



IARE
INSTITUTE OF
AERONAUTICAL ENGINEERING

RESEARCH & DEVELOPMENT CENTER

RESEARCH INITIATIVES



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Research and Development (R&D) plays a crucial role in driving innovation. It involves investing time and resources into developing new technologies and capabilities, which are then transformed into innovative products, processes, and services. In recent years, the Institute of Aeronautical Engineering (IAE) has made significant strides in R&D initiatives, consistently encouraging both faculty and students to think creatively and generate comprehensive ideas that can bring about meaningful societal changes

1. Research Objectives

- ❖ Identify and encourage faculty members about funded research opportunities from academic, research, industry, or government organizations.
- ❖ Encourage faculty members and students to publish research papers in reputable national and international journals and conferences.
- ❖ Establish collaborations with universities, research centers, and industries on research projects that advance knowledge, address societal needs, and enhance applied teaching.
- ❖ Create awareness and guide faculty and students on the importance of IPRs, while motivating innovators to develop new ideas and assisting them in protecting their innovations.

2. Student Research Experience

For students, an education at Institute is more than just a classroom experience. Hundreds of students are working with faculty on research projects, gaining lab or field experience, giving presentations, and authoring publications. These experiences provide vital additions to one's resume and greatly increase acceptance rates into Jobs and post-graduate programs abroad.

Summer Research Internship (SRI)

The Summer Research Internship (SRI) Program infuses real-world experiences into engineering education. Engineering students work in interdisciplinary teams from fifth semester onwards on creative projects that emphasize the design process and the creation of a thoughtfully engineered, tested and validated outcome or prototype.

Here are some key characteristics of a Summer Research Internship:

Research Focus: Interns participate in research projects aligned with their academic interests or career aspirations. These projects can span various disciplines such as science, engineering, social sciences, humanities, and more.

Hands-On Experience: Interns actively contribute to research activities, which may include literature reviews, data collection and analysis, experimentation, simulations, and writing research reports or papers.

Mentorship: Interns work closely with mentors who are experts in their field. Mentors provide guidance, support, and feedback to help interns develop research skills, navigate challenges, and refine their research methodologies.

Learning Objectives: The internship is designed to achieve specific learning outcomes, such as enhancing research skills, gaining exposure to advanced research techniques, understanding the research process from conception to dissemination, and fostering critical thinking.

Professional Development: Interns have opportunities to attend seminars, workshops, and professional development sessions related to research ethics, presentation skills, academic writing, and career planning. They may also network with peers, faculty members, and professionals in their field

Duration and Structure: Summer Research Internships typically last for several weeks to a few months, depending on the program. The structure may include regular progress meetings, presentations of findings, and opportunities to collaborate with other interns or researchers.

Outcome: Interns often produce a final research report, presentation, or poster summarizing their findings and conclusions. Some may also have the opportunity to publish their work in academic journals or present at conferences.

Summer Research Internships provide valuable experiential learning opportunities to strengthen resumes, help participants make informed decisions about their academic and career paths. They are highly competitive and sought after by students looking to gain practical research experience and establish professional connections in their fields of interest.

Full Semester Research Internship – Abroad

Spending a semester during the final year at abroad will not only enrich student's academic experience but will also help prepare students to practice engineering across national boundaries after they graduate.

IARE students can participate in several study abroad programs. In recent years, our students have studied in USA, Australia, Singapore, England, Malaysia, Vietnam, Thailand, Italy, Spain, Japan and Taiwan, which are just a few of the countries from which our students can choose. The International Relations website lists many of the details that have already been worked out.

Global Research & Internship Program (GRIP)

Participation in the Global Research & Internship Program (GRIP), enhances student career potential through life-changing global work and research experience.

The GRIP offers outstanding B.Tech / M.Tech students the opportunity to intern or conduct research with a variety of organizations and universities abroad for 8 to 12 weeks over the summer/spring during the course of study. As part of the GRIP program, students collaborate with people from different disciplines, embrace and adapt to new challenges, and gain global exposure that makes students stand out when applying for jobs or higher studies.

Program Features and Facts

- ❖ A wide variety of internships across many institutions / universities including business, engineering, sustainable development, healthcare, community development, and more.
- ❖ Opportunity to develop hands-on research skills under leading international researchers and faculty associated with a university abroad.
- ❖ Generous guaranteed funding awards to help accepted students offset travel and internship-related expenses.

3. Faculty Seed Money Grant

The purpose of the research seed money is to create a vibrant atmosphere of research among young faculty and researchers. Depending on the quality of proposals, up to 15 faculty members per academic year will be approved to receive seed money for a tune of up to Rs. 5,00,000/-. However, this is not a constraint for high potential and cross-disciplinary research partnerships.

Objectives of seed money grant:

- ❖ Create opportunities for teachers to engage in real-life research projects and secure sponsorships, while testing novel ideas and generating preliminary results before submitting proposals to external agencies.
- ❖ Promote inter-faculty collaboration in emerging areas to generate intellectual property, develop products/processes, and attract and retain talent.
- ❖ Create an enabling environment to foster socially useful research with commercialization potential, while developing strong external proposals for targeted funding opportunities.

Eligibility

- ❖ The faculty shall be Regular Faculty.
- ❖ Faculty members having a Ph.D. degree or pursuing Ph.D. are eligible to apply as Principal Investigator (PI) for the Seed Money Grant.
- ❖ Faculty should not have any external funded research projects at the time of application.
- ❖ The PI of the project can associate a team of UG/PG students and he/she is responsible for the conduct of the research in accordance with the institute research policy.

Process

- ❖ Announcement will be made to submit pre-proposal.
- ❖ Pre-proposals submitted by Principal Investigator (PI) will be evaluated by Dean – Sponsored Research and concerned Head of Department.
- ❖ Short-listed applications will be asked to submit a full proposal in the format available at https://iare.ac.in/sites/default/files/downloads/Seed%20_Money_Application_Form.docx
- ❖ The full proposals will be reviewed by Research Advisory Committee (RAC). The PI will be invited to make a presentation before the RAC
- ❖ Final list approved by the RAC will be communicated to selected PIs

Conditions

- ❖ At any time, a PI can submit only one application. However, he/she can be a co- investigator in more than one proposal.
- ❖ Faculty is not permitted to use the seed money for their Ph.D. work.
- ❖ The provision of seed money grant is for a maximum period of two years. In case of any delay in the projects, it is expected from PIs/Co-PI to take the extension of the project from R&D.
- ❖ A faculty is not permitted to use the seed money for organizing or attending conferences, seminars, webinars and other such events.
- ❖ If the PI leaves the Institute, all items procured (books, equipment, stationery, furniture, etc.) will become property of the University.
- ❖ Any intellectual property generated during the course of such a project will be owned by IARE.

4. Externally Funded Research Grants

Institute is committed to advancing knowledge and promoting cutting-edge research that addresses pressing global challenges. To further this mission, Institute collaborates with various international and national funding agencies that support research projects across diverse disciplines. Institute encouraging and supporting the faculty to apply for extramural grants involves creating an environment and providing the necessary resources that enable faculty members to seek and secure funding from external sources. This support include:

- ❖ The R&D Center has identified a list of funding agencies and schemes and the faculty are encouraged to submit major research projects proposals to these agencies.
- ❖ Organizing training sessions to help faculty develop strong grant proposals.
- ❖ Keeping faculty informed about upcoming grant opportunities and deadlines.
- ❖ The proposals are scrutinized by an expert review committee that includes the Dean of Sponsored Research, two senior faculty members from the institute, and two experts from eminent research organizations or institutions before being submitted to the funding agencies

- ❖ The institute will provide all kind of infrastructure facilities required to carry out all major/minor research projects
- ❖ The R&D Center shall monitor the progress of major research projects funded by external agencies, maintain their accounts, and submit the utilization certificate to the funding agency on time, as per the requirements
- ❖ Recognizing and rewarding faculty members who successfully secure extramural funding to motivate others

By implementing these strategies, institutions can significantly increase the likelihood of their faculty securing extramural grants, thereby enhancing research capabilities and advancing academic excellence.

Guidelines for Submission of Project Proposal

- ❖ In order to submit research proposal, the PI / Co-PIs should submit the following documents to the Dean – Sponsored Research for getting an endorsement letter
 - Project detailed form dully forwarded by the Head of the Department
 - Complete project proposal along with budget
 - Template of the Endorsement certificate on Institute letterhead, signed by PI / Co-PI
- ❖ If collaboration with other Govt. / Public Sector organizations is anticipated, the nature and financial budget of the proposed arrangements will also be specified at the time of submitting the project proposal for approval
- ❖ If the PI leaves the Institute, goes on leave, or is unavailable for any reason, the Dean of Sponsored Research, upon the recommendation of the PI (if available), shall appoint a new PI, who will assume the powers and responsibilities of the previous PI. The appointment of the new PI will require approval from the funding agency

National Funding Agencies



5. Research Collaborations

Institute proactively collaborates with both international and Indian universities, as well as national-level research laboratories, to foster research and academic partnerships. These initiatives include faculty and student exchange programs, which enhance educational experiences and broaden perspectives. Additionally, Institute engages in industry collaborations to elevate the quality of research and ensure that it remains relevant and impactful in real-world applications. These concerted efforts aim to drive innovation and maintain high academic standards.

The primary objectives of research collaborations are

- ❖ Foster a stronger research inclination by promoting collaborative publications and research collaboration with premier international universities and institutes in India like the IISC, IIT, etc.
- ❖ Enhance the research culture by featuring renowned researchers and experts by hosting events like discussions, meetings, and workshops.

6. Research Ethics and Integrity

Research Ethics and Integrity at Institute involve ensuring that research is conducted with honesty, transparency, and respect for ethical standards. This includes adhering to ethical guidelines for research involving human and animal subjects, maintaining accurate and honest data reporting, avoiding plagiarism, and ensuring proper acknowledgment of contributions. The faculty and students are advised in the usage of Generative AI that can create academic work that may be biased, discriminatory, or not aligned with the goals of higher education, or that goes beyond the students' level of understanding. Institutes also emphasize the importance of ethical decision-making, protecting the confidentiality and privacy of research participants, and addressing conflicts of interest to uphold the credibility and trustworthiness of the research process.

Promoting Original Work and Preventing Plagiarism

- ❖ Declare and implement the technology-based mechanism using iThenticate software so as to ensure that documents such as thesis, dissertation, publications or any other such documents are plagiarism-free at the time of their submission.
- ❖ The iThenticate software shall be made accessible to all engaged in research work including students, faculty and researchers.
- ❖ Every student submitting a thesis, dissertation, or any other such documents, shall submit an undertaking certifying that the document has been prepared by them and it is their original work and free of plagiarism. The same must be duly certified by the supervisor too.
- ❖ The undertaking shall include the fact that the document has been duly checked through a plagiarism detection tool.



Ethical Principles

The following is a rough and general summary of some ethical principles that various codes address:

- ❖ **Honesty:** Strive for honesty in all scientific communications. Honestly report data, results, methods and procedures, and publication status. Do not fabricate, falsify, or misrepresent data. Do not deceive colleagues, research sponsors, or the public.

- ❖ **Objectivity:** Strive to avoid bias in experimental design, data analysis, data interpretation, peer review, personnel decisions, grant writing, expert testimony, and other aspects of research where objectivity is expected or required. Avoid or minimize bias or self-deception. Disclose personal or financial interests that may affect research.
- ❖ **Integrity:** Keep your promises and agreements; act with sincerity; strive for consistency of thought and action.
- ❖ **Carefulness:** Avoid careless errors and negligence; carefully and critically examine your own work and the work of your peers. Keep good records of research activities, such as data collection, research design, and correspondence with agencies or journals.
- ❖ **Openness:** Share data, results, ideas, tools, resources. Be open to criticism and new ideas.
- ❖ **Transparency:** Disclose methods, materials, assumptions, analyses, and other information needed to evaluate your research.
- ❖ **Accountability:** Take responsibility for your part in research and be prepared to give an account (i.e. an explanation or justification) of what you did on a research project and why.
- ❖ **Intellectual Property:** Honor patents, copyrights, and other forms of intellectual property. Do not use unpublished data, methods, or results without permission. Give proper acknowledgement or credit for all contributions to research. Never plagiarize.
- ❖ **Confidentiality:** Protect confidential communications, such as papers or grants submitted for publication, personnel records, trade or military secrets, and patient records.
- ❖ **Responsible Publication:** Publish in order to advance research, not to advance just your own career. Avoid wasteful and duplicative publication.
- ❖ **Responsible Mentoring:** Help to educate, mentor, and advise students. Promote their welfare and allow them to make their own decisions.
- ❖ **Social Responsibility:** Strive to promote social good and prevent or mitigate social harms through research, public education, and advocacy.
- ❖ **Non-Discrimination:** Avoid discrimination against colleagues or students on the basis of sex, race, ethnicity, or other factors not related to scientific competence and integrity.
- ❖ **Competence:** Maintain and improve your own professional competence and expertise through lifelong education and learning; take steps to promote competence in science as a whole.
- ❖ **Legality:** Know and obey relevant laws and institutional and governmental policies.
- ❖ **Human Subjects Protection:** When conducting research on human subjects minimize harms and risks and maximize benefits; respect human dignity, privacy, and autonomy; take special precautions with vulnerable populations; and strive to distribute the benefits and burdens of research fairly.

7. Publications and Indexing

Academic research publications are essential for the dissemination of knowledge, advancement of science, and the academic reputation of researchers and institutions. They provide a formal avenue for researchers to share their findings, contribute to their field, and engage with the broader scholarly community.

Institute encourages faculty and students to publish their research outcomes in high-quality and reputed journals and conferences.

Types of Academic Publications

1. **Journal Articles:** Peer-reviewed articles published in academic journals are the most common form of research publication. They can be original research, reviews, or theoretical papers.
2. **Conference Papers:** Presentations and papers delivered at academic conferences. These are often preliminary findings or works in progress.

3. **Books and Monographs:** Comprehensive works that cover a specific topic in detail. They are usually authored or edited by experts in the field.
4. **Book Chapters:** Contributions to edited volumes, where different authors write chapters on various aspects of a broader topic.

Indexing evaluates and categorizes academic publications based on criteria like quality and relevance, serving as a benchmark for assessing their reliability, impact, and visibility in the scholarly community

Web of Science (WoS): WoS is a widely recognized and prestigious indexing database that covers a broad range of disciplines. Journals indexed in WoS are considered reputable and have a higher impact on the academic community. WoS evaluates journals based on rigorous selection criteria, including citation analysis, content quality, and editorial standards.



Scopus: Scopus is another widely used indexing database that covers a wide range of disciplines. Scopus evaluates journals based on criteria such as content quality, peer-review process, editorial standards, and citation analysis. Journals indexed in Scopus are considered prestigious and have higher visibility in the academic community.



SJR (SCImago Journal Rank) and JCR (Journal Citation Reports) are two metrics used to evaluate the impact and quality of academic journals.

SJR: This metric measure journal impact based on citations and the prestige of citing journals, using Scopus data to reflect the average weighted citations received in a given year from papers published in the past three years.

JCR: Published by Clarivate Analytics, provides citation metrics like the Impact Factor (IF), measuring the average number of citations to articles in a journal over two years, using data from the Web of Science to assess journal importance.

Both SJR and JCR are internationally recognized standards for identifying the quartile of a journal. Each subject category of journals is divided into four quartiles: Q1, Q2, Q3, Q4.



8. Intellectual Property Rights (IPRs)

The office of Intellectual Property Management and Commercialization (IPMC) deals with following activities relating to intellectual property of the Institute.

- ❖ Create awareness and guide faculty and students on the importance of IPRs, while motivating innovators to develop new ideas and assisting them in protecting their innovations.
- ❖ Ensure that inventions, literary works, designs, and other creations are adequately protected through patents, copyrights, trademarks, and relevant IP laws, and offer guidance and resources for securing these protections.
- ❖ Promote IP commercialization, facilitate industry partnerships for technology transfer, and provide dispute resolution mechanisms for IP issues.
- ❖ Enable IP Policy adoption and implementation at the Institute.



Ownership

In-House Research: All rights to investigations conducted at the Institute belong to the Institute and inventor(s), except for activities done in collaboration with other institutions or sponsors, where ownership will be mutually agreed upon.

Sponsored Research: Intellectual Property Rights (IPR) from research projects for sponsoring agencies will be jointly held by the Institute and sponsors if the sponsors cover filing and maintenance costs or as mutually agreed. If sponsors do not support filing, the Institute may file solely, bearing all associated costs.

Collaborative Research: Intellectual property created during collaborative research with other institutions will be jointly owned, with collaborating institutions requested to cover filing and maintenance costs. If they decline, the Institute may share costs equitably. If they do not participate in filing, the Institute may proceed independently, assuming full ownership and costs.

Copyright: IARE shall be the owner of work, including software created by IARE personnel with significant use of IARE resources. IARE shall be the owner of copyright on all teaching material developed by IARE personnel as part of any of the academic programmes at IARE.

Submission of IP Disclosure Forms

- ❖ Faculty or student contributors must submit IP-based Invention disclosure forms to the Office of Intellectual Property Management and Commercialization (IPMC).
- ❖ Submissions can be made via email or in person.
- ❖ Valid proof of work must accompany each submission.
- ❖ Include comprehensive or partial documentation detailing the invention or creation, its potential applications, and any relevant prior art.
- ❖ A signed statement must be included, confirming that the faculty or student contributors are the original creators of the IP or that they possess the necessary rights to disclose it

Processing and Disposal

- ❖ Upon receiving the IP disclosure forms, the Office of IPMC will initiate processing within three working days.
- ❖ The office of IPMC will diligently assess the submitted IP for novelty, market potential, and possible commercialization avenues
- ❖ The IPMC will decide and initiate IP protection under institutional ownership within 30 days of receiving the disclosure forms with the relevant authority in India or abroad.

- ❖ The IARE shall bear 100% of the IPR filing fee including consultant charges. If the Intellectual Property is emerged with sponsoring / funding agency, then the filing cost will be equally shared or may be decided by the Funding Agency.

Technology Transfer

The Intellectual Property of IARE held either in the name of IARE or jointly with other Institutions/Industry will be marketed for commercial exploitation under agreements involving technology transfer, licensing and revenue sharing models. The inventor(s) are expected to support this process. If IARE has not commercialized the creative work within a reasonable timeframe, the inventor(s) may approach the IPMC office to request the assignment of rights for the invention(s) to them.

IP Infringement

In case of violation / infringement of any IPR such as patent infringement by the IARE faculty / students or any third-party infringing upon the IPR of an IARE inventor, Institute would create an appropriate administrative body, which would first investigate the matter and make recommendations to the principal for resolution of such violation / infringement. In case of any third-party infringing upon IPR of IARE, the above administrative body would investigate and make recommendations to the principal including need for any legal course of action.

9. Research Incentives

The Institute of Aeronautical Engineering is continuously encouraging, supporting, and promoting R&D activities towards achievements by establishing incentive policy.

Journal Articles

Provide an incentive grant of maximum Rs. 1,00,000/- for journal articles published in refereed Scopus and Web of Science (WoS) indexed journals or proceedings within the Engineering subject categories (Engineering / Computer Science / Materials Science / Energy / Chemical Engineering)

The process of payment for Journal Article publications is as following

Incentive Category	Incentive Amount (as a percentage of the maximum)	Quartile	Indexing	Author Position
1	100%	Q1	Scopus & WoS	First / Second
2	80%	Q1	Scopus or WoS	First / Second
3	70%	Q1	Scopus & WoS	Third / Fourth
4	50%	Q1	Scopus or WoS	Third / Fourth
5	50%	Q1	Scopus & WoS	Fifth
6	30%	Q1	Scopus or WoS	Fifth
7	50%	Q2	Scopus & WoS	First / Second
8	40%	Q2	Scopus or WoS	First / Second
9	30%	Q2	Scopus & WoS	Third / Fourth
10	25%	Q2	Scopus or WoS	Third / Fourth
11	15%	Q3	Scopus & WoS	First / Second
12	15%	Q3	Scopus or WoS	First / Second
13	15%	Q4	Scopus & WoS	First / Second
14	15%	Q4	Scopus or WoS	First / Second

WoS includes SCI, SCIE, SSCI, AHCI

Conference Papers

A registration fee subjected to a maximum of Rs.10,000/- is granted along with Rs.10,000/- as incentive for Scopus / WOS Indexed conference.

Citations

The faculty will be granted an incentive for every citation made in his/her publication from the list of publications supporting the improvement of institute h-index viz., maximum of Rs. 2,000/- for Journal article citation and Rs. 500/- for conference paper citation.

The process of payment for journal article citation is as following

Incentive Category	Incentive Amount (as a percentage of the maximum)	Quartile	Indexing
1	100%	Q1	WoS
2	90%	Q1	Scopus
3	75%	Q2	WoS
4	60%	Q2	Scopus
5	50%	Q3	WoS
6	40%	Q3	Scopus
7	50%	Q4	WoS
8	40%	Q4	Scopus

Sponsored Research Projects / Schemes

The faculty who gets sponsored research project from any funding agency like DST / AICTE / UGC etc., will be given 7% (3% on submission of first utilization certificate, another 2% on second utilization certificate and 2% on third utilization certificate) as incentive during ongoing period. In addition, 5% of sanctioned grant after successful completion and submission of project completion report to the respective funding agency.

The faculty who got sanctioned with the Government funded scheme will be given an overall incentive of 3% of the total grant received, after successful submission of utilization certificate along with the scheme completion report to the respective funding agency.

Patents

In the case of Patent, faculty and student shall get incentive of Rs. 30,000/- each after their patent get published and granted; and Rs.40,000 shall be granted for the commercialization of the patent. The overall incentive granted to the faculty during patent grant process for institute owned patent is Rs. 1,00,000/-

Faculty shall get an incentive of Rs. 10,000/- for the institution affiliated patent published with a maximum of 4 per year, and Rs. 20,000/- for the institution affiliated patent granted.

10. Faculty Research Profile

A research profile is an online platform that highlights a researcher's work, accomplishments, and academic background. It typically features their publications, research data, areas of expertise, and skills. All faculty members are required to create research profiles on ORCID, IRINS, Scopus, Web of Science, and Google Scholar, and they must update their service register accordingly.

IRINS: It is a web-based Research Information Management (RIM) service developed by the INFLIBNET Centre. It enables academic and R&D organizations, faculty, and scientists to collect, curate, and showcase their scholarly activities while fostering a scholarly network. IRINS integrates with existing research management systems and academic identities like ORCID ID and Scopus ID to streamline the ingestion of scholarly publications from various sources.

ORCID: It stands for Open Researcher and Contributor ID, is a name-independent person-identifier founded specifically to help solve the problem of name ambiguity in research and to enable transparent and trustworthy connections between researchers, their contributions, and their affiliations.

11. Guidelines for Faculty to get Eligibility as Research Supervisor

Institute is focusing on research programmes and need based science and technology, which may be solutions for societal problems. Various International / National / State level universities are offering guideship to the faculty working in both autonomous and affiliated colleges.

The eligibility criteria for research supervisor is given below as per the Jawaharlal Nehru Technological University Hyderabad (JNTUH) norms

- ❖ A Ph.D Degree from a University recognized by the UGC
- ❖ A ratified faculty of the institute having minimum 5 years of teaching experience
- ❖ A minimum of two years of either teaching or research experience after acquiring the Ph.D degree
- ❖ A minimum of five research publications (should not be an outcome of the Ph.D research work) after the award of Ph.D degree in referred journals of the relevant discipline / subjects in the SCOPUS / WOS.

12. Guidelines for Departments to get JNTUH Recognized Research Centre

JNTUH encourages autonomous institutions to set up research centers that promote collaboration across disciplines, support research programs, and offer facilities, funding, and guidance to research scholars.

Eligibility:

- ❖ The Departments should have at least one M.Tech programme running.
- ❖ At least two eligible Supervisors should be available in the respective department.
- ❖ The Supervisor (proposed) should have five years of prior service out of which minimum three years (as ratified faculty in any college) in the same college / Institution / Organization.
- ❖ Preference will be given to those Institutions having NAAC / NBA accreditation / Sponsored research projects from UGC / DST / AICTE / and other Government Agencies / Corporate Sector (or) Public Sector undertakings.
- ❖ In-house R&D Centers recognized by Department of Scientific and Industrial Research (DSIR) will also be given due preference.

13. Focused Research Areas

Institute is not only dedicated to advancing core and emerging research areas but also actively promoting awareness of the Sustainable Development Goals (SDGs) among faculty and students, fostering a commitment to sustainability across the academic community. These facilities are provided for both students and research associates to implement research-based projects under the guidance of faculty. Facilities can be utilized by B.Tech, M.Tech students and research scholars extensively for their project and research work.

Center for Artificial Intelligence and Deep Learning Solutions

The center is to develop comprehensive image processing and text understanding techniques that can be used in various applications such as quantitative analysis, medical imaging, gaming, and visualizations. More recently, we are extending our research interests by employing text, speech, and vision processing techniques to develop various real-time applications.



Center for Alternative Energy Sources

The Center is focused on developing sustainable energy solutions. It aims to advance knowledge in renewable energy technologies such as solar, wind, bioenergy, and hydrogen power. The center fosters interdisciplinary collaboration, providing students and researchers with hands-on experience in cutting-edge energy systems, while promoting eco-friendly practices to address global energy challenges.

Center for Advanced Power Engineering Research

The Center focuses on cutting-edge research in power systems and energy technologies. Its activities include exploring advanced power generation, transmission, and distribution methods, with an emphasis on smart grids, renewable energy integration, and energy storage solutions. Researchers at the center work on enhancing grid stability, efficiency, and sustainability.



Center for Aerospace Research and Development

The center focuses on aeromodelling, UAVs, basic flight training. Apart from these, the center is also focused to make the building blocks of an aircraft such as, aerodynamics research, aircraft propulsion, new smart materials, automated manufacturing process. Center also promotes aeromodelling and UAV through collegiate clubs, student clubs and also SAE aero design challenges.

Center for IoT, Sensor and Instrumentation Engineering

The center actively involved in theoretical and applied research in the broad areas of Wireless networks (Sensor, adhoc and cellular), Signal Processing, Virtual instrumentation and IoT. The center collaborates with NI Instrumentation and offers facilities for PCB routing and etching to support prototype design development.



Center for Advanced New Materials and Energy Research

The center focuses on developing new nanomaterials for energy storage, harvesting, and conversion. The center explores sustainable energy systems with reduced environmental impact. It also investigates nanomaterials for applications in electronics and healthcare.

Center for Big Data Computing

The Center is actively involved in theoretical and applied research in the broad areas of Big Data, Predictive Analytics, Machine Learning, Data Visualization, Natural Language Processing, cloud computing and Internet of Things. The center focus on solving real-world challenges by utilizing Big Data and Data Science technologies through extensive academic research.



Center for Developing AR/VR Solutions

The Center is dedicated to pioneering research in augmented reality (AR) and virtual reality (VR) technologies. Its research activities focus on creating immersive, interactive environments for applications in fields like education, healthcare, gaming, and industry training. The center explores innovative solutions for real-world problems using these technologies.



Center for Cloud Computing Development

The Center is focused on advancing research in cloud computing technologies. Its activities include optimizing cloud infrastructure, enhancing security and scalability, and developing innovative cloud-based solutions for data storage, processing, and management. The center explores areas such as distributed computing, virtualization, cloud-native applications, and edge computing.



Center for Materials Testing and Characterization

The Center focuses on testing the strength and durability of various materials. It specializes in fatigue and tribological testing, ensuring materials meet high standards for safety and performance. The Center uses advanced equipment to evaluate metals, polymers, composites, and other materials used in industries like aerospace and automotive.



Center for Analysis and Design of Structures

The center focuses on structural analysis, design, and optimization. Key areas include earthquake-resistant designs, structural health monitoring, and behavior of structures under various loads. The center also explores innovative materials like high-performance concrete and composites to improve the safety, efficiency, and sustainability of buildings and infrastructure.



 **Find out more:**
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