayak M.  
Junior Technician  
CFET

### 4.4 STAFF ON CONTRACT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Designation</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>K. M. Unni</td>
<td>Project Advisor</td>
<td>Administration</td>
</tr>
<tr>
<td>2</td>
<td>Anandan V.</td>
<td>Senior Project Assistant</td>
<td>Administration</td>
</tr>
<tr>
<td>3</td>
<td>S. Samuel</td>
<td>Advisor (Student Matters)</td>
<td>Hostel</td>
</tr>
<tr>
<td>4</td>
<td>M. Balachandran</td>
<td>Senior Project Engineer</td>
<td>Engineering Works Department</td>
</tr>
<tr>
<td>5</td>
<td>Sreenathan P.</td>
<td>Advisor (Finance &amp; Purchase)</td>
<td>Finance and Purchase</td>
</tr>
<tr>
<td>6</td>
<td>Revindran M.</td>
<td>Project Engineer</td>
<td>Engineering Works Department</td>
</tr>
<tr>
<td>7</td>
<td>R. Santhosh Kumar</td>
<td>Training and Placement Officer</td>
<td>Career Development Cell</td>
</tr>
</tbody>
</table>
5.1.1 Overview
IIT Palakkad offers B. Tech Programme in four major engineering streams viz. Civil Engineering, Computer Science and Engineering, Electrical Engineering and Mechanical Engineering. The intake in Civil Engineering Stream and Mechanical Engineering stream is of 30 in each and in the Computer Science & Engineering and Electrical Engineering streams is 50 seats each. This makes a total sanctioned intake strength of 181.

5.1.2. B.Tech Curriculum
Every branch of the B Tech programme has a well-drawn ‘Curriculum and Syllabi’ of courses duly approved by the Institute Senate. The complete programme comprises a total of 167 credits for 2016 batch and 160 credits for 2017 onwards with courses under different categories viz. Basic Science, Basic Engineering, Professional Major Theory, Humanities and Electives under Professional Major and General Categories. In addition, there are few courses of interdisciplinary and general nature and a project work in the final year. All students are required to participate in life skills activities in the first few weeks and NSS/NSO in the first year of their entry.

5.1.3 Branch Change Policy
IIT Palakkad allows a limited number of students to change their branch based on their academic performance in the first year. The change comes into effect at the end of their first year as per senate approved norms.

5.1.4 Orientation Programme for B Tech 2019 batch
The academic session for the 2019-20 begins on Wednesday, July 31, 2019 with the students registering for their respective programs. From the next day, all students go through a two-week-long orientation program. The primary goal of this program is to help students adapt to the unfamiliar environment before the onset of academic rigor. The orientation programs include a variety of student-centric activities such as remedial courses for language, talks and lectures by faculty and experts, yoga sessions, hands-on science and technology workshops, life skills program for personality development, outbound training, cultural and sports events.
5.2 M.TECH PROGRAMME

5.2.1 Overview
IIT Palakkad offers M.Tech Programmes in two major Specializations viz. M.Tech in Geotechnical Engineering and M.Tech in Materials and Manufacturing Engineering. The intake in each of the specializations is 15 seats. This makes a total intake strength of 31 students in the year 2019-20.

In addition, 10% of EWS seats are available as per the Government norms in these specializations.

DEMOGRAPHIC DISTRIBUTION OF M. TECH STUDENTS AS ON 2019-20 ACADEMIC YEAR

5.2.2 M. Tech Curriculum
Every M.Tech programme has a curriculum and syllabi for the courses approved by the Senate. The curricula are so drawn up that the minimum number of credits for successful completion of the M.Tech programme of any stream is 60 ± 3 credits. The programme of instruction for each stream of specialization consists of Core courses to be compulsorily taken by all the students of the programme. Elective courses mostly including domain specific courses are offered. A major project work is also included in the curriculum and that spans the 3rd and 4th semesters of the programme. About two-thirds of the total credits involve coursework and laboratory practices, and the remainder consists of project work / dissertation. In addition to the types of courses mentioned above, the curriculum of M.Tech may contain Course/s Without Credits (CWC).

5.3 M. SC. PROGRAM

5.3.1 Overview
IIT Palakkad offer M.Sc Programmes in two major Streams viz. M.Sc. in Chemistry and Physics. The intake in each of the streams is 20 seats. This makes a total intake strength of 32 students in the year 2019-20. In addition, 10% of EWS seats are available as per the Government norms in these specializations.

DEMOGRAPHIC DISTRIBUTION OF M. SC STUDENTS AS ON 2019-20 ACADEMIC YEAR
5.3.2 EM, ESÁSI, PAÁCHÁRVA

This EM, ESÁSI, PAÁCHÁRVA among the students who have completed the courses approved by the Senate. The curriculum is so drawn up that the minimum number of credits for successful completion of the M.Sc. of any stream is 70 ± 3 credits. The main components of the program in each stream consist of:

- Core courses: Compulsory courses to be taken and cleared by all students enrolled in the program to get the degree. These will be listed in the curriculum of the program. In the case of Chemistry and Physics Departments, the core subjects include laboratory-based courses.
- Elective courses: Can be of Departmental elective or open elective as per the curriculum. Open electives can be any course taken from within or outside the department.
- Project work: Every student must do a mini project and a main project in third and fourth semesters respectively, the nature and credits of which will be as per the specific curriculum.
- Seminar/Viva Voce: As may be prescribed by the faculty.

In addition to the types of courses listed above, the curriculum of M.Sc. may contain Course/s Without Credits (CWC).

5.4 SCHOLARSHIPS AND FINANCIAL ASSISTANCE

Merit-Cum-Means scholarships, Scholarships for SC/ST students and differently-abled students are available to the students of IIT Palakkad, as per the Government of India norms. There are also provisions for Institute free studentships. IIT Palakkad has signed an MOU with State Bank of India, Kanjikode and eligible students can avail loans for Tuition fee under Vidyalakshmi educational loan scheme.

5.5 RESEARCH PROGRAMMES

Currently, the five research programmes are conducted one half in the temporary space of Addali Integrated Campus and the other half in the Nila Campus at the permanent campus site at Puduserry which is about 7 km from Palakkad in the Palakkad-Coimbatore highway. As of now, the Institute is proud of its growth in terms of the very qualified and committed faculty and staff, well equipped laboratories, excellent computing infrastructure, well stacked library and a brilliant student community. IIT Palakkad is an excellent choice for those enthusiastic research scholars who wish to carry out their research in a tranquil atmosphere.

The M.S. (Research) and PhD programmes were started in 2017. IIT Palakkad currently offers M.S. in Civil Engineering, Computer Science and Engineering, Electrical Engineering and Mechanical Engineering, and PhD programmes in Chemistry, Civil Engineering, Computer Science and Engineering, and Electrical Engineering.
5.5.2. Summer Internship

The summer Internship of IIT Palakkad started in the month of June, 2019. A total of thirty students underwent summer internship which comprises 17 girl students & 13 boy students. A stipend of Rs. 9000 was given to each of them.

5.5.3 Postdoctoral Programmes

IIT Palakkad offers Post Doctoral fellowships in the areas of Civil Engineering, Computer Science and Engineering, Electrical Engineering, Mechanical Engineering, Chemistry, Mathematics, Physics & Humanities and Social Sciences. In addition to the PDFs supported by IIT Palakkad, candidates with fellowships supported by other government agencies like SERB, NBHM, DBT, DST etc., are encouraged to apply.

Postdoctoral Fellows

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name</th>
<th>Designation</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dr. N. Pandurangan</td>
<td>Institute Post Doctoral Fellow</td>
<td>Chemistry</td>
</tr>
<tr>
<td></td>
<td>Dr. V.K. Benzy</td>
<td>Institute Post Doctoral Fellow</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>3.</td>
<td>Dr. Francis P.</td>
<td>Institute Post Doctoral Fellow</td>
<td>Computer Science and Engineering</td>
</tr>
<tr>
<td>4.</td>
<td>Dr. Ashwani Assam</td>
<td>Institute Post Doctoral Fellow</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>5.</td>
<td>Dr. Darshana O.</td>
<td>Institute Post Doctoral Fellow</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>6.</td>
<td>Dr. Nisha Gupta</td>
<td>Institute Post Doctoral Fellow</td>
<td>Physics</td>
</tr>
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</table>

Detailed stream wise split of students is as under:

<table>
<thead>
<tr>
<th>Department</th>
<th>PhD</th>
<th>Post-doc</th>
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<tbody>
<tr>
<td>Chemistry</td>
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<td>Physics</td>
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<td>Mathematics</td>
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<td>HSS</td>
<td>Nil</td>
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<tr>
<td>Civil Engineering</td>
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<td>Mechanical Engineering</td>
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<td>Electrical Engineering</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>
6.1 Library

As the informatics center of the Institute, the Central Library provides an enjoyable learning experience with a carefully developed collection of books, journals, standards, magazines, and newspapers. The library also stores a collection of audio-visual materials such as CD-ROM, scientific kits etc. The library opened its doors to the students, faculty and staff in August 2015 with a collection of 700 printed books which has grown to nearly 6000 printed barcoded and RFID tagged books (textbooks, reference, popular sciences and literature) in the past five years. Based on the needs and requirements of researchers, the library has subscribed to a number of electronic journals for its users. The library also has the support of national consortium E-ShodhSindhu (INFLIBNET) to fulfill maximum journal requirements.

The operations of the library are fully computerized and enabled with the RFID system for fast transactions, for ease of access as well as for the security of the library. The RFID based kiosk provides self-check-in and self-check-out of books.

The library is also enabled with Wi-Fi and LAN facility for unlimited high-speed internet access. Online facilities of the library are available 24x7 days for its registered users. Users can renew, reserve books and also can access their library account through the Online Public Access Catalog (OPAC) facility. The library also renders services such as Reference and Consultation as well as updates the users with the Current Awareness Services. The users of Central Library of IIT Palakkad are also registered with the National Digital Library sponsored by MHRD and coordinated by IIT Kharagpur.

Working Hours - The Central Library functions from 9 am to 7.30 pm on all working days and 9 am to 5 pm on Saturdays. Library remains closed on Sundays and Public holidays.

Library Services - Web OPAC - The Web OPAC is available for 24x7 days and is integrated with all the e-resources available in the library. Users are able to login to their library account to search, renew books, manage accounts etc.

Digital Library - Digital Library has a total of 10 Desktop PCs with supporting audio-visual peripherals for making maximum use of e-resources inside the library. The e-resources available at the Central Library are accessible throughout the campus and outside (for the user community only).

Newspaper Clipping Service - The various kinds of news related to the Institute published in newspapers such as; inventions, lecture series, projects etc. from the beginning of IIT Palakkad is available with the library, both in print and digital form.

Open Access System - Library follows open access system. With this, users can access the facility and fully automated system of the Central Library.

New Arrivals Alert - All the newly added collections (books, e-resources etc.) in the library are communicated to the user community through email.

Working Hours - The Central Library functions from 9 am to 7.30 pm on all working days and 9 am to 5 pm on Saturdays. Library remains closed on Sundays and Public holidays.

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Open Access System - Library follows open access system. With this, users can access the facility and fully automated system of the Central Library.

New Arrivals Alert - All the newly added collections (books, e-resources etc.) in the library are communicated to the user community through email.
Off-Campus access - The e-resources subscribed by the Central Library can be accessed by the IIT Palakkad academic community outside the campus through INFLIBNET Access Management Federation (INFED) – (https://idp.iitpkd.ac.in/). Faculty members, research scholars, students and staff belonging to the Institute can use their LDAP credentials to access the resources 24x7 through identity providers.

Training Sessions – The Central Library provides training sessions for the users to make maximum utilization of available e-resources in the library. The sessions are carried out by authorized trainers as well as subject experts. Feedback from the attendees is collected to analyse the impact of the session.

E-Resources - Many reputed national and international online resources in Science & Technology and its allied areas as well as of humanities & social sciences are available for the user community 24x7. The Central library has a collection of more than 6218+ journal collections, out of which more than 4143+ are subscribed e-resources and 2075 are available through E-ShodhSindhu National Consortium.
List of Subscribed E-Resources (Journals, Databases & Standards)

1. Elsevier (ScienceDirect)
2. IEEE/IET Electronic Library (IEL Online)
3. American Chemical Society (ACS)
4. The Royal Society of Chemistry (RSC)
5. The American Society of Mechanical Engineers (ASME)
6. American Mathematical Society (AMS)
7. JSTOR
8. Project Euclid (Euclid Prime)
9. Sage Journals
10. Economic and Political Weekly Research Foundation (EPWRF)
11. SciFinder (Abstract database)
12. American Concrete Institute (ACI)
13. Institute of Physics Publishing (IOP)
14. Proceedings of the National Academy of Sciences (PNAS)
15. AAAS (Science Online)
16. Indian Standards (BIS online)

List of E-Resources available from E-Shodh Sindhu (Journals & Databases)

1. ACM Digital Library (The Association for Computing Machinery)
2. The American Society of Civil Engineers (ASCE)
5. Oxford Academic (Oxford University Press – OUP)
6. Springer Nature Journals

6.2 LABORATORY FACILITIES

The Chemistry Department at IIT Palakkad has at present two well-furnished teaching laboratories with several basic and advanced experimental infrastructure such as Analytical balances, Benchtop conductivity & pH meters, Digital colorimeter with micro-control and water-purifiers, Ice flake machine, Melting point apparatus, orbital shakers, Ultrasonic bath, solvent-storage cabinets, etc. Several analytical types of equipment required for chromatography separation and spectroscopic analysis such as TG-DTAM, Benchtop NMR, FT-IR, Chemisorption, UV-vis, and fluorescence spectrophotometer, cyclic voltammeter, bomb calorimeters, microwave synthesizer, optical microscopes are available. In addition to this, major research equipment such as an X-ray powder diffractometer and a scanning electron microscope (SEM) is in operation. Besides, 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 facility, sophisticated instruments relevant to the field of chemistry such as High-performance liquid chromatograph, Liquid chromatograph-Mass Spectrometer and a Nuclear magnetic resonance spectrometer for analysis and characterization of samples are already in use. Details of the available central facilities at IIT Palakkad are listed in section “Central Research Facilities at IIT Palakkad” on the institute website.

The Chemical Instrumentation Facility (CIF) is dedicated to the analysis of advanced materials and research areas. Some of the standards are Specific Impedance Analysis (SIA), Potentiostat, Turbidity meter, and Analytical Balance.

A dedicated air-conditioned workspace equipped with UV Spectrophotometer, TOC Analyser and multi-channel Potentiostat has been established for cutting edge research and innovations.

UV Spectrophotometer – To analyze transition metal ions, highly conjugated organic compounds, and biological macromolecules.

TOC Analyser - To measure Total carbon (TC), Inorganic carbon (IC), Total organic carbon (TOC), non-purgeable organic carbon (NPOC), and total nitrogen (TN) of aqueous and solid samples.

Multi-channel Potentiostat - Corrosion studies; Electrocatalysis; Electrodeposition; Electrochemical impedance analysis.
Heavy Structural Testing Laboratory
Facility for testing large-scale steel, concrete and composite structural components. Equipment include servo-hydraulic actuators of various capacities, 100 kN servo-hydraulic fatigue rated universal testing machine, and a 500 kN servo-hydraulic universal testing machine with integrated T-slot table. The hydraulic power pack is capable of a flow rate of 300 litres per minute with a maximum pressure of 20.7 MPa. The facility also included a pair of closed-loop controllers offering complete flexibility in test configurations.

Geotechnical Engineering Laboratory
All the basic facilities for soil characterisation including equipment for sieve and hydrometer analysis, consistency limits tests, specific gravity test, field density tests, compaction test, CBR test, permeability test, consolidation test, vane shear test, unconfined compression test, direct shear test, etc. In addition, the lab is equipped with various state-of-the-art equipment such as automated static triaxial system, computerised cyclic triaxial system, automated consolidation test apparatus, computer controlled direct shear test setup, computerised flexible wall permeability system and fully automated soil-geosynthetic interface shear resistance testing apparatus for advanced soil testing. Procurement of additional advanced equipment is in process.

Pavement Engineering Laboratory
The Pavement engineering laboratory is equipped with all the basic pavement material characterization facilities. The aggregate characterization facilities include specific gravity test, sieve analysis, flakiness and elongation test, Los Angeles abrasion test, crushing test, impact test & stripping test. The bitumen characterization facilities include specific gravity test, penetrometer, ring & ball apparatus, ductilitymeter, viscometer and other general facilities for bitumen testing.

Pavement Engineering Laboratory
The Pavement engineering laboratory is equipped with all the basic pavement material characterization facilities. The aggregate characterization facilities include specific gravity test, sieve analysis, flakiness and elongation test, Los Angeles abrasion test, crushing test, impact test & stripping test. The bitumen characterization facilities include specific gravity test, penetrometer, ring & ball apparatus, ductilitymeter, viscometer and other general facilities for bitumen testing.
रािाराि प्रणाली सु रवधाओं का एक ऐसा समुच्चर है, जो रकरातरायरात प्िराली प्योगशरालरा प्रा्षिरमक िौि पि अंडिग्ेजुएट पाठ्यक्रम हेिु प्ररुक्त होने वाला भूिरापन प्योगशरालरा प्रचालन के रलए कारषि कििा है। इस प्ररोगशाला में रवरभन्न प्रकाि सामुरहक रुप से नागरिकों एवं वस्तु ओं के संिरक्ि एवं प्रभावी रप्रज्मेरटक कम्पास, प्ेन टेबल ि्ा सामान्य वस्तुएं, एवं चेन भयूरम इस प्ररोगशाला मेंपाििम्परित आधु रनक दोनों प्रकाि के सॉफ्टवे एवं टयू ल्स िखे गए हैं जो रकरािाराि प्रणाली के स्टेशन, वरनषिरि र्रोडोलाइटयुस स्चारलि लेवल्स, डम्पी लेवल्स, उपकिण सब्म्रलि हैं.उपकिणों की स यूची में जीपीएस, कु ल मापन उपकिण सब्म्रलि हैं।

मांग भरवष्यवाणी, रडजाइन, प्रबंधन एवं ऑपि ेशन में सहारिा रवस्ीम, रवस्म आरद), रसस्तम एनालेरटक्स सॉफ्टवे रि में टट् ारफक रसम्यूलेशन सॉफ्टवेरि (पीटीवी भ्ाइजि, एनारलस्ट), भौगोरलक सयूचना प्रणाली (आक षिजीआईएस), लोग्गि, हाइ-एण् टट् ारफक डेटा एक्ट्ै क्शन ि्ा कम्प्यूटिीकिण ि्ा उपकिणों में इन-वाहन सामंजस्य जीपीएस सह रवरडओ कं सोल आरद सब्म्रलि हैं।

यातायात प्रणाली प्रणोभाराला

यातायात प्रणाली सुधियों का एक ऐसा समूह है, जो कि समस्त रूप से नागरिकों एवं वस्तुक ांतिएं के संरक्षित एवं प्रभावी प्रणाली के लिए कार्य करता है। इस प्रणाली में दिशा प्रकार के सोफ्टवेर जय त्याग तथा ्ा यातायात प्रणाली में कार्य करता है जो कि यातायात प्रणाली के मां में हैं। यातायात प्रणाली के लिए वस्तु के साथ नागरिकों के लिए सुरक्षा एवं सरकारी सेवाओं के साथ संबंधित किया जाता है। यातायात प्रणाली में उपकिणों का एक श्रेणी शामिल है जो कि यातायात प्रणाली के लिए एक श्रेणी का मतलब है। इस प्रणाली के लिए एक सॉफ्टवेर के साथ संबंधित किया जाता है।

Transportation Systems Laboratory

Transportation System is a set of facilities that collectively work for safe and efficient movement of people and goods. This laboratory houses various softwares and tools that aid in demand-forecasting, design, management and operation of transportation systems, including traffic simulation softwares (PTV Vissim, Vismus etc.), system analytics software (Cube Voyager, Analyst), geographic information system (ArcGIS), and equipment including In-vehicle synchronous GPS cum Video Logger, high-end traffic data extraction and computation console etc.

Surveying Laboratory

Primarily used for the undergraduate laboratory course, this lab includes both traditional and modern instruments. The list of instruments includes GPS, total stations, vernier theodolites, automatic levels, dummy levels, prismatic compasses, plane table and accessories, and chain survey equipment.

Water Resources Engineering Laboratory

Equipment: Experimental Flume.
Description: A tilting flume of 5m long channel section and 45 cm width. The accessories present in the flume are ogee spillways, sluice gate and a digital velocity meter. Used for conducting experiments on flow profile computation, hydraulic jump, sediment transport and coastal protection.

data extraction and computation console etc.
General Electronics Lab

The General Electronics Laboratory is fully functional in the Nila Campus of IIT Palakkad. This lab is used to run courses in Digital and Analog Electronics, Digital Signal Processing, Computer Aided Design, PCB fabrication and Computer Organization. For this purpose, the lab is equipped with 42 workbenches – each with a power computer, a 100 MHz Digital Storage Oscilloscope (from Keysight), a 60 MHz Arbitrary Waveform Generator (from Tektronix) and a Multiple-Output power supply. The lab also has a reflow oven, pick-and-place system and a stencil printer (all from Eurocircuits) for fine PCB work with surface mount components. The lab also has a 3D printer (from Ultimaker) to help prototyping student projects.

Electrical Machines Lab

This laboratory is now fully functional in the Nila Campus. Fourteen sets of composite machine beds are available. Each of them has an AC generator coupled to a DC machine coupled to another DC machine coupled to an AC motor, enabling students to perform various experiments at the same setup. Each test-bed is equipped with an autotransformer as well. A permanent magnet dc motor is also available in the lab. Sufficient number of single, three phase transformers are available. Data is collected using a data acquisition card and analyzed using LABVIEW. The lab also has two sets of dissection machines setup (from Delorenzo) which are used for showing the inside construction and working of various DC and AC machine parts and types. Inverter stacks are also available in the lab for conducting experiments on motor drives.
Power Systems Laboratory

This laboratory houses equipment and simulation softwares to teach students key practical concepts in modern electric power systems. Licenses for the Power System Computer Aided Design (PSCAD) power system transient analysis software to simulate electromagnetic transients of power systems are available now. Further, licenses for dynamic security assessment tools (DSA Tools) are also procured. DSA Tools is useful in complete assessment of power system security including all forms of stability. Thus, the power system laboratory is now equipped with four key simulation softwares (PSCAD, DSA Tools, MiPower and MATLAB) to conduct different types of power system studies. Apart from this students are also using open source software development platforms such as PyCharm to design and develop various software solutions for modern energy management systems (EMS). Other equipment includes

• Alternator fault simulator to study about various faults
• A setup to study the operation of overcurrent and earth fault relays
• A setup to study the parallel operation of alternators using a differential protection scheme
• Photovoltaic simulator to study the integration of PV power to grid
• Equipment to measure earth and insulation resistance.

Microwave and Communication Systems Laboratory

Software defined radios (SDRs) USRP 2901 and 2930 have been procured from National Instruments. They can be programmed through LabVIEW Communications software to act as the transmitter/receiver for existing wireless communication systems such as FM, WiFi, GPS, GSM, LTE, etc. Furthermore, these SDRs have the ability to transmit RF signals from 70 MHz to 6GHz and bandwidth as high as 50 MHz. Novel physical layer algorithms for 5G cellular systems and IoT are being prototyped, tested and verified using these devices. To introduce the students to the process of testing Microwave and Radio Frequency components, a fourport 8 GHz Vector network Analyzer (from Rohde and Schwarz), a Signal Analyzer (from Keysight) for measurements up to 7 GHz, and a Vector Signal Generator (from Tektronix) operating up to 6 GHz have been procured. The lab is also stocked with various microwave components like amplifiers, oscillators, mixers, filters, directional couplers and antennas operating from 1 GHz to 10 GHz. These components and test equipment are used for various final year projects. Various klystron and oscillator based experimental setups for the study of klystron tubes, gun oscillators, waveguides, isolators, directional couplers and antennas have also been set up. Licenses for HFSS, and industry standard simulation tools from ANSYS have been purchased.
VLSI and Microelectronics Licenses for the industry standard Integrated Circuit design tool from Cadence have been installed. This tool is used by students to understand the standard workflow involved in the design of analog and digital ICs. We have also licenses for the Sentaurus device simulation software from Synopsys. This is also an industry standard tool where students understand the flow of electrons and holes inside semiconductor devices like diodes and transistors. These tools are also used by research scholars working in the VLSI area. On the hardware side, an ample stock of FPGA (from Xilinx), Microcontrollers (ARM, Arduino and Texas Instruments), DSP (fixed and floating point from Texas Instruments) and Embedded System boards (ARM, Raspberry Pi with accessories) is maintained to facilitate hands-on learning. An MoU has been signed between ARM and IIT Palakkad. IIT Palakkad has full access to the ARM IP Cores for research purposes and full licensed version of Keil uVision IDE. IIT Palakkad has a licensed version of Xilinx Vivado suite for FPGA design.

Brain Computing Interface Lab Brain Machine Interface Systems lab at IIT Palakkad focuses on the development of Brain Machine Interface (BMI) systems, which offers alternate ways to augment a wide range of human activities such as locomotion, cognition and perception. Our BMI research aims to design and implement Electroencephalography (EEG) based BMI systems using signal processing and machine learning techniques to decode the associated neuronal signatures corresponding to various mental tasks. The laboratory is equipped with 64 channel actiCHamp EEG amplifier (Brain Products) with data acquisition software, Emotive Epoc+ and MUSE 2 Headband for data acquisition, monitoring and analysis, providing an interactive environment for experimental research. The team works on different BMI applications including (but not limited to):

- Development of Motor Imagery BMI systems.
- Analysis/detection of error related potentials that are generated when the error/mistake is perceived to take corrective actions or to use it as a learning strategy using single trial EEG data.
- Development of an EEG based biometric identification system.
- Development of an EEG based intention driven control system.
Key programmes during the year:

- Students and our staff Mr Ananthu Sasikumar designed and implemented a biometric access system for our Innovation lab and equipment in it. The Summer innovation workshop C-Square Programme was conducted during the year. Multiple project submissions to Young Innovators Program, e-Yantra Robotics Competition, Reboot Kerala Hackathon and Smart India Hackathon. 3D printing and design workshop was conducted by students. Robot Implementation Workshop was conducted by Dr. Vijay Muralidharan. A Python bootcamp was conducted by Dr. Sandeep Chandran.

Chief Innovation Officer

Ms. Anuradha Shankar who is an IIT alumnus with several decades of experience has joined to lead the helm of affairs as the Chief Innovation Officer. She engages with students to enable them with conceptualization to innovate on projects. We have also onboarded a technical staff, Mr Sarah T.K., who will be maintaining the facilities of the Lab including equipment and tools.

### INNOVATION LAB

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### MECHANICAL ENGINEERING

**Central Workshop**

The central workshop is an integral part of the curriculum and has four modules: Electrical, Electronics, Instrumentation and Manufacturing. Students are also introduced to sheet metal working, arc/gas welding, moulding and hydraulic-pneumatic practices. A unique and modern transit machine shop with lathes, milling, drilling machines is set up in a container adjacent to the academic building. The faculty and skilled technical staff members provide hands-on training to the students.

**Applied Mechanics Laboratory**

Applied mechanics laboratory houses facilities in the broad areas of Strength of Materials and Fluid Mechanics. There are experimental facilities to study deformation of beams, torsion of circular sections and buckling of struts. Strain gauge demonstration, a photo elastic set up for demonstrating the stress patterns in loaded transparent models and a Universal Testing Machine (UTM) of loading capacity up to 5 kN are also available. There are tabletop facilities for demonstrating the fundamentals of Fluid Mechanics. These include setups for pressure gauge calibration, friction losses in pipes and fittings, demonstration of Bernoulli’s principle, visualization of free and forced vortices, Osborne Reynolds’ demonstration, visualization of stream lines in open channel flow and flow through orifices.

**Infrastructure development:**

At the Nilai Campus, an innovation lab annex was set up in the students’ hostel complex to enable students with their work on projects, anytime they may wish to pursue. We also procured a Trello drone with a camera - A programmable drone which is being used by students for various innovative projects and hackathons.
Thermo - Fluids Laboratory

In the thermo - fluids laboratory, IC engines section consists of a computerized IC engine setup with eddy current dynamometer where performance characteristic test and heat balance test can also be conducted. Additionally, cut-section models of SI and CI engines are available to gain insight into the working of various components of a practical IC Engine. Heat transfer section consists of combustion diagnostics experimental setup, linear and radial conduction apparatus, heat transfer from extended surfaces, convective heat transfer and radiation apparatus. Counter and parallel flow heat exchanger apparatus is used to study effective modes of heat transfer under process conditions. Facilities such as filter pressure drop testing and Schlieren visualization setup are also available for the research and development activities.

Design And Manufacturing Laboratory

Major teaching elements in this laboratory are additive manufacturing, traditional and non-traditional machining, materials characterization, measurements & metrology, fatigue and fracture mechanics. Design and Manufacturing laboratory consists of state of the art 3D metal printer, wire EDM, CNC lathe, coordinate measuring machine, metrology kit, polymer 3D printer. Materials characterization and testing facilities include hardness tester, optical microscopy, tensile tester, fatigue and contact fatigue testing machines. These facilities are effectively used by the students to carry out UG and PG laboratory experiments and also for research, internship and project assignments. Computational facilities include engineering simulation software Ansys 18.2.

वायुकण्ठ - फ्ल्युइड्स प्रयोगशाला

वायुकण्ठ - फ्ल्युइड्स प्रयोगशाला में आईसी ईंजन के अनुभाग में एड्डी डाइनेमोमीटर के साथ एक कंप्यूटरीकृत आईसी ईंजन कारखाना होता है, जहां कारखाना उपकरण लक्षण-वांच तथा उपकरण संरचना जांच की होती है। इनके अतिरिक्त ऐसे ऐसे सीआई एवं सेरीवर्प अनुभागों के कर्त-लेखन मॉडल उपरकरण होते हैं, जिससे एक वातान्त्रिक आईसी के विभिन्न अंशों की कारकी के बारे में जानकारी प्राप्त की जा सकती है। उपकरण अनुभाग में जांचकत्ता उपकरण सम्पर्कीय स्वचालन, विशेषता कॉड प्रशंसक उपकरण, एड्डी कॉइल विश्लेषण एवं रेखांकन संरचना उपकरण, विशेषता सारे से उपकरण अंतर्गत, समाधान उपकरण तथा विशेषता उपकरण उपकरण रहता है, काउंटर एवं समानांतर विशेषता हीरों एंडसेक्शन उपकरण का उपयोग प्रक्रिया परिवर्तनों में उपकरण अंतर्गत के प्रभावकारी माध्यमों के अध्ययन में होता है। फिल्ट्र प्रेस ड्रूम टेस्टिंग एवं सिक्शनें प्रवर्तकरण जांच रक्षित रहांदी सीचिएन्जन भी अनुसंधान एवं इकायों गैसिशियन्स के लिए उपयोग होता है।

डिजाइन और उत्पादन प्रयोगशाला

इस प्रयोगशाला में प्रथम विशेष अवसर प्राप्त धातु डिस्टिंग उपकरण, पारमार्की एवं गर्म-पारमार्की मशीन, नामी लक्षण-वांच, मापन एवं मान-तीत विश्लेषण, फैक्ट्री एवं कृतकर उपकरण, समीक्षित होता है। डिजाइन और उत्पादन प्रयोगशाला में अनुसंधान के तौर पर धातु डिस्टिंग, बायर डिस्टिंग, टी-सी-बी, को-रेतिंग राइटच एवं, मान-तीत विश्लेषण कितरां, पॉलिंएर 3 दी कितरां रहता है। सामान्य लक्षण-वांच एवं बायर ध्वनि सुविधाओं में काफीता जांचकत्ता, अंगूठीय माइक्रोस्कोपी टेस्टिंग ज्योकरण, फैक्ट्री एवं समान फैक्ट्री बायर-ध्वनि माध्यम की जांच होती है। इन सुविधाओं का अहंकार द्वारा प्रभावकारी उपयोग पूर्व एवं भी जो प्रयोगशाला प्रयोगों के संरचना में समान होता है, संरचनात्मक सुविधाओं में अधिवर्षकी शिम्यूलेशन सिमुलेशन एप्सोस 18.2 समीकृत होता है।
इस रवभाग में रांरत्रकी, एलेक्ट्ोमैग्नेरटज्म, ध्वनि एवं प्रकाश के क्षेत्र में मौरलक भौरिकी प्रक्ेशों के साथ संलग्न अंडिग्वेट भौरिक रवज्ान प्ररोगों का विविधता है। यह भौरिक रवज्ान पाठ्यक्रम के लिए एक अभावभुक्त चैनलिंग रवज्ान प्ररोगशाला निर्माण किया गया है, यद्यप: यह अभावभुक्त रवज्ान प्ररोगशाला निर्माण में स्थानीय मैकेनिकल, एलेक्ट्ोमैग्नेरटज्म, ध्वनि एवं प्रकाश के क्षेत्र में मौरलक प्ररोगों का विविधता है।

इस प्ररोगशाला में कल्पना पेंडुलम, कंप्यूटर पेंडुलम, धीरे-धीरे पेंडुलम, डेशी-आक्षरक पेंडुलम, हॉल इफेक्ट के बारे में वेबसाइट, इलेक्ट्रॉनिक-मैकेनिकल, अटॉमिक फिजिक्स, लॉस्ट्रक्षोणी, एवं संरचित पदार्थ भौरिक रवज्ान के निदर्भ विवरण क्रम-पत्र पर संकेत किया गया है।

यह प्ररोगशाला में कल्पना पेंडुलम, कंप्यूटर पेंडुलम, धीरे-धीरे पेंडुलम, डेशी-आक्षरक पेंडुलम, हॉल इफेक्ट के बारे में वेबसाइट, इलेक्ट्रॉनिक-मैकेनिकल, अटॉमिक फिजिक्स, लॉस्ट्रक्षोणी, एवं संरचित पदार्थ भौरिक रवज्ान के निदर्भ विवरण क्रम-पत्र पर संकेत किया गया है।

भौवतक रवज्ान

The Department has an undergraduate physics laboratory equipped with basic physics experiments in the field of mechanics, electromagnetism, sound and optics. A state of the art postgraduate lab is established for M.Sc. Physics curriculum on the broad themes of mechanics, electromagnetism, thermodynamics, optics, atomic physics, spectroscopy and condensed matter physics. The lab houses equipments/experiments like coupled pendulum, compound pendulum, eddy current pendulum (damped oscillator), Hall Effect in metals and semiconductors, Thomson's tube e/m determination, ultrasonic diffraction, Michelson interferometer, Zeeman effect, thermal conductivity of metals, specific heat, latent heat of vaporization of liquid nitrogen etc. The Advanced Physics Lab for M.Sc. is currently equipped with a liquid nitrogen cryostat having resistivity and ac susceptibility measurement option down to 77K temperature and a room temperature Scanning Tunneling Microscope. In the near future, this lab will be further enriched with Nuclear Magnetic Resonance and Electron Spin Resonance setups; Polarizing Microscopes for Liquid crystal phase transition and Brownian Motion 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). Details of the available central facilities at IIT Palakkad are listed in section “Central Research Facilities at IIT Palakkad”.

PHYSICS

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Advancements in technology are closely tied to success in the research and development of new molecules and materials. The journey to success becomes all the more exciting and challenging when the technology must meet the constraints of sustainability and performance. One of the thrust areas of research in IIT Palakkad is to develop new functional molecules, assemble them into materials and 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. The facilities were formally inaugurated by Dr. Madhavan Nair Rajeevan, Secretary to the Ministry of Earth Sciences, Government of India on February 29, 2020. At an expenditure of Rs 23 crores, these facilities maintain a high operational standard of a variety of sophisticated equipment. The Director of IIT Palakkad administers the functions of the CIF-CMFF through a duly appointed team of faculty members and staff. Every single equipment under the CIF and CMFF has a faculty-in-charge, under whose care the high standards of operation and maintenance are ensured. The dedicated team of faculty and staff is responsible for evolving policies as well as managing the day-to-day operations of the facilities. In addition to providing access to the high-end sophisticated equipment, the Institute is also committed to training interested users who will not only be capable of operating the equipment but also gain technical expertise necessary to analyse...
Structural information of materials such as crystallinity, microstructure, surface morphology, roughness for powder and thin film samples up to 1500 degree celsius can be analyzed using various standard techniques. Standard imaging process in High Resolution-Field Emission Scanning Electron Microscope (HR FEG - SEM) can perform standard imaging, backscatter diffraction (EBSD) for studying the texture in crystalline and polycrystalline materials and energy dispersive x-ray spectroscopy (EDS) for chemical spectroscopy applications. E-beam lithography for fabricating micro-level devices for electronics/communications applications can be performed at high precision. Thermal events occurring on the materials can carry crucial structural information. Following such events precisely is crucial in understanding and design of the structure of new materials. A thermogravimetric analysis coupled to a mass spectrometer is useful to monitor the change in the mass of the sample as a function of temperature. In addition, the automated flow chemisorption is important to study the adsorption nature of the surface of materials by studying the adsorption behaviour of probe molecules as a function of temperature.

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 ultra fast oscilloscope. A thermionic wire binder is available to bond wafer-level devices to standard integrated-circuit packages. A high-end 64-channel Electroencephalogram (EEG) is capable of acquiring brain signals from scalp electrodes and is capable of analyzing motor and cognitive activities of the brain.

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-patterned contours 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. Realization of microstructures is possible using wet-chemical methods performed inside the
Built firmly on the motto of “Share and Grow,” these facilities should be managed by the research community through funded research projects. The facilities are connected to Indian Science Engineering and Technology facilities Map (I-STEM), which is a national network of sophisticated equipment launched by the Government of India. The facilities are open to any researcher in the country on a payment basis. It is envisaged that these central facilities will create an ecosystem to foster productive collaboration between academia and industry.

The details of the equipment in CIF and CMFF are summarized below:

1. Equipment Name: Fourier Transformed IR Spectrophotometer
   Model: Schimadzu IR Tracer 100
   Capability of the equipment: An essential characterization tool to study the vibrational frequencies of the chemical bonds. It is useful to study different modes of vibrations of chemical bonds such as stretching and bending.
   Capable of studying vibrational spectroscopy of solid and liquid samples in the wavelength range of 7800 - 350 cm-1 at 0.2 cm-1 resolution.
   Available with DLATGS and MCT detectors.
   The probe station has:
   - a high-resolution microscope, a wafer chuck (to mount a wafer with diameter up to 150 mm) with temperature range from room temperature to 200 oC, and a dark box capable of EM shielding.

2. Equipment Name: Automated flow Chemisorption
   Model: Anton Parr - Quantachrome make Chemstar TPX
   Capability of the equipment: The equipment is capable of quantifying the nature, strength and number of chemically distinct reactive sites on solids by systematic adsorption / desorption of gases. This is useful in studying specific components in nano composites e.g. metal dispersion in polymers or ceramics, heterogeneous catalysis, metal components in fuel cells, adsorbents for filtration and membranes. This is a fundamental characterization equipment commonly used by Chemists, Materials, Chemical & Mechanical engineers. The equipment is necessary to carry out projects that are of industrial importance such as batteries, fuel cells and catalysts. The equipment is capable of carrying out the following studies in an automated fashion:
   - Temperature Programmed Desorption (TPD),
   - Temperature Programmed Oxidation (TPO),
   - Temperature Programmed Reduction (TPR) and Quantitative Pulse Titration.

3. Equipment Name: Semiconductor Parameter Analyser
   Model: B1500A (from Keysight)
   Capability of the equipment: The semiconductor parameter analyzer integrates multiple measurement and analysis capabilities to perform the current-voltage (I-V) and capacitance measurements (C-V) at a wide range of frequencies (0 to 5 MHz).
   - 4 source measure units (SMUs), 1 multi-frequency capacitance measure unit (MFCMU) (up to 5 MHz), and 1 waveform generator unit.

4. Equipment Name: Manual DC Probe Station
   Model: Probe Station Model BD-6DC with accessories (from Precise Measurement Technologies)
   Capability of the equipment: The manual probe station supports DC parametric measurements and analysis capabilities to perform the current-voltage (I-V) and capacitance measurements (C-V). It has 4 source measure units (SMUs), 1 multi-frequency capacitance measure unit (MFCMU) (up to 5 MHz), and 1 waveform generator unit.
5. Equipment Name: Manual RF Probe Station
Model: Probe Station Model EPS150RF-EDU with accessories (from Cascade Microtech)

Capability of the equipment: The manual RF probe station can mate with any vector network analyzer (VNA); and allows seamless calibration and integration with standard characterisation instruments, for a wide range of device and circuits measurement test setups. The probe station has: (a) a microscope; (b) wafer chuck: to mount a wafer with diameter up to 150 mm, temperature range: room temperature; (c) can make RF measurements up to 40 GHz.

6. Equipment Name: Vector Network Analyzer
Vector network analyser is a test system that enables the RF performance of radio frequency (RF) and microwave devices. The characterised in terms of network scattering parameters, or S parameters can be determined.

Model: N5224A

Capabilities of the equipment: Vector network analyser is a test system that enables the RF performance of radio frequency (RF) and microwave devices to be characterised in terms of network scattering parameters, or S parameters can be determined. The permeability and permittivity of various materials can be determined.

- Measurement frequency range: 10 MHz to 43.5 GHz
- Number of ports: 4 ports with bias tees on all port
- Noise floor: -114 dBm
- Measurement of all S parameters both phase and magnitude, Y/Z parameters, wave Quantities, Impedance
- Measurement capability (hardware and software) for mixer measurements like conversion loss, matching & isolation measurements. Power meter for source and receiver power

7. Equipment Name: Signal Analyzer
A signal analyzer is an instrument that measures the magnitude and phase of the input signal at a single frequency within the IF bandwidth of the instrument. It employs digital techniques to extract useful information that is carried by an electrical signal.

Model: N9020B MXA Signal Analyzer

Capability of the equipment:
- Measures the magnitude and phase of the input signal at a number of frequencies within the IF bandwidth
- Measurement frequency range: 10 Hz to 44 GHz
- Noise floor: -150 dBm
- Phase noise Noise figure measurement and plotting
- Spectrum and time domain envelope of RADAR signals
- Measure and list rise time, fall time, PRL, PRF, duty cycle, peak power, average power, pulse to pulse phase, pulse to pulse frequency, detect and list the modulation within the pulse like FM

Unique Capability:
- Measurement range: 10 MHz to 43.5 GHz
- Number of ports: 4 ports with bias tees on all port

8. Equipment Name: Gas Chromatograph
Model: Agilent 7890B

Capability of the equipment: This equipment can separate mixtures of gases into separate components and identify them using FID and TCD detectors.

Unique Capability:
- Noise figure measurement
- Vector signal measurement
- Phase noise measurement

9. Equipment Name: Analog Microwave Signal Generator
An electronic device that generates repeating or
Non-repeating electronic signals in the analog. The signal could be carrier frequency or modulated.

Model: N5173B

Capability of the equipment:
- Measurement frequency range: 9 kHz to 40 GHz
- Noise floor: -150 dBm
- Max. output: 11 dBm
- Modulation for both internal and external AM, FM, PM, Pulse
- Narrow pulse modulation: 30 ns
- Generate pulse of various widths and demonstrate the corresponding spectrum characteristics

10. Equipment Name: Thermogravimetric Analyzer coupled with Mass Spectrometer (TG-DTA-MS)

Model: Perkin Elmer STA 8000 and Clarus SQ8T

Capability of the equipment:
- The equipment is useful to closely monitor the thermal events of solid samples such as weight loss, weight gain etc. with temperature. This may also be used to study events like temperature dependent phase transitions and mechanistic aspects related to thermal reactions.
- The equipment can measure thermal events in the range of room temperature to 1600 °C at a heating rate of 0.1°C/min to 100°C/min from ambient to 1000 °C and 0.1°C/min to 25 °C/min from 1000 to 1500 °C.
- The MS has the capability of measuring the mass in the range of 1-300 amu or more.

11. Equipment Name: High Performance Liquid Chromatography

Model: Shimadzu LC-20AP Analytical -cum-Preparative HPLC System

Capability of the equipment:
- Chromatographic separation of the components from a mixture
- Quantification of each component in a mixture
- Large scale purification by preparative system (flow rate of 150 mL/min)
- Small scale purification by analytical system
13. Equipment Name: Nuclear Magnetic Resonance Spectrometer
Model: Inkarp NMREADY 60Pro benchtop NMR
Capability of the equipment:
- Characterization of an unknown chemical compound
- Measurement of reaction kinetics
- Assessment of reagent/product purity
- Recording 1H NMR spectrum of a compound
- Recording 13C NMR spectrum of a compound
- Recording 2D NMR (COSY, TOCSY, HSQC/HECOR, HMBC) spectra of a compound

Unique capability:
- Equipped with flow cell for monitoring the reaction progress
17. Equipment Name: Scanning Electron Microscopy (SEM) with EDS, EBSD and Lithography attachment
Model: Gemini SEM 300 (Carl Zeiss)

Capability of the equipment:
- To examine metallic/non-metallic specimens microstructure at 200,000 X magnification with a resolution of 0.15 nm at 15 kV (lower) to 1050 nm (higher) with a resolution better than 0.1 nm.
- Performing confocal Raman Imaging/Mapping with a spatial resolution of 100 nm (or better) on a large area of 0.5 mm x 0.5 mm (or higher).
- Performing temperature-dependent Raman and PL measurements down to 77 K with ultra-low vibrations, and for measurements above room temperature up to 800 K (or higher) using a suitable heating stage. The temperature-controlled stage is equipped with 4 probes for simultaneous electrical transport measurements.

18. Equipment Name: Mixed signal digital storage oscilloscope
Model: Keysight MSO404A Mixed Signal

Capability of the equipment:
- Measurement frequency range: DC to 400MHz
- Measuring low voltage as well as high voltage quantities

19. Equipment Name: VTI Model: Oxford Teslatron

Capability of the equipment:
- 12 T Magnet, Temperature range from 300 mK – 473 K
- Electrical and Magneto transport measurements at high magnetic field (upto 12T)
- Allows measurement of the sample at different orientations in a magnetic field with the help of a rotating probe.
- Magnetooptical measurement in-plane and out-of-plane magnetic field
- Temperature dependent characterization of gated electrical devices.

20. Equipment Name: Wire Bonder
Model: TPT

Capability of the equipment:
- Manual Wedge Wire Bonder with adjustable height (60mm) and heater stage (250°C)
- Bond using Aluminium or Gold wires
- For bonding the devices with the measurement equipment

21. Equipment Name: Mixed signal digital storage oscilloscope
Model: Keysight MSO404A Mixed Signal

Capability of the equipment:
- Measurement frequency range: DC to 800MHz
22. Equipment name: 64-channel Electroencephalograph (EEG) Data Acquisition System

**Equipment Name:** Mask Aligner

**Model:** SUSS MA/BA6 Mask Aligner (from SUSS MicroTec)

**Capability of the equipment:**
- Top-side alignment accuracy: ±0.5 μm
- Bottom-side alignment accuracy: ±1 μm

**Equipment Name:** 64-channel Electroencephalograph (EEG) Data Acquisition System

**Model:** Apo Instruments EZSpinA1

**Capability of the equipment:**
- Spin speed accuracy: better than ±/− 1 rpm
- Speed range: 100 rpm to 10000 rpm
- Spin speed accuracy: better than ±/− 1 rpm

5. Equipment Name: Spin Coater

**Model:** Apex Instruments EZSpinA1

**Capability of the equipment:**
- Spin speed range: 100 rpm to 10000 rpm
- Spin speed accuracy: better than ±/− 1 rpm

Minimum feature of sub-micron size. The system can process:
1. Wafer size: 50-mm-diameter (or lower) to 150-mm-diameter wafers
2. Exposure wavelengths: (i) 365 nm (i-line); (ii) 405 nm (g-line); (iii) 248 nm (DUV)
3. Alignment accuracy:
   - Topside alignment accuracy: ±0.5 μm
   - Bottom-side alignment accuracy: ±1 μm

**Equipment Name:** Polypropylene Fume Hoods

**Model:** NanoClean

**Capability of the equipment:** Class 100 fume hood for acid/base use.

Class 100 fume hood for solvent use.

**Equipment Name:** De-Ionized Water Plant

**Model:** Merck Millipore Milli-Q Integral 15

**Capability of the equipment:**
- Capable of producing Type II (at least 5 Megaohm-cm resistivity) and Type I (at least 18.2 megaohm-cm resistivity)
- Dedicated Point-Of-Delivery Units for control of DI water system and delivery of Type I water inside Class-100 fume-hoods

**Equipment Name:** RF/DC/Pulsed DC Sputtering System

**Model:** AJA Orion 5

**Capability of the equipment:**
- VHF capability with guaranteed chamber pressure as low as 5x10-8 Torr. Load lock chamber available.
- Three sputter guns, all of which can be used either for DC, Pulsed DC or RF Sputtering. Support for magnetic materials available.
- Three power supplies: one DC, one Pulsed DC one RF supply.
- Support for reactive sputtering in O2 rich environment

**Equipment Name:** Spin Coater

**Model:** Apex Instruments EZSpinA1

**Capability of the equipment:**
- Spin speed range: 100 rpm to 10000 rpm
- Spin speed accuracy: better than ±/− 1 rpm
Visits to CIF
Central Instrumentation Facility at IIT Palakkad encourages augmentation of knowledge among young aspirants and students by hosting educational visits. In the year 2019-2020, CIF had hosted 10 students of M.Sc Chemistry from Mercy college in Palakkad and 20 students from Providence Women’s College in Calicut. During the day-long interaction, our staff had given detailed demonstrations of the sophisticated equipment.
1. **Facility for Data Acquisition and Workload Characterization:** The exploration of the most beneficial micro-architectural features and overall design of the system for a particular application (or a set of target applications) is driven by careful examination of the application's characteristics and computational patterns. The applications under consideration could potentially be an IoT solution deployed over a large population, a memcache database system equipped with automatic load balancing or failover options, or a performance-critical web services such as Google Mail or Hangouts. The requirements of each of these applications could be very different from the other. Gaining insights into the characteristics of such applications often requires elaborate setup that replicates common modes of operation of these applications, and instrumenting it at appropriate points in time of its execution. This facility is targeted at developing expertise and generating meaningful data that subsequent stages of design can use.

2. **Facility for Simulation and Design-Space Exploration (DSE):** Once the characteristics and requirements of an application is well understood, and a broad design of the system is ready, it is then important to determine the exact configurations and sizes of internal components such as internal tables and data stores, FIFOs, and buffers. This is primarily done using simulations. A set of parameters are varied in a candidate space to sweep the parameter space to identify the optimal set of parameters. Several factors such as the choice of the simulator and its level of abstraction, its speed of simulation and accuracy, post-processing scripts that analyze the results and determine configurations of subsequent runs, determine the efficiency of such exploration. This facility will target these aspects of system design by developing and maintaining simulators for different levels of abstraction, and efficiently running different simulations to determine optimal configurations across different projects.

3. **Facility for Implementation and Deployment:** This facility is the most crucial aspect as it involves implementing the proposed solution on actual boards/devices, and demonstrating its benefits on target applications. AAL hosts state-of-the-art Xilinx UltraScale Zynq evaluation boards, Virtex-7 FPGA evaluation boards and other boards for rapid prototyping, IoT and embedded computing.

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1. **आवेदनों के अन्तर्गत किस्मों को ध्यान में रखने की जरूरत पर लेकर चाहिए, तथा आयामणिक प्रयोजन में किस्मों की सामग्री को अनुसार संभालने की प्रति ध्यान करने हेतु प्रश्नों की दृष्टि से जुड़ी उद्देश्य की पुष्टि हो लेने चाहिए: (i) कार्यकलाप, (ii) उद्देश्य हेतु एवं (iii) सुरक्षा। ऐसे अविष्टों को ध्यान में रखने के लिए नील महामण्डल सुधारण हैं:

2. **आवेदनों के अन्तर्गत किस्मों की ध्यान में रखने की जरूरत पर लेकर चाहिए, तथा आयामणिक प्रयोजन में किस्मों की सामग्री को अनुसार संभालने की प्रति ध्यान करने हेतु प्रश्नों की दृष्टि से जुड़ी उद्देश्य की पुष्टि हो लेने चाहिए: (i) कार्यकलाप, (ii) उद्देश्य हेतु एवं (iii) सुरक्षा। ऐसे अविष्टों को ध्यान में रखने के लिए नील महामण्डल सुधारण हैं:

### 1. Facility for Data Acquisition and Workload Characterization

The exploration of the most beneficial micro-architectural features and overall design of the system for a particular application (or a set of target applications) is driven by careful examination of the application's characteristics and computational patterns. The applications under consideration could potentially be an IoT solution deployed over a large population, a memcache database system equipped with automatic load balancing or failover options, or a performance-critical web services such as Google Mail or Hangouts. The requirements of each of these applications could be very different from the other. Gaining insights into the characteristics of such applications often requires elaborate setup that replicates common modes of operation of these applications, and instrumenting it at appropriate points in time of its execution. This facility is targeted at developing expertise and generating meaningful data that subsequent stages of design can use.

**Facility for Simulation and Design-Space Exploration (DSE):** Once the characteristics and requirements of an application is well understood, and a broad design of the system is ready, it is then important to determine the exact configurations and sizes of internal components such as internal tables and data stores, FIFOs, and buffers. This is primarily done using simulations. A set of parameters are varied in a candidate space to sweep the parameter space to identify the optimal set of parameters. Several factors such as the choice of the simulator and its level of abstraction, its speed of simulation and accuracy, post-processing scripts that analyze the results and determine configurations of subsequent runs, determine the efficiency of such exploration. This facility will target these aspects of system design by developing and maintaining simulators for different levels of abstraction, and efficiently running different simulations to determine optimal configurations across different projects.

### 3. Facility for Implementation and Deployment

This facility is the most crucial aspect as it involves implementing the proposed solution on actual boards/devices, and demonstrating its benefits on target applications. AAL hosts state-of-the-art Xilinx UltraScale Zynq evaluation boards, Virtex-7 FPGA evaluation boards and other boards for rapid prototyping, IoT and embedded computing.
The Career Development Center (CDC) of IIT Palakkad employs significant efforts to refine the capabilities, personality and work readiness of students with the help of placement, training and career preparation workshops. In order to facilitate better career opportunities, CDC constantly engages with industry through internships, industry visits, Industry-Academia conclave and also by hosting industry experts at the campus. A combination of rigorous yet sufficiently flexible curriculum prepares the students for the challenges in a competitive industrial environment. The centre is functional under a Faculty In-Charge and the Training and Placement officer (TPO) dedicated to the endeavor of grooming the students.

### 7.1 Industry Job Placement

Ever since its inception, IIT Palakkad witnessed a perfect culmination of the campus placement year after year in which several offers were received from coveted MNCs with excellent profiles, as desired by the students. The CDC at IIT Palakkad dominated the peer IITs on account of the highest percentage of job offers received by students. In addition to these, several PSU visit the campus for recruitment each year. The participating companies made a total of 85 offers. Major recruiters include Yodlee, GE, OYO, TCS Research, HSBC, Maybank, L&T Groups, Vmware, United Health (Optum) Group, Arista Networks, UST Global, Cloudera etc. A total of 70 companies participated across the sectors such as Research and Development, Information technology, Core Engineering, Analytics, Government, Consulting, etc to fill their full-time requirements.

**Key Highlights:**
1. Highest Domestic CTC offered was INR 21.34 Lakhs per annum by Arista Networks (Bangalore) for 3 students.
2. Average CTC offered to the batch of 2020 was INR 9.94 Lakhs.
3. 15 Pre-placement offers were made for the 2020 batch of students.
4. 16 offers were for INR 15 Lakhs and above to the batch of 2020.

#### 7.2 Internship

More than 40 companies visited the campus for the current academic year across sectors such as Research and Development, Information technology, Core Engineering, Analytics, Government, Consulting. The participating companies made a total of 125 offers. The internship season saw participation from major recruiters like Adobe, UST Global, Pasonanic, TCS, Ford, Texas Instruments, vConstruct, Arista Networks, GE, KMRL, FCRI, B&H, etc.

**Key Highlights:**
1. Adobe offered INR 1 Lakhs stipend per month for 4 students.
2. Arista networks offered INR 45,000 per month.
Industry Academia Conclave:
IIT Palakkad saw its first ever Industry Academia Conclave on August 14, 2019 which deliberated on avenues for potential convergence. With a focus on initiating dialogues on research, the event attracted participation from over 30 industry experts. The organizations which came forward to the event included Intel, Wipro, Ultratech Cements, ARM, GE, Bosch, Samsung, Sandvik, ITS planner, among many others.

It was surely a novel and enlightening experience for IIT Palakkad as the academic fraternity took one step forward to understand how industries execute and undertake projects. The event churned many insights on the industry life and opened up new career opportunities for many. Students were able to imbibe a fair idea about the challenges faced by the industry and the timelines which are met/attempted to be met in projects. The students also became more aware of the skill sets they need to further develop to contribute and make a mark in the industry.

4. UST Global has made the maximum number of offers, i.e. 20.
3. 2 Students have received academic internships from Nanyang Technological University (NTU) - Singapore.

7.3 INTERNATIONAL RELATIONS

IIT Palakkad faculty members and students have been collaborating with universities globally since its inception. This includes analyzing challenging problems and researching solutions for them, leading to improvement of lives of people. In the past one year, we have expanded our efforts to all geographical regions of the world. IIT Palakkad has secured research funding from various funding agencies to perform several joint projects. This includes a joint project between IIT Palakkad and BSTU Belgorod, Russia aims to develop a stationary trainer to perform lower limb rehabilitation therapies, project on optimization method for multi view biological data between Aalto university, Finland and IIT Palakkad, joint project between IIT Palakkad and Hanyang University, Seoul, Republic of Korea aims to develop a robust motion controller along with a functional prototype of an underwater robot for intelligent intervention tasks and, project on reliability of many core processors and cyber security in collaboration with NTU, Singapore.
There are several active joint collaborations ongoing with several esteemed institutes in abroad, this includes Basque Foundation for Science, Bilbao, Spain, Trinity College Dublin, Ireland, NUS Singapore, TU Vienna, Austria, Florida International University, USA, RWTH Aachen, Germany, Tsinghua University, China, Osaka University, Japan, Queen’s University, UK and many more top institutions.

In addition, IIT Palakkad also secured an award to perform a joint project on Unified Theory for Projection Theorems, Large Deviation, and Statistics in Connection with Divergence Functions through the SERB Vaira scheme. The joint award with Prof. Ashok Kumar, IIT Palakkad and Prof Michel Broniatowski of Universite Pierre Et Marie Curie, Paris, France.

IIT Palakkad also secured several international fellowships to mobilize both students and faculty members. This includes the European master on advanced robotics plus (EMARO+) fellowship from Erasmus+, Europe to visit the Ecole Centrale de Nantes, France, Indo-Finland mobility grant to visit Aalto university, Finland.

Although we have international students present on our campus during substantial time of the year under exchange programs, this past year we specifically made efforts to enroll more foreign students in our degree programs from developing regions (SAARC, ASEAN, West Asia, and African Collaboration). Currently, we have two international students enrolled in our degree programs.

Projects managed at IIT Palakkad
A total of 42 Sponsored Projects and 11 Consultancy Projects have been handled by the faculty members with a total budget amounting to Rs 10.88 Crores during the period from April 2019 to March 2020. This includes funding received from DST-INSPIRE, DST-Namoboomi, DST-Cognitive Science Research Initiative (CSR1) SERB-Ramanujan Fellowship, SERB-EMEQ, SERB-ECRA, SERB-MATRICS, SERB-SRG, SERB-CRG, Defence Food Research Laboratory (DFRL), Gadgets Smart Systems Pvt. Ltd., Department of Space, Kerala Public Works Department, National Mission on Himalayan Studies (NMHS), Kerala State Council for Science, Technology & Environment (KSCSTE), UVI Technologies Pvt Ltd., Ernad Engineering Enterprises, E. K. K. Infrastructure Limited, Flatworx Consulting LLP, Bharat Petroleum Corporation Limited (BPCL), Garrison Engineer (Main) Ezhimala, Kerala Water Authority and IIT Madras.
8.1 प्रायोजित अनुसंधान

प्रायोजित अनुसंधान के क्षेत्र में निर्मलिपित परियोजनाएं यहाँ की गई हैं, जिनमें कुल राशि ₹ 10,60,38,436/- राखा है:

<table>
<thead>
<tr>
<th>क्रम सं.</th>
<th>परियोजना का शीर्षक</th>
<th>निर्म-प्रदाय अभिक्रिया</th>
<th>प्रधान अनुसंधानकर्ता</th>
<th>कुल बजट</th>
<th>अवधि</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>गैर-संयुक्त क्रान्ति गतिविधि और विषय (भाषातीति परियोजना)</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. उमा दिवाकर</td>
<td>₹ 15,05,208</td>
<td>2013-2019</td>
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<td>2.</td>
<td>प्राणिय ओर अन्य 2 डी में मरीजों और सामग्री की संपादन और प्रौद्योगिकीक इंटरफेर (भाषातीति परियोजना)</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. राजकुमार बाळकृष्णन</td>
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<td>2014-2019</td>
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<td>3.</td>
<td>लेखन उत्पादन के नव-प्राप्त क्षेत्रों के लिए उच्च अध्ययन</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. अर्जुन पी.</td>
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<td>नैन-निर्मित इंकटिक्टर बालिक 2019 में प्रेम व विद्युत नुस्खा संचार कामना नव-साधन (भाषातीति परियोजना)</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. तामी रक्षा के.</td>
<td>₹ 16,91,680</td>
<td>2016-2021</td>
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<td>5.</td>
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<td>डॉ. सोहिन मिश्री</td>
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<td>2018-2023</td>
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<td>6.</td>
<td>बहे आमवासी आवास संचार गतिविधि में भौतिक इंजन फुटपाइक के लिए एक नवीकरण संगठन आवासि रेडियो</td>
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<td>₹ 13,65,654</td>
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<td>8.</td>
<td>मेटलिक इंजन तथा गहनारी अनुभवों के लिए दुर्गम क्षेत्रों में स्व-संचार विकास के लिए एक नवीकरण संगठन</td>
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<td>डॉ. मेंटु परेल</td>
<td>₹ 38,00,000</td>
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<td>9.</td>
<td>दी अधिकारी (त्रिमंजित / नैन-निर्मित पांडवान) अल्फा-सेलेक्शन में भौम नव-संचार (भाषातीति परियोजना)</td>
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<td>₹ 5,40,361</td>
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<td>10.</td>
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<td>डॉ. दुपप्पु चक्रधिक</td>
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<td>11.</td>
<td>बनान खेल-लेखन पर क्रांति अनुसंधान के संस्करण के लिए एक नवीकरण संगठन</td>
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<td>12.</td>
<td>अभिलक्षित वाल पुरुष और उनके खेल-लेखन पर क्रांति अनुसंधान के संस्करण के लिए एक नवीकरण संगठन</td>
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<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. शनमुगानथा सेतुबंधन</td>
<td>₹ 37,63,000</td>
<td>2019-2022</td>
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<tr>
<td>14.</td>
<td>बहु-प्रदीप नवाचार प्रशिक्षण के लिए एक नवीकरण संगठन</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. अभिजन्ता अर्जुन</td>
<td>₹ 49,01,830</td>
<td>2019-2022</td>
</tr>
<tr>
<td>15.</td>
<td>अभिलक्षित वाल पुरुष और उनके खेल-लेखन पर क्रांति अनुसंधान के संस्करण के लिए एक नवीकरण संगठन</td>
<td>विज्ञान और प्रौद्योगिकी भिंतर (सीएसटी)</td>
<td>डॉ. शनमुगानथा सेतुबंधन</td>
<td>₹ 42,11,530</td>
<td>2019-2022</td>
</tr>
</tbody>
</table>
16. माइक्रोबर्ल टडसेरलनेशन सेल के लाभ का उपयोग करके भूल नए करने एवं अभ्यास के लिए वेटिकॉर्ट का कीविकुल कार्य करना।

17. अल्ट्रावेयरोबिअर भोज परिवर्तन के साथ चेयरेक्टर पैलेट कोम्बले में अपने ज्ञान और दिशानिर्देश

18. कूटनेवर्क की हंगामा शेरोन में वृद्ध कक्षीय और अवधी

19. महासर अनुसंधान हेतु जीव-प्रेरित हंगामा आंकड़ों वेरीफाइकेशन

20. ट्रांसथ्रैल ज्वार और प्रेरित ए-परमीटरियोलोजिक कॉलेक्ट से वातावरण की ज्यादत्वता हंगामावाद द्वारा हंगामा एवं आपातकालिक परिवर्तन एलास्टिकके साथ दोनों को नयाँ कार्य (सत्यायतीत परिवर्तन)

21. संगठन, शासन और और टेक्नीक का योग वातावरण के जीवकार्योरीतिक अविश्वसनीय है। पारंपरिक नैवेडि मोडिफाइड

22. सत्यायतीतोर्न क्षेत्र की अप्रत्याशित धारा और वैदिक वातावरण के रूप में पारंपरिक तरीके की पूर्वानुमान

23. मूर्खता के लिए, एक अपनी आण्विक व्यवस्था सेवा नेटवर्क

24. सेल्टिक ट्रांसहैंड्रेक के साथ परमीटरियोल दिखाई दिखाई का 24 परसेंट विभाजन (सत्यायतीत परिवर्तन)

25. रोशनी के लिए वेडिकॉर्ट के आधार रूप से सरासरी मेडिकाल कार्य के रंग और विधि दर्शानेविषय में अनुसंधान हेतु वेरीफाइकेशन विषयक श्रद्धालु श्रम का विवाद

26. माइक्रोबर्ल टडसेरलनेशन बीडसेरलनेशन सेल और वृद्धि में सार्वजनिक मुद्दों को नयाँ कार्य की तरह से अल्ट्रात्वकॉर्ट परिवर्तन एवं एलास्टिकके साथ

27. महत्वपूर्ण के लिए वेडिकॉर्ट दोनों एवं कार्य के साथ वृद्धि साधन - प्रो. टॉम वी. मैथ्यू (मु.अ.), डॉ. डी. के.मी. रू. (सह-मु.अ.)

28. हिमालय के वृक्ष दक्षिणोत्तर नेटवर्क में स्थापित मोडिफाइड पैनट और अपने भेदात्मक परिवर्तन द्वारा हंगामावाद्वारा द्वारा कार्य विधेयक का विवाद

29. कृत्रिम कालों में होमोस्टैरटक दवाएं और वैदिक अक्षय के वृद्धि पारंपरिक संबंध (सत्यायतीत परिवर्तन)

30. भारत में हंगामावाद्वारा परमीटरियोल धारा और वैदिक धारा का संबंध
<table>
<thead>
<tr>
<th>नं.</th>
<th>शीर्षक</th>
<th>विभाग एवं इंजीनियरी</th>
<th>अनुसंधान बोर्ड (एसईएबी)</th>
<th>अनुसंधान अनुदान (एसआई)</th>
<th>श्रेणी मूल्यांकन</th>
<th>कुल बिल</th>
<th>सन</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. संजुक्ता चक्रवर्ती</td>
<td>21,56,240</td>
<td>2019-2021</td>
<td></td>
<td></td>
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<tr>
<td>32.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. अरविंद अश्व</td>
<td>27,73,690</td>
<td>2019-2021</td>
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<td>33.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. संजुक्ता चक्रवर्ती</td>
<td>30,70,370</td>
<td>2019-2021</td>
<td></td>
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<td>34.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. संजुक्ता चक्रवर्ती</td>
<td>30,87,770</td>
<td>2020-2021</td>
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<td>35.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. संजुक्ता चक्रवर्ती</td>
<td>67,17,160</td>
<td>2020-2023</td>
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<tr>
<td>36.</td>
<td>वैज्ञानिक एवं इंजीनियरी अनुसंधान बोर्ड (एसईएबी) - स्टाटिस्टिकल अंपीक्षा और प्रावरोगिक जांच</td>
<td>डॉ. संजुक्ता चक्रवर्ती</td>
<td>15,66,200</td>
<td>2019-2021</td>
<td></td>
<td></td>
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<tr>
<td>37.</td>
<td>क्रेटल एवं फूलेट मॉडल रूप में संशोधन प्रणाली का उपयोग करते हुए कूट फूलेट</td>
<td>क्रेटल रूप में संशोधन प्रणाली का उपयोग करते हुए कूट फूलेट</td>
<td>12,88,000</td>
<td>2019-2021</td>
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</tbody>
</table>

कुल बिल: रु. 10,60,38,436
### 8.2 परामर्शी परियोजनाएं

परामर्शी परियोजनाओं के क्षेत्र में निकृष्टिकता परियोजनाएं प्रयुक्त किए गए हैं, जिनमें कुल राशि ₹ 27,91,820 /- संतुलित है।

<table>
<thead>
<tr>
<th>परियोजनाएं</th>
<th>सं. क्रम</th>
<th>निम्न-प्रदाय अर्थात</th>
<th>प्रधान अन्वेषक</th>
<th>कुल बजट</th>
<th>अवधि</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. • ब्रेकेवे-आधारित ड्राइवर पारियोजना</td>
<td>ड्रीवर इंजीनियरिंग एवं डायरेक्टर</td>
<td>₹ 12,00,000</td>
<td>18 माह (जनवरी 2019 - जुलाई 2020)</td>
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<tr>
<td>2. • संचालनक डिजाइन का पुनरीक्षण (कोरिएटरों के लिए)</td>
<td>ड्रीवर इंजीनियरिंग एवं डायरेक्टर</td>
<td>₹ 84,960</td>
<td>2 माह (मार्च 2019 - मई 2019)</td>
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<tr>
<td>3. • संचालन प्रबंधन का पुनरीक्षण (एडिशनल डायरेक्टर)</td>
<td>ड्रीवर इंजीनियरिंग एवं डायरेक्टर</td>
<td>₹ 2,83,200</td>
<td>2 माह (अप्रैल 2019 - जून 2019)</td>
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<tr>
<td>4. • प्रबंधन दूसरा का पुनरीक्षण (रिपोर्ट इंजीनियरिंग)</td>
<td>ड्रीवर इंजीनियरिंग एवं डायरेक्टर</td>
<td>₹ 1,06,200</td>
<td>2 माह (मई 2019 - जूलाई 2019)</td>
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<tr>
<td>5. • अन्य विषयों के साथ 1-786 मॉडल का पुनरीक्षण (शिमोट)</td>
<td>ड्रीवर इंजीनियरिंग एवं डायरेक्टर</td>
<td>₹ 1,41,600</td>
<td>2 माह (बुधवार 2019 - अगस्त 2019)</td>
<td></td>
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<tr>
<td>6. • पोलिटंकेज कंटेनिंग</td>
<td>पोलिटंकेज कंटेनिंग</td>
<td>₹ 1,55,760</td>
<td>1 सप्ताह (तिथि 2019)</td>
<td></td>
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<tr>
<td>7. • लेफ्टीनेंट करियर कंट्रॉल मॉडल की ज्ञान प्राप्ति (स्टील और कॉम्पोज़िट)</td>
<td>पोलिटंकेज कंटेनिंग</td>
<td>₹ 2,36,000</td>
<td>1 महीना (नवंबर 2019 - दिसंबर 2019)</td>
<td></td>
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<tr>
<td>8. • मॉडल-आधारित वर्तमान स्थानीय चाअरियांक</td>
<td>पोलिटंकेज कंटेनिंग</td>
<td>₹ 2,83,200</td>
<td>2 माह (जनवरी 2020 - मार्च 2020)</td>
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</tbody>
</table>

परियोजनाओं के कुल बजट : ₹ 27,91,820

### परियोजनाओं की संख्या:

अप्रैल 2019 से मार्च 2020 के बीच संस्थान में 43 संकरायों के संबंध में कुल 43 परियोजनाओं का अनुसंधान किया गया है।

### परियोजनाओं का कुल मूल्य:

अप्रैल 2019 से मार्च 2020 की अवधि के दौरान किए गए सभी परियोजनाओं का कुल बजट ₹ 10.88 कोटियां है।
## 8.1 SPONSORED RESEARCH

In the space of Sponsored Research, the following projects have been undertaken and the total amount is Rs. 10,60,38,436/-.

### Sponsored Projects

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Title of the Project</th>
<th>Funding Agency</th>
<th>Principal Investigator</th>
<th>Total Budget (Rs.)</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Non-equilibrium quantum dynamics and decoherence (Transferred Project)</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Uma Divakaran</td>
<td>15,05,208</td>
<td>2013-2019</td>
</tr>
<tr>
<td>2.</td>
<td>Graphene and other 2D materials base spintronics and topological insulators (Transferred Project)</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Jayakumar Balakrishnan</td>
<td>10,31,488</td>
<td>2014-2019</td>
</tr>
<tr>
<td>3.</td>
<td>Improving water availability in hilly rain shadow regions through conservation measures (Transferred Project)</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Athira P.</td>
<td>10,01,340</td>
<td>2015-2020</td>
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<tr>
<td>4.</td>
<td>On positive solutions for classes of nonlinear elliptic boundary value problems (Transferred Project)</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Lakshmi Sankar K.</td>
<td>16,91,680</td>
<td>2016-2021</td>
</tr>
<tr>
<td>5.</td>
<td>Discovery, single crystal synthesis and investigation of anisotropic physical properties of novel spin-orbit materials</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Soham Manni</td>
<td>35,00,000</td>
<td>2018-2023</td>
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<tr>
<td>6.</td>
<td>A Compressed Sensing based Framework for Physical Layer Security in Large Dimensional Wireless Communication Systems</td>
<td>Department of Science and Technology (DST) INSPIRE Grant</td>
<td>Dr. Lakshmi Narasimhan Theagarajan</td>
<td>35,00,000</td>
<td>2018-2023</td>
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<tr>
<td>7.</td>
<td>Design of heterogeneous catalysts to improve the selectivity of high-temperature, gas-phase reactions</td>
<td>Science and Engineering Research Board (SERB) - Ramanujan Fellowship</td>
<td>Dr. Dinesh Jagadeesan</td>
<td>13,65,654</td>
<td>2013-2019</td>
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<td>8.</td>
<td>A novel class of functionally controlled macromolecules with tunable properties for material and biomedical applications</td>
<td>Science and Engineering Research Board (SERB) - Ramanujan Fellowship</td>
<td>Dr. Mintu Porel</td>
<td>38,00,000</td>
<td>2018-2023</td>
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<td>9.</td>
<td>Spin transport in 2D material (graphene)/perovskites(LSMO) heterostructures (Transferred Project)</td>
<td>Department of Science and Technology (DST) Nanomission</td>
<td>Dr. Jayakumar Balakrishnan</td>
<td>5,40,361</td>
<td>2016-2019</td>
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<td>11.</td>
<td>Study of approximation theoretic properties of the space of compact operators on Banach spaces</td>
<td>Science and Engineering Research Board (SERB) - MATRICS Scheme</td>
<td>Dr. Jayanarayanan C. R.</td>
<td>6,60,000</td>
<td>2018-2021</td>
</tr>
<tr>
<td>12.</td>
<td>Energy positive microbial osmotic-electro desalination cell for wastewater treatment and high-quality water recovery</td>
<td>Science and Engineering Research Board (SERB) - EMEQ Scheme</td>
<td>Dr. Praveena Gangadharan</td>
<td>39,94,500</td>
<td>2019-2022</td>
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<tr>
<td>16.</td>
<td>Integrating wastewater treatment to groundwater softening and defluoridation using microbial desalination cell</td>
<td>Science and Engineering Research Board (SERB) - Early Career Research Award (ECRA)</td>
<td>Dr. Praveena Gangadharan</td>
<td>Rs. 35,19,480</td>
<td>2019-2022</td>
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<tr>
<td>17.</td>
<td>Behaviour and Design of CFS Channel compression member with partial LIP Stiffened Flanges</td>
<td>Science and Engineering Research Board (SERB) - Core Research Grant (CRG)</td>
<td>Dr. Anil Kumar M. V.</td>
<td>Rs. 34,26,691</td>
<td>2019-2022</td>
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<tr>
<td>21.</td>
<td>Synthesis, characterization and evaluation of TiO2 - polymer nanocomposite for photocatalytic oxidation of ethylene</td>
<td>Defence Food Research Laboratory (DFRL)</td>
<td>Dr. Dinesh Jagadeesan</td>
<td>Rs. 9,45,000</td>
<td>2019-2021</td>
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<tr>
<td>22.</td>
<td>Assistive and Rehabilitation Technology Development</td>
<td>GadgEon Smart Systems Pvt. Ltd., Kochi</td>
<td>Prof. Vinod A. Prasad (PI) &amp; Dr. Mahesh R. Panicker (Co-PI)</td>
<td>Rs. 17,30,000</td>
<td>2020-2022</td>
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<tr>
<td>23.</td>
<td>ZIGBEE based wireless sensor network for landslide</td>
<td>ISRO RESPOND Programme, Department of Space</td>
<td>Dr. Albert Sunny (PI) &amp; Dr. Sudheesh T. K. (Co-PI)</td>
<td>Rs. 15,52,000</td>
<td>2019-2021</td>
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<td>24.</td>
<td>Feedback control of stochastic hybrid systems with state-dependent noise (Transferred Project)</td>
<td>Science and Engineering Research Board (SERB) - MATRICS Scheme</td>
<td>Dr. Shaikshavali Chitraganti</td>
<td>Rs. 6,60,000</td>
<td>2019-2021</td>
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<td>Funding Agency</td>
<td>Award Amount</td>
<td>Duration</td>
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<tr>
<td>27.</td>
<td>Sustainable and resilient environment friendly solutions for hill road design through a pilot study on Mannarkkad - Chinnathadagam Road</td>
<td>Kerala Public Works Department</td>
<td>Rs. 24,98,760</td>
<td>2019-2021</td>
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<td>29.</td>
<td>Mechanistic correlation between homeostatic pressure and metastatic competence in cancer cells (Transferred Project)</td>
<td>Science and Engineering Research Board (SERB) - Early Career Research Award (ECRA)</td>
<td>Rs. 16,00,154</td>
<td>2019-2020</td>
<td></td>
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<tr>
<td>30.</td>
<td>Linkage of Large Scale Ocean-Atmospheric Phenomena on Hydroclimatic Extremes in India</td>
<td>Science and Engineering Research Board (SERB) - Start-up Research Grant (SRG)</td>
<td>Rs. 19,73,180</td>
<td>2019-2021</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Analytical and Experimental Investigation on Frequency Dependent Linear Control Algorithm for Performance Enhancement of Real Life Civil Structures under Random Excitation</td>
<td>Science and Engineering Research Board (SERB) - Start-up Research Grant (SRG)</td>
<td>Rs. 21,56,240</td>
<td>2019-2021</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Low voltage MEMS actuation using Negative Capacitance</td>
<td>Science and Engineering Research Board (SERB) - Start-up Research Grant (SRG)</td>
<td>Rs. 27,73,690</td>
<td>2019-2021</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Multi-functional optically-sensitive devices with high efficiencies using perovskites</td>
<td>Science and Engineering Research Board (SERB) - Start-up Research Grant (SRG)</td>
<td>Rs. 30,87,770</td>
<td>2020-2022</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>A multimodal brain-machine interface-based neuro-enhancement system for retarding the decline of cognitive and motor functions in the early-stages of Dementia, Stroke and Parkinson's Disease patients</td>
<td>Department of Science and Technology (DST) - Cognitive Science Research Initiative (CSRI)</td>
<td>Rs. 67,17,160</td>
<td>2020-2023</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Drought preparedness in Kerala: A comprehensive assessment with respect to climate change</td>
<td>Kerala State Council for Science, Technology &amp; Environment (KSCSTE)</td>
<td>Rs. 12,88,000</td>
<td>2019-2021</td>
<td></td>
</tr>
</tbody>
</table>
8.2 CONSULTANCY PROJECTS

In the space of Consultancy Projects, the following projects have been undertaken and the total amount is Rs. 27,91,820/-.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Title of the Project</th>
<th>Funding Agency</th>
<th>Principal Investigator</th>
<th>Total Budget</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brainwave- based Driver Drowsiness Detection System</td>
<td>UVI Technologies Pvt. Ltd.</td>
<td>Prof. Vinod A. Prasad</td>
<td>Rs. 12,00,000</td>
<td>18 months (January 2019 - July 2020)</td>
</tr>
<tr>
<td>2</td>
<td>Vetting of Structural Design (Improved Design of Eranholi Bridge)</td>
<td>Ernad Engineering Enterprises</td>
<td>Dr. Anil Kumar M. V. (PI) &amp; Dr. Madhu Karthik M. (Co- PI)</td>
<td>Rs. 84,960</td>
<td>2 months (March 2019 - May 2019)</td>
</tr>
<tr>
<td>3</td>
<td>Vetting of Structural Drawings (Flyover at Edappal Junction)</td>
<td>Ernad Engineering Enterprises</td>
<td>Dr. Anil Kumar M. V. (PI) &amp; Dr. Madhu Karthik M. (Co- PI)</td>
<td>Rs. 2,83,200</td>
<td>2 months (April 2019 - June 2019)</td>
</tr>
<tr>
<td>4</td>
<td>Proof Checking of 40m Girder and Deck Slab: Flyover at Vytilla</td>
<td>PWD, Kerala Government</td>
<td>Dr. Anil Kumar M. V. (PI) &amp; Dr. Madhu Karthik M. (Co- PI)</td>
<td>Rs. 1,06,200</td>
<td>2 months (May 2019 - July 2019)</td>
</tr>
<tr>
<td>5</td>
<td>Vetting of Detailed Design of Viaduct from 1+786 to 2+013 along Thiruvalla Bypass</td>
<td>E. K. K. Infrastructure Limited</td>
<td>Dr. Anil Kumar M. V. (PI) &amp; Dr. Madhu Karthik M. (Co- PI)</td>
<td>Rs. 1,41,600</td>
<td>2 months (July 2019 - September 2019)</td>
</tr>
<tr>
<td>6</td>
<td>Checking and Vetting of Design Solution of Reinforced Flooring, done by Flatworx Consulting LLP</td>
<td>Flatworx Consulting LLP</td>
<td>Dr. Sunitha K. Nayar</td>
<td>Rs. 1,55,760</td>
<td>1 week (September 2019)</td>
</tr>
<tr>
<td>7</td>
<td>BPCL Cross Country Pipeline: Study on Ground Improvement for the Development of Cochin Seaport- Airport Road Phase-II</td>
<td>Bharat Petroleum Corporation Limited (BPCL)</td>
<td>Dr. Divya P. V.</td>
<td>Rs. 2,36,000</td>
<td>1 month (November 2019 to December 2019)</td>
</tr>
</tbody>
</table>
8. Structural stability check of flag mast for Naval Academy, Ezhimala
Garrison Engineer (Main) Ezhimala
Dr. Aril Kumar M. V. (PI), Dr. Madhu Karthik M (Co-PI) & Dr. Sudheesh T. K. (Co-PI)
Rs. 2,83,200
2 months (January 2020 to March 2020)

9. RWSS to Pudukkad, Parappukkara and Adjoining Panchayats - Implementation of pipeline near Railway bridge at Kurumulli, Rapal by HDD Method
Kerala Water Authority
Dr. Sudheesh T. K. (PI) & Dr. Rakesh J. Pillai (Co-PI)
Rs. 30,090
2 months (January 2020 to March 2020)

10. Optimization of Production 
& Transmission - WSS to Pavaratty & Mullassery Panchayats in Chavakkad Taluk - Supplying, Laying & Commissioning of 300/250/200 mm DI K9 gravity main - Railway crossing at Brahmakulam - Soil exploration by taking 2 nos. trial bores
Kerala Water Authority
Dr. Sudheesh T. K. (PI) & Dr. Rakesh J. Pillai (Co-PI)
Rs. 30,090
2 months (January 2020 to March 2020)

11. Consultancy for Design 
and Vetting of Fibre reinforced concrete (FRC) and Mesh reinforced concrete (RC) Flooring
IIT Madras
Dr. Sunitha K. Nayar
Rs. 2,40,720
1 month (March 2020 - April 2020)

Total Budget : Rs. 27,91,820

Number of Faculties with Projects
43 Faculty members are involved in various Research Projects (both Sponsored and Consultancy Projects) in our institute from April 2019 to March 2020.

Total Value of Projects
The total budget of all the projects handled during the period from April 2019 to March 2020 is Rs. 10.88 Crores.
A Memorandum of Understanding (MoU) was signed on September 19, 2019 between IIT Palakkad and GadgEon Smart Systems Pvt. Ltd., Kochi to conduct joint Research & Development (R&D) in the areas of Healthcare and Biomedical technology, Wireless technology, Embedded systems, Home automation and Network systems. GadgEon will work with IIT Palakkad researchers in developing assistive and rehabilitation technology devices as part of IIT Palakkad’s ‘Assistive and Rehabilitation Technology Programme’ with Institute for Communicative and Cognitive Neuroscience (ICCONS), Shoranur, Kerala.

GadgEon will provide IIT Palakkad a research grant to employ two Research Associates for a period of 2 years to work on the ‘Assistive and Rehabilitation Technology Programme’. The company will also provide necessary technology development support. GadgEon will provide the R&D expertise for the above programme and work with the engineers of GadgEon and the Research Associates for developing low-cost assistive and rehabilitation technology devices targeting patients suffering from cerebral palsy, autism, speech impairment and stroke.

Further, GadgEon and IIT Palakkad will collaborate on relevant project proposals submitted by IIT Palakkad for research grants from government funding agencies as well as on internships of B. Tech students and suitable B. Tech Projects. The agreement will remain effective for a period of 3 years.

Research Collaboration Agreement with Arm Inc.
IIT Palakkad and Arm University Program, India signed a Letter of Agreement on fostering Research and Teaching in the areas of Embedded Systems and System-on-Chip. Ms. Apurva Varma, Regional Manager, Arm University Program, India and Prof. Vinod A Prasad (IIT Palakkad) signed the letter in the presence of Prof. P B Sunil Kumar, Director IIT Palakkad. Through this agreement, IIT Palakkad 100 floating licenses of Arm Keil Pro Software Tool, Faculty members from IIT Palakkad and Arm agreed to work together in building course materials for undergraduate and graduate programs.
Study Abroad Programme with Auckland University of Technology (AUT), New Zealand: A study abroad programme agreement was signed with Auckland University of Technology (AUT), New Zealand for a period of three years in which the purpose was to establish educational relations and cooperation between the two institutes in order to promote academic linkages. Under this Study Abroad Programme, 5 final year students (Mr. Chaitanya Khawase, Mr. Nikhil Kumar Yadav, Mr. Saurabh Inge, Mr. Gaurav, Mr. Talabattula Jayaram) were selected from IIT Palakkad. Mr. Nikhil Kumar Yadav, Saurabh Inge sent to AUT which enabled them to enrol in projects for credit points. These credit points would be jointly evaluated by AUT and IIT Palakkad to be applied towards their degree at IIT Palakkad. The students returned to IIT Palakkad in April 2020 after successful completion of their B. Tech Project.

Research Internship at Nanyang Technological University (NTU), Singapore: IIT Palakkad has attached three of its students (Navaneeth and Yaseen) with Nanyang Technological University (NTU), Singapore in an effort to deliver superior international research exposure. In addition, IIT Palakkad also hosted several distinguished researchers and top level professors from abroad to enrich our community and establish international collaborations, in the past one year, there are several of renowned academicians/researchers visited our campus, this includes Prof. Sethu Vijayakumar, University of Edinburgh, UK, Prof. Thiusius Rajeeth Savarimuthu, University of Southern Denmark, Prof. Mustafizur Rahman, NUS Singapore, Prof. V Chandrasekar, Colorado State University, USA, Dr. Madhavan Anirudhan, Essen Nutrition Corporation, Chicago, Prof John H. Ipsen, University of Southern Denmark.
सीरीजिक अनुसंधान

10.1 अनुसंधान प्रकाशनें/ पुस्तक अध्याय/ पेटेंट्स

रसायनशास्त्र

प्रो. एल. के. रामाञित
• साम्प्ले सामग्री अनुसंधान के जरूरत में " तो धातुमय वर्तमान एवं तथ्य पर द्यामान " नामक शीर्षक से एक पेपर प्रकाशित किया। वर्ष 2019 में हिंदीम एवं प्रेषित।

डॉ. दिनेश जागडेशन
• उद्योग के जरूरत में वर्ष 2019 में " छोटे आम एवं उनके अनुसरण के सूक्ष्मों निर्माण हेतु Fe(OH)3 में जल अभिनवित सतह प्रायीता" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. देवाकर ठर्डेंस
• भौतिक रसायनशास्त्र के जरूरत में वर्ष 2020 में " जीव-अर्धरंग वनस्पति रासायनिक प्रवचन: एक उद्योग क्षेत्र में निर्माण के प्रदर्शन" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. सुभाष प्रोरेट
• पीढ़ी रसायनशास्त्र के जरूरत में वर्ष 2019 में " विज्ञान डाइएड टू प्री-गत््न पीवी: निर्माण एवं अनुसंधान" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. पीरेट्स दिशनये
• पीढ़ी रसायनशास्त्र के जरूरत में वर्ष 2020 में " विज्ञान डाइएड टू प्री-गत््न पीवी: निर्माण एवं अनुसंधान" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. प्रोरेट्स ए.
• रसायनशास्त्र ध्वनि के जरूरत में वर्ष 2020 में " एक गत््न प्री-गत््न निर्माण के जरूरत के लिए" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. निवाजन ए.
• रसायनशास्त्र ध्वनि के जरूरत में वर्ष 2019 में " अस्फाल्त-बड़े गैस-बड़े गैस अभिनवित सतह प्रायीता" नामक शीर्षक से एक पेपर प्रकाशित किया।

डॉ. प्रोरेट्स ए.
• रसायनशास्त्र ध्वनि के जरूरत में वर्ष 2020 में " एक गत््न प्री-गत््न निर्माण के जरूरत के लिए" शीर्षक से एक पेपर प्रकाशित किया।

डॉ. दिब्बा प. ति.: जीव-अर्धरंग रसायन के जरूरत में वर्ष 2019 में " अस्फाल्त-बड़े गैस-बड़े गैस अभिनवित सतह प्रायीता" नामक शीर्षक से एक पेपर प्रकाशित किया।

समस्ति अभिनवितकोशी

डॉ. अशोक वी.
• रसायनशास्त्र ध्वनि के जरूरत में वर्ष 2019 में " अस्फाल्त-बड़े गैस-बड़े गैस अभिनवित सतह प्रायीता" नामक शीर्षक से एक पेपर प्रकाशित किया।

डॉ. वी. के. शर्तवरण
• विभिन्न विज्ञान के जरूरत में वर्ष 2020 में " प्रेरणाचक बक्षि के संस्थान पर स्रोतांतरण सम्बन्ध पर विचार" नामक शीर्षक से एक पेपर प्रकाशित किया।

डॉ. दी. क. दी. बनाधुरण
• जीव-अर्धरंग एवं मूलधार रसायन के जरूरत में वर्ष 2019 में " अस्फाल्त-बड़े गैस-बड़े गैस अभिनवित सतह प्रायीता" नामक शीर्षक से एक पेपर प्रकाशित किया।

डॉ. सी. री. शर्तवरण
• विभिन्न विज्ञान के जरूरत में वर्ष 2020 में " अस्फाल्त-बड़े गैस-बड़े गैस अभिनवित सतह प्रायीता" नामक शीर्षक से एक पेपर प्रकाशित किया।
डॉ. एि. िी. अवनल कुराि • संचनात्मक अरभरांरत्रकी के जनरल (एएससीई) में वर्ष 2020 में “आंरशक रुप से कड़ा रकए गए ित्वों के रडस्टोशषिनल बकरलंग के संचनात्मक क्रिया के लिए पर अस्थायी तत्त्व” नामक शीर्षक से एक पेपर प्रकाशित किया गया। (लेखक)

डॉ. संजूला राव • प्रबंधन अनुसंधान समीक्षा के जनरल में वर्ष 2019 में “लघु एवं मध्म आकार के दरक्षण अफरिकी ऊजाषि संगठनों से संगठनात्मक रशक्ण” नामक शीर्षिक से एक पेपर प्रकाशित किया गया।

डॉ. शवि्यष्ठरा वसंह • हाइडट्ोलॉरजक अरभरांरत्रकी के जनरल में वर्ष 2019 में “रनम्निि अपालारचकोला-चट्हची में सुखा के दौिान भयूजल स्ति पि रसंचाई प्ररक्ररा की बंदी के प्ररि कृर्ब जन्य गहनिा कास्टषि सातकि पि भयूजल अवरवों की संवेदनशीलिा-अपालारचकोला-चट्हची ब्फ्ंट नदी बेरसन में एक मामला अध्रन” नामक शीर्षिक से एक पेपर प्रकाशित किया।

डॉ. िधुकरावत्यक एि. • इंफ्ास्ट ट्क्चि प्रणारलरों के जनरल में वर्ष 2019 में “पोस्ट-टेनशरनंग एवं स्टे के बल प्रणारलरों के रलए गैि-हारनकािक मयूल्ांकन सकरों का क्ररमक मयूल्ांकन” नामक शीर्षिक से एक पेपर प्रकाशित किया।

डॉ. सुवनतरा के . नरायि • अरभरांरत्रकी संचनाओं के जनरल में वर्ष 2019 में “बाह्य पोस्ट-टेनशरनंग प्रणारलरों में धाब्त्वक क्ेत्र में हाँइ की पहचान के रलए चुम्कीर फ्क्स लीके ज िकनीकी” नामक शीर्षिक से एक पेपर प्रकाशित किया।

इंफास्ट्रक्शन एवं अभियांत्रिकी प्र. विनोद ए. प्सराद • न्ययूिल प्रणारलरों ि्ा पुनवाषिस अरभरांरत्रकी पि आई.ई.ई.ई. लेनदेन, पीपी(99):1-1,जयून 2019 (संदरभषिि जनरल) में “प्रोग्नोब्स्टक एवं मॉनीटिी ईईजी-बीसीआई अप्ि रलम् आघाि पुनवाषिस हेिु बारोमाक षि सषि” नामक शीर्षिक से एक पेपर प्रकाशित किया।

डॉ. अल्बट्य सन्नी • नेटवक षि एवं सेवा प्रबंधन के जनरल में वर्ष 2019 में “सेलुलि नेटवकषों में एडैपरटव स्टट् ीरमंग टट् ारफक हेिु बाइटटे ट-दृढ़िा का लागयू रकरा जाना” नामक शीर्षिक से एक पेपर प्रकाशित किया।

कम्प्यूटर विज्ञान एवं अभियांत्रिकी कम्प्यूटर विज्ञान एवं अभियांत्रिकी प्र. विनोद ए. प्सराद • न्ययूिल प्रणारलरों ि्ा पुनवाषिस अरभरांरत्रकी पि आई.ई.ई.ई. लेनदेन, पीपी(99):1-1,जयून 2019 (संदरभषिि जनरल) में “प्रोग्नोब्स्टक एवं मॉनीटिी ईईजी-बीसीआई अप्ि रलम् आघाि पुनवाषिस हेिु बारोमाक षि सषि” नामक शीर्षिक से एक पेपर प्रकाशित किया।

डॉ. िॉवबन फरांवसस • आई.ई.ई.ई. सम्पे्ण पत्र के जनरल में वर्ष 2020 में “मैरसव एमआईएमओ में अपरलंक लैटेंसी आधारिि सी-आिएएन, इंटट्ा-पीएचवाई फं कशनल ब्सप्ट सरहि” नामक शीर्षिक से एक पेपर प्रकाशित किया।
डॉ. मोहेश सिंहनाथ परिकर
• जैव-रचरकत्की नवीकरण एवं प्राणायामियों पर आई.ई.ई. िलनेवन में प्रकाशन हेतु लिखित "डाइग्नोस्टिक अल्ट्रासूडाउट संलग्न हेतु एक सिस्टेम लेने रिक्युर्यंगुरेन्द्रित बीम ध्वस्तयोगी" नामक शीर्षक से एक पेपर प्रकाशित किया गया।

डॉ. मानस कुमार जेना
• आई.ई.ई. यौन रचरकत्की एवं वैद्यकीय अचानकण नतियों में वर्त 2019 में "अंडाच्युत में दूरसंचलन एवं स्वाभाविक स्वचालन के लिए नवीनता पाठ्यमुद्र" नामक शीर्षक से एक पेपर प्रकाशित किया गया।

डॉ. श्यामशुला विनायकगती
• प्रौद्योगिकी संस्थान के वर्त 2019 में "एच-वैद्यकीय ध्वस्तयोगी एवं हाइ-संघर भें-भें-भें-भें-अग्रणी तूफान लोकार्क" नामक शीर्षक से एक पेपर प्रकाशित किया गया।

डॉ. दीक्षा गुप्ता
• एस्ट्रोनॉर्मल प्रौद्योगिकी के वर्त 2019 में "राज्य-स्तरीय भौतिक और राज्य-स्तरीय संचलन के संगति से सच्चालित रहरपीडिटन" नामक शीर्षक से एक पेपर प्रकाशित किया गया।

डॉ. लक्ष्मी शंकर
• रेडियो दाखिल एवं अभिलेखिक वैद्यकीय अवधारणा के लिए भ्रमण-संगति जांच-प्ररक्ररा" नामक शीर्षक से एक पेपर प्रकाशित किया गया।
• सामग्री प्रसंस्करण प्रौद्योगिकी के जन्म में वर्ष 2020 में "कीटनाथ मोहन" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• मूडर एवं एनामोनिया बीमारी के जन्म में वर्ष 2020 में "कीटनाथ मोहन" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• ती अमूल्य से के जन्म में वर्ष 2020 में "श्रीविष्णु संगठन" की एक बैठक में रेकिओ-अल स्ट्रेस की जांच करता "नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• वेलेश तथा जॉन्सन के विवाह एवं लीसीमैन के जन्म में वर्ष 2019 में "बीमारी हाइड्रोपिया विकार" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• उपरान्त अनुसंधान के जन्म में वर्ष 2020 में "प्रायोगिक विद्या दोली धार्मिक क्रयाक्रम पर एक अपनी बीमारी बालक रवाना की तथा नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• मुख्य अनुसंधान के जन्म में वर्ष 2019 में "लैक्टिक मिश्रण" की वित्तरण" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• अनुसंधान परिक्षा में अंतरराष्ट्रीय जन्म में वर्ष 2019 में "एक अल्लाम हॉल ड्रामा वाले के रूप में प्रभावित जीवन में एक पेपर प्रकाशित किया गया।
• मापन के जन्म में वर्ष 2019 में "17-4 पीडी स्टेनलस शीटल प्रमाण की मॉडलिंग" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• अनुसंधान अल्मेट्रिकन के जन्म में वर्ष 2019 में "स्पेक्ट्रम इलेक्ट्रॉनिक्स की उपलब्धि" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• अनुसंधान के जन्म में वर्ष 2019 में "कार्बन डायोजनिक एक्सीजन" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• सामग्री अनुसंधान अल्मेट्रिकन के जन्म में वर्ष 2019 में "बीमारी हाइड्रोपिया विकार" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• सामग्री अनुसंधान एक्साक्स के जन्म में वर्ष 2019 में "एक बीमारी जीवन प्रकार के रूप में प्रभावित जीवन में एक पेपर प्रकाशित किया गया।
• सामग्री अनुसंधान एक्साक्स के जन्म में वर्ष 2019 में "एक बीमारी जीवन प्रकार के रूप में प्रभावित जीवन में एक पेपर प्रकाशित किया गया।
• सामग्री अनुसंधान एक्साक्स के जन्म में वर्ष 2019 में "एक बीमारी जीवन प्रकार के रूप में प्रभावित जीवन में एक पेपर प्रकाशित किया गया।
• सामग्री प्रसंस्करण प्रौद्योगिकी के अंतरराष्ट्रीय में प्रगति में वर्ष 2020 में "कीटनाथ मोहन" नामक शैक्षिक से एक पेपर प्रकाशित किया गया।
• डॉ. शंभरकुमार मोहन
  रख बिहार जनवरी 2020 में "सम्बन्धित मोबाइल एप्लिकेशन के प्रभाव का पत्ता लगाने" नामक शीर्षक से एक पेपर प्रकाशित किया गया।

• डॉ. अमित कुमार पांडेय
  उल्लेखित परिशद में कथित जनवरी 2019 में "नेव उपहार का विकास और संचार में योगदान" नामक पत्र किया गया।

• डॉ. पुष्पजीत सिंह
  रिंगर  रिद्यूस्ट ग्लाफ्स ऑक्साइड नैनोकम्पोज्ज्ट रसस्टम" नामक शीर्षक से पेपर प्रकाशित किया गया।
रसायनशास्त्र

• आईटीएफसी एवं बोर्ड के समिति के अन्तर्गत पूर्वोरंगों पि आरोजि एक रद्वसीर िाष्ट् ीर से सुपिामॉरलकुल सेल्फ-असेम्ली समूह का उपरोग किक े  िीन-स्तिीर फ ैरटग असफलिा का अवधािणा रनमाषिण।

• अनुप्रोगों पि आरोजि एक दिशिसय राष्ट्रीय समन्वय में “सुपिामॉरलकुल रसायनशास्त्र विषय से वर्तमान तक” विषय पर आमंत्रित किया।

• विषयसंगठन मेटल का एवं विषय महाविद्यालय को सम्भा्ण हेिु आमंरत्रि सम्भा्ण रकरा।

• फाइनल वार्षिक समिति, जुलाई 2020 को स्थायी समन्वय में “अनुप्रोगों पि आरोजि एक दिशिसय राष्ट्रीय से सुपिामॉरलकुल रसायनशास्त्र विषय से वर्तमान तक” विषय पर आमंत्रित किया।

• राजस्थान अनुसंधान बोर्ड के 99वें वार्षिक बैठक, वारशंगटन डी सी, जुलाई 2020 में “सूचकांक दिशक का एवं विषय महाविद्यालय को सम्भा्ण हेिु आमंरत्रि सम्भा्ण रकरा।

10.2 समोलनें/ कार्यशालाएं/ संगोष्ठियां/ समिनार

रसायनशास्त्र

• आईटीएफसी एवं बोर्ड के समिति के अन्तर्गत पूर्वोरंगों पि आरोजि एक दिशिसय राष्ट्रीय समन्वय में “सुपिामॉरलकुल रसायनशास्त्र विषय से वर्तमान तक” विषय पर आमंत्रित किया।

• विषयसंगठन मेटल का एवं विषय महाविद्यालय को सम्भा्ण हेिु आमंरत्रि सम्भा्ण रकरा।

• फाइनल वार्षिक समिति, जुलाई 2020 को स्थायी समन्वय में “अनुप्रोगों पि आरोजि एक दिशिसय राष्ट्रीय से सुपिामॉरलकुल रसायनशास्त्र विषय से वर्तमान तक” विषय पर आमंत्रित किया।

• राजस्थान अनुसंधान बोर्ड के 99वें वार्षिक बैठक, वारशंगटन डी सी, जुलाई 2020 में “सूचकांक दिशक का एवं विषय महाविद्यालय को सम्भा्ण हेिु आमंरत्रि सम्भा्ण रकरा।
ड. शामिला सिंह
• जलतूम परीक्षण, अनुश्रुतन एवं न्यूरिकेन पर अंतरराष्ट्रीय सम्मेलन 8-10, जनवरी, ग्वालियर, भारत में वर्ष 2020 में "
• विज्ञान, केंद्र, भारत के शासक उम्मीद की (भुवनेश्वर), नियोजक विज्ञान-विज्ञान विषयक सूचना एवं तेलीमेलिंग टेलीफोन उपकरण के उपयोग करते हुए मूलांकन" नाम शीर्षक से एक पेपर प्रकाशित किया गया।

ड. दी. लोप्रिय तुमरा
• अंतरराष्ट्रीय धार्मिक एवं अंतरराष्ट्रीय प्रभाव पर अंतरराष्ट्रीय सम्मेलन की कार्यशालाओं में वर्ष 2019 में "विद्युत की धार्मिक प्रभाव पर कार्यशाला सम्मेलन रुप में आयोजित की गई।

ड. डोमेनिक दुरी
• भारतीय संस्थान तथा आंदोलन के परियोजना के लिए विद्वान विकास समिति द्वारा "आपका नाम" शीर्षक से एक पेपर प्रकाशित किया गया।

ड. दीप्ति राघव
• कम्प्यूटर विज्ञान एवं अभियांत्रिकी
• कॉम्प्यूटर विज्ञान के लिए आयोजित "मिलिटरी डेटा के सारण संचालन एवं शीर्षक स्थान" नामक पेपर प्रकाशित किया।
डॉ. कृतिका रामायणी
• सी.एस.एम.जी.एस.डी.एम.के.पी.आई.टी.वॉल्ट्स के उपरोग का उपरोग किया गया।
• सप्ताहिकों के माध्यम से अल्गोरिथम सदस्य बने।

डॉ. सत्यीत दरास
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. सहेली भद्र
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. कृजििका िरािरािी
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. वििेक चतुिवेदी
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. अरुि िराहुल एस.
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. रकसी खुले सीि रवंरडंग
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. जागरुकिा रवज्ान एवं प्रौद्ोरगकी पि 10वें आई.ई.ई.ई. अंििाषिष्ट् ीर सम्ेलन (आईसीएएसटी 2019), मोरिरोका, इवाटे, जपान, 6-9 अक्टूबर, 2019 में "सैम्पल एंटटो परमाणु रवभेदक ईईजी लक्णों का उपरोग किया।" पेपर प्रकारशि रकरा।

डॉ. अरुि राहुल एस.
• माध्यम से अल्गोरिथम सदस्य बने।
• डी.एस. बॉड के सदस्य बने।

डॉ. जागरुकिा रवज्ान एवं प्रौद्ोरगकी पि 10वें आई.ई.ई.ई. अंििाषिष्ट् ीर सम्ेलन (आईसीएएसटी 2019), मोरिरोका, इवाटे, जपान, 6-9 अक्टूबर, 2019 में "एरिोनॉटीकल सम्पे्ण प्रणाली हेिु एक चक्रीर पयूवषिरोरजि सहाय्य शोि िोबस्ट स्पेक्ट् म" शी्षिक से एक पेपर प्रकारशि रकरा।

डॉ. जागरुकिा रवज्ान एवं प्रौद्ोरगकी पि 10वें आई.ई.ई.ई. अंििाषिष्ट् ीर सम्ेलन (आईसीएएसटी 2019), मोरिरोका, इवाटे, जपान, 6-9 अक्टूबर, 2019 में "एरिोनॉटीकल सम्पे्ण प्रणाली हेिु एक चक्रीर पयूवषिरोरजि सहाय्य शोि िोबस्ट स्पेक्ट् म" शी्षिक से एक पेपर प्रकारशि रकरा।
• पीसीजी कोरम्यू ि, 16 रदसम्ि 2019 में "रडरजटल रसग्नल प्रसंस्िण-भौरिक मॉदल से सांब्ख्की मॉदल िक की रात्रा" पि एक पेपर प्रकाशित किया।
• सीएसआईआि द्ािा प्रारोरजि एक रदवसीर िाष्ट् ीर सेरमनाि, अमृिा अरभरांरत्रकी एवं प्रौद्ोरगकी महारवद्ालर, नागेिकोराल में टीईएनसीओएन 2019, कोच्ची की कारषिवारहरों में "सीईईएमडी एवं वैबलेट रवघटन का उपरोग किक े  आई.ई.ई.ई. वैरश्वक सम्ेलन (ग्ोबल एसआईपी) में व्षि 2019 में "मल्ी मोड सामान्यीक ृि डॉ. िहेश ििींद्रनराथ पन्नीकि
• रसग्नल एवं सयूचना प्रसंस्िण पि आई.ई.ई.ई. वैरश्वक सम्ेलन (ग्ोबल एसआईपी) में व्षि 2019 में "मैरट ट्क्स   पयूणषििा के  माध््यम डॉ. लक्षिी निवसंघि त्यरागिरािन
• वेबसाइट पर िाष्ट् ीर सम्ेलन (एनसीओसेएस-22019), एनआइटी पुडुचेिी में रसिंबि 2019 में प्रमुख वक्ता।
• संचाि प्रणारलरां पि िाष्ट् ीर सम्ेलन (एनसीओसेएस-22019), एनआइटी पुडुचेिी में रसिंबि 2019 में प्रमुख वक्ता।
• रनाम्य रूब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कारषिशाला में "एमओएस-2 मेमरिस्टसषि में इलेक् ट्ो-क ेरमकल अधषिसंचालक रुब्क्तरों के  भौरिक रवज्ान पि 20वें अंििाषिष्ट् ीर कार�
• आईआईटी हैदराबाद, 2019 में रत्रकोणरमरि में बैनक स्पेसेज पि एक संगोष्ी में व्ाख्ान के रलए आमंरत्रि रकरा गरा।
• सेंट बक षिमेंस कॉलेज, चांगनाचेिी में व्षि 2019 में फ ं कशनल रवश्े्ण पि िाष्ट् ीर सेरमनाि-2019 में एक व्ाख्ान के रलए आमंरत्रि रकरा गरा।
• भाििीर प्रौद्ोरगकी संस्ान, नई रदल्ी में व्षि 2019 में रवश्े्ण में पयूणषििा पि कुछ परिणाम पि एक आमंरत्रि व्ाख्ान के रलए आमंरत्रि रकरा गरा।
• प्ो. एस एच कुलकिजी
• एसटीएसीएस 2020 में स्ीकृि "स्ोलेम प्रोबलम के खंडों के रलए रनरि-ऑटिीमल कम्प्ेब्क्सिी बाउंडयुस" शी्षिक से एक पेपि प्रकारशि रकरा।
• भाष्किाचारषि संस्ान पुणे, 2019 में रशक्कों के रलए अनुदेशकात्मक स्यू ल में छः व्ाख्ान (स्वाजषि, लेमा िेमन मैरपंग सी.आि. मिनरािरायिन)
• आईआईटी पालक्ाड में 16 मई 2019 को आरोरजि रवज्ान खोज आवासीर कै म्प में "रलंग एवं रवज्ान" रव्र पि जांच-रक्ररा संिचनात्मक सामरग्रों के रलए एक उच्च दाब गमषि कोिोजन बनाना" शी्षिक से एक पेपि प्रकारशि रकरा।
• सीओपीईएन 11, आईआईटी इंदोि, मध् प्रदेश भािि में व्षि रदसम्ि 2019 में "िागुची रवरध का उपरोग किके रवज्ान अरुंडेंटेशन जनरल मोड्लरंग" शी्षिक से एक पेपि प्रकारशि रकरा।
10.1 RESEARCH PUBLICATIONS/BOOK CHAPTERS/PATENTS

**CHEMISTRY**

**Prof. K. L. Sebastian**

**Dr. Dinesh Jagadeesan**
- Published a paper titled “Water enhanced surface basicity in FeO(OH) for the synthesis of pseudoionones and their analogues” in the Journal of Catalysis in 2019.

**Dr. Debarati Chatterjee**

**Dr. Mintu Porel**

**Dr. Padmesh A.**
- Published a paper titled “Folding-Unfolding Dynamics of pH-Assisted Structures of S-Peptide” in the journal of ChemistrySelect in 2020.

**Dr. Shanmugaraju Sankarasekaran**
- Published a paper titled “Turn-on” fluorescence sensing of volatile organic compounds using a 4-amino-1,8-naphthalimide επερ’s base functionalized triazine organic polymer” in the journal of Chemical Communication in 2019.
• Published a paper titled “Aggregation induced emission (AIE) active 4-amino-1, 8-naphthalimide-Trogers base luminogen for discriminative sensing of nitroaromatic explosives in aqueous media” in the journal of Chemical Communication in 2020.

CIVIL ENGINEERING

Dr. Athira P.
• Published a paper titled “Long-Term Changes in Climatic Variables over the Bharathapuzha River Basin, Kerala, India” in the Journal of Theoretical and Applied Climatology in 2020.

Prof. Tom V. Mathew
• Published a paper titled “Estimation of traffic conflicts using precise lateral position and width of vehicles for safety assessment” in the journal of Accident Analysis & Prevention 2019.
• Published a paper titled “Modelling multi-class disordered traffic streams using traversable distance: a concept analogous to fluid permeability” in the journal of Transportmetrica A: Transport Science in 2020. (accepted)

Dr. B. K. Bhavathrathan
• Published a paper titled “Identifying critical links on disruption-prone road networks: an approach that obviates scenario enumeration” in the journal of Current Science in 2020.
• Published a paper titled “Perceived level of service at signalized intersections under heterogeneous traffic conditions” in the journal of Transportmetrica A: Transport Science in 2020.

Dr. C. V. Veena Venuadharan
• Published a paper titled “Rutting performance of asphalt-rubber gap-graded mixtures: evaluation through statistical and reliability approaches ” in the journal of Road Materials and Pavement Design in 2019.
• Published a paper titled “Investigation on Rutting Performance of Gap-Graded Asphalt Mixtures: Study on Aggregate Gradation” in Transportation Research in 2020.
• Published a paper titled “Conceptualization of Three-Stage Fatigue Failure in Asphalt-Rubber Gap-graded Mixtures using Dynamic Semi-Circular Bending Test ” in Transportation Research Record in 2020.

Dr. Divya P. V.
• Published a paper titled “Influence of fiber morphology on the integrity of geofoam reinforced soil barriers” in the Journal of Geosynthetic International (2020).
• Published a paper titled “Deformation behaviour of reinforced soil slopes subjected to rainfall induced subsidence” in Laterites and Lateritic Soils, ISSMGE, 87-94 (2019)

Dr. M. V. Anil Kumar
• Published a paper titled “Unstiffened Elements as Limiting Case of Distortional Buckling of Partially Stiffened Elements” in the Journal of Structural Engineering (ASCE) in 2020 (Accepted)

Dr. Rakesh J. Pillai
• Published a paper titled “Permanent deformation behaviour of black cotton soil treated with calcium carbide residue” in the Journal of Construction and Building Materials in 2019.

Dr. Sarmistha Singh

Dr. Senthilkumar V.

Dr. Subhasis Mitra
• Published a paper titled “A Comprehensive Drought Assessment Tool for Coastal Areas, Bays and Estuaries: Development of a Coastal Drought Index” in the Journal of Hydrologic Engineering in 2020. (accepted)

Dr. Madhu Karthik M.

Dr. Sunita K. Nayar
COMPUTER SCIENCE & ENGINEERING

Dr. Albert Sunny

Dr. Jasine Babu
- Published a paper titled “An Improvement to Chvátal and Thomassen’s Upper Bound for Oriented Diameter” in the Proceedings of CSR 2020, Springer Lecture Notes in Computer Science.

Dr. Krithika Ramaswamy
- Published a paper titled “Graph Hamiltonicity Parameterized by Proper Interval Deletion Set” in the 14th Latin American Symposium on Theoretical Informatics, in 2020.

Dr. Sahely Bhadra
- Published a paper titled “Multi-View Data Completion” in the Journal of Springer in 2019.

Dr. Satyajit Das

Dr. Vivek Chaturvedi

ELECTRICAL ENGINEERING

Prof. Vinod A. Prasad

Dr. Jobin Francis

Dr. Mahesh Raveendranatha Panicker
- Published a paper titled “Towards A Pixel-Level Reconfigurable Digital Beamforming Core for Diagnostic Ultrasound Imaging” accepted for publication in IEEE Transactions on Biomedical Circuits and Systems.

Dr. Manas Kumar Jena
- Published a paper titled “Decentralised wide-area back-up protection scheme based on the concept of centre of reactive power” in the journal of IET Generation, Transmission & Distribution in 2019.

Dr. Shaikshavali Chitrangan
- Published a paper titled “Event based estimation with correlated noises” in the Journal of the Franklin Institute, in 2019.
- Published a paper titled “Event-based state estimation with multiplicative measurement noise and correlated additive noises” in IEEE Control System Letters in 2020.

Dr. Subrahmaniam Mula

Dr. Sukomal Dey
- Published a paper titled “RF MEMS Switches, Switching Networks and Phase Shifters for Microwave to Millimeter Wave Applications” in Springer Journal of Micro and Smart Systems in 2020.
- Published a paper titled “77 GHz Polarization Agile MEMS Antenna” in the Journal of Wiley Microwave and Optical Technology Letter (MOTL) in 2020.

Dr. Swaroop Sahoo

Dr. Vijay Muralidharan
- Published a paper titled “Rendezvous and Attitude Synchronization of a Space Manipulator” in the Journal of the Astronautical Sciences in 2019.
- Published a paper titled “Concurrent Rendezvous Control of Underactuated Space Manipulators” in the Journal of Guidance, Control, and Dynamics in 2019.
HUMANITIES
Dr. Amrita Roy
• Accepted for publication a paper titled “Structural Change and Labour Productivity Trend in the Non-Agricultural Sector: A Study of Asia” in the Journal of the European Journal of Comparative Economics in 2019.

Dr. Anoop George
• Published a paper titled “The Technology driven modern world and Gandhi” in the book Gandhi In Contemporary Times 2020.

MATHEMATICS
Dr. C. R. Jayanarayanan
• Published a paper titled “Characterization of strong ball proximinality in $L_1$-predual spaces” in the Journal of Convex Analysis in 2019.
• Published a paper titled “Ideal Operators and Relative Godun Sets” in the journal of Extracta Mathematicae in 2019.

Dr. G. P. Balakumar

Dr. Jaikrishnan Janardhanan
• Published a paper titled “Schwarz Lemmas via the Pluricomplex Green’s Function” in The Journal of Geometric Analysis in 2019.
• Published a paper titled “A 1-point poly-quadrature domain of order 1 not biholomorphic to a complete circular domain” in the journal of Analysis and Mathematical Physics in 2019.
• Published a paper titled “A note on the smoothness of the Minkowski function” in the journal of Complex Variables and Elliptic Equations, 2020.

Dr. Lakshmi Sankar K.
• Published a paper titled “Singular semilinear elliptic problems with asymptotically linear reaction terms” in the Journal of Mathematical Analysis and Applications in 2019.

Dr. M. Ashok Kumar
• Published a paper titled “Composite Tests under Corrupted Data” in the journal of Entropy in 2019.
• Published a paper titled Cram\'er-Rao Lower Bounds Arising from Generalized Csiszár Divergences” in the journal of Information Geometry in 2020.

Dr. Parangama Sarkar
• Published a paper titled “Mixed multiplicities of filtrations” in the journal Trans. Amer. Math. Soc. in 2019.

Prof. S. H. Kulkarni
• Published a paper titled “Absolutely minimum attaining closed operators” in The Journal of Analysis in 2019.
• Published a paper titled “Continuity of $\{n, \epsilonISON\}S$ Pseudospectrum in Banach algebras” in the journal Integral Equations and Operator Theory in 2019.
• Published a paper entitled “ Spectrum and related sets: a survey” in the Journal of Analysis in 2019.
• Published a paper titled “ Decomposition of the $\{n, \epsilonISON\}S$-pseudospectrum of an element of a Banach algebra” in the journal of Advances in Operator Theory in 2019.
• Published a paper titled “ Shift invariant spaces in $\mathbb{R}^2$((\mathbb{R}), ymathbb(C))=m\$ with $m\$ generators” in the Journal of Analysis in 2020.
• Published a paper titled “Condition pseudospectral radius of bounded linear operators” in the journal of Linear and Multilinear Algebra 2020.

MECHANICAL ENGINEERING
Dr. Afzaal Ahmed
• Published a paper titled “Ultrafast drilling of Inconel 718 using hybrid EDM with different electrode materials” in The International Journal of Advanced Manufacturing Technology in 2019.
• Published a paper titled A novel approach in high performance deep hole drilling of Inconel” in the journal of Precision Engineering.
• Published a paper titled “Investigation of the specific cutting energy and its effect in shearing dominant precision micro cutting” in the journal of Materials Processing Technology in 2020.
• Published a paper titled Wire electrical discharge polishing of additive manufactured metallic components” in the Procedia CIRP in 2020.

Dr. Anand T. N. C.
• Published a paper titled “Estimation of measurement error and depth of field in PDIA experiments: a comparative study using water droplets and a calibration target” in the journal of Measurement Science and Technology in 2020.

Dr. Buchhabu Vicharapu
• Published a paper titled “ Probing residual stresses in stationary shoulder friction stir welding,” in the journal of International Journal of Advanced Manufacturing Technology in 2019.
• Published a paper titled “Material flow during friction hydro-pillar processing,” in the Journal of Science and Technology of Welding and Joining in 2019.
Dr. D. Chakradhar
- Published a paper titled “The Effectiveness of a Novel Cryogenic Cooling Approach on Turning Performance Characteristics During Machining of 17-4 PH Stainless Steel Material” in the journal of Silicon in 2019.
- Published a paper titled “Effect of working parameters on the surface integrity in cryogenic diamond burning of 17-4 PH stainless steel with a novel diamond burnishing tool” in the journal of Manufacturing Processes in 2019.
- Published a paper titled “Sustainable diamond burnishing of 17-4 PH stainless steel for enhanced surface integrity and product performance by using a novel modified tool” in the journal of Materials Research Express in 2019.

Dr. S. Kanmani Subbu

Dr. Ganesh Natarajan
- Published a paper titled “Comment on “Modifications to the gradient schemes on unstructured cell centered grids for the accurate determination of gradients near conductivity changes” in the journal of Fluids in 2019.
- Published a paper titled “A computational analysis of the role of particle diameter on the fluidization behavior in a bubbling gas-solid fluidized bed” in the Journal of Computational Particle Mechanics in 2019.

Dr. K. V. N. Surendra

Dr. S. Kamani Subbu
- Published a paper titled “FEA-Based Electrothermal Modeling of a Die-Sinker Electro Discharge Machining (EDM) of an Aluminum Alloy AA6061 in Numerical Optimization in Engineering and Sciences in 2020.
- Published a paper titled “FEA of Electrical Discharge Machining on the Particle Metal Matrix Composite” in Advances in Simulation, Product Design and Development in 2020.
- Published a paper titled “Post-processing of laser additive manufactured Inconel 718 using laser shock peening in International Journal of Precision Engineering and Manufacturing in 2019.

Dr. Samarjeet Chanda

Dr. Santhakumar Mohan
- Published a paper titled “A Simplified Motion Control of a Vehicle Manipulator for the Coordinated Mobile Manipulation” in Defence Science Journal in 2020.
- Published a paper titled “Actuator fault-tolerant control study of an underwater robot with four rotatable thrusters” in the journal of Ocean Engineering in 2020.
- Published a paper titled “Conceptual design of a hybrid propulsion underwater robotic vehicle with different propulsion systems for ocean observations” in the journal of Ocean Engineering in 2019.
- Published a paper titled “Behavioral Fault Tolerant Control of an Omni Directional Mobile Robot with Four Mecanum Wheels” in Defence Science Journal in 2019.
- Published a paper titled “Disturbance observer-assisted hybrid control for autonomous manipulation in a robotic backhoe” in Archive of Mechanical Engineering in 2019.

Book Chapters
Dr. Sovan Lal Das
- Published a paper titled “Transition from curvature sensing to generation in a vesicle driven by protein binding strength and membrane tension” in the journal of Soft Matter in 2019.

PHYSICS

Prof. P. B. Sunil Kumar

Dr. Amit Kumar Pal
- Published a paper titled “Necessarily transient quantum refrigerator” in the journal of Europhysics Letters in 2019.
- Published a paper titled “Uniform decoherence effect on localizable entanglement in random multiqubit pure states” in the journal of Physical Review A in 2020.
- Published a paper titled “Scalable characterization of localizable entanglement in noisy topological quantum codes” in the New Journal of Physics in 2020.

Dr. Jayakumar Balakrishnan
- Published a paper titled “Structural and resistive switching behaviour in Lanthanum strontium manganite - Reduced graphene oxide nanocomposite system” in the journal of Journal of Alloys and Compounds in 2019.

Dr. Kusum Dhochak
- Published a paper titled “Interplay of uniform U(1) quantum spin liquid and magnetic phases in rare-earth pyrochlore magnets: A fermionic parton approach” in the journal of PHYSICAL REVIEW B in 2019.

Dr. Prithvi Narayan P.

Dr. Projijwal Banerjee

Dr. Uma Divakaran

CHEMISTRY

Dr. Dinesh Jagadeesan
- Delivered a Remote Area Lecture sponsored by INSA New Delhi at Government Tribal Residential High School, Kargudi, Mudumalai Tiger Reserve, Tamil Nadu on November 22, 2019.

Dr. Debarati Chatterjee
- Invited for a talk at International Conference on Frontiers in Chemical Sciences (ICFCS 2020), Department of Applied Chemistry, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu.
- Invited for a talk at International Conference on Functional Materials (ICFM2020), Materials Science Center, IIT Kharagpur, India, 6th - 8th Jan 2020.

Dr. Sushabhan Sadhukhan
- Presentation on Understanding the Mechanism of Action of (–)-Epigallocatechin-3-gallate (EGCG), A Major Green Tea Polyphenol on Advances at the Interface of Biology & Chemistry, BARC, Mumbai, India, Nov 1-3, 2019.

Dr. Shanmugaraju Sankarasekaran
- Delivered an invited talk on “Chemistry of 4-Amino-1,8-Naphthalimide Trogers base Supramolecular Scaffolds” in a one-day international conference on Frontier Areas of Chemistry held at The American School, Kargudi, Mudumalai Tiger Reserve, Tamil Nadu.
- Delivered an invited talk on “Coordination-Driven Self-Assembly of Supramolecular Complexes: From Design to Applications” in a National Conference on Recent Trends in Chemistry of Materials (NCRCTCM) held at Banarsi Amman Institute of Technology, Sathyamangalam on 12th October 2019.
- Delivered an invited talk on “Supramolecular Chemistry: From the past to present” in a one-day national conference on Applications of Green Chemistry and Its Applications held at Sri Ramakrishna College of Arts and Science, Coimbatore on 30th January 2020.
- Delivered an invited talk on “Supramolecular Chemistry: From the past to present” in a one-day national seminar on Frontiers in Chemistry and Its Applications held at Vivekanandha Arts and Science College for Women, Sankari, Erode on 07th February 2020.
• Delivered an invited talk on “Supramolecular Chemistry: Where From? Where to?” in a one-day national seminar on Recent Trends in Chemistry held at Fatima College, Madurai on 19th February 2020.
• Delivered an invited talk on “Recent Advances in the development of 4-Amino-1,8-Naphthalimide Troge base Based Supramolecular Structures and Materials” in a Two-day national seminar on Current Scenario of Medicinal NanoChemistry in Target Drug Design held at Kongunadu Arts and Science College, Coimbatore on 26th February 2020.
• Delivered an invited talk on “Surprising ‘Twist And Turns’ In Supramolecular Self-Assembly Formations of Novel Structures and Materials” in a Two-day international conference on Frontiers in Chemical Sciences held at Karunya Institute of Technology and Sciences, Coimbatore on 05th March 2020.

CIVIL ENGINEERING
Dr. Athira P.
• Published a paper titled “Long Term Trend in Climate Variables over Bharathapuzha Catchment, Kerala, India, Kerala, India” in the 8th Asia Pacific Association of Hydrology and Water Resources (APHW) International Conference IIT Roorkee (22-23 November) 2019.
• Published a paper titled “A Comparative Study on Different Calibration Approaches for Streamflow Prediction in Swat Model ” in the 17th Annual Meeting of Asia Oceania Geosciences Society HS-02 in 2020.

Prof. Tom V. Mathew

Dr. B. K. Bhavathrathan
• Presented a paper titled “Traffic Rerouting to Maximize Structural Reliability”, at the Second ASCE India Conference on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies, Kolkata, March 2-4, 2020
• Presented a paper titled Modeling Freight in SimMobility, A Multi-scale Agent-based Urban Simulation Platform”, at the World Conference on Transportation Research, June 2019, Mumbai.
• Presented a paper titled “SimMobility Freight: An innovation framework for agent-based urban freight modelling at the 26th ITS World Congress, Singapore, 21-25 October 2019

Dr. C. V. Veena Venudharan

Dr. Divya P. V.
• Published a paper titled “Geosynthetic reinforced soil walls with construction and demolition waste backfill” in the International Symposium on Recent Advances in Sustainable Geotechnics (2019)
• Published a paper titled “Performance of Geosynthetic Reinforced Steep Soil Slopes at the onset of Rainfall Infiltration” in the Proceedings of Indian Geotechnical Conference (2019).

• Published a paper titled “Geosynthetic filters to Prevent Soil Piping and Internal Erosion” in Laterites and Lateritic Soils, ISSMGE, 95-104 (2019)
• Published a paper titled “Behaviour of Geosynthetic Encased Crushed Concrete Debris Columns” in the Proceedings of Geosynthetics 2019, TX USA (2019)
• Published a paper titled “Mechanically stabilized earth structures with alternate backfills for highway structures” in the Proceedings of International Conference on Geoenvironment and Sustainability 229-236 (2020)

Dr. M. V. Anil Kumar

Dr. Madhu Karthik M.
• Published a paper titled “Influence of Concrete Fill on the Buckling Characteristics of Slender Circular Steel Tubes” in the 7th International Congress on Computational Mechanics and Simulation 2019.

Dr. Praveena Gangadharan
• Presented a paper titled“Wastewater treatment using E-Waste” at the ‘E-WASTE World Conference & Expo’, held at Frankfurt, Germany on 14th to 15th November 2019.
• Attended a workshop, titled “Upscaling and field-scale application of bio-electrochemical systems for wastewater treatment and bioenergy recovery” on February 26-27, 2020 at Indian Institute of Technology Kharagpur.

Dr. Rakesh J. Pillai
• Published a paper titled “Geopolymer stabilization of soft clays - an emerging technique” in the Proceedings of Indian Geotechnical Conference in 2019.

Dr. Sanjukta Chakraborty
• Published a paper titled “Component Response of Base Isolated Structure under Seismic Excitation” in the17th World Conference on Earthquake Engineering (17WCEE) in 2020. (paper accepted)

Dr. Sarmistha Singh
• Published a paper titled “Assessment of urban heat islands (UHI) of Thrissur city, Kerala, India using remote sensing geospatial techniques and multi-temporal satellite data” in the International Conference on Climate change: Adaptation and Mitigation, Jan 8-10, Thrissur, Kerala, India in 2020.
Dr. V. Senthilkumar
• Published a paper titled “Investigation of Project Delivery Risks in Public-Private-Partnership (PPP) Infrastructure Projects in UAE” in the Proceedings of ASET 2020, held at Dubai.
• Published a paper titled “Centralized Versus Decentralized Sewage Treatment Plant in a Metropolitan City” in the Proceedings of the International Conference on Industrial Engineering and Operations Management, © IIEOM Society International in 2020.

Dr. Subhashis T. K.
• Published a paper titled “Improving Short to Medium Range Precipitation Forecasts in India using Analog Approach” in the International Conference on Ensemble Methods in Modelling and Data Assimilation, National Centre for Medium Range Weather Forecasting (NCMRWF) in 2020.

Dr. Sudheesh T. K.
• Published a paper titled “Numerical Analysis of Hybrid Back-to-Back MSE Wall with Select and Marginal Backfill.” in the 7th Indian Young Geotechnical Engineers Conference in 2019.

COMPUTER SCIENCE & ENGINEERING

Dr. Deepak Rajendraprasad
• Published a paper titled “On Graphs with Minimal Eternal Vertex Cover Number” in the Journal of Springer Lecture Notes in Computer Science, Proceedings of CALDAM in 2019.
• Published a paper titled “An Improvement to Chvátal and Thomassen’s Upper Bound for Oriented Diameter” in the Proceedings of CSR 2020, Springer Lecture Notes in Computer Science (2020).
• Published a paper titled “Oriented Diameter of Star Graphs” in the Proceedings of CALDAM 2020.

Dr. Albert Sunny
• Published a paper titled “Dynamic DASH Aware Scheduling in Cellular Networks” in the Proceedings of IEEE Wireless Communications and Networking Conference (WCNC) in 2019.

Dr. Krithika Ramaswamy
• Participated in the Summer School on Algorithmic Tractability via Sparsifiers, Leh, Ladakh, 2019.

Dr. Sahely Bhadra
• Published a paper titled “Large-Scale Sparse Kernel Canonical Correlation Analysis” in the Proceedings of the 36th International Conference on Machine Learning(ICML) in 2019.

Dr. Sandeep Chandran
• Published a paper titled “Reusing Design-for-Debug Hardware for Online Monitoring” in IEEE/ACM Design Automation Conference (DAC), Las Vegas, USA in 2019.
• Technical Program Committee member and Session Chair for VLSID 2019
• Technical Program Committee member for HiPC 2019
• Technical Program Committee member for VLSID 2020

Dr. Satyajit Das

Dr. Unnikrishnan Cheramangalath
• Published a paper titled “Custom Code Generation for a Graph DSL” in the GPGPU ’20: Proceedings of the 13th Annual Workshop on General Purpose Processing using Graphics Processing Unit.

Dr. Vivek Chaturvedi
• Technical Program Committee member for International Symposium on VLSI (ISVLSI) 2019.
• Technical Program Committee member for International Symposium on VLSI (ISVLSI, 2020).
• Technical Program Committee member for International Conference on VLSI Design (VLSID 2020)
• Senior Editor in the Editorial Board of ACM Ubiquity Magazine. ACM Ubiquity is a peer-reviewed web-based magazine devoted to the future of Computing.

ELECTRICAL ENGINEERING

Prof. Vinod A. Prasad
• Published a paper titled “Name Familiarity Detection using EEG-based Brain Computer Interface,” in the IEEE International Technical Conference of Region 10 (TENCON), Kochi, India, in 2019. (Refereed International Conferences)
• Published a paper titled “EEG Based Sleep-Awake Classification Using Sample Entropy and Band Power Ratio,” in the IEEE International Technical Conference of Region 10 (TENCON). (Refereed International Conferences)
• Published a paper titled “Classification of Motor Imagery Hand Movement Directions from EEG extracted Phase Locking Value features for Brain Computer Interfaces in the IEEE International Technical Conference of Region 10 (TENCON), Kochi, India, 2019. (Referred International Conference)
• Published a paper titled “Utilizing Subject-Specific Discriminative EEG Features for Classification of Motor Imagery Directions” in the 10th IEEE International Conference on Awareness Science and Technology (iCAST) 2019, Morioka, Iwate, Japan, 2019. (Referred International Conference)
• Published a paper titled “New Channel Selection Method using Autoencoder for Motor Imagery based Brain Computer Interface” in the IEEE International Conference on Systems, Man, and Cybernetics, Bari, Italy, 6 - 9 October 2019. (Referred International Conferences)

Dr. Arun Rahul S.
• Published a paper titled “Carrier Based Hybrid Modulation Scheme for Dual Inverter Fed Induction Motor Drive with Reduced Switching Loss” in IEEE National Power Electronics Conference (NPEC), 2019
• Published a paper titled “A Novel Predictive Control for an Active Front End Rectifier using Lyapunov Stability Criteria”, IECON 2019 - 45th Annual Conference of the IEEE Industrial Electronics Society
• Published a paper titled “Constant Switching Frequency Virtual Vector Based Predictive Control of a Three-Level Flying Capacitor Active Front End Converter”, TENCON 2019 - 2019 IEEE Region 10 Conference.
• Published a paper titled “Evaluation of Modulation Methods on Switching Loss, Common Mode Voltage and Current Ripple for an Open End Winding Induction Motor Drive” in the IEEE International Conference on Sustainable Energy Technologies and Systems in 2019.

Dr. Arvind Ajoy

Dr. Jobin Francis
• Published a paper titled “Packet Loss in Latency-constrained Ethernet-based Packetized C-RAN Fronthaul” in the proceedings of IEEE PIMRC in 2019.
• Published a paper titled “Energy Efficiency Maximization in Massive MIMO-aided, Fronthaul-constrained C-RAN” in the proceedings of IEEE PIMRC in 2019.
• Published a paper titled “Downlink Power Control in Cell-free Massive MIMO with Partially Distributed Access Points” in the proceedings of IEEE VTC-Fall in 2019.

Dr. Lakshmi Narasimhan Theagarajan
• Published a paper titled “Multi-Mode Generalized Space-Time Index Modulation: A High-Rate Index Modulation Scheme for MIMO-ISI Channels” in IEEE Global Conference on Signal and Information Processing (GlobalSIP) in 2019.
• Published a paper titled “Constructing Index Codes with Coded Demands and Side Information through Matrix Completion” in IEEE Global Conference on Signal and Information Processing (GlobalSIP) in 2019.

Dr. Manas Kumar Jena
• Invited for a talk on “Wide area monitoring, protection and control in future smart grid”, CSIR sponsored one day national seminar, Amrita College of Engineering and Technology, Nagercoil.

Dr. Revathy Padmanabhan

Dr. Sukomal Dey
• Published a paper titled “A Chip-Scale Frequency Down-Conversion Realized by MEMS-Based Mixler and Local Oscillator” in International Conference on Smart Sensors – 2019, Hsinchu, Taiwan in 2019.
• Published a paper titled “Broadband, Reliable and Compact Lateral MEMS SPAT and SPPT Switching Networks for 5G Applications” in IEEE MTT-S International Microwave and RF conference, Bombay, India in 2019.
Dr. Swaroop Sahoo
• Published a paper titled “Robust beamforming for X-band phased array weather radar” in the Proceedings of APRASC 2019.
• Published a paper titled “Estimation of Specific Differential Phase in Melting Layer from C-Band Radar Measurements during the RELAMPAGO Experiment” in the Proceedings of URSI GASS 2020.

Dr. Shaikshavali Chitraganti
• Invited talk on “Event triggered state estimation with multiplicative noise: an optimization perspective” for TEQIP workshop on Data science and optimization in System and Control, IIT Guwahati, September, 2019.

HUMANITIES
Dr. Amrita Roy

Dr. Reenu Punnoose
• Paper presented “Effects of Gender and School Type on Rhoticity in Urban Indian English” at the 24th Conference of the International Association of World Englishes, University of Limerick, Ireland in 2019.
• A talk at the Science Quest Residential Science Camp held at IIT Palakkad on 16 May 2019.

Dr. Anoop George
• “Imagining the Social self: A Philosophical Narrative” an inaugural address delivered on the Inauguration of Social Sciences Forum at the Maharaja’s college, Ernakulam on 03rd December 2019.
• “Professional Ethics”, a lecture delivered at the Department of Mechanical Engineering, NSS College of Engineering, Akathethara, Palakkad on or 22nd January 2020. Organised by the Institution of Engineers (India).

Dr. G. Sujatha
• A talk on “Gender and Science” in the Science Quest Residential camp held at IIT Palakkad on 16 May 2019.
• A talk on “Gender and STEM” in the First Year Orientation programme, held at IIT Palakkad, on 1 August 2019.
• An oration on “Mahatma Gandhi” as part of Gandhi Jayanthi celebrations, held at IIT Palakkad, on 9 October 2019.

MATHEMATICS
C. R. Jayanarayanan
• Invited to deliver a lecture at International Conference on Algebra, Analysis and Their Applications, School of Mathematics, Madurai Kamaraj University, 2020.
• Invited to deliver a lecture at 11th Refresher Course in Mathematical science, organized by the UGC-HRDC, University of Calicut at UGC-Human Resource Development Centre (HRDC), Calicut University campus, University of Calicut, 2019.
• Invited to deliver a lecture at National Seminar on Functional analysis -2019, St Berchmans College Changanacherry, 2019.
• Invited to deliver a Symposium on Geometry of Banach spaces, IIT Hyderabad, 2019.
• Invited to deliver a lecture at Training & Faculty Development in Advanced Mathematics (TFDAM 2019) organized by Centre for Advanced Research in Applied Mathematics and Statistics (CARMS), Manipal Academy of Higher Education, Manipal, 2019.

Dr. G.P. Balakumar
• Six lectures (Schwarz Lemma, Riemann Mapping theorem and the Monodromy theorem) at the Instructional School for Teachers at Bhaskaracharya Pratishthana Pune, 2019
• Talk titled ‘Remarks on the higher dimensional Suita conjecture’, at ICTS Bangalore in 2019.

Dr. Rohith Varma
• Published a paper titled “Near-optimal complexity bounds for fragments of the Skolem Problem” accepted in STACS 2020.

Prof. S. H. Kulkarni
• Invited to deliver a lecture at National Seminar on Functional analysis -2019, St Berchmans College Changanacherry, 2019.
• Delivered an invited lecture on “Some consequences of completeness in Analysis” at the Indian Institute of Technology Delhi in 2020.

Dr. Sarath Sasi
• Invited talk at National Seminar on ‘Topology and Analysis’, Department of Mathematics, University of Calicut, 8th and 9th May 2019.
• Talk at the workshop KSoM - Talent Nurture Programme at Kerala School of Mathematics, May 13, 2019.
• Resource person for the Advanced Instructional School on Geometric Measure Theory & PDEs, IIT Madras 12-15, June, 2019.

MECHANICAL ENGINEERING
Dr. D. Kesavan
• Published a paper titled “Fracture toughness of AlSi10Mg parts produced through Selective Laser Melting” in the NMD AT, Trivandrum, 2019.
• Published a paper titled “Effect of Shot Peening on Rolling Contact Fatigue Life of EN 31Steel using a Two Disc Test Rig” in the NMD AT, Trivandrum, 2019.
• Published a paper titled “Effect of heat treatment on high cycle fatigue behavior of Inconel 718 processed by selective laser melting ” in the 6th Asian Conference on Heat Treatment and Surface Engineering, Chennai, 2020.
Dr. Krishna Sesha Giri
- Published a paper titled “Development of a high-pressure hot corrosion burner rig for testing structural materials following long exposures to Arabian Extra Light crude oil combustion products” in ASME TurboExpo Proceedings in 2019.

Dr. K. V. N. Surendra
- Published a paper titled “Contact stress analysis of a heavy annulus pulley of transmission system” in the 4th Indian Conference on Applied Mechanics (INCAM-2019) Poster IISc, Bangalore (2019)
- Published a paper titled “Finite element analyses of a centre cracked heavy rotating pulley” in 1st Int. Conf. on Mechanical Power Transmission (ICMPT-2019) IIT Madras (2019)
- Published a paper titled “Stress Analysis of a Brake Drum under different contact conditions” in IndiaTrib international conference IISc Bangalore, 2019

Dr. S. Kammani Subbu
- Published a paper titled “Experimental investigation and mathematical modelling for material removal and tool wear in making of rectangular channels by Electric Discharge Machining (EDM) on Aluminium-Boron carbide composite sintered preform” in the 1st International Conference on Applied Mechanical Engineering Research 2019, NIT Warangal.
- Published a paper titled “FEA based electro-thermal modeling of die-sinker Electro Discharge Machining (EDM) of aluminum alloy, NOIEAS-2019” in the 1st International Conference on Numerical Optimization In Engineering And Sciences 2019, NIT Warangal.
- Published a paper titled “Investigation on Mechanical Properties and coefficient of Friction of Aluminium reinforced PLA composites fabricated using FDM” in the OPEN 11, IIT Indore, Madhya Pradesh, India December in 2019.
- Published a paper titled “Optimization of Process Parameters in WEDM for Micro Channel Machining using Taguchi Method” in the OPEN 11, IIT Indore, Madhya Pradesh, India December in 2019.
- Co-chaired technical session in the OPEN 11, IIT Indore, Madhya Pradesh, India December in 2019.

Dr. Santhakumar Mohan
- Published a paper titled “Implementation of a robust motion control scheme for an Ostraciiform inspired underwater robot with caudal and pectoral fins” in the Joint 12th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles 1st IFAC Workshop on Robot Control, (Joint CAMS and WROCO 2019).

Dr. Sovan Lal Das
- Co-Chaired Session on Surfactants and Membranes in CompFlu2019 IISER, Bhopal, India.

Dr. Bibhu Ranjan Sarangi
- A talk -University of Kerala, Kariavattom Campus, Trivandrum, 2019
- A talk - omFlu2019, IISER Bhopal, Bhopal, Dec 05 - 07, 2019
- A talk -Phenotypic Heterogeneity as a Driver of Cancer Progression, Indian Institute of Science (IISc), Bangalore, 2020.

Dr. Soham Manni

Dr. Jayakumar Balakrishnan
- Invited Talk: International Conference on Theoretical and Experimental Physics, ICTEP 2020, Farook College (February 2020)
- Inaugural Lecture: Sasthрапadham , Social Science Enrichment Residential Camp, Samagra Shiksha, Kerala and Directorate of Collegiate Education and Department of General Education, Kerala - at Victoria College Palakkad (January 2020)
- Invited Talk: National Conference on Optoelectronic and Nano Materials for Advanced Technology (nCONMAT -2020) atCUSAT, Kochi (January 2020)
- All India Radio (Akashvani) Thrissur - Prabhashnam on Eminent Indian Scientists (October 2019)

Dr. Prithivi Narayan P.

Dr. Amit Kumar Pal
- Talk titled “Robustness of Topological Quantum Codes: Perspectives of a Many-Body Theorist” at Harish-Chandra Research Institute, Prayagraj, on December 11, 2019.
- Attended the Consultative Meeting on National Mission on Quantum Technology & Applications (NM-QTA) planned by DST at IISER Thiruvananthapuram on Nov 5th and 6th, 2019.

Dr. Projwual Benerjee
- Invited talk, “Synthesis of Elements in Core-Collapse Supernovae,” Celebration of 150 years of Periodic Table: Chemical elements in the Universe, IIA Bengaluru, 12/2019
आधारभूत संरचना

INFRASTRUCTURE

नीला स्थित समघाट

500 व्यक्तियों के बैठने की क्षमता के साथ इस संस्थान के समघाट का निर्माण अंतरराष्ट्रीय मानकों को पूरा करते हुए किया गया है, संस्थान में स्थानीय अंसारों के साथ इस संस्थान का समघाट के साथ सहभागी भावना आती है। संस्थान में दसों अंशों के समान, इस भवन द्वारा भी छात्रों के स्थलों की श्रेणी में संस्थान का समघाट करने के लिए तैयार है। सार्वजनिक वहीं-विजुअल उपकरण एवं डिजिटल प्रोजेक्टन प्रणाली से सुरक्षित रखने के लिए प्रस्तावित इस संस्थान का समघाट अंतरराष्ट्रीय मानकों के दौरान कई महत्वपूर्ण कार्यक्रमों का संचालन होगा। इस संस्थान की इंजीनियर-विभाग सुरक्षित बनाने के लिए दसों अंशों के साथ संस्थान का समघाट करने का प्रस्ताव है, जिससे केवलए एवं वास्तविक न्याय-विरोधी समूहों में निर्माता बने सभी कार्यक्रमों में समां बनाकर छात्रों के साथ तथा संयुक्त रूप से रखने में सहयोग मिलेगी।

A glimpse of our Nila and the Permanent campus site in the making

Auditorium at Nila

The Institute Auditorium with a seating capacity of 500 is constructed meeting international standards. Like everything else at the Institute, this facility also shows the commitment to provide students with the best in class facilities. Proposed to be equipped with full-fledged Audio-Visual equipment and a digital projection system, the institute auditorium is to stage numerous important programmes throughout the year. It is also proposed to be well equipped with indoor badminton facilities which would keep the students healthy and fit by enabling them to regularly participate in sports and recreational physical activities.
Permanen Campus Development

The road that would pave the way for development of campus and the site office for construction has been completed. The Total length of the road constructed is 4.8 km. The campus will have many water bodies and natural streams lined with selected species of trees to make the space environment friendly and sustainable.

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Construction of Permanent Campus under Phase 1A

The Construction of Permanent Campus under Phase 1A has been awarded to M/s. Shapoorji Pallonji and Company Pvt Ltd., Chennai for a value of Rs. 597.06 Crore on 28.02.2020 and the related work commenced on 08.03.2020. The total build up area is around 1,13,000 sqm.

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12.1 HOSTEL FACILITIES
IIT Palakkad has three hostels in its temporary campus in which B. Tech students and Research Scholars are accommodated. All rooms in the three hostels have attached washrooms. Similarly, there are three hostels in the Nila campus. A common mess serves food to all the students in Temporary and Nila campuses. The mess building in the temporary campus is provided with one television set each in both the floors with DTH connection. At the Nila campus also all the three hostels have Television facility with DTH connection. All hostels are provided with heavy duty washing machines and water dispensers with R.O. Purifiers. Gymnasium and Sports facilities are available in the hostel on both campuses. A coffee vending machine has been installed in Hostel-3 of the temporary campus.

12.2 STUDENT WELLNESS Counseling Services
A professional team of psychologists work towards addressing the wellness needs of students. This year a name was given for this function i.e Students Wellness and Counseling Cell (SWCC). The Team consists of both male and female resident counsellors. A webpage was formed to create more awareness about SWCC and reduce stigma with regard to counseling. A professional counseling service has been set up in order to ensure that the students receive emotional and social support. Before every semester, the SWCC interacts with every new student to enable them with the knowhow on the facilities available in the institute. Every month a discussion/
workshop on a requested topic is conducted. Apart from this, online counselling services of the Bangalore based company "YourDost" is also made available to students.

Mostly, the students approach SWCC to voice the academic issues, depression, anxiety, relationship concerns and sometimes family related problems that they find hard to understand. Mainly the team focus on Cognitive Behavioral Therapy (CBT) and psychoanalytic psychotherapy. More than 500 sessions were conducted during the past year. Some students were referred to psychiatrists for medication.

During COVID 19 lockdown, face to face interaction was not plausible and hence online help was offered and a questionnaire was floated to assess the general health and well being of students. Guide points for positive thoughts were created and a workbook was emailed to help students invest their time for creative pursuits. After lock down the psychologists plan to conduct sessions pertaining to Post traumatic assessment, stigma reduction on mental health and other group problem solving activities.
IIT Palakkad began its tryst in the year 2015 and 2019 proudly marked the graduation of the first batch of students. Convocation, a moment beautifully balanced between reminiscence of the bygone and excitement for the upcoming granted the IIT Palakkad fraternity a compelling reason and a momentous occasion to come together. The Convocation ceremony was held on 27th July 2019 from 4 PM at a curated space in the Nila Campus. The convocation address was delivered by the Chief Guest Dr. G. Satheesh Reddy, Secretary, Department of Defence R & D and Chairman, DRDO who joined online. The function was presided over by Shri. R. Subrahmanyam IAS, Secretary, Department of Higher Education, MHRD, New Delhi and Chairman, Board of Governors IIT Palakkad. The Director elucidated the growth of the institute through a Director’s Report which was read during the occasion. This was followed by the award of degrees to 98 BTech and 2 MS students. The prizes to meritorious students were awarded by the Chief Guest. Standing true to the belief in nurturing students who make the institution proud and contribute to nation building, the graduation instilled immense confidence in the journey so far.
ALUMNI ASSOCIATION INAUGURATION

The Alumni association of IIT Palakkad was inaugurated on 26th July 2019 at the Nila campus. The event was organised one day ahead of the first Convocation ceremony. The inaugural keynote was addressed by Prof. Nagarajan, the first Dean of International & Alumni Relations, IIT Madras. The Water Cascade in Nila Campus was also inaugurated on the very same day. This event was followed by a Sapling plantation and a Graduation dinner.

INSTITUTE DAY

The fourth Institute Day was celebrated on the 17th of January, 2020 at the Nila Campus. The campus was officially named so during this institute day. The Chief Guest for the day was Padma Vibhushan Dr. E. Sreedharan who delivered a motivating talk to the students, faculty and staff. Various awards were distributed to meritorious students following which the music club of IIT Palakkad, 'Vadya', released the Institute Theme Song by presenting it live to the gathering.
PUBLIC LECTURE SERIES - PALE BLUE DOT

Public lecture series named Pale Blue Dot aspires to make recent scientific and technological research accessible to people from all walks of life. This series aims to demystify science, instill and nourish scientific temper, and create a ground for critical inquiry and reasoning in our local community. Most of all, we hope this series will create a platform where the joys of scientific discovery will be shared and the liberating power of the scientific method can be experienced. IIT Palakkad strongly believes that the dialogue between the scientific community and the public play a significant role in a healthy democracy.

The lectures are open to all and will usually be held on a Friday or Saturday. Each talk will be for an hour and will be followed by a question-answer session with the audience.

The first lecture in the series was delivered by Prof. Amitabh Joshi from JNCASR, Bangalore on 24.01.2020 at Surya Resmi convention Centre, Palakkad. Prof. Joshi is an Indian evolutionary biologist, geneticist and a professor of Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR). He heads the Evolutionary Biology Laboratory in JNCASR and is known for his studies on Genetics & Population ecology. Prof. Joshi delivered a talk on "Why evolution is central to both biology and our lives". Evolution is often considered as a topic of only academic interests and few if any applications. It is unfortunately a neglected field in India despite the fact that some of the most significant Indian contributions to the growth of biological knowledge have come from our small community of ecologists and evolutionary biologists. In this talk he addressed some of the misconceptions about evolution and showed that evolutionary biology is a very well established and verified body of scientific knowledge and an evolutionary perspective is not just central to biology as a discipline but is crucial to how we address many pressing societal problems. He also mentioned some of the significant Indian contributions to the development of evolutionary thinking over the past three decades or so.

The second lecture in the Pale Blue Dot - IIT Palakkad Public Lecture Series was delivered by Dr. Madhavan Nair Rajeevan, Secretary, Ministry of Earth Sciences, Government of India, on 29.02.2020 at the Surya Resmi convention Centre, Palakkad. Dr. M. Rajeevan, Secretary, Ministry of Earth Sciences, Government of India, is well known for his research work in Tropical Meteorology including monsoon variability, seasonal monsoon forecasts, climate change, and prediction of convective weather systems. He has more than 35 years of experience, both as an operational forecaster and also as an active researcher. Dr. Rajeevan delivered a talk on "Global Climate Change: Causes, Concerns and Commitments". This talk featured basic physics of climate change, past and future climate change scenarios, the impact of climate change and how climate models are used. India’s commitments to tackling climate change was elaborated upon. The long-term climate changes across/over Kerala and particularly the Western Ghats and the recent extreme weather events in the state, including the 2018 and 2019 floods was discussed.
**RESEARCH SCHOLARS’ DAY**

Research Scholars’ Day 2019 was celebrated on 28th September, 2019 with the Director, IIT Palakkad inaugurating the programme. This was followed by a lecture on “Techniques of Radio Astronomy” by Prof. Jayaram N Chengalur, National Centre for Radio Astrophysics, TIFR. The daylong event included Technical sessions which were organised as 11 Seminars on research problems of current interest and 28 posters which were presented by both faculty members and research scholars in honor of the proceedings of the day.

**INAUGURATION OF THE CENTRE FOR RESEARCH AND EDUCATION IN DATA SCIENCE (CREDS)**

IIT Palakkad has established a Centre for Research and Education in Data Science (CREDS) with the vision to provide world class education, pursue cutting edge research, and develop data science & artificial intelligence for the benefit of society. Academicians from four major engineering streams (Computer Science & Engineering, Electrical Engineering, Civil Engineering, Mechanical Engineering), two fundamental science streams (Physics, Mathematics), and the Humanities & Social Sciences have come together to form this centre. A major objective of the centre is to foster active collaboration with industries, Government, and other academic institutes and research labs.

Inauguration and Funding: The Mehta family Foundation, Houston, Texas, USA has committed to partially support CREDs activities at IIT Palakkad. To mark the inauguration, CREDs organised a day-long symposium on data science on 22 February 2020 at the Nila campus, Kanjikode. Eminent speakers from industry as well as academia took part in this programme; Prof. Niloxy Ganguly, IIT Kharagpur, Prof. Chiranjib Bhattacharyya, IISc Bangalore, Mr. E.S.Padmakumar, Deputy Director, VSSC Trivandrum, Dr. Raman Sankaran, Senior Applied Research Scientist, LinkedIn.

**Research focus:** The following areas have been identified as an immediate focus of CREDs:
- Smart Farming: Towards a Sustainable Agricultural Framework in India
- AI based Water Management in India
- Immunizing the World against Zoonotic Pandemics using Data Science

Course: CREDs is hosting a MTech program in Data Science from the academic year 2020, in addition to training MS and PhD students.
OUTREACH PROGRAMMES

As part of the science outreach programme at IIT Palakkad, various programs were organized for high school and higher secondary school students. In May 2019, in the memory of Late Prof. M.C. Valsakumar, former Dean Student Affairs, IIT Palakkad conducted a 10 days residential workshop for 30 higher secondary students selected from schools across Kerala and Coimbatore district of Tamil Nadu. The camp was filled with interactive sessions on various topics in science, engineering and mathematics and hands-on laboratory sessions where scientific concepts were introduced through experiments.

As a prelude to the National Science Day, IIT Palakkad organized a technical visit, sponsored by the District Employment office, for 50 high school and higher secondary students from the district. Faculty from the science and engineering disciplines of IIT Palakkad engaged with the students in scientific endeavours.

In order to inculcate the culture of mathematical thinking among school students, IIT Palakkad started mathematical enrichment activities under its Palakkad Math Circle initiative. A planning workshop to this end for high school teachers was conducted in December 2019. A pilot run of Math Circle sessions were conducted in a few selected schools by IIT Palakkad faculty members and research scholars during Jan-March 2020. The institute plans to continue these programmes in the coming years to motivate young talents to pursue their passion.
INNOVATION

Technical Domain

Major Update: Biometric access to the Innovation Lab, helping in keeping things more systematic and in a more orderly fashion under the guidance of Mr. Ananthu Sasikumar.

Announcement: Appointment of two coordinators for the lab: Mr. Nikhil and Mr. Sarath. Also, Mrs. Anuradha joined as a part of the Institute Innovation Council.

1. C-Square Programme

C-Square Summer Programme is an annual program held for the students to work on real-life, industry-related problem statements. Three groups of Sophomore students worked on three different interesting problem statements.

Group 1 Team: Mr. Anoop (2nd yr, ME), Ms. Nishalini (2nd yr, ME), Mr. Gregory (2nd yr, ME)

Title: Printed Circuit Fabrication System Project description: This project aims to make a Printed Circuit Board (PCB) Fabrication system for the IIT Palakkad community. A well documented open-source project that details the fabrication of such a system is here: http://www.diyourwave.com/. This will involve using GRBL (an open-source XY plotting system), stepper motor operation, Arduino programming.

Group 2 Team: Ms. Ruchi (2nd yr, EE), Ms. Nikhila (2nd yr, CE), Ms. Meghana (2nd yr, EE)

Title: Emergency Power for disaster zones Project description: Whenever an area is hit by floods, whenever a region is cut off, this isolates the affected people to make an integrated illumination cum detection system. The fixture will be cast out of a flexible material. The project will involve working with low-cost IR cameras, resins, 3D printers and some electronics.

3. Yuba Nandaari Program

This will be a three-day event in which students will present projects they have worked on in various domains. Our students participated in the program with keenness and it provided a good exposure for them.

4. e-Yantra Robotics Competition

e-Yantra is an initiative by IIT Bombay that aims to create the next generation of embedded systems engineers with a practical outlook to help provide practical solutions to some of the real-world problems. Our students participated in the program and it provided a good exposure for them.
5. ICPC 2019-20
Two teams from IIT Palakkad qualified at regional qualifiers in the Asia Regional Rounds and both secured ranks in the top 100.

6. Reboot Kerala Hackathon (None qualified in the first round)
Reboot Kerala Hackathon is an initiative of the Department of Higher Education – Government of Kerala and the Additional Skill Acquisition Program (ASAP). A total of 4 teams including 24 team members registered for the programme.

7. Smart India Hackathon (SIH)
Smart India Hackathon 2020 is a nationwide initiative to provide students with a platform to solve some of the pressing problems we face in our daily lives and thus inculcate a culture of product innovation and a mindset of problem-solving. A total of 11 teams participated from the institute, with the problem statement category inclusive of Hardware and Software.

INTER IIT STUDENTS SPORTS MEET 2019
Inter-IIT Sports Meet is a sporting festival where all the IITs across India would participate in this pool-cum-knockout tournament ranging from a variety of sports and compete for the General Championship every year. The 54th Inter IIT Sports Meet was conducted from Dec 14th, 2019 till December 23rd, 2019. The Sports Meet was co-hosted by IIT Kharagpur and IIT Bhubaneswar. This was the first time since the establishment of Inter
INTER IIT STAFF SPORTS MEET 2019

The 26th Inter IIT Staff sports meet was held at IIT Kharagpur from December 24 to December 28, 2019. A 18 member staff contingent from IIT Palakkad joined the meet. The team participated in various sports events like Athletics, Volleyball, Cricket, Badminton and Table Tennis.

कै चरानिका तिंक खेल-कू द प्ररिरोरगिा

26वीं अंतिआईआईटी कि्यचरािी खेल-क ू द प्ररिरोरगिा का आरोजन आईआईटी खड़गपु ि में दिनांक 24 डिसेंबर, 2019 से 28 डिसेंबर, 2019 तक किया गया था। आईआईटी पालक्ाड से 18 सदस्यों का एक खिलाड़ी दल ने इस प्ररिरोरगिा में भाग लिया था। इस दल ने एथलेटिक्स, वॉलीबॉल, क्रिकेट, बैडमिंटन तथा टेबल टेनिस आदि स्पष्टों में भाग लिया था।

15. संसथरान परिगोष्ठीयरां

1. 03 अप्रैल 2019: प्रकाश-अवशो्क एरिओसोल का रहस्य तथा जलवायु (इंफोरसस पुिस्ाि व्ाख्ान), संस्ान परिगोष्ी, प्रो. एस के ीश, वारुमंडली रवज्ान के ीद, सह रनदेशक, जलवायु परिविषन के ीद, नागपुर (आईएएसए वरिष् वैज्ारनक, भाििीर रवज्ान संस्ान, बंगलोि, द्ािा।

2. 02 मई 2019: ऑटोकल ट्ीजसषि ि्ा नैनो-स्े ल जैववैज्ारनक मशीनें, संस्ान परिगोष्ी, प्रो. रुप मब्ल्क, जैववैज्ारनक रवज्ान रवभाग टाटा मौरलक अनुसंधान संस्ान, मुम्ई, द्ािा, इंफोरसस पुिस्ाि व्ाख्ान।

3. 15 मई 2019: धािणीर उत्रजषिि जल प्रबंधन: चुनौरिरां एवं भरवष्य के े मागषि, संस्ान परिगोष्ी, प्रो. रलगाइ रफरलप, रसरवल अरभरांरत्रकी के े शास्त्र, ि्ा आरोजना डीन, भाििीर प्रौद्ोरगकी संस्ान मद्ास, द्ािा।

4. 28 अगस्त 2019: लोभी कोरशकाएं , संस्ान परिगोष्ी, प्रो. जी. के . अनंिसुिेश, प्रोफ े सि रांरत्रकी अरभरांरत्रकी , भाििीर रवज्ान संस्ान, बंगलोि, द्ािा।

5. 25 रसिम्ि 2019: कम्प्ेक्स प्ेन में काडट्ेंटयुस, संस्ान परिगोष्ी, प्रो. कौशल वमाषि, गरणि के े प्रोफ े, भाििीर रवज्ान संस्ान, बंगलोि, द्ािा।

6. 23 अक्यू बि 2019: सेंसि रवरवधिा एवं स्े रलंग, उद्ामी इलेक् ट्ोरनक्स हेिु नए पैिारडम, संस्ान परिगोष्ी, प्रो. नवकांि भट्, नैनो-रवज्ान एवं अरभरांरत्रकी के ेद भाििीर रवज्ान संस्ान, बंगलोि, द्ािा।

7. 10 अप्रैल 2019: व्वधान-प्रवण शहिी सड़क संजाल पि रटरपंग पॉटियुस की पहचान, डॉ. बी. के . भावा्ििन द्ािा।

8. 21 अगस्त 2019: सुदृरढ़किण रशक्ण: रक्र यु त्रम बुब्धिमत्ता का सीमांि प्रदेश, डॉ. चंद् शेखि लक्ष्मीनािारणन द्ािा।

9. 04 रसिम्ि 2019: अल् शब्क्त टट् ांरजस्टि एवं एमईएमएस एक्चुएटसषि मॉडरलंग (ि्ा उसके े उपिांि), डॉ. अिरवंद अजर द्ािा।

10. 18 रसिम्ि 2019: पत्ी से मानवी िक: िारमल आधुरनकिा के े दौिान आदशषि पत्ीत्व की अवधािणा में बदलाव, प्रो. जी. सुजािा द्ािा।

11. 06 नवम्ि 2019: सकल से अणु िक: जीरवि पदा्षि का एक रांरत्रकी संदशषि, प्रो. रबभु िंजन सािंगी द्ािा।

12. 15 जनविी 2020: बनाक स्पेसेज में सववोत्तम सरन्नकटन, प्रो. सी. आि. जरनािारणन द्ािा।

13. 19 फिविी 2020: प्रसाि के े अविाि, प्रो. के . एल. सेबाब्स्टरन द्ािा।

14. 11 माचषि 2020: भरवष्य के े प्ररि मागषि: अस्फाल्-िबड़ अंििाल ग्ेडेड रमशणों पि ध्न-के ेंद्िा, डॉ. वीणा वेणुधिण द्ािा।
15.3. 20.02 January 2020: High Mobility Support in 5G: Challenges and Solutions, Institute colloquium by Prof. Ligy Philip, Discipline of Civil Engineering and Dean Planning at the Indian Institute of Science.


17. 12th February 2020, High-Mobility Support in 5G: Challenges and Solutions, Institute colloquium by Prof. A. Chockalingam, Department of Electrical Communication Engineering, Indian Institute of Science, Bengaluru.

18. 15th May 2019, Porous Functional Polymers As Separators For Lithium Ion Batteries, Institute colloquium by Prof. S. Sivaraj, Honorary Professor & INSA Senior Scientist, Indian Institute of Science Education & Research, Pune.

19. 29th September 2019, Quadratures in the Complex Plane, Institute colloquium by Prof. K. G. Ananthasuresh, Professor of Mechanical Engineering, Indian Institute of Science, Bengaluru.

20. 12th February 2020, High-Mobility Support in 5G: Challenges and Solutions, Institute colloquium by Prof. A. Chockalingam, Department of Electrical Communication Engineering, Indian Institute of Science, Bengaluru.


22. 22nd January 2020: Massachusetts Institute of Technology, Madras, Chennai.
15.2 LECTURES

1. 10th April 2019, Identifying tipping points on disruption-prone urban road network by Dr. B K Bhavathrathan.

2. 21st August 2019, Reinforcement Learning: Frontier of Artificial Intelligence by Dr. Chandrashekar Lakshminarayan.

3. 4th September 2019, Low power transistors and MEMS actuators - Modeling (and Beyond) by Dr. Arvind Ajay.

4. 18th September 2019, From Patni to Manaivi: Shifts in the Conceptualisation of Ideal Wifehood during Tamil Modernity by Dr. G. Sujatha.

5. 6th November 2019, From aggregates to molecules: a mechanical perspective of living matter by Dr. Bibhu Ranjan Sarangi.


11. 11th March 2020, The ROADS to future: Focus on Asphalt-Rubber Gap-graded Mixtures by Dr. Veena Venudharan.

15.3 EXTERNAL LECTURES

1. 3rd May 2019, Early Vertebrate Development: Busy Time At A Young Age by Prof. Sreelaja Nair, Reader, Department of Biological Sciences, Tata Institute for Fundamental Research, Mumbai.

2. 6th May 2019, Accurate Computation and Efficient Exploration of High Dimensional Free Energy Landscapes of Chemical Reactions by Prof. Nisanth N Nair, Department of Chemistry, IIT Kanpur.

3. 6th June 2019, Making Safe Water Commonplace: Solutions through Science and Technology by Dr. R. Venkataraman, Senior Research Scientist at Unilever R&D Bangalore.

4. 7th June 2019, 2-Dimensional Nanomaterials for Electrocatalysis by Prof. Shaijumon, IISER Trivandrum.

12. 6th June 2019, Seminar on Ultrafast Excited State Dynamics by Prof. Mahesh Harinharan, IISER Thiruvananthapuram.

14. 6th June 2019, The Role of Electron-Nuclear Coupling on Multi-State Photoelectron Spectra and Scattering Processes by Prof. Satrajit Adhikari, Senior Professor at the School of Chemical Science, Indian Association for Cultivation of Science, Kolkata.

20. 6th June 2019, Laboratory Astrochemistry by Dr. Bhalamurugan Sivaraman, PRL Ahmedabad.


10. 19th August 2019, Membrane geometry and interactions between proteins by Prof John H. Ipes, University of Southern Denmark.

30th October 2019, Metaphor of love in Rajput Miniatures by Prof. Ashrafi S. Bhagat, Art Historian and an Art Critic, Former Head and Associate Professor of the Department of Fine Arts, Stella Maris College, Chennai.

12. 1st November 2019, Autoignition behavior of fuels in modern engine-relevant conditions by Dr. Nimal Naser, Post Doctoral Researcher, ERC, UWM.


15. 15th November 2019, Teaching the Robot its “moves” by Prof. Thiyisius Rajeeth Savarimuthu, The Maersk Mc-Kinney Moller Institute, the University of Southern Denmark.


18. 1st January 2020, Biomass, Energy, and Climate Change by Dr. Deepak Jaiswal, presently a Visiting Researcher at Carl R. Woese Institute for Genomic Biology, University of Illinois Urbana-Champaign, USA.


20. 2nd January 2020, High performance computing, accelerated computing, compilers and domain specific languages, accelerating machine learning (HPC for machine learning) and graph and sparse algorithms by Prof. Aravind Sukumaram Rajan, School of Electrical Engineering and Computer Science, Washington State University, USA.

21. 14th January 2020, Application of learning algorithms to nonlinear filtering and Markov chain Monte Carlo (MCMC) methods by Dr. Anand Radhakrishnan, working at Amadeus North America Inc., USA, as Senior Data Scientist.

22. 22nd January 2020, Health Awareness Program for Women by Dr. Bidisha Biswas, Gynecology and Obstetrics.

23. 23rd January 2020, Polymer-based batteries- All solid-state electrical energy storage by Prof. Mukundan Thelakkat, University of Bayreuth, Germany.

24. 29th January 2020, Attitude Control of Agile Rotorcrafts: a Geometric Approach by Dr. Nidhish Raj, Research Engineer.

25. 30th January 2020, The IIT System – Retrospect and Prospect by Prof. Ravikumar Bhaskaran (Retired Professor, IIT Kharagpur, Former Dean Continuing Education, Managing Director Technology Foundation and Professor in Charge T&P IIT Kharagpur).

26. 26th February 2020, Train-18: The first indigenous engine-less train by Mr. Sudhanshu Mani, ex-General Manager of Indian Railways’ Integral Coach Factory, Chennai.

4th March 2020, Anthropocene preparedness in Kerala: On two short visits to death as pointers to future by Dr. Sajeed Velayudhan, Head Forest Entomology Department & Research Coordinator, KFRI and Coordinator of Forest Invasive Species Network (APFISN)- under the FAO of the United Nations.

WOMEN’S FORUM

Kadambini

The forum organized an event on August 21, 2019 showcasing selected technical projects (both individual and team) prepared by women students. Some of these projects had also gained recognition for their excellence in platforms outside our institute.

To commemorate the National Education day, the birth anniversary of the nation’s first education minister, who was also an ardent advocate of women’s education, Kadambini arranged a talk by Prof. Bino Paul, Tata Institute of Social Sciences (TISS) Mumbai, on “Women and Work in India: Insights from micro-data” on November 11, 2019.

As an expression of respect for women’s labour, Kadambini conducted a “Pin-a-poster” activity in March, 2020 as a part of its International Women’s Day celebrations, where students, staff and faculty of the institute shared posters on women who had inspired them by making a difference in the public plane.

NATIONAL UNITY DAY (RASHTRIYA EKTA DIVAS)

The National Unity Day was celebrated by organizing a 5.6 km long run in the Temporary Campus and the participants included faculty and staff as well, besides the students, thus depicting the unity we have in the IITPKD family. The event was sponsored by Punjab National Bank.

NSO (NATIONAL SPORTS ORGANIZATION) ACTIVITIES FOR FIRST YEAR B.TECH

All the Incoming Batch Students were given a list of sports that they had to participate in to stay fit and healthy during their First Semester.
FIT INDIA MOVEMENT
The Govt of India had announced a Fit India Movement to promote physical fitness among the citizens. This Movement was launched by the Prime Minister on 29 Aug 2019 and a Fitness Pledge was administered. A yoga program was held on 29th August 2019 (Thursday) at 5 PM in the Auditorium (Ahalia Campus). This program was led by the Yoga instructor, Smt. Priyambada Palai. Subsequently, there was a physical training session for the 2019 batch B Tech students in front of the academic block, conducted by the resident Coach Shri. Sarath and Dr. Swaroop Sahoo.

Friends with Amrita Vishwa Vidyapeetham University

In order to prepare for Inter IIT Sports Meet 2019 and to maintain healthy sporting relations with neighboring Universities, IIT Palakkad had a few friendly matches with Amrita Vishwa Vidyapeetham University on November 16, 2019. The matches were organized under the following sports: Football, Volleyball, and Basketball. The matches were played and supported with a very healthy intensity by both students and staff of Amrita University, Coimbatore.

Intra Institute Cricket Tournament
The Intra Institute Cricket Tournament was conducted on January 25, 2020, at Nila Campus Football Ground From Morning till Evening. The Tournament had 8 Teams with students from all batches and staff alike and thus we had a knockout Tournament. Students, faculty, and staff, interacted without boundaries with their sportsmanship thus strengthening the bond and ensuring a pleasant time.

Sportacus 2.0
Sportacus is the Intra College Sports Meet which is a two-day event held on Feb 22-23 2020 and students from all the batches took part in it. The Sports Meet consisted of a plethora of events such as Cricket, Football, Volleyball, Badminton, Basketball, Table Tennis, Chess, Athletics, PC games, and a whole lot more. The event was held for all B.Tech, M.Tech, Ph.D., Research Scholars. Students thoroughly enjoyed the two day weekend Sporting Festival and reforged their memories.

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FORMATION OF FITNESS CLUB

The Fitness Club was formed in February 2020, whose main activity is to have regular Fitness programmes for Students. Its main motto is to install and initiate activities to help ensure minimum Fitness levels to IIT Palakkad fraternity.

CIRCUIT TRAINING

Circuit Training was the First Activity of the Fitness Club conducted on February 21, 2020, at Temporary Campus at 5:00 PM. The Circuit Training was a route plan with completing the Fitness challenges placed along the route. The participants’ time taken to complete the circuit was taken into consideration and thus advising them on their fitness levels.

STUDENT CLUB ACTIVITIES

Battle of Bands (BoB)

Battle of Bands (BoB) is a flagship event organized by the Vadya club wherein members of the Vadya club, along with the new talent, team up to perform as different bands who compete for glory. The event is very popular among students and is an opportunity to recognize budding talent in music. BoB 2.0 had The Cold Fairy, winner of Petrichor BoB, perform. Naatya, the first-ever group dance competition organized by Sync 2 Beat- the dance club of IIT Palakkad, turned out to be a huge success and is expected to return next year as well.
Formation of a new Arts club, Grafica

The club aims to provide students with the opportunity to enhance their creativity and to learn new skills like photoshop, designing logos, pamphlets, posters, etc.

EBSB - Ek Bharat Shreshtha Bharat

EBSB is an initiative under the Ministry of Human Resources and Development (MHRD), organized at central institutions across India to bring forth the cultures, traditions, customs, and practices of various states across India. It aims at spreading unity among different sections of our population. Throughout the year, cultural awareness about the magnificent states Madhya Pradesh, Andhra Pradesh & UP, and Gujarat & Orissa, was spread amongst the students. The Gujarat & Orissa EBSB program was followed by the formation of EBSB club.

Band Competitions

The institute music club Vadya is doing outstandingly well in competitions held at various places. The club achieved a remarkable feat of getting 3rd place at NSS Palakkad Band Competition and 4th place at GEC Palakkad.

Petrichor

Petrichor, the Techno-Cultural Fest of IIT Palakkad, is not just a fest for the institute, but also a journey to define ourselves. Petrichor is growing tremendously year-by-year with participation from over 100+ colleges and 1000+ participants at the Petrichor’20. A plethora of events and competitions fit to everyone’s taste was organised because the motto is to have everyone, regardless of their background, to come and thoroughly enjoy at Petrichor over a period of two magical days.
Spic Macay (Society for the Promotion of Indian Classical Music And Culture Amongst Youth)

SPIC MACAY is a non-political nationwide voluntary movement that organizes programmes of classical music and dance, folk arts, crafts, yoga, classic cinema screenings, heritage walks, etc. inside school and college campuses throughout the world to make students more aware about the Indian and world heritage. SPIC MACAY chapter at IIT Palakkad started on October 23, 2017, with an idea of providing a platform for the students to admire and appreciate the beauty of Indian culture. SPICMACAY IIT Palakkad has organized a Vocal by Vidwan Abhishek Raghuram, a very talented young artist who has already received many awards and recognitions.

Science Day

Every year, 28th February is celebrated as National Science Day to mark the discovery of the Raman effect by Indian physicist C. V. Raman (who was awarded the Nobel Prize in Physics in 1930). IIT Palakkad organised a humble science and technology meet on 28th February 2020 evening in the auditorium of the Ahalia Integrated campus. This science meet was for two hours and it started with a short talk by Dr. Jayakumar on "Raman Spectroscopy" followed by a quiz programme.
Holi

Holi, the festival of colors, is one which is celebrated with utmost zeal and zest in the campus by throwing colors and splashing water on each other until the music ends. Holi at IIT Palakkad is celebrated with the same passion and flair as the rest of India.

Onam

Onam featured a wide variety of programs including singing, dancing, a mouth-watering Sadhya, and of course a Mega Thrivathira performance. Competitions included the traditional Onam games (by research scholars) such as Pookalam (flower carpet), Lemon and Spoon race, Chaakkilottam (sack race), Musical Chair, Uriyadi and not to mention the feisty affair of the Tug of War tournament. This year, an inter-batch tug of war competition was arranged and the Batch 2017 emerged as the victor. The celebrations concluded with a blast which featured the Kalashakoot, an excited and energetic traditional drum beat, performed by a troupe of traditional artists.
Navratri and Vijayadashami

The festival is celebrated to commemorate Maa Durga's win over the demon Mahishasura and represents the victory of peace and dharma over ego and evil. There is also a Garba night, where all students perform Garba together. With Dandiyas and colorful displays about Navratri, Vijayadashami makes everyone move their feet to the rhythmic Gujarati and Rajasthani folk songs and gives us a fun-filled taste of this festival which signifies the victory of good over evil.

Diwali

Diwali is one of the most awaited festivals in the institution. Arranged by the students themselves, Diwali is one such occasion that brings out the creativity of students. Each year witnesses the display of a new version of Ramayan enacted by the first year students, making it intriguing and refreshing. This year the celebrations started on October 26, 2019 and went on up to October 27, 2019 evening. The events included a Sports competitions, Rangoli competitions organized on both campuses and Ramleela organized in the Nila campus by students of Batch 2019. The children from Ahalia Children’s Home (Orphanage) were invited to be a part of the celebration.
Constitution Day
Constitution Day is celebrated on 26th November 2019. All the students, faculty and staff gathered at the Nila Campus Auditorium. The noble ideals enshrined in the Constitution was revisited by collectively reading its Preamble. This was led by the Director, IIT Palakkad. Subsequently, there was a discussion by the students about the Indian Constitution.

Republic Day
The 71st Republic Day was celebrated with grandeur and pride at the Nila Campus on Sunday, the 26th of January, 2020. The celebrations began with the Hoisting of the National Flag and recitation of the National Anthem. The programme was presided over by the Director who addressed the IIT Palakkad fraternity. A moment was set aside to honor the Swacchta Brigade - all the sanitation workers who have worked tirelessly to keep the campus clean.

All the CDC (Career Development Centre) student coordinators were given a token of appreciation for their fabulous contributions throughout the year. Thereafter, a Nukkad Natak (Street Play) was performed by the members of the Curtain Call club. This auspicious moment was chosen to release the first Institute song, written by Mr Raghav Tiwari (B.Tech – CE). Some of the students sang patriotic songs including a solo flute rendition. A mesmerizing dance performance from the students formed the final part of the programme. A Tree Plantation initiative was organised in which the Director who was joined by the faculty and staff planted saplings in the campus.