

## **RESEARCH AND DEVELOPMENT POLICY**



**LTJSS's**  
**PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR**  
(Approved by A.I.C.T.E, New Delhi & Govt. of Maharashtra, Affiliated to R.T.M. Nagpur University, Nagpur)  
Priyadarshini Campus, Near CRPF, Hingana Road, Nagpur-440019, Maharashtra (India)  
**2025-2026**

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**PREAMBLE**

Priyadarshini College of Engineering (PCE) is a well-recognized and highly appreciated Institute imparting quality technical education since last three decades and strongly believe to disseminate knowledge through teaching and create new knowledge through research. For accomplishment of the Vision & Mission of the Institute for high quality research it is important to cultivate and enhance the research culture amongst (all the stake holders ) faculties and students with all necessary infrastructure and supporting facilities.

Priyadarshini College of Engineering has been awarded an A+ grade by NAAC with a CGPA of 3.45 for a period of five years. The institute has also successfully obtained accreditation from the National Board of Accreditation (NBA), New Delhi, for the maximum number of eligible programs.

The institute boasts a strong academic workforce comprising over 300 faculty members, including 118 Ph.D. holders. A total of 130 research scholars from our recognized research centre have been awarded Ph.D. degrees by RTMNU. Currently, more than 60 scholars are actively pursuing their Ph.D. at the research centre.

The Institute runs 14 Under Graduates programs for studies namely Computer Technology, Information Technology, Computer Science Engineering, Electronics and Telecommunication, Electronics & Communication Engineering, Mechanical Engineering, Electrical Engineering, Aeronautical Engineering, Civil Engineering, Bio Technology, Chemical Engineering, Artificial Intelligence & Data Science, Industrial IoT and Robotics & AI.

We also have 6 Post Graduate programs for studies namely Mechanical Engineering Design ,Industrial drives and control, VLSI, Structural Engineering, Chemical Engineering, Computer Science and Engineering.

We have Ph.D. research centers affiliated with Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU), Nagpur, in the fields of Mechanical Engineering, Electronics Engineering (Electronics and Telecommunication engineering), Electrical Engineering and Computer Science Engineering.

## **1.0 INTRODUCTION**

The Research & Development (R&D) Cell integrates all departments to facilitate academic research, sponsored projects, and consultancy services. It provides extensive support to students, faculty, alumni, and other stakeholders through its state-of-the-art research labs and centers. The cell encourages the presentation and publication of research papers in national and international conferences and journals, contributing to academic transformation, professional growth, and career advancement.

The R&D Cell actively associates with and sponsors various research and innovation initiatives, including:

Workshops, symposiums, and seminars

Conferences and research publications

Sponsored projects and innovations

Patent filings and Intellectual Property Rights (IPR)

The cell strives for excellence by promoting high-quality scientific research that leads to publications, patents, prototypes, and IPR filings. It fosters a strong research culture by encouraging multidisciplinary R&D, harnessing global potential, and promoting social innovation and indigenous technology. The cell also aligns with national initiatives like Make in India and Digital India, supporting the vision of the Prime Minister and the nation.

To create a high-quality research environment, the R&D Cell enables faculty and students to engage in research and consultancy work. As per the R&D policy, all individuals involved in research must adhere to the rules and regulations governing R&D activities.

### **VISION OF R&D CELL**

To facilitate innovative and multidisciplinary research in collaboration with industry and stakeholders, addressing global challenges and advancing technological progress.

### **MISSION OF R&D CELL**

To develop a robust R&D ecosystem by encouraging the active participation of faculty and students in:

- Industry-relevant innovative projects
- Research proposal development and funding applications
- Publications, patents, and IPR filings

## 2.0 AIMS AND OBJECTIVES OF THE R&D CELL

### AIMS:

- Foster a culture of research and innovation among all stakeholders.
- Integrate research at all academic levels—undergraduate, postgraduate, and PhD.
- Enhance both the quality and quantity of research output.
- Develop partnerships with R&D organizations and funding agencies.
- Encourage faculty to undertake projects in thrust areas of science and engineering, supported by national and international funding agencies.
- Provide an environment enriched with resources and facilities to support research activities among faculty and students.

### OBJECTIVES:

1. Inspire faculty and students to engage in multidisciplinary research and publish their work in reputed national and international journals and conferences.
2. Establish Memorandums of Understanding (MOUs) with industries and collaborate with institutions of higher learning and R&D organizations.
3. Promote scientific temperament, ensure research quality, and uphold ethical standards in R&D activities.
4. Develop Centers of Excellence in emerging and high-impact research areas.
5. Recommend financial assistance for various research and development activities.
6. Identify and communicate relevant research opportunities offered by academic institutions, industries, and government organizations.
7. Encourage students to undertake innovative projects and publish their findings in reputed journals.
8. Facilitate opportunities for faculty and students to work on cutting-edge technologies in collaboration with industry.
9. Provide consultancy and testing services in coordination with alumni, industry partners, and stakeholders.

### **3.0 COMPOSITION OF R&D CELL**

The R&D cell comprises of Dean and Co- Deans (R&D), All HoDs,R&D Coordinators from various departments in the institute. This committee oversees the smooth and efficient coordination of research and development activities in the institute, thus fostering overall research growth. Dean (R&D) heads the cell with an advisory support from principal.

<b>S. No.</b>	<b>Category</b>	<b>Status</b>
1	Head of the Institution	Chairman
2	Dean (R&D)	Member Secretary
3	Co-Deans	Member
4	All HODs	Member
5	Departmental R&D coordinators	Member
6	One student from each department nominated by respective HOD (Optional)	Member
7	One Entrepreneur Alumni (Optional)	Member
8	One representative from Industry nominated (Optional)	Member

#### **FREQUENCY OF MEETING:**

The committee shall meet atleast two times a year or as and when required. The member secretary in consultation with the chairman prepares and circulates the agenda of the meeting well in advance. The member secretary maintains the minutes of the meeting and action taken report.

#### **QUORUM:**

Two-third members constitute the quorum. If there is no quorum for the meeting convened up to half an hour, then the meeting shall stand adjourned to the next convenient day.

#### **TERM:**

The tenure of the members shall be three years or as decided by Head of Institute.

**Composition of R & D Cell : 2025-26**

<b>S.No.</b>	<b>Name</b>	<b>Designation / Department</b>	<b>Mail-ID</b>	<b>Contact No.</b>
1	Dr. S.A. Dhale	Principal	principal.pce.ngp@gmail.com	9822577961
2	Dr V. M. Nanoti	Director (Engg)LTJSS	directorenggljtss@gmail.com	9822233286
3	Dr. N.K.Choudhary	Director (R&D)LTJSS	directorresearch.ltjss@gmail.com	9823273864
4	Dr. G.M. Asutkar	Vice principal	g.m.asutkar@gmail.com	9881711752
5	Dr.(Mrs.) S.W.Varade	Dean (R & D)	swvarade@gmail.com	9922659106
6	Dr. Girish Mehta	Co-Dean (R & D)	girishmehta1980@gmail.com	9665426048
7	Dr. S. G. Suke	Co-Dean (R & D)	sanvidhan@gmail.com	9561580408
8	All Deptt.	HoDs	-	-
9	R&D Coordinators	All Departments	-	-
i	Dr.(Mrs.)P.M. Chaudhari	CSE Deptt.	pallavi.chaudhari@pcenagpur.edu.in	7507581557
ii	Dr.(Mrs.) A.Dehankar	CT Deptt	archana_dehankar@rediffmail.com	9422807628
iii	Mrs. Mrudula Gudadhe	IT Dept	mrudula.gudadhe@pcenagpur.edu.in	7722046602
iv	Dr.(Mrs.)Y.A.Nafde	E & T Engg	yogita.nafde@gmail.com	9325303279
v	Dr A. D. Bijawe	ECE	bijweabhijit@rediffmail.com	9221387990
vi	Dr Sumitra Agrawal	Electrical Engg.	hiten.agrawal5111@gmail.com	9657924559
vii	Dr. Sagar Shelare	Mech. Engg.	sagmech24@gmail.com	9890027265
viii	Ms. Vaishali Kesalkar	Civil Engg	vaishali.kesalkar@pcenagpur.edu.in	8788067308
ix	Mr. M.P.Mahore	Aeronautical Engg	mahore.aeropce@gmail.com	7219225192
x	Dr. Prasad Sherekar	Biotechnology	sherekar.vprasad@gmail.com	7057353665
xi	Mrs. M.G. Patil	Chemical Engg	minalb905@gmail.com	9096347134
xii	Dr. Umesh Akare	AI&DS	umeshakare@gmail.com	9689884886
xiii	Dr.Chetan Tembhurkar	Robotics & AI	chetantembhurkar@gmail.com	9420248189
xiv	Ms. Sharda G. Mungale	Industrial IoT	shardamungale@gmail.com	9970615935
xv	Dr.(Mrs.)D.T.Marghade	First Year	deepalichem@gmail.com	9764002588

#### **4.0 ROLES AND RESPONSIBILITIES OF DEAN AND CO-DEANS R&D**

1. To set up various research quality policy and implement them time to time as per directives and recommendations of from stake holders (industrial experts, faculties, students and other experts etc)
2. To work out policies/ strategies and implement them for faculty for funded research projects and consultancy from funding agencies.
3. To enhance Industry Institute Interactions (III) for meaningful collaborations in terms of projects, faculty training, guest lectures, student projects, student internships, memorandum of understanding (MOUS) etc.
4. To monitor the progress of funded projects received from Govt and non funded projects and its utilization after completion.
5. To inculcate research culture in the institute by organizing seminars, workshops, conferences, etc.
6. Identification of thrust areas where faculty need training and implementation
7. To formulate incentive scheme for faculties and students to enhance the motivation for research development.
8. Good coordination amounts the various stakeholders for smooth conduction of Undergraduate, Post graduate and Ph.D Program

#### **5.0 FUNCTIONS OF R&D CELL**

1. Prepare the annual R&D action plan along with R&D incentive policy for various R&D activities / programmes.
2. Prepare a comprehensive list of funding agencies that allocate funds for R & D projects.
3. Motivate staff and students to publish papers/articles/manuscripts in conferences/journals of national/ international repute and to file/publish patents.
4. Encourage staff & students to prepare and submit R&D/AQIS/project proposals for funding by ISRO, DRDO, CSIR, DST, AICTE, UGC, MSME, HUBs etc., within the stipulated time.
5. Formulate strategies for mutual benefit of stakeholders by fostering research collaborations in interdisciplinary areas of industry/govt./IITs/TBIs/professional chapters to address societal needs.
6. Monitor R&D project progress of various departments through visits to identify bottlenecks and propose remedial actions.
7. Maintain close liaison with industry and undertake sponsored projects.

8. Organize national/international conferences/workshops/seminars/training programs in thrust areas to enhance the professional and research skills among the staff and students.
9. Insist faculty members to publish their research work in WoS/Scopus indexed journals.
10. Maintain & update data of research, consultancy and extension activities of staff/students
11. Upload progress of R&D activities on the web portals of affiliating/accrediting/ranking agencies.
12. Constitute a review committee to adjudicate the originality & quality of the publications/projects/consultancies/patents of staff/students and to recommend for incentives/appreciation and suggestions for improvement.
13. Consolidate the progress of R&D activities of all departments and submit report to the Principal/Director.

## **6.0 RESEARCH CENTER**

We have Ph.D. research centers affiliated with Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU), Nagpur, in the fields of Electrical Engineering, Computer Science Engineering, Electronics, and Mechanical Engineering.

### **6.1 Ph.D. (Part-Time) Programs Offered:**

The following departments are recognized research centers of Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU) and offer registration for the Doctor of Philosophy (Ph.D.) degree.

<b>Department</b>	<b>Year of Establishment</b>	<b>Current reference</b>
Mechanical Engineering	<b>2005</b>	No.RTMNU/CDS/2024/6855 C/3002 Dated 12/04/2024
Electronics Engineering (E&T)	<b>2005</b>	No.RTMNU/CDS/2024/6855 C/3002 Dated 12/04/2024
Electrical Engineering	<b>2013</b>	No.RTMNU/CDS/2024/6855 C/3002 Dated 12/04/2024
Computer Science Engineering	<b>2025</b>	No.RTMNU/CDS/2025/7197 C/40 Dated 18/02/2025

### **6.2 Ph.D Awarded from PCE Research center :**

<b>Depatt./Session</b>	<b>2024-25</b>	<b>2023-24</b>	<b>2022-23</b>	<b>2021-22</b>	<b>2020-21</b>	<b>2019-20</b>
Mechanical Engineering	01	01	0	01	01	04
Electronics Engineering (E&T)	04	03	0	04	07	09
Electrical Engineering	00	01	01	03	01	02
Computer Science Engineering	-	-	-	-		

### 6.3 Permissible Number of Ph.D. Scholars Under the Supervisor: (Refer to Section 11 of Direction No.22 of 2025 of RTMNU)

Cadre	*Maximum number of Ph.D. scholars
Professor	08
Associate professor	06
Assistant Professor	04

\*The total number of Ph.D. scholars that can be registered under a particular supervisor shall include those for whom they serve as a co-supervisor.

\*\*Furthermore, if a recognized Ph.D. supervisor of the University or its Autonomous Colleges/Institutions is also recognized as a supervisor in another university, the number of Ph.D. scholars registered under them in that university shall also be considered. This ensures that, at any given time, the supervisor does not exceed the maximum permissible number of Ph.D. scholars under this Direction.

### 6.4 Code of Ethics for Researcher

- To get publish in the reputed journal all research work must be original
- The data must be errorless and justified.
- The text of research work must be very clear and should not create confusion so that every point must be understood by reader, editors and reviewers
- The contents of research work should not plagiarized from any source more than the norms laid by UGC time to time
- It is compulsory to include acknowledgement and citation

### 6.5 Ethical Guidelines for Research

1. **Academic Honesty:** The institute upholds the highest standards of honesty in all scientific communications, including the reporting of data, results, methods, procedures, and publication status. Fabrication, falsification, or misrepresentation of data is strictly prohibited. Any form of deceit toward colleagues, funding agencies, or the public is considered research misconduct.
2. **Integrity:** The institute values sincerity, consistency of ideas, and the fulfillment of promises and agreements. Researchers are expected to maintain integrity in all aspects of their work.

3. **Carefulness:** Researchers must critically and meticulously examine their own work as well as the work of their team or associates. Proper documentation of research activities, including data collection, research design, and correspondence with journals or agencies, is essential.
4. **Respect for Intellectual Property:** Researchers must honor patents, copyrights, and citations, and respect other forms of intellectual property. Unpublished data, methods, or results should not be used without proper permission. Proper acknowledgments and citations must be given to avoid plagiarism.
5. **Confidentiality:** Researchers must protect confidential information, including unpublished documents, blueprints, papers, trade secrets, observations, and patent records.
6. **Social Responsibility:** Research should contribute positively to society by mitigating social harm and promoting public education and advocacy.
7. **Competence:** Researchers should continuously enhance their professional competence and expertise throughout their careers. Lifelong learning and skill development should be encouraged to promote research excellence.
8. **Legality:** Researchers must be aware of and comply with government policies, relevant laws, and institutional regulations, especially those related to intellectual property rights (IPR).
9. **Protection of Human Subjects:** Researchers must minimize risks and harm to human subjects, use special precautions in vulnerable situations, and respect human dignity, privacy, and autonomy. The benefits and burdens of research and development (R&D) should be equitably distributed.
10. **Plagiarism Rules:** All project reports, seminar reports, dissertations, theses, research papers, and case studies must be checked using standard plagiarism detection software. In the case of project reports, dissertations, and theses, students are required to submit a plagiarism report generated by licensed software.

## **6.6 Research Laboratories**

The institute has established multiple research centers to enhance R&D activities, teaching-learning processes (TLP), learning outcomes, and employability for UG/PG students and staff. These centers also facilitate the development of new curricula and additional laboratories to foster a strong research culture among faculty and students, thereby improving industry-institute interaction.

The following Research Laboratories and Centers of Excellence have been/will be set up to train students in advanced technologies and support research work:

### **A. ELECTRICAL ENGINEERING DEPARTMENT: Electrical Drives Research Laboratory**

Department of Electrical Engineering at PCE, Nagpur houses a state-of-the-art Electrical Drives Research Laboratory designed to serve both graduate students and research scholars. This facility has been developed with the objective of providing cutting-edge infrastructure for practical training and advanced research in electrical engineering disciplines.



The laboratory is dedicated to bridging the gap between theoretical knowledge and practical applications in electrical engineering. It enables students and research scholars to develop comprehensive expertise in critical technical domains, including Machine Design, Operations and Control, Electronics and Microprocessor Applications, and Power Electronics.

The laboratory supports both educational and research activities across the following specialized domains:

**i. Machine Design and Control** – Development and experimental validation of electric machine control algorithms, encompassing implementation of advanced control strategies.

**ii. Power Electronics** – Research and implementation of advanced power conversion techniques, including inverters, converters, and associated control systems.

**iii. Digital Signal Processing** – Real-time control and signal processing using DSP platforms for applications in motor control and power system analysis.

**iv. FPGA-Based Systems** – Hardware implementation and testing of control strategies using Field Programmable Gate Array (FPGA) technology.

**v. Motor Drives** – Comprehensive study and implementation of AC and DC motor drive systems with encoder feedback mechanisms for precise motion control.

**vi. Power Quality Analysis** – Measurement, monitoring, and analysis of electrical parameters to assess and improve power quality in electrical systems.

The Electrical Drives Research Laboratory plays a pivotal role in developing practical competencies and research capabilities among electrical engineering students at PCE, Nagpur. The modern equipment and comprehensive infrastructure provide students with industry-relevant experience while enabling them to contribute to cutting-edge research in electric drives, power electronics, and control systems.

The laboratory continues to uphold academic excellence by fostering innovation, encouraging project-based learning, and preparing graduates to meet the technical and professional challenges of contemporary electrical engineering practice. Through hands-on experimentation and research-oriented projects, students gain the skills and knowledge necessary to excel in both industrial and academic environments.

## **B. MECHANICAL ENGINEERING DEPARTMENT**

**i. CAD Laboratory (CREO & ANSYS):** The CAD Laboratory facilitates research, analysis, and structural design using advanced computer-aided design tools such as CREO and ANSYS.



**ii. Mechanical Vibrations:** This laboratory emphasizes the use and application of FFT analyzers for the measurement and detailed analysis of vibrations in mechanical systems.

**iii. Finite Element Analysis (FEA):** This laboratory focuses on the application of advanced software tools, including ANSYS and CREO, to simulate and analyze how products respond to real-world forces such as stress, thermal effects, and vibrations.

**iv. Stress Analysis:** This facility is dedicated to the evaluation of stress, strain, and deformation in materials subjected to varying load conditions.

### C. ELECTRONICS & TELECOMMUNICATION DEPARTMENT

The Department has been **recognized as a Research Centre by Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU), Nagpur**, and provides a well-established research environment to support advanced academic and research activities.



The **Research Laboratory** facilitates **undergraduate students, postgraduate scholars, doctoral researchers, and faculty members** in undertaking research-oriented and experimental work. The laboratory supports investigations across emerging and core areas of Electronics and Telecommunication Engineering, enabling both theoretical validation and practical implementation of research outcomes.

The laboratory is equipped with **20 computer systems** supported by a wide range of **open-source tools and licensed software**, including **HFSS, Anaconda, Eagle Arduino IDE, NS2, Xilinx, and MATLAB R2017b**, which are extensively used for simulation, modeling, analysis, and algorithm development.

In addition, specialized software tools such as **OrCAD and LT-Spice** are installed for **circuit design, schematic capture, layout development, chip design, IC package design, and PCB design**. To support experimental validation, the department is also equipped with essential hardware instruments such as a **Digital Storage Oscilloscope, Function Generator, DC Power Supply, and Frequency Spectrum Analyzer**. These facilities are actively utilized by students for **final-year projects, doctoral research**, and for addressing **practical engineering problems** in Electronics and Telecommunication Engineering and developing viable solutions.

Further, the Research Laboratory is equipped with **Keil software and RSLogix 500**, which are effectively used for **PLC and SCADA-related practicals and research applications**.

For advanced VLSI studies, the laboratory has **Microwind software**, which is utilized by **postgraduate students** for **VLSI design practicals and research-oriented learning**, thereby strengthening design and fabrication-level understanding.

#### **D.COMPUTER SCIENCE & ENGINEERING DEPARTMENT**

##### **Cyber Security Lab for Doctoral Research:**

The Cyber Security Laboratory is a dedicated research facility established to support high-end computational studies and advanced doctoral-level investigations at the institute. Equipped with modern computing infrastructure, high-performance devices, and a wide range of open-source tools along with select licensed software (currently under procurement), the lab provides an ideal environment for project-based learning and research innovation.



It enables scholars to explore emerging domains such as cloud security, cyber security, network security, digital forensics, and related advanced technologies. The laboratory promotes research that integrates strong theoretical foundations with practical, application-oriented approaches to address real-world engineering and security challenges.

It also serves as a platform for prototype development, vulnerability assessment, secure system design, and simulation-based analysis with high precision and efficiency. Through continuous technological enhancements and a strong commitment to research excellence, the Cyber Security Laboratory plays a pivotal role in strengthening the doctoral research ecosystem in alignment with the rapidly evolving landscape of global cyber threats.

The lab facilitates advanced research in:	Software available:	
<ul style="list-style-type: none"> <li>➤ Cloud and Edge Computing</li> <li>➤ Cybersecurity and Blockchain</li> <li>➤ Network security</li> </ul>	<ul style="list-style-type: none"> <li>➤ Linux &amp; Kali Linux</li> <li>➤ Wireshark</li> <li>➤ Tcpcdump</li> <li>➤ Snort</li> <li>➤ Parrot OS</li> <li>➤ Nmap</li> <li>➤ OpenAudit</li> </ul>	<ul style="list-style-type: none"> <li>➤ Anaconda, Python, R Studio</li> <li>➤ TensorFlow, PyTorch, Keras</li> <li>➤ Docker, Kubernetes</li> <li>➤ OpenProject</li> <li>➤ OpenCV, OpenGL</li> <li>➤ Reqflow</li> </ul>

### E. ROBOTICS & AI DEPARTMENT

**E-Yantra Robotic Lab:** Serves as a platform for research in Autonomous navigation, Path planning and obstacle avoidance, Localization and mapping (SLAM), Multi-robot coordination, Embedded intelligence, IoT-enabled robotic systems, Real-time control systems.



### F. INDUSTRIAL IoT DEPARTMENT

**Industry 4.0 & IOT lab :** An **Industry 4.0 & IoT Lab** is a specialized environment that integrates advanced digital technologies to simulate, test, and develop solutions for modern smart industries and manufacturing. It focuses on hands-on experience with the key components of the Fourth Industrial Revolution, primarily the **Industrial Internet of Things (IIoT)**. The primary goals of lab are to bridge the skills gap, foster innovation, and provide practical experience for students.

The Industry 4.0 & IoT lab is essential for providing practical exposure to the students of UG and PG about **sensors and actuators** also enabling students to sense physical parameters and perform automated control actions. The purpose of Industry 4.0 & IoT lab is to improve the **problem-solving, debugging, and system integration** capabilities of the students.

*Industry 4.0 & IOT lab helps the learners to understand the integration of **Arduino, NodeMCU, and Raspberry Pi** for developing smart and connected systems. Through hands-on experiments, students gain the knowledge of **IoT protocols** such as MQTT, HTTP, and CoAP etc. This lab strengthens the students' skills in **embedded programming, hardware interfacing, and wireless communication**. By using the facilities in the lab, students are able to design and implement **real-time IoT applications** like smart homes, healthcare, and industrial monitoring.*

*Overall, Industry 4.0 & IOT lab prepares the students for **Industry 4.0, research, and entrepreneurship** by building strong practical and innovation-oriented skills.*

## **CENTER OF EXCELLENCE**

### **i. CENTER OF EXCELLENCE: (AI & DS- AICTE IDEA LAB)**

The AICTE IDEA Lab aims to provide state-of-the-art facilities under one roof, enabling the seamless conversion of innovative ideas into prototypes. The lab will serve as a hub for students and faculty, fostering creativity, problem-solving skills, and collaborative learning. This initiative will encourage research, innovation, and skill development, enhancing the institution's contribution to technological advancements.

#### **Vision for AICTE-IDEA Lab**

Empowering a future where Generative AI and Data Science transform lives and industries. We pioneer innovative solutions, foster collaboration, and develop talent to drive positive change. Our laboratory is a catalyst for creativity, expertise, and impact, shaping a brighter future through AI-powered technologies and data-driven insights.

#### **Mission for AICTE-IDEA Lab**

To strengthen the culture of Innovation, Incubation and Entrepreneurship.

- To enhance outreach with nearby Industries and Institutions through collaboration.

AICTE IDEA LAB (Idea Development, Evaluation & Application) are highly beneficial for research by providing a hands-on, interdisciplinary hub that transforms theoretical knowledge into practical, innovative solutions, fostering creativity, problem-solving, and entrepreneurship through advanced prototyping tools, industry collaboration, and a focus on real-world challenges, ultimately bridging the gap between academia and industry.

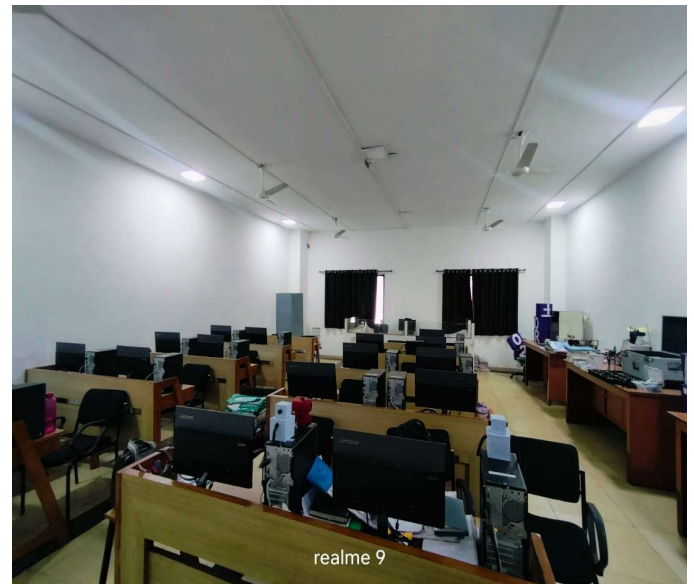
#### **Key Benefits for Research Activities:**

- **Hands-On Prototyping:** Provides equipment (3D printers, CNC, electronics) to turn ideas into physical prototypes, accelerating the research cycle from concept to MVP (Minimal Viable Product).
- **Interdisciplinary Collaboration:** Acts as a common space for students and faculty from various engineering disciplines (AI, ML, IoT, etc.) to work together on complex problems, fostering holistic research.
- **Focus on Real-World Problems:** Encourages research addressing industry needs, societal challenges (like sustainability), and market demands, making research more impactful.
- **Skill Development for Researchers:** Develops crucial 21st-century skills like design thinking, critical thinking, and communication, essential for effective research.

- Industry-Academia Bridge: Connects researchers with industry experts, offering mentorship and opportunities for joint projects, leading to more relevant and funded research.
- **Entrepreneurship & Commercialization:** Supports the development of commercially viable solutions, helping transform research outcomes into startups and new ventures.
- **Enhanced Learning & Mentorship:** Offers continuous learning through experiential education ("learning by doing") and access to mentors, empowering both students and faculty researchers.
- **Fosters Innovation Culture:** Creates an ecosystem where creativity is nurtured, encouraging students and faculty to explore novel ideas and challenge conventional approaches in STEM.

**ii. R&AI Center of Excellence: Janatics India Pvt. Ltd. Center of Excellence under CISR Activity**

**Automation and Robotics Lab (JANATICS Authorized Training Centre (ATC) under CSIR activity.**



**Serves as a platform for research in**

- a) Pneumatic actuated / Operated elements covering different classifications like FRL, Roller level valve, hand lever valve, Directional control Valves, Flow control valves, AND, OR logic Valves, and Cylinders
- b) Advanced Electro Pneumatic for design, construction and application of electro-Pneumatically actuated / operated elements covering 5 classifications like FRL, Magnetic Sensors
- c) Programming and application of a IoT Devices and its connectivity with different kits like pneumatic, hydraulic, sensors or vacuum.
- d) Smart factory architectures

## **7.0 POLICY FOR B.E./B.TECH/ M. TECH THESIS SUBMISSION**

All students have to satisfy conditions before the submission of project/ thesis

### **7.1 For Under Graduate (U.G.) Students**

Every student should publish atleast 01 paper in International or national conference or journal.

### **7.2 For Post Graduate (P.G) Students**

Every student should publish atleast 02 papers, one should in the International or national conference and one in UGC care/ AICTE/IEEE / SCOPUS / WoS/SCI/ other journals ( Ex. Institution of Engineer/ IWWA/ICI) etc decided by committee).

### **7.3 For Ph.D Research Scholar**

Every candidate shall publish minimum **two** research papers (one of them should be in SCOPUS / WoS/ UGC Care listed journal as first author) and two paper presentations at International or National conferences (as first author), relating to the topic of his/her research at the time with non-plagiarism certificate

#### **7.3.1 Procedure of Registration for Ph.D. Programme**

**Research Committees:** The following committees are constituted at various levels to oversee and guide the Ph.D. research process. Their scope, level of operation, and composition are detailed below:

<b>S.N.</b>	<b>Name of Committee</b>	<b>Scope</b>	<b>Members</b>
1.	Research Centre Committee (RCC)	Institute Level Committee	<b>Chairman:</b> Principal <b>Members:</b> Dean(R&D) Co-Deans(R&D) & All the Research Centre (RC) HoDs/ Coordinators
2.	Research Advisory Committee (RAC)	Department Level Research Centre	Refer to <b>Section 12</b> of Direction 22 of RTMNU-2025
3.	Research & Recognition Committee (RRC)	University Level	Refer to <b>Section 18</b> of Direction 22 of RTMNU-2025

\*As per the guidelines or directions issued by RTMNU from time to time.

**A) RESEARCH ADVISORY COMMITTEE** (Refer to **Section 12** of Direction No.22 of 2025 of RTMNU)

**B) Duration of the PROGRAM** (Refer to **Section 16** of Direction No.22 of 2025 of RTMNU):

**C) PROGRESS REPORT** (Refer to **Section 17** of Direction No.22 of 2025 of RTMNU):

**D) CANCELLATION OF REGISTRATION**(Refer to **Section 18** of Direction No.22 of 2025 of RTMNU)

(a) **Cancellation of registration** (Refer to **Section 18(a)** of Direction No.22 of 2025 of RTMNU)

(b) **Redressal of Grievances** (Refer to **Section 19** of Direction No.22 of 2025 of RTMNU)

### 7.3.2. Guidelines For Conduct of Ph.D. Seminars & Documentation

Research scholar is required to appear before the Research Advisory Committee (RAC) to present the progress of their research work every six monthly.

#### A) Presence of Supervisor

Mandatory Presence of Research Supervisor/Guide: No seminar—whether for Provisional Admission, Progress Review, or Pre-submission—shall be conducted in the absence of the research supervisor/guide. If the guide is unavailable due to official reasons or any other emergency, prior written approval must be obtained from the Principal or Dean (R&D).

#### B) Fee Compliance:

The fees should be paid in the months of July and December every year during the research period. Research scholars must ensure payment of all applicable fees at least before the seminar. The RCC must verify the fee receipt prior to the commencement of the seminar. For non- submission of fees in time, may not be permitted for progress seminar.

#### C) Mode of Seminar

i. **Preferred Mode** – Physical (Offline): All Ph.D. interviews and seminars shall preferably be conducted in physical (offline) mode.

ii. **Exception** – Virtual Mode: In exceptional or emergency circumstances the virtual mode may be permitted. Such exceptions shall require prior written approval from the Principal or Dean (R&D).

#### D) Documentation and Record Maintenance

i. **Seminar Register:** Each research centre must maintain a seminar register to record:

- Details of every seminar: *Provisional Admission, Progress Review, and Pre-submission*
- A detailed register of all seminars must be maintained by each research center.
- The register should include:
  - ✓ Scholar-wise records
  - ✓ Observations and remarks from RAC members and other committee members

ii. **Review and Monitoring:** Records must be systematically reviewed during future seminars to ensure:

- Continuity
- Proper monitoring
- Implementation of committee recommendations

**iii. Submission of Recommendations:** The Research Advisory Committee (RAC) shall:

- Submit its recommendations along with a copy of the research scholar's progress report to the University
- Provide a copy of the same to the research scholar

**iv. Unsatisfactory Progress:** If the progress of a research scholar is found unsatisfactory:

- The RAC shall record the reasons and suggest corrective measures
- If the research scholar fails to implement these measures, the RAC may recommend cancellation of the Ph.D. registration with specific reasons

### **7.3.3. Six-Monthly Progress Reporting**

**i. Submission of Report:** Every registered research scholar must submit a progress report every six months through the research guide using the prescribed format (Annexure II). **In case the research scholar fails to submit his/her progress report for two consecutive terms, his/her registration shall be liable for cancellation.**

**ii. Presentation Before RAC:** The research scholar must appear before the Research Advisory Committee once every six months to present the progress of their research work for evaluation and guidance.

**iii. Forwarding to University:** The progress report must be forwarded through the Head of the Research Centre to the Director, Board of Examinations and Evaluation of the University,

**iv. Timeline for Submission:** The six-monthly progress report must be submitted within one month from the date of its presentation before the RAC.

**v. Absence from Seminar:** If a research scholar is unable to deliver the seminar due to a genuine reason, he/she must inform the Research Coordinator in advance.

However, if the scholar remains absent for more than three consecutive seminars, regardless of the reason, the RAC recommend to cancel the registration to RTMNU. No further claims regarding the continuation or reinstatement of the registration shall be entertained (Refer to **Section 12 & Section 18** of Direction 22 of RTMNU-2025)

**vi. Presence of R&D Team Member:** At least one member from the R&D team must be present during each seminar.

### 7.3.4 Pre-Submission Seminar Guidelines

The research scholar must apply in writing for the scheduling of the seminar, duly endorsed by the supervisor, ensuring that all requisite criteria and documentation are fulfilled as per the norms of the Research Centre

#### i. Application for Pre-Submission Seminar

The application submitted by the research scholar must clearly mention that the requirements of the Research Centre have been fulfilled. The application should include the following details:

1. Number of Seminars Delivered: .....
2. Number of Research Papers Published in Reputed Journals:
  - o (e.g., Scopus-indexed, Elsevier journals)
3. Number of International Conferences Attended and Papers Presented: .....
4. Number of Papers Under Review or in Process for Publication: .....

#### ii. Enclosures to be Submitted with the Application

The application must be accompanied by the following documents:

1. Copy of University Registration Letter
2. Seminar Details – Dates, Progress Reports, Feedback, and Implementation of Suggestions
3. Published Research Papers – One set of copies along with a consolidated list
4. Research Centre Fee Details – Payment receipts or confirmation

#### iii. Authorship and Affiliation in Publications

- In all research publications, the research scholar must be listed as the first author.
- The research scholar must mention their affiliation as:

**“Research Scholar, Priyadarshini College of Engineering, Nagpur”**

**Important Note:** *If a publication does not mention the scholar’s affiliation as a research scholar at Priyadarshini College of Engineering, it will not be considered as part of the official research work.*

#### iv. Review by Departmental Ph.D. Committee

Before scheduling the pre-submission seminar, the Departmental Ph.D. Committee (RCC) shall:

- Verify the application and supporting documents
- Ensure the research scholar meets the academic and publication criteria
- Recommend suitable action regarding seminar scheduling

**v. Scheduling of Pre-Submission Seminar**

The Research Advisory Committee (RAC) shall evaluate the quality and completeness of the research during the pre-submission seminar.

- If the RAC is satisfied, the scholar will be permitted to proceed toward thesis submission.
- If the RAC finds the research work incomplete or unsatisfactory, the scholar will be advised to undertake further research and may reapply at a later date for the pre-submission seminar.

**7.3.5 Plagiarism** (Refer to **Section 20** of Direction No.22 of 2025 of RTMNU)

**7.3.6 The Submission of Thesis** (Refer to **Section 21** of Direction No.22 of 2025 of RTMNU)

**8.0 GUIDELINES FOR RESEARCH PROPOSAL**

The **research and development (R&D) culture** of any **technical institute** is a key factor in assessing its academic excellence. One of the primary indicators of a strong R&D culture is the **number and quality of research grants received** through successful research proposals.

Securing research grants provides **faculty members and students** with valuable opportunities to **initiate or continue their research work** within the institute. To obtain **financial assistance**, researchers can explore various **funding agencies and platforms**, such as:

1. All India Council for Technical Education (AICTE)	11. University Grants Commission (UGC).
2. RashatraSant Tukodoji Maharaj Nagpur University Nagpur (RTMNU)	12. Department of Science & Technology (DST)
3. Defence Research & Development organization (DRDO)	13. Indian Space Research Organization (ISRO)
4. Aeronautical Research & Development Board (ARDB)	14. Department of Atomic Energy (DAE)
5. Ministry of Micro, Small & Medium Enterprises(MSME)	15. Institution of Engineers (India) (IE).
6. Ministry of Communications and Information Technology.	16. Ministry of Agriculture and HRD.
7. Industry - IBM, TCS, Infosys, TATA Motors, Honeywell, etc	17. Ministry of Non-Conventional Energy Sources
8. Indian Council of Social Science Research (ICSSR)	18. National Science Fund, U. S. (NSF) .
9. Scientific and Engineering Research Board (SERB)	19. Aeronautical Development Agency (ADA)
10. Council of Scientific & Industrial Research (CSIR)	20. Department of Biotechnology (DBT)

## 8.1 Guidelines for the Research Proposals

The guidelines for the research proposals are as follows :

1. All research proposals must be routed through the **Dean (R&D)**.
2. The **Principal Investigator(s)** must submit both a hard and soft copy of the proposal to the **Dean (R&D)** through the **Head of the Department (HOD)** at least **10 days before** the submission deadline.
3. The **Principal Investigator** is required to present the proposal before the **College Research Approval Committee (C-RAC)** for evaluation.
4. Based on the committee's assessment, the **Dean (R&D)** will review the proposal.
5. If the proposal meets the required standards, the **Dean (R&D)** will recommend it to the **Principal** for final approval.

### 8.1.1 Proposal Requirements

The research proposal should include the following:

1. A clear statement of objectives, an overview of the current national and international status, the methodology to be employed, a detailed research plan, expected results, and project outcomes, along with a **budget estimate for two years**.
2. A **detailed budget estimate**, categorized under different heads such as equipment, consumables, chemicals/reagents, supplies, contingency, books, etc.
3. The **end-user application** of the project, specifying how the product or research outcome will be utilized after completion.

### 8.1.2 Post-Approval Guidelines for Research Proposals

1. The **Principal Investigator (PI)** must present their project work **quarterly** before the **Project Evaluation Committee**.
2. All **Principal Investigators** are required to publish their research findings in an **international peer-reviewed conference or a reputed journal**.
3. A **separate dead stock/consumable stock entry** must be maintained for all purchases made under the research project.
4. The **Principal Investigator** must submit an **annual progress report**, along with the **statement of accounts and utilization certificate**, at the end of the financial year to ensure the release of the subsequent grant.
5. If the **Principal Investigator** leaves the institute, all **instruments, software, and other purchased items** will remain the **property of the institute**.
6. The **Principal Investigator, Co-Principal Investigator, and Head of the Department (HOD)** are responsible for ensuring the **security and proper maintenance** of all instruments, software, and other materials in the laboratory and department.

### **8.1.3 Post-Completion Requirements for Research Projects**

Upon project completion, the Principal Investigator (PI), must submit a final report, which should include:

- Technical Report with conclusions – Two hardbound copies along with a soft copy of any published, presented, or accepted research papers.
- Statement of Accounts detailing the financial aspects of the project.
- Utilization Certificate confirming the appropriate use of funds.
- A final project report indicating how the research outcomes will be utilized by the end user, including its implementation, transfer, and benefits to society, industries, or other relevant sectors.
- It is mandatory for the PI, Co-PI, and Head of the Department (HOD) to display or make available the developed model, software, or equipment to students, faculty members, committee members, and end users for reference and learning purposes.

## **8.2 Sponsored Research Projects**

### **1. Submission & Scrutiny:**

- Faculty members must submit their research proposals to the R&D Cell for review before forwarding them to funding agencies such as AICTE, UGC, DST, etc.

### **2. Institutional Support:**

- The institute provides comprehensive support for the execution of R&D projects.
- Funds sanctioned by the funding organization must be credited to the institute's bank account and utilized strictly as per the approved budget, without any deviations.

### **3. Financial Guidelines:**

- No alterations or deficiencies in budget allocation are permitted.
- Any shortage of funds must be covered through honorarium or remuneration.
- If the cost escalation of a project occurs due to uncontrollable factors, it must be reported to the Director for approval and necessary action.

### **4. Collaboration & Student Involvement:**

- Faculty members can collaborate on major research projects for publications and patents.
- UG/PG students must be involved in sponsored research projects and may receive remuneration, if feasible.

### **8.3 Collaborative Research Projects**

#### **i. Industry-Sponsored Research Projects**

Public and private sector-sponsored projects can leverage institutional expertise for research. If a patent is registered, the income generated will be shared among the industry, researcher, and institute, leading to the following benefits:

- The researcher gains valuable exposure in the relevant research domain.
- The industry receives effective solutions to its challenges.
- The researcher, institute, and industry benefit from the commercial applications of the research.
- Society ultimately benefits from the introduction of new R&D products or services.

#### **ii. Multi/Interdisciplinary Research**

Interdisciplinary and multidisciplinary research is essential in addressing complex problems that cannot be solved by a single department, institution, or researcher alone. The institute actively encourages faculty members to engage in collaborative R&D activities across disciplines. The following actions are implemented:

- Identification of key multidisciplinary/interdisciplinary R&D areas.
  - Collaboration with experts from various disciplines to work on joint projects.
  - Assessment of infrastructure requirements for interdisciplinary research.
- Exploration of potential funding and resource opportunities for such research initiatives.

#### **iii. Inter-Institutional Research**

Faculty members are encouraged to develop research proposals in collaboration with renowned research institutions such as Universities, NITs, IITs, and other organizations with similar research interests.

Faculty may take up roles as Principal Investigators (PI) or Co-Investigators (Co-PI) based on their contributions to the research.

### **8.4 Intellectual Property (IP)**

- In the event of any innovation or invention, the institute encourages researchers to file for a patent.
- The institute has a collaboration with a third-party agency to facilitate the patent application process.
- The institute shall cover all expenses related to the patent filing process, in accordance with its IP policy.
- If the patent is commercialized, revenue sharing will be done as per the Institute's IP Policy.

## **9.0 RESEARCH INCENTIVE POLICY**

**Reference:** As per Circular No. **LTJSS/Principals/2021-22/009** dated 18-01-2023 issued by the Office of the Director (Engineering), this policy outlines the incentives and support provided to faculty and students for promoting quality research and innovation.

**Effective Duration:** From **01 July to 30 June** of every academic year.

### **9.1 Support for Faculty**

The institute provides various forms of support to faculty members to promote research, innovation, and intellectual property generation. These include:

- i) Support for Publication in Reputed Research Journals
- ii) Incentives for Copyright Registration
- iii) Assistance and Recognition for Patent Filing by Faculty Affiliated to PCE

#### **i. Publication in Reputed Research Journals**

Incentives will be provided to faculty members for publishing research papers in peer-reviewed journals indexed in reputed databases such as SCI, SCIE, Scopus, and UGC CARE.

#### **ii. Copyrights**

Faculty members securing copyrights for original academic or research-related content will be eligible for recognition and monetary incentives as per the policy norms.

#### **iii. Patent Filing**

Faculty affiliated with Priyadarshini College of Engineering (PCE) will be supported for filing patents at national or international levels.

## **9.2 Support for Students**

The institute encourages and supports students in their research, innovation, and professional development through the following initiatives:

- 1. Support for research paper publication
- 2. Support for Project & innovative idea presentation in technical events at IITs & NITs

#### **1. Publication in referred Journals**

Students who publish research articles in referred journals will be eligible for incentives and a certificate of appreciation.

#### **2. Project & innovative idea presentation**

3. Students winning awards at recognized workshops, technical festivals, and conferences at IITs & NITs will be eligible for incentives

### 9.3 Final Decision-Making Authority

All proposals for incentives/support under this policy will be evaluated by a 4 to 5 - **Member Committee** comprising:

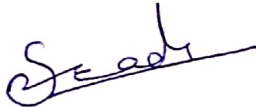
1. Head of the Institute (Principal/Director)
2. Dean (Research and Development)
3. Two Senior faculty members as Experts:
4. Head of the respective department ( if required)

The decision of the committee shall be final and binding in all cases.

### 9.4 Procedure

As per Circular No. LTJSS/Principals/2021-22/009 dated 18-01-2023, issued by the Office of the Director (Engineering), the following procedure is to be followed:

1. Faculty members shall submit their claims in accordance with the circular issued by the Office of the Director (Engineering).
2. A committee comprising 3–4 senior faculty members shall verify the claims and record their remarks.
3. The committee, along with the R&D team, shall jointly review the claims for final remarks.
4. Upon finalization of the committee's remarks and after obtaining approval from the Principal, the consolidated claim shall be submitted to the Accounts Section for the release of the sanctioned amount.



Dr. ( Mrs.) S.W.Varade  
Dean ( R&D)



(Dr. S. A. Dhale)  
Principal

Date :