AISECT GROUP OF UNIVERSITIES
India's Leading Higher Education Group
CHHATTISGARH | MADHYA PRADESH | JHARKHAND | BIHAR

RISE@AGU- 2024
RESEARCH, INNOVATION, SKILLS & ENTREPRENEURSHIP

RESEARCH IN
AISECT
GROUP OF UNIVERSITIES
(AGU)

AISECT GROUP OF UNIVERSITIES
RESEARCH, INNOVATION & CONSULTANCY

RNTU Rabindranath TAGORE UNIVERSITY
MADHYA PRADESH, BHOPAL

DR. C.V. RAMAN UNIVERSITY
Chhattisgarh, Bilaspur AN AISECT GROUP UNIVERSITY

DR. C.V. RAMAN UNIVERSITY
Bihar, Vaishali AN AISECT GROUP UNIVERSITY

AISECT UNIVERSITY
JHARKHAND, HAZARIBAG AN AISECT GROUP UNIVERSITY

DR. C.V. RAMAN UNIVERSITY
Madhya Pradesh, Khandwa

SCOPE GLOBAL SKILLS UNIVERSITY

RISE@AGU- 2024

RESEARCH, INNOVATION, SKILLS & ENTREPRENEURSHIP

RESEARCH IN AISECT GROUP OF UNIVERSITIES (AGU)

AISECT GROUP OF UNIVERSITIES
RESEARCH, INNOVATION & CONSULTANCY

RNTU Rabindranath TAGORE UNIVERSITY MADHYA PRADESH, BHOPAL

DR. C.V. RAMAN UNIVERSITY Chhattisgarh, Bilaspur AN AISECT GROUP UNIVERSITY

DR. C.V. RAMAN UNIVERSITY

AISECT UNIVERSITY JHARKHAND, HAZARIBAG AN AISECT GROUP UNIVERSITY

DR. C.V. RAMAN UNIVERSITY Madhya Pradesh, Khandwa

SCOPE GLOBAL SKILLS UNIVERSITY

AGU RESEARCH- A ROAD MAP FOR EXCELLANCE

Research, skill development, innovation, and entrepreneurship form the foundational DNA of the AISECT Group of Universities (AGU), setting them apart from other institutions. The New Education Policy (NEP) of 2020 marked a significant shift towards quality research and innovation with a holistic approach. In parallel, the Skill India Mission, initiated in 2015, aimed to address the skill deficit by equipping individuals with relevant competencies. Meanwhile, Rabindranath Tagore University (RNTU), since its establishment in 2011, has been at the forefront of cultivating a culture of research and innovation among students and faculty. In 2013, RNTU pioneered the introduction of skill electives into its curriculum, further enhancing its educational offerings. The Government of India's Innovation Mission, launched in 2017 to promote entrepreneurship and startups, spurred RNTU to become the first private university in central India to host an Atal Incubation Centre. RNTU's commitment to sustainability was recognized when it was selected by the Ministry of New and Renewable Energy (MNRE) as one of only 17 campuses nationwide to receive funding for developing a green campus. Additionally, within the university campus, the establishment of Pradhan Mantri Kaushal Kendra (PMKK) and partnerships with prominent companies such as DAIKIN, LUCAS-NUELLE, Microsoft, Micro Focus, Tata, Frugal Labs, and Intel have provided invaluable opportunities for skill development and industry readiness among students, while also fostering an environment conducive to research and innovation.

AGU's relentless pursuit of excellence has resulted in numerous milestones within the higher education landscape. The institution's proactive initiatives are reshaping the paradigms of research and innovation in higher education institutions (HEIs). AGU's focus on integrating research, skill development, and entrepreneurship not only distinguishes it from its peers but also positions it as a pioneer in the field.Through its strategic collaborations, cutting-edge facilities, and forward-thinking curriculum, AGU is nurturing a generation of students equipped to tackle the challenges of tomorrow's world. As AGU continues to push boundaries and redefine standards, its impact on the education sector resonates far beyond its campuses, inspiring a new era of innovation-driven learning and societal advancement.

Over 300 research faculty, armed with PhD, long research experience and industry background, are the big asset and real strength of AGU research. For lit's capability and research potentials, AGU has bagged research projects funded by DST, DRDO, MNRE, MPCST and similar organizations. Most innovative initiative of AGU was the independent group titled Core Research and Innovation Group (CRIG), to provide internal funding for which a huge corpus of 1 Crore annually has been set up in the AGU. CRIG has its own advisory board of eminent specialists. It has funded over 35 research projects in last 6 years and financed over 100 patents. Multidisciplinary approach and collaborative research is another niche area of AGU research. AGU has large number of active research collaborations with universities, research organisations and industries within the country and abroad. There are over 15 International and 150 National active research collaborations of AGU. AGU is also very well known for meaningful mega research events in the form of international and national conferences, seminars and symposiums. The most interesting part of these events is that, they are not only in STEM topics, but also in humanities where Rabindranath Tagore Centres for Art & Culture is conducting research in languages, arts, history, yoga etc and providing real grounds for implementing the vision of 2020 motivating Indian youth to revisit the cultural roots of India. This catalogue provides a window to look in the rich research resources available at AGU interns of advanced equipments, laboratories, hardware & software packages and highly trained, experienced qualified research people.

CONTENT

1 AGU – UNIVERSITIES OF NEW INDIA

1.1 ABOUT AGU

The concept of AISECT Group of Universities (AGU) originated in early eighties with AISECT Network's skill development and distance learning initiatives. Comprising Six premier universities, AGU prioritizes affordable, high-quality education, research, and entrepreneurship. Situated in rural and tribal areas, these universities pioneer private education, addressing educational disparities and empowering underserved communities. Blending tradition with modern methods, AGU fosters conducive learning environments. Named after eminent personalities like Dr. CV Raman and Rabindranath Tagore, these campuses symbolize dedication to knowledge and innovation. AGU excels in research, innovation, and entrepreneurship, recognized nationally and internationally. Beyond campuses, AGU catalyzes social and economic development, empowering communities through education.

- **Dr. C.V. Raman University, Bilaspur, Chattisgarh** (CVRU, Bilaspur)
- **Rabindranath Tagore University, Bhopal, Madhya Pradesh** (RNTU, Bhopal)
- **Dr. C.V.Raman University, Vaishali, Bihar** (CVRU ,Vaishali)
- **AISECT University, Hazaribagh, Jharkhand** (AU, Hazaribagh)
- **Dr. C.V.Raman University, Khandwa, Madhya Pradesh** (CVRU, Khandwa)
- **SCOPE Global Skills University, Bhopal, Madhya Pradesh** (SGSU, Bhopal)

AISECT™ GROUP OF UNIVERSITIES
India's Leading Higher Education Group
CHHATTISGARH | MADHYA PRADESH | JHARKHAND | BIHAR

AGU STRENGTH

- **6 Premier Universities**
- **44 Advanced Research Centers**
- **250 + Research Faculties with Ph.D.**
- **28K +Students**
- **1.6K + Faculty**
- **320 + Labs**
- **Food Processing Unit**
- **Atal Incubation Center**

AGU-THE CUTTING EDGE

- ✓ NIRF Ranking
- ✓ NAAC Accreditation
- ✓ Atal Incubation Center by Neeti Aayog GoI
- ✓ PMKK within campus
- ✓ 15 + world class Industry Centers
- ✓ Publishing two Research Journals Anusandhan and Shodhaytan
- ✓ 70+ Active Start ups
- ✓ 145 patents of social concerns
- ✓ Rs. One Cr. Annual research fund
- ✓ Huge International Center for Arts Culture and literature
- ✓ International Association ISWEES -Water Energy Envir & Society

1.2 WHAT RESEARCH MEANS TO AGU

Research at AGU transcends the conventional perception of a systematic process; it's envisioned as a dynamic endeavor aimed at creating something novel, whether new knowledge, technologies, or societal improvements. AGU emphasizes tangible and impactful results, viewing research as a catalyst for innovation and societal progress. The goal is to extend outcomes beyond academic confines, directly benefiting society. AGU advocates for research with practical applications, contributing to the welfare of communities. Success is measured not just by academic significance but by real-world positive changes. By fostering an environment conducive to impactful research, AGU aims to produce outcomes that reach beyond scholarly circles, driving societal advancement. Whether through technological innovations, streamlined processes, or solutions to pressing challenges, AGU's research endeavors are envisioned as agents of positive transformation, breaking traditional academic boundaries.

1.3 RESEARCH PHILOSOPHY IN AGU

Research philosophy encompasses four pillars. Firstly, Positivist Research Philosophy entails understanding problems objectively, with researchers separating from personal values. Secondly, Interpretive Philosophy views problems subjectively. Thirdly, Pragmatist Research Philosophy deals with practical facts, guiding methodology selection. Lastly, Realism Research Philosophy includes direct realism, accepting things at face value, and critical realism, acknowledging potential deception. These pillars create a supportive environment for effective research based on the problem and objectives. AGU emphasizes conducting realistic and literature-based surveys to identify research gaps before framing questions and objectives. Ethics, paramount to AGU, involve ensuring honesty, objectivity, carefulness, and respect for intellectual property throughout the research process. AGU employs software to detect plagiarism but also stresses integrity and fairness in data, results, and analysis. Regardless of the philosophical approach or combination, AGU advocates for rigorous ethical standards in research, prioritizing integrity and credibility.

1.4 IMPLEMENTATION OF RESEARCH PHILOSOPHY IN AGU

AGU prioritizes research integrity and impact through a meticulously designed ecosystem. The Research and Development Department (RDD), overseen by the Vice Chancellor, centrally manages administrative aspects of Ph.D. research. University Teaching Departments (UTDs) provide crucial supervision and support, fostering a nurturing environment for scholars. Research Centers, led by independent Coordinators/Directors, focus on specialized research, ensuring responsiveness to diverse academic needs. The Core Research and Innovation Group (CRIG) coordinates internal funding and aligns research with AGU's goals. Collaboration is key, extending to partnerships with other institutions and industries. AGU sees research as a catalyst for societal development, addressing real-world issues. Its ecosystem fosters collaboration, innovation, and problem-solving, envisioning itself as a hub for impactful research. From RDD to CRIG, each component contributes to AGU's mission of advancing knowledge and societal well-being through collaborative, problem-solving research. Through this approach, AGU aims to shape the future through meaningful knowledge creation and dissemination.

SOME IMPORTANT INDUSTRY CENTERS IN AGU

Microsoft

TATA MOTORS

BOSCH

intel

DAIKIN
AIR CONDITIONERS

LN
LUCAS-NUELLE

Schneider Electric

frugal labs
Tech Solutions Pvt Ltd.

MICRO FOCUS

2 CRIG-AGU

2.1 CRIG – A UNIQUE CONCEPT

The Core Research and Innovation Group (CRIG) at AGU has instituted a Departmental Research and Innovation Cell (DRIC) within each university department. DRIC oversees various activities, including researcher recognition, financial benefits, and appraisal report considerations. Its roles include serving as the Nodal Center for departmental and inter-departmental research, nurturing a culture of innovation, and providing visible representation of research efforts through dedicated display corners. DRIC aims to implement structured policies to encourage scholarly output, such as annual paper production per faculty, project initiation, and publication targets. Prioritizing academic growth, DRIC aims to enhance engagement in PhD research and leverage Research Centers of Excellence for innovative initiatives. It emphasizes comprehensive documentation, regular meetings, and collaborative efforts under Memorandums of Understanding (MoUs). Harnessing social media, DRIC seeks to optimize platforms for academic communication, ensuring widespread dissemination of scholarly achievements and support a connected academic community within AGU.

CRIG – ADVISORY BOARD

Shri Santosh Choubey, Chancellor, RNTU, Bhopal (M.P.)
Prof. Vijay Kant Verma, Chancellor, CVRU, Vaishali (Bihar)
Prof. Rajni Kant, VC, RNTU, Bhopal, (M.P.)
Prof. Ravi Prakash Dubey, VC, CVRU, Bilaspur, (C.G.)
Prof. M.L. Gaur, VC, CVRU, Vaishali (Bihar)
Prof. Pramod Kumar Naik, VC, AU, Hazaribagh, (Jharkhand)
Prof. Ajay Bhushan, VC, SGSU, Bhopal (M.P.)
Prof. Amitabh Saxena, VC, CVRU Khandwa, (M.P.)
Dr. Mohamed Ouessar, IRA, Tunisia
Mr. Richard Hopkins, ORCA, Australia
Prof. S Sapra UCF, USA
Prof. FJ Manjon UPV, Spain
Prof. Weicheng W U, ECUT, China
Prof. Joel Kibiiy, Moi University, Kenya
Prof. M. Sundarrajan, (Science)
Prof. Salim Abbas Bhai Chaniwala (Energy)
Prof. Tarun Pandya (Management)
Prof. Vimal Kumar Sharma (Science)
Prof. Murali Mantrala (Management)
Prof. Sandhya Chaturvedi (Sociology)
Dr. Ram Narayan Yadav (Environment)
Prof CK Ghosh (Engineering)
Maj Gen Chaturvedi (Technology)
Dr. Dinesh Kumar Soni (Engineering)
Dr. H.D. Verma (Agriculture)

2.2 VISION & MISSION OF CRIG

VISION

The Core Research & Innovation Group (CRIG) of AISECT Group of Universities (AGU) will develop, an effective environment for meaningful research and innovation, in all constituent Universities of AGU in development of research projects, development of research facilities, publication of research work, help in organizing research related events/activities and promotion of innovative ideas for research.

MISSION

- To develop a culture of research and innovation amongst faculty, researchers and students in AISECT Group.
- To help AGU in building centers of Research Excellence in constituent Universities in their respective area of expertise and to help in exploring new frontiers of research.
- To invest in promising research work and researchers through internal funding.
- To motivate researchers in AGU to take up projects, which are of social and national relevance and explore for external funding agencies.
- To develop own research journals and to take up publication of quality research material for publication in these journals and make effort for indexing and recognition.
- To assist AGU constitutes in organizing national and international research events in order to improve quality of research and to build a motivational research environment amongst faculty and students.
- To enhance researchers abilities through exploring untouched areas of research.
- To create research friendly administration and infrastructure in AGU.
- To raise the need of research community.
- To broaden the AGU research activities through collaboration with other research organizations and institutes in India and abroad.
- To Support and promote AGU for developing strong infrastructure for multidisciplinary research project.

2.3 RESEARCH VALUES AND GUIDING PRINCIPLES

- The equitable treatment of researchers, valuing their unique perspectives and develop an environment guided by robust research principles are primary objectives of research.
- We cultivate innovation and flexibility, aligning with our mission to research adaptability. Transparency and integrity anchor our decisions, complemented by cutting-edge proposals elevating CRIG's significance. Open communication is paramount, encouraging a dynamic exchange of ideas between CRIG and universities.
- We dedicate ourselves to cultivating robust partnerships, supporting sustained growth and significant contributions to AGU's research landscape.
- Our philosophy to centers on disseminating research for societal betterment, aiming for the highest standards in social research.
- Envisioning AGU's future, we aspire to simplify the research process, develop an environment that supports researchers' needs. By aligning our goals with researchers', we create a symbiotic collaboration driving individual success and the institution's knowledge advancement.
- AGU's commitment to supporting research efforts ensures a mutually beneficial relationship, propelling the research community forward within the institution.

2.4 MULTIDISCIPLINARY RESEARCH

In contemporary research endeavors, there's a notable trend towards interdisciplinary collaboration, drawing insights from various educational domains. For instance, projects in Mechanical and Electrical Engineering increasingly integrate Internet of Things (IoT) technologies to amplify their societal impact. This blending of disciplines is evident across numerous research initiatives, enriching their relevance and effectiveness. Aligned with the directives outlined in the National Education Policy (NEP) 2020, the Core Research & Innovation Group (CRIG) actively promote multidisciplinary research within the AISECT Group of Universities. To cultivate a culture of interdisciplinary awareness, AGU organizes regular discussion sessions and researcher meetings. Engineers, scientists and agricultural experts converge on joint projects, pooling their expertise to yield substantive outcomes. Several noteworthy research endeavors from AGU have garnered recognition on esteemed platforms, underscoring the institution's commitment to pioneering multidisciplinary approaches and helping impactful scholarly contributions.

2.5 DEPARTMENTAL RESEARCH & INNOVATION CELL (DRIC)

The Core Research and Innovation Group (CRIG) at AGU has instituted a Departmental Research and Innovation Cell (DRIC) within each university department. DRIC oversees various activities, including researcher recognition, financial benefits, and appraisal report considerations. Its roles include serving as the Nodal Center for departmental and inter-departmental research, promoting a culture of innovation and providing visible representation of research efforts through dedicated display corners.

DRIC aims to implement structured policies to encourage scholarly output, such as annual paper publication per faculty and project initiation. Prioritizing academic growth, DRIC aims to enhance engagement in PhD research and leverage Research Centers of Excellence for innovative initiatives. It emphasizes comprehensive documentation, regular meetings, and collaborative efforts under Memorandums of Understanding (MoUs).

Connecting through social media, DRIC seeks to optimize platforms for academic communication, ensuring widespread dissemination of scholarly achievements and connected academic community within AGU.

JOURNALS

2.6 JOURNALS

In a significant move towards enhancing academic discourse, Rabindranath Tagore University (RNTU) achieved a milestone in 2012 with the inception of ANUSANDHAN, a print journal focusing on engineering, science, and management. This initiative aimed to support research writing among professionals and experts. Building on this success, RNTU expanded its scholarly endeavors in 2014 by introducing SHODHAYTAN, a multidisciplinary print journal covering commerce, education, and humanities. Both journals transitioned to online platforms, providing accessible forums for scholars, researchers, and industry experts to showcase their work. As an NIRF-ranked and NAAC-accredited institution, RNTU believes in nurturing quality research as a catalyst for India's vision. Currently, the operation of these journals falls under the horizon of the Core Research and Innovation Group (CRIG), managed by AISECT Publication Pvt Ltd. This evolution demonstrates AGU's commitment to developing a vibrant research culture, promoting academic excellence, and disseminating cutting-edge knowledge globally.

2.7 SHODH SHIKHAR

Shodh Shikhar, launched in the academic year 2021-22, represents Rabindranath Tagore University's (RNTU) dedication to nurturing curiosity and collaboration. Under the theme "Atma Nirbhar Bharat," the festival encourages young researchers to partake in a celebration of their endeavors, promoting a research-driven atmosphere.

Its primary goal is to acknowledge and commend the endeavors of youthful intellects that resonate with the nation's aspirations. By bringing together researchers from various domains, including Engineering & Technology, Science & Agriculture, and Commerce, Humanities & Management, Shodh Shikhar facilitates interdisciplinary exchange and cooperation.

The festival extends invitations to academics, scientists, partners, and students to exhibit exceptional research through paper presentations and project demonstrations. With an inclusive stance on language, Shodh Shikhar welcomes research in any linguistic medium, incorporating subthemes that align with national priorities. This all-encompassing strategy encourages researchers to contribute meaningfully to the country's progress.

Expecting widespread engagement from across the globe, Shodh Shikhar invites participants to join the Annual Inter University National Research Festival hosted on the RNTU Bhopal in Campus. Envisioning a worldwide network committed to advancing research for societal upliftment, the festival serves as a hub for knowledge dissemination, innovative ideation, and cultural interchange.

2022

2023

3 CENTERS OF RESEARCH EXCELLENCE

3.1 NEW DIMENSIONS OF RESEARCH

AGU has erected multiple Centers of Research Excellence, bolstering research and educational efficacy. These centers serve as expansive platforms for faculty and students to engage with diverse research communities collaboratively. Each center adheres to a systematic approach, emphasizing five pivotal aspects for research excellence: Formation, Staff, Working Patterns, Performance, and Financial Support. This strategic blueprint ensures the seamless operation of these centers, markedly contributing to knowledge advancement and fostering a vibrant environment for exploration and collaboration within the academic sphere. Through meticulous attention to these fundamental elements, AGU's Centers of Research Excellence uphold a standard of excellence, driving innovation and facilitating interdisciplinary collaboration to address pressing challenges and propel scholarly endeavors forward.

Formation of Centers

AGU's constituent universities strategically established 39 Centers of Research Excellence, tailored to specific needs and leveraging available expertise to ensure effective societal impact. Each center operates independently but aligns with the administrative hierarchy under the university's Dean Academic. Inclusive organizational dynamics welcome faculty members and doctoral students from all disciplines, with each center led by a Coordinator and supported by research scholars. AGU uniquely allows doctoral students and visiting scholars to engage across multiple centers, facilitated by Center Coordinators to enable collaborative research. Advisory Boards comprising distinguished faculty and external experts ensure each center benefits from global expertise. This collaborative model enhances research quality and impact. AGU's commitment to interdisciplinary research drives the success of these ventures, by impactful research projects and activities. AGU's Centers of Research Excellence emerge as dynamic hubs at the forefront of cutting-edge research by promoting inclusivity, leadership, and collaboration.

Staff Members

The operational success of a research center relies not only on its academic contributors but also on crucial support personnel. Faculty members, visiting scholars, and doctoral students collaborate with dedicated staff members who ensure the center's efficiency. At the core of this operational framework is the Center Administrator, responsible for daily operations, managing interactions with various entities, and supporting all physical aspects of the center. Another pivotal role is the Research Coordinator, who coordinates research projects, identifies research needs, orchestrates activities, and generates comprehensive reports on progress and findings. Research Coordinators also explore new research opportunities, contributing to the center's growth. They assist in the publication process, guiding contributors in finding suitable outlets and facilitating scholarly writing initiatives, thereby contributing to the dissemination of research outcomes. Together, these support personnel ensure the smooth functioning and impactful contributions of the research center, enriching its academic endeavors and fostering a culture of excellence and collaboration.

Working Pattern

The research center functions not just as a physical facility but as a dynamic platform fostering interaction among educators, scientists, students, and industry experts. Its overarching goals include advancing research, promoting academic excellence, solving real-world problems, and creating and disseminating knowledge. By providing a collaborative environment, the center integrates knowledge from diverse disciplines to arrive at accurate and efficient solutions to complex problems.

To enhance research efficiency, the center strategically ensures each faculty member collaborates with multiple doctoral students, and reciprocally, each doctoral student engages with multiple faculty members. This collaborative structure forms a larger group that facilitates the exchange of ideas and contributes to an effective research process. Consequently, the environment becomes a hub of diverse perspectives, fostering a culture of innovation and creativity conducive to addressing multifaceted challenges and advancing scholarly endeavors.

Performance Record

The performance of Centers of Research Excellence is fundamentally measured by their ability to consistently generate innovative research ideas, methodologies, and solutions while effectively documenting them. AGU's Centers of Research Excellence excel in all these aspects, showcasing an outstanding track record in advancing research and its practical applications within their respective domains. These centers consistently demonstrate their ability in pushing the boundaries of knowledge, exploring creativity, and addressing pressing challenges through rigorous research endeavors. Their capacity to innovate, coupled with their efficiency in documenting findings, underscores their significance in contributing to the academic and practical landscape.

AGU's commitment to excellence in research is reflected in the remarkable achievements of these centers, which continue to spearhead groundbreaking initiatives and make significant contributions to their fields, establishing themselves as pivotal hubs for cutting-edge research and innovation within the institution.

Financial support

The financial well-being of a research center is paramount for its success. The achievement of objectives and effective conduct of research to expand the knowledge base depend on financial stability and security. Financial support is crucial for the growth and success of a research center. At AGU, research centers typically receive financial support from various sources. These may include institutional funding, government grants, industry partnerships, and collaborative research projects.

Each of these sources plays a vital role in providing the necessary resources to sustain the operations of the research center, including funding for equipment, facilities, personnel, and research activities. By diversifying funding sources and securing adequate financial support, research centers can ensure their continued operation and pursue innovative research initiatives that contribute to advancements in knowledge and address societal challenges. AGU recognizes the importance of financial support in enabling research excellence and actively seeks funding opportunities to support the endeavors of its research centers.

- The center can become self-financing by undertaking projects with government research centers and engaging in consulting projects. Essentially, it would function as a consulting firm, adopting a structure similar to that of a research center. This approach will enable the center to raise funds to finance its operations and ongoing projects.
- The university provides funds for setting up research facilities.
- The AGU provides funding for the centers through CRIG for specific research projects.

3.2 CATEGORIES OF RESEARCH CENTERS IN AGU

AGU comprises 43 Centers of Research Excellence across its constituent universities. Rabindranath Tagore University, Bhopal leads with 18 centers, followed by Dr. C.V. Raman University Bilaspur with 15, Dr. C.V. Raman University, Vaishali with 5, AISECT University, Hazaribagh with 2, and Dr. C.V. Raman University Khandwa with 3 centers. These centers are categorized into three groups: Technology, Skill, and Cultural, each dedicated to advancing research in its respective domain.

Technology Centers of Research Excellence:

Research Centers in the field of technology and engineering fall under this category, typically comprising a blend of engineering and science disciplines. These centers prioritize multidisciplinary research, often collaborating with other categories and within the same domain. With a core vision of promoting innovation, technical centers engage in diverse projects, aiming for comprehensive solutions to complex challenges through interdisciplinary cooperation.

Skill Centers of Research Excellence:

AGU hosts multiple skill centers dedicated to cultivating proficient workers and researchers. Alongside renowned industry giants like DAIKIN, LUCAS, Microsoft, Frugal lab, and Tata, AGU houses PMKVY, DDUGKY, and approximately 8 other skill centers. These establishments offer not only skill training but also prestigious programs. Furthermore, various departments operate Skill Academies, supplementing academic syllabus with industry-relevant skill courses. This integration ensures that diploma and undergraduate curriculum align with the demands of contemporary industries, equipping students with practical expertise alongside theoretical knowledge for enhanced employability and career prospects.

Cultural Centers of Research Excellence:

The Technology Centers of Research Excellence within AGU encompass a diverse array of fields within technology and engineering. Typically, these centers integrate multiple streams of engineering, fostering a collaborative environment conducive to multidisciplinary research. While their primary focus remains on technological advancements, they often engage in partnerships and projects spanning various categories, enhancing the breadth and depth of their research endeavors. In addition to technological innovation, AGU's Cultural Centers of Research Excellence play a vital role in promoting Indian culture on both national and international

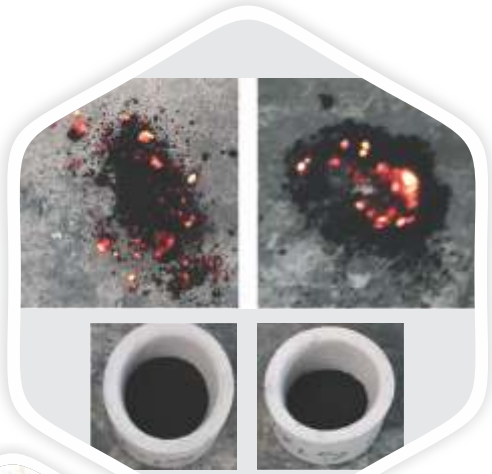
platforms. Under the auspices of the "Vanmali Srijan Peeth," these centers delve into various dimensions of India's rich cultural heritage through in-depth research. They explore aspects of visual, performing, and literary arts, enriching the academic curriculum of AGU universities with Indian cultural subjects. Moreover, AGU's Dramatics School not only offers diploma and degree programs but also actively engages in research on various forms of theatrical work, contributing to the preservation and evolution of India's cultural heritage. Through these initiatives, AGU ensures that students across disciplines benefit from cultural exposure and contribute to the scholarly exploration of India's vibrant cultural landscape.

3.3 TECHNOLOGY CENTERS OF RESEARCH EXCELLENCE

AGU strategically implements Technology Research Centers across its universities, tailored to local expertise and societal needs. Supported by the Core Research & Innovation Group (CRIG), these centers serve as multidisciplinary hubs, offering infrastructural and financial support to faculty members and researchers. Their core mission is to achieve research excellence, translating technology into practical solutions and, when applicable, into marketable products.

Central to their function, these centers cultivate strong ties with industries, through collaboration between academia and industry to expedite the commercialization of intellectual property. By addressing societal challenges through technology and replacing outdated practices with modern solutions, they contribute to the well-being of communities surrounding AGU's campuses. Operating as intermediaries between academia and local communities, these centers engage with farmers and stakeholders, promoting innovative technological models to address unique challenges. This focus not only enhances local quality of life but also strengthens the symbiotic relationship between academia and society.

Collaboration is integral to their approach, as they partner with research organizations and universities to explore novel solutions to research challenges. Collaborative efforts amplify the impact of AGU's research initiatives, by a global perspective and facilitating the exchange of knowledge and expertise. AGU's research centers, including Technology Research Centers, form partnerships and MoUs with national and international organizations, broadening their reach and impact. This expansive network enhances AGU's research capabilities, promoting innovation, societal betterment, and global collaboration. Technology centers of AGU are working in research project related to following sectors:-



- Defence sectors, with prestigious defence organizations.
- Agriculture sectors, to boost farmers income.
- School education, to disseminate the innovative way of science learning.
- Municipal waste, to minimize the hazardous effects pollution in environment.
- Renewable energy, to assure best use of available energy in industries and household.
- IoT & Advanced computing, to meet the technological enhancement in computer education.

The Technology Centers consistently enhance their expertise through a range of initiatives. These include seminars, workshops conducted by field experts, industrial visits, and participation in national and international conferences. These activities ensure that the centers remain in touch of the latest developments in their respective fields and facilitate knowledge exchange between academia and industry. Moreover, each center maintains its own advisory board comprising experts from relevant domains. This advisory board serves as a valuable resource for the centers, providing guidance, insights, and recommendations to augment their knowledge base and broaden the scope of their work. Through regular interactions with the advisory board, the centers refine their research agendas, identify emerging trends, and explore new avenues for collaborative research endeavors. This collaborative approach enables the centers to stay at the forefront of technological innovation and effectively apply their expertise to address real-world challenges through research projects.

TECHNOLOGY CENTERS OF RESEARCH EXCELLENCE

RNTU Rabindranath TAGORE UNIVERSITY — MADHYA PRADESH, BHOPAL

- Center for Renewable Energy and Energy Park
- Agriculture Research Center
- Advanced Material Research Lab
- Center for IoT & Advance Computing
- Center for Advanced Water & Environmental Research
- Dr. C.V. Raman Center for Science Communication

DR. C.V. RAMAN UNIVERSITY — Chhattisgarh, Bilaspur — AN AISECT GROUP UNIVERSITY

- Center of Excellence for Advanced Environmental Research
- Raman Center for Science and Communication
- Center for Biotechnology Research
- Center for Renewable and Green Energy
- Center for Rural Technology & Entrepreneurship
- Center for GIS and Remote Sensing
- Center for Innovation, Incubation Entrepreneurship Development

DR. C.V. RAMAN UNIVERSITY — Bihar, Vaishali — AN AISECT GROUP UNIVERSITY

- Center for Agriculture Research
- Bhabha Center for Renewable Energy
- Center for Science Communication

AISECT UNIVERSITY — JHARKHAND, HAZARIBAG — AN AISECT GROUP UNIVERSITY

- Center for Agriculture Research

DR. C.V. RAMAN UNIVERSITY — Madhya Pradesh, Khandwa

- Dr. C.V. Raman Center for Science Communication
- Center for Agriculture Research

3.4 SKILL CENTERS OF RESEARCH EXCELLENCE

AGU's commitment to fostering a skilled workforce extends beyond mere academic pursuits; it encompasses a holistic approach to skill development and empowerment. Through strategic initiatives like the establishment of skill centers as part of a national skill development mission, AGU addresses the burgeoning demand for skilled workers in India. These skill centers, operating under the supports of the Core Research & Innovation Group (CRIG), serve as vital conduits between industry needs and rural areas, producing skilled manpower equipped with the necessary competencies for employment in various sectors, particularly manufacturing. Leveraging significant industry involvement, these centers upgrade skills to international standards, ensuring that the workforce meets global benchmarks.

AGU's framework includes initiatives like Pradhan Mantri Kaushal Kendra (PMKK), Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), Skill Academies, and the Atal Incubation Center, all of which contribute to skill development at different levels. By engaging with rural communities, these centers not only enhance regional economic growth but also create job opportunities, thereby empowering individuals and fostering socio-economic development. AGU's comprehensive approach to skill development underscores its commitment to nurturing a workforce capable of addressing the challenges of the future and contributing to India's journey toward becoming a global leader in skilled labor.

SKILL CENTERS OF RESEARCH EXCELLENCE

RNTU Rabindranath TAGORE UNIVERSITY MADHYA PRADESH, BHOPAL

- Atal Incubation Center
- Center for Skill Development (Pradhan Mantri Kaushal Kendra)
- Center for Women Entrepreneurship
- Santosh Choubey Center for Social Entrepreneurship
- Livelihood Resource Center

CVRU DR. C.V. RAMAN UNIVERSITY Chhattisgarh, Bilaspur AN AISECT GROUP UNIVERSITY

- Center for Innovation, Incubation & Entrepreneurship Development
- Center for Skill Development and Industrial Consultancy
- Center for Future High End Skill

3.5 CULTURAL CENTERS OF RESEARCH EXCELLENCE

India's cultural richness, stemming from its ancient heritage, encompasses a diverse array of customs and traditions, uniting its populace through shared values despite myriad differences. Its artistic landscape flourishes with visual, performing, and literary expressions, reflecting the nation's multifaceted identity.

Generations of artists have dedicated themselves to enriching these forms, often within familial settings that nurture creativity. AGU acknowledges the integral role of Indian arts, culture, and literature in education, evident in its establishment of Cultural Research Centers under "Vanmali Srijan Peeth."

These centers serve as custodians of India's cultural legacy, preserving, researching, and propagating its diverse traditions. An exemplar of AGU's commitment is the annual cultural festival "Vishwarang" at Rabindranath Tagore University, Bhopal. This festival, in collaboration with more than 50 countries, promotes Indian culture, languages, arts, and more, becoming a significant event in South Asia.

Through such initiatives, AGU's Cultural Research Centers uphold India's heritage, conduct vital research, popularize culture among youth, and impart essential skills, contributing to the preservation and global appreciation of India's extraordinary cultural wealth.

RNTU Rabindranath TAGORE UNIVERSITY MADHYA PRADESH, BHOPAL

- Vanmali Srijanpeeth
- Tagore International Center for Arts & Culture
- Lok Bhasha evam Sanskriti Kendra
- Bhasha Shikshan Kendra
- Anuvad Kendra
- Pravasi Bhartiya Sahitya Evam Sanskriti Shodh Kendra
- Sanskrit, Prachya Bhasha Evam Bhartiya Gyan Parampara Kendra

---

DR. C.V. RAMAN UNIVERSITY
Chhattisgarh, Bilaspur AN AISECT GROUP UNIVERSITY

- Hindi Sahitya Kendra
- Vanmali Srijanpeeth
- Center for Performing Art and Raigarh Kathak
- Chhattisgarh Lok Kala and Sanskriti Kendra
- Rabindranath Tagore International Center of Excellence for Arts & Culture
- Chhattisgarhi Shodh evam Srijanpeeth

DR. C.V. RAMAN UNIVERSITY
Bihar, Vaishali AN AISECT GROUP UNIVERSITY

- Vanmali Srijanpeeth
- Center for Buddhist

AISECT UNIVERSITY
JHARKHAND, HAZARIBAG AN AISECT GROUP UNIVERSITY

- Vanmali Srijanpeeth

DR. C.V. RAMAN UNIVERSITY
Madhya Pradesh, Khandwa

- Tagore International Center for Arts & Culture

3.6 SOME SIGNIFICANT ACTIVITIES IN TECHNOLOGY

CHEMISTRY & MATERIALS

Completed Projects

1. Synthesis and Characterization of Lanthanide based phosphors as spectral convertors in solar cells. Co PI- Dr. Sudeshna Ray, PI- Dr. Sameer Sapra, Prof., Chemistry, IIT Delhi. PI from Taiwan- Prof., Teng Ming Chen, applied Chemistry, NCTU, Taiwan. Project funded by DST GoI (Indo-Taiwan Project)
2. Investigations on ABO_3 and A_2X_3 compound under extreme conditions of pressure and temperature External Investigator – Dr. Sudeshna Ray. Project supported by Spanish Ministry testing chemicals received by AMRC.
3. Development of Pyrophoric Metal Ceramic Composite material for smart flare as IR Counter measure Project is funded by ARMREB, DRDO, PI – Dr. Sudeshna Ray.

Ongoing Projects

1. Indoor quality herbs/vegitable production through vertical/geoponic farming with the intervention of Nano Tech/Phosphor converted LED, PI- Dr. Sudeshna Ray, RNTU, Co PI- Dr. Tapan Adhikari, Indian Institute of Soil Science, Co PI- Dr. Ajay, Indian Institute of Soil Science.
2. Development of dust resistant nano material coating for solar panel, PI – Dr. Prachi Dhote. (Project funded by CRIG).
    1. IPR No. – 201921035656 "up conversion nanophosphor-based photo electrode".
    2. IPR No. – 201821003809 "A novel blue color emitting phosphor composition and a process for the preparation there of".
3. Spray Drying Mediated Coating/Desensitizing/Surface Modification of Ultrafine Ammonium Perchlorate.

AGRICULTURE

Ongoing Projects:

1. Self Generating Research Projects

- Organic Farming to enhance quality and yield
- Vermi-composting for agri waste management in innovative manner
- Hi-tech poly house with facilities for experiments and research
- Organic honey bee production and Mushroom cultivation
- Skill upgradation program for farmers from adopted villages
- Evaluation of various herbicides for weed control in mustard
- Evaluation of different nutrient management for growth and yield of mustard
- Evaluation of various varietal parameters in Moong bean
- Evaluation of different herbicides for weed control in Moong and Urd bean including nutrient management

2. Externally Funded Ongoing Projects

- DSIR funded Project "Assessment study of the commercialization of already developed technologies of the Public Funded Research Institutes established in Madhya Pradesh" Funded by Department of Scientific and Industrial Research (DSIR)

3. Transfer of Technologies

- In five adopted villages namely Medua, Keeratnagar, GoklaKundi, Chandkhedi and Tilendi a technology transfer was done under Unnat Bharat Abhiyan for adoption of improved process, fertilizers and weed control system developed by ARC.
- Farmers' Meeting in villages-"Kisan Sangosthi" at adopted villages to solve problems of the farmers shares the outcome of ARC and mutually exchanges the experience. ARC takes up projects based on need of the adopted villages.

IoT & ADVANCE COMPUTING

Completed Projects

1. Design and development of some prototype smart systems including smart dustbin, Attendance system, Fire Detection System security system and temp and humidity monitors system for agriculture application PI – Dr. Preeti Maheshwari. Project was funded by CRIG.
2. Natural level training project for faculty. PI Dr. Preeti Maheshwari. Project was self generating nature.

Ongoing Project

1. Design and development of 6 prototype smart systems – Soap Dispenser, Mask Detector, Temp Controller, Water quality. Monitor and Smart bed. PI – Dr. Rakesh Mittan Project is funded by CRIG.

Patents Generated

1. IPR No. – 20172104069 Automated attendance system

ENERGY

Ongoing Projects

1. MODROB Project for Refrigeration & Indoor Air Quality (RIAQ) Lab - Funded By AICTE
2. Establishment of two RE labs for Suryamitra Solar PV Installation.
3. Design and development of an innovative multi solar dryer for rural application – Funded by CRIG.
4. Design and development of fault resistant dual axis solar tracking system – Funded by CRIG.
5. Design and development of a vertical turbine pump for rural application – Funded by CRIG.

Major IPR Generated

1. IPR No- 201721034865 - Solar Dryer
2. IPR No- 201721034866 - Transformer Fault Detection System
3. IPR No- 201721042401 - Smart Solar panel cleaning device
4. IPR No- 201721040691 - Intelligent Solar Pole
5. IPR No- 201721042400 - Dual Axis Solar tracking system
6. IPR No- 201821035492 - A Novel Slider Crank Mechanism

SCIENCE COMMUNICATION

Ongoing Project

1. Mission Eco Next, Eco Route, Eco Leads to nurture young role models for resurgence of eco scientific tradition funded by DST (GoI) – National Council for Science and Technology (NCSTC)

Publication

1. Electroniki Aapke Liye, a popular science magazine published every month since last 25 years.



WATER AND ENVIRONMENTAL SCIENCE

Completed Projects

1. Design and development of pervious concrete blocks for rural application. PI- Dr. Shalini Yadav, Project funded by CRIG.
2. Assessment and water quality management with special reference to lifeline sources of Bhopal. PI- Dr. Sunil Sharma, Project funded by CRIG.

Ongoing Projects

1. Project KA-1 in collaboration with PM University, Romania for faculty & Student Mobility for research and education activities. Project is Funded by European Union. RNTU PI is Dr. Shalini Yadav.
2. Design and development of mobile sanitizer. PI- Dr. Dinesh Kumar Soni, Project funded by CRIG.

4 ABOUT ATAL INCUBATION CENTRE (AIC) RNTU

4.1 INTRODUCTION

A random idea might lose its track if it is not nurtured regularly in the right way. For a large number of people venturing into the culture of entrepreneurship nowadays, it is very important to educate and support them for the proper growth of their ideas. At AIC-RNTU, we have taken the charge of providing essential services such as fund support, management, mentorship, co-working space, and state-of-the-art technical assistance to the budding business units. By playing the role of both startup incubator and accelerator, we aim at training and mentoring young people to fuel their inner drive to innovate. Our primary objective here is to create a startup ecosystem and familiarize the visionary brains with the business aspects of an idea and provide them a platform with necessary resources – culture, opportunities, and amenities – to grow their startup units into business enterprises.

The services are offered by AIC RNTU

- **Co-Working Space**
  A comfortable and dedicated working space is said to have a visible impact on the performance of the workers. At AIC-RNTU, we give splashy office space to the startups for their exclusive use.
- **Access To Network & Events**
  It is imperative to build healthy relationships with the like-minded people in order to learn and refine your perspective. We provide opportunities for the startups to network with the top minds of their industry and get the knack of the real-time business operations from their experiences.
- **Mentorship**
  We provide a pool of experts who shall mentor the incubates and guide them with their experience. Our domain-specific and generic network of mentors would acknowledge the challenges faced by the incubates and give them advice in their fields of expertise.
- **Intellectual Property Rights**
  It is essential to protect your creation in the growing trend of piracy. We, thus, take care of providing you with the intellectual & property rights to safeguard your startup.
- **Trainings & Workshops**
  We conduct different workshops and events to educate the incubates wherein experts provide valuable insights on subjects concerning the development of a startup. We organize both domain-specific and general training sessions to enhance the knowledge of the incubates.
- **HR/Intern Support**
  As the business flourishes, so it demands more workforce. Thus, we provide the necessary Intern /HR support to fulfill the requirements of human resource.
- **Access To Labs**
  Our incubation center houses several labs which are important for the startup units. Some of them are FAB

lab, Rapid Prototyping lab, IoT lab, and shared resources lab.

- **Company Registration**

  We will provide assistance and guidance for the registration of the startups.

- **Funding**

  For an idea to take wings and materialize, money is the crucial resource. We have several funding options available (seed funding, etc), and a pool of investors to our disposal which shall pave the way for the startups to blossom through all the stages of development.

- **Technical Assistance**

  At our incubation center, the incubates will have access to high-speed internet. We will also provide them with guidance for the domain registration and the hosting space.

- **Legal & Accounting Support**

  The sound legal and accounting advice plays an important role in the smooth running of the business. We would be providing the incubates with the necessary legal & accounting support for their seamless development.

4.2 HAND HOLDING SUPPORT FOR A SUCCESSFUL STARTUP

Ideate

The Ideate symbolizes the startups that are teeming with ideas but still have no concrete action plan. They have a strong idea but a limited understanding of building a startup. This program aims at helping the innovation driven startups in their cocoon stage to convert their invalidated business ideas into a feasible and profitable business proposition. Under this, the startups in their ideation stage with no MVP and customer segment but a proof of concept would be guided to form a team, build a sustainable business model and learn nuances of market and entrepreneurship.

Discover

The team is built, the customers are there, and the money is coming too but is it enough to rev up your success? The raw material of innovation has to be converted into real-world breakthrough success. And this is where this 'Discover Program' helps you. This program, in particular, is designed for the startups in their 'caterpillar stage' to steer them in the right direction by making them aware of the process to turn the product insights into a great company. This diligently prepared incubation program would assist them in catalysing their growth and upscaling their limited customer base by adopting an outlier's approach towards the culture of entrepreneurship. In this, the startups will learn to leverage technology to drive their innovation to the real-world market, customer acquisition and revenue generation. The training sessions focused on business operations by seasoned professionals will facilitate them in engineering their startup success by following the right process.

Growth

This program targets the segments of startups with sound customer base and revenue in hand but not enough market visibility. With a team built successfully, this program will categorically help the startups to earn

the market exposure on a wider scale & seek different channels to market their products. This will help in improving the success rate of their innovative products. The quality mentorship by the adept professionals of the industry would help them in acing different verticals of the market so that their venture lives up to its potential and does not fail in the long run. This is the stage where our support would take their back.

4.3 I4 LAB
[INNOVATION INTEGRATION INCUBATION AND IMPLEMENTATION]

Rapid Prototyping

A rapid prototyping lab weighs much importance when it comes to product development. AIC-RNTU has the well-furnished rapid prototyping lab equipped with the latest technology to help the startups create a high-quality scale model of their product at lower costs. A shared Rapid Prototyping lab ensures speedy process and efficient management of the available resources.

Fabrication

Dedicated to the facility of digital fabrication, a well-furnished fab lab with all the modern equipment comes up with AIC-RNTU. It renders assistance to the product focused startups with a bunch of flexible technology, industrial-grade fabrication and computer-controlled tools to carry out their research with ease. The benefit of a fab lab lies in its ability to be tailored according to the specific needs of the startups.

Internet of Things (IoT)

A highly developed IoT lab dons our Incubation Centre for the startups driven toward advanced technical research and innovation. It is basically a large scale research platform for exploiting the potential of the Internet of Things to translate innovative ideas into material products. Our sophisticated lab is suitable for carrying out the deployment and testing of small wireless sensor devices and communicating objects.

"Learn while Innovating or Innovate while Learning"

A random idea might lose its track if it is not nurtured regularly in the right way. For a large number of people venturing into the culture of entrepreneurship nowadays, it is very important to educate and support them for the proper growth of their ideas. At AIC-RNTU, we have taken the charge of providing essential services such as fund support, management, mentorship, co-working space, and state-of-the-art technical assistance to the budding business units. And providing a platform to students, entrepreneurs, professionals to fabricate the samples, build a prototype in our lab with their ideas. And assistance throughout the way by our team. By playing the role of both startup incubator and accelerator, we aim at training and mentoring young people to fuel their inner drive to innovate. Our primary objective here is to create a startup ecosystem and familiarize the visionary brains with the business aspects of an idea and provide them with a platform with necessary resources – culture, opportunities, and amenities – to grow their startup units into business enterprises.

4.4 RESOURCES IN AIC

3D Printer
3d printer can print solid 3D models which are simple or complicated ranging from toys to bearings, machine parts, replacements of broken article, casing and variety of other things. 3D printer helps turn concepts and ideas into physical prototypes saving time, reducing costs and shortening product development life cycles.

LASER Machine
This machine are used for engraving and cutting on wooden material, acrylic and other soft materials.

CNC Router Machine
This CNC Router machine can engrave the 3D & 2D design on wood, plywood, MDF board and Acrylic also. Its working precision is very high.

MINI 3D Printer
This printer is Digital Light Processing (DLP) type. Its output is very precise than other type of 3D Printer. It can design very complex model quickly and easily.

Mini CNC Machine
As a small milling machine, that offers compact size and powerful functionality. Production of realistic parts and prototypes is made simple. For users looking for advanced milling capabilities without the need for expert operating skills, this is one of the easiest and most precise CNC mills in its class.

Vinyl Cutter
It is a type of computer-controlled machine. The computer controls the movement of a sharp blade over the surface of the material. This blade is used to cut out shapes and letters from sheets of thin self-adhesive plastic (vinyl). It is used to make signs, banners and advertisements. Advertisements seen on automobiles and vans are often made with vinyl cut letters.

3D Scanner
This 3D Scanner can scan real objects for 3D printing. The lightweight, ergonomic design makes it portable and easy to use for larger objects. It can produce portable as well as high-accuracy scans.

OUR PARTNERS

AIC-RNTU

नीति आयोग

ATAL INNOVATION MISSION

MSME

MEITY STARTUP HUB

amazon webservices

Google Cloud Platform

Digital Ocean

ZOHO One

HubSpot

DCB BANK

FlexingIt

CRISP ISO 9001:2008

IBM

OYO

MAINSTAGE INCUBATOR

WADHWANI FOUNDATION

MathWorks

MSG91 SMS PARTNER

NBB NEXT BIG BRAND

CODESIGN LABS

SAWO LABS

upGROWTH

FUNDENABLE

vakilsearch Legal is now Simple

Paytm BUILD for INDIA

4.6 STARTUP ASSOCIATED

ARISTI
CLOUD. COMPLIANCE. SECURITY.

accountant lalaji .com

Amrutulya

ZingalBox

EZ Loading Serivices

MY tutor247

InfiAmp

GadiRepair

Germanium Instruments

VIJAYBAHADUR
Info Solutions

Desprin

DIGI Reacts

WearBerry

WHITE MAGNETS
CHARCOAL TOOTH POWER

STRATXG
STRATEGY | TRANSFORMATION | GROWTH

RTIwala
Empowering the masses...

Khadiji

Catriu

Go-easy

AVOWAL

WHITE WULAR

Ansoz
ANSWER OWN ZEAL

Sttago

Elektroforz

TUSEVA

GemStaa

KEYSHAAN

DHARMASHALA.in
Digital Tirth : Digital India

AyurYug
new era of ayurveda

VOLAR ALTA
DRONE TECH SOLUTIONS

Factiveminds

leverMIND

nuclespace TV
Making Care Easier

Quaish

Paravent Apparels

GenFlow Ai
Digitilizing livestock care

AMIGOS HUB

Lfyd

EASEEXAM

MUDDLEART

Farm Prosperity Solutions

Carrus

SaathEase
CARE AT HOME & BEYOND

100 PLUS

5 RESEARCH RESOURCES

5.1 THE NATURE OF RESEARCH

In the realm of university research, the focus is predominantly on conducting experimental investigations rather than delving into theoretical inquiries. This preference stems from the belief that experimental research is closely aligned with practical applications and is inherently more reliable. The emphasis on practicality underscores the significance of generating tangible outcomes and solutions.

The essence of research extends beyond academia, permeating our daily lives. Whether considering major decisions like purchasing a new car, choosing a book, or making life-altering choices such as selecting a job, school, or college, individuals engage in a continuous research process. This proactive approach involves gathering information, analyzing options, and seeking relevant data to ensure informed decision-making, ultimately leading to optimal results in our endeavors. This universal integration of research highlights its pervasive role in both academic exploration and the practical aspects of our daily decision-making processes.

5.2 WHY RESEARCH IS NECESSARY?

The key highlights of research are: -

- Investigating and understanding new data and information
- Constructing informed opinions based on research findings
- Involve in conversation with writers and scholars in your field
- Understand the way of using primary and secondary resources in related research

Research expands and integrates your experience and knowledge by providing a broader foundation for thinking and writing. This allows you to become an expert in a field that is not directly related to your daily life. When you do your research, you develop valuable and important skills that will help you in other areas of your life. You will learn to ask important questions, collect and interpret data, read critically, form knowledgeable views, and process and know conflicting evidence. By studying the major of your choice, you will become an expert in the field. Also, when you write down your findings, others will respect your knowledge and evaluate your judgment.

5.3 WHEN IS RESEARCH IMPLEMENTED?

Research is not universally essential in all forms of writing, as it specifically applies to the exploration of topics requiring in-depth understanding. This process demands a blend of discipline and advanced skills to delve into specific fields, unveiling hidden aspects and managing conflicting perspectives. Vital to the growth of research is the act of posing questions to the research community. By generating knowledge and addressing contradictory opinions, research becomes a dynamic tool for unraveling intricate subjects within a particular domain, contributing to the continuous expansion of understanding and knowledge in that field.

5.4 RESOURCES

Research resources are broadly categorized into physical and digital sources. Physical sources encompass experimental setups, crucial for conducting research, and their efficiency is evaluated based on factors like smooth operation, time and power consumption, and reliability. Regular preventive and predictive maintenance, along with calibration before experiments, are essential requirements during their operation.

On the digital front, resources include print media such as books, brochures, journals, magazines, newspapers, and electronic sources like the internet and the World Wide Web. Data collection can also involve interviews, surveys, and articles based on someone else's designs. Researchers at AGU benefit from access to a range of digital research resources, including journals, e-books, magazines, and e-libraries. Additionally, AGU provides experimental setups to researchers based on their evaluated needs. The CRIG serves as the evaluating authority, facilitating the provision of such setups to promote and support research endeavors within the institution. This dual approach ensures a comprehensive array of resources for researchers, fostering an environment conducive to effective and robust research practices.

5.5 SOME PROMINENT RESEARCHERS OF AGU

AGU is home to a distinguished troop of researchers whose expertise spans various disciplines, enriched by years of academic inquiry. These seasoned researchers serve not only as individual scholars but also as mentors and consultants to budding researchers within the institution. Leveraging their wealth of knowledge and extensive networks, they guide research scholars in refining their methodologies and exploring relevant research areas. Through close collaboration, they facilitate access to resources, recommend literature, and identify niche topics for investigation, thereby optimizing research focus and efficiency. Moreover, AGU's librarians play a crucial role in supporting research endeavors by offering expertise in information retrieval and management, enriching the research environment with their specialized skills.

The Collaborative Research and Innovation Group (CRIG) further boosts AGU's research ecosystem by arranging collaborative initiatives across its campuses. Through interviews, surveys, and questionnaires conducted periodically, CRIG provides a culture of collaboration and knowledge exchange among researchers from different universities within the AGU network. This coordinated approach not only enhances the research environment but also promotes interdisciplinary collaboration and innovation.

AGU's commitment to make a collaborative and dynamic research community is evident in its concerted efforts to harness the collective expertise of seasoned researchers and provide structured support to emerging scholars. By emphasizing guidance, consultation, and collaborative initiatives, AGU cultivates an environment where scholars can thrive, innovate, and make meaningful contributions to their respective fields, positioning itself as a leading hub for impactful research and scholarly endeavours.

5.6 EXPERIMENTAL RESEARCH RESOURCES

Experimental research is indispensable for advancing knowledge, often forming the backbone of scientific investigations. AGU recognizes the significance of experimentation in research endeavors, offering state-of-the-art facilities and equipment to support rigorous scientific inquiry. Conducting experiments entails navigating through both favorable and unfavorable results, a time-consuming and challenging process crucial for informed decision-making. By collecting empirical data, experimental research enhances the quality of decisions made. The success of experimental analysis hinges on the coordination between universities and researchers, leveraging collective knowledge and expertise. AGU ensures research is conducted under scientifically acceptable conditions, providing researchers with the necessary resources to execute experiments effectively. With a diverse range of research equipment available, AGU facilitates impactful research outcomes, with some equipment having undergone rigorous experimentation to yield significant contributions to society. Through its commitment to supporting experimental research, AGU empowers researchers to generate meaningful insights and address pressing societal issues through rigorous scientific inquiry.

SOME PROMINENT RESEARCHERS OF AISECT GROP OF UNIVERSITIES (AGU)

Researchers of AISECT Group of Universities (AGU) contributes in research every year. Most of their contribution is based on their parent discipline, however RNTU researchers heading towards interdisciplinary solution of problems to produce path-breaking outcomes. AISECT Group of Universities (AGU) have an impressive H-Index of 60 (based on Scopus database), which is cumulative contribution of all researchers of AGU.

RABINDRANATH TAGORE UNIVERSITY, BHOPAL

Prof. Rajni Kant
Physics
Citation- 2145
H Index- 20
I-10 Index- 71

Dr. Sharad Kumar Soni
Civil Engineering
Citation- 05
H Index- 01

Dr. Sunil Kumar Sharma
Civil Engineering
Citation- 03
H Index- 01

Dr. Amit Kumar Ahirwar
Civil Engineering
Citation- 02
H Index- 01

Dr. Shankar Singh Kushwaha
Civil Engineering
Citation- 62
H Index- 04
I-10 Index- 03

Dr. Kapil Kumar Soni
Civil Engineering
Citation- 81
H Index- 03
I-10 Index- 03

Dr. Pratima Gautam
Computer Science-Engineering
Citation- 135
H Index- 07
I-10 Index- 06

Dr. Rajendra Gupta
Computer Science-Enginnering
Citation- 64
H Index- 04
I-10 Index- 10

Dr. Rakesh Kumar
Computer Science & Engineering
Citation- 238
H Index- 09
I-10 Index- 03

Dr. Harsh Mathur
Computer Science & Engineering
Citation- 29
H Index- 02
I-10 Index- 01

Dr. Mukesh Kumar
Computer Science Engineering
Citation- 07
H Index- 02

Dr. Ankur Khare
Computer Science & Information Technology
Citation- 198
H Index- 07
I-10 Index- 05

Dr. Ravi Shankar Sharma
Computer Science & Information Technology
Citation- 12
H Index- 02

Dr. Varsha Jotwani
Computer Science & Information Technology
Citation- 08
H Index- 02

Dr. Sanjeev Gupta
Electronics & Communication Engineering
Citation- 353
H Index- 09
I-10 Index- 09

Dr. Kishor Thakre
Electrical & Electronics Engineering
Citation- 289
H Index- 11
I-10 Index- 12

Dr. Prateek Nigam
Electrical & Electronics Engineering
Citation- 57
H Index- 04
I-10 Index- 01

Dr. Ankit Pandit
Electronics & Communication Engineering
Citation- 13
H Index- 03

Dr. Laxmi Singh
Electronics &
Communication Engineering
Citation- 05
H Index- 01
I-10 Index-

Dr. Prakash Narayan Tiwari
Electrical and Electronics Engineering
Citation- 04
H Index- 01

Dr. Nand Lal Shah
Electrical and Electronics Engineering
Citation- 05
H Index- 02

Dr. Sitaram Pal
Electrical and Electronics Engineering
Citation- 10
H Index- 02

Dr. T. Ravi Kiran
Mechanical Engineering
H Index- 05
I-10 Index- 03

Dr. Dinesh Kumar Soni
Mechanical Engineering
Citation- 157
H Index- 05
I-10 Index- 05

Dr. Rahul Kumar Singh
Mechanical Engineering
Citation- 04
H Index- 01

Dr. Vinay Kumar Yadav
Mechanical Engineering
Citation- 09
H Index- 02

Dr. Manish Singh Bharti
Mechanical Engineering
Citation- 01
H Index- 01

Dr. Anil Kumar Rao
Mechanical Engineering
Citation- 14
H Index- 03
I-10 Index- 01

Dr. Swapnil Kumar Singh
Mechanical Engineering
Citation- 01
H Index- 01

Dr. Anurag Bargi
Mechanical Engineering
Citation- 01

Dr. Tejkaran Narolia
Mechanical Engineering
Citation- 40
H Index- 03
I-10 Index- 02

Prof. (Dr.) Har Dayal Verma
Agriculture
Citation- 125
H Index- 08
I-10 Index- 10

Dr. Rishikesh Mandloi
Agriculture
Citation- 107
H Index- 07
I-10 Index- 04

Dr. Manohar Saryam
Agriculture
Citation- 26
H Index- 03

Dr. Mukesh Kumar Dhakad
Agriculture
Citation- 02
H Index- 01

Dr. Shubham Kumar Kulshreshtha
Agriculture
Citation- 06
H Index- 02

Dr. Balveer Singh
Agriculture
Citation- 90
H Index- 05
I-10 Index- 01

Dr. Digvijay Dubey
Agriculture
Citation- 02
H Index- 01

Dr. Sudeshna Ray
Chemistry
Citation-435
H Index-13
I-10 Index-06

Dr. Prachi Tadge
Chemistry
Citation-158
H Index-06
I-10 Index-05

Dr. Ankit Agrawal
Life Science
Citation- 124
H Index- 06
I-10 Index- 05

Dr. Pragya Shrivastava
Life Science
Citation- 68
H Index- 04
I-10 Index- 01

Dr. Bhawna Agrawal
Physical Science
Citation- 21
H Index- 03

Dr. Jyoti Rawat
Physical Science
Citation- 01
H Index- 01
I-10 Index- 01

Dr. Purvee Bhardwaj
Physical Science
Citation- 348
H Index- 11
I-10 Index- 11

Dr. Chitra Singh
Physical Science
Citation- 15
H Index- 02

Dr. Kusum Sharma
Life Science
Citation- 97
H Index- 05
I-10 Index- 03

Prof. (Dr.) Manisha Gupta
Nursing
Citation- 17
H Index- 01
I-10 Index- 01

Dr. Durga Pandey
Pharmacy
Citation- 116
H Index- 04
I-10 Index- 03

Dr. Nimisha Jain
Pharmacy
Citation- 48
H Index- 03
I-10 Index- 01

Dr. Pritaj Yadav
Pharmacy
Citation- 02
H Index- 01

Dr. Ravindra Pathak
Commerce
Citation- 98
H Index- 06
I-10 Index- 04

Dr. Rachna Chaturvedi
Management
Citation- 87
H Index- 05
I-10 Index- 04

Dr. Sangeeta Jauhari
Management
Citation- 136
H Index- 06
I-10 Index- 03

DR. C.V. RAMAN UNIVERSITY, BILASPUR

Dr. M. K. Tiwari
Civil Engineering
Citation- 452
H Index- 08
I-10 Index- 08

Dr. Amrita Verma
Computer Science Engineering
Citation- 01
H Index- 01

Dr. Vivek Shukla
Computer Science Engineering
Citation- 01
H Index- 01

Dr. Saurabh Mitra
Electronics & Communication Engineering
Citation- 102
H Index- 05
I-10 Index- 03

Dr. Shanti Rathore
Electronics & Communication Engineering
Citation- 101
H Index- 06
I-10 Index- 03

Dr. Shikha Singh
Electronics & Communication Engineering
Citation- 19

Dr. Ayush Kumar Agarwal
IT
Citation- 35
H Index- 03
I-10 Index- 01

Dr. Pritendra Kumar Malakar
IT
Citation- 03
H Index- 01

Dr. Abhinav Shukla
IT
Citation- 85
H Index- 01
I-10 Index- 01

Dr. Harsh Pandey
Mechanical Engineering
Citation- 90
H Index- 05
I-10 Index- 05

Dr. Jayati Chatterjee Mitra
Chemistry
Citation- 60
H Index- 04
I-10 Index- 03

Dr. Rashmi Verma
Chemistry
Citation- 324
H Index- 04
I-10 Index- 02

Dr. Rakesh Kumar Yadav
Chemistry
Citation- 28
H Index- 02
I-10 Index- 02

Dr. Jyoti Goswami
Chemistry
Citation- 21
H Index- 02
I-10 Index- 01

Dr. Milan Hait
Chemistry
Citations- 172
H Index- 11
I-10 Index- 04

Dr. Vinita Tamrakar
Chemistry
Citation- 38
H Index- 03
I-10 Index- 01

Dr. Namita Bhardwaj
Chemistry
Citation- 43
H Index- 04
I-10 Index- 01

Dr. A. K. Shrivastava
Physics
Citation- 4301
H Index- 25
I-10 Index- 64

Dr. Ashutosh Pandey
Physics
Citation- 27
H Index- 03

Dr. Umakant Shrivastava
Physics
Citation- 03
H Index- 01

Dr. Ratnesh Tiwari
Physics
Citation- 465
H Index- 12
I-10 Index- 13

Dr. Saket Singh Chandel
Pharmacy
Citation- 156
H Index- 07
I-10 Index- 07

Dr. Shweta Sao
Life Science
Citation- 211
H Index- 09
I-10 Index- 06

Dr. Lata Sharma
Life Science
Citation- 07
H Index- 13
I-10 Index- 01

Dr. Amit Sharm
Life Science
Citation- 12
H Index- 01

Dr. D.K. Soni
Life Science
Citation- 430
H Index- 05
I-10 Index- 03

Dr. Himani Sandey
Life Science
H Index- 02

Dr. R. K. Singh
Life Science
Citation- 347
H Index- 04
I-10 Index- 01

Dr. R.P. Dubey
Mathematics
Citations-340
H Index- 09
I-10 Index- 08

Dr. S.K. Tiwari
Mathematics
Citation- 237
H Index- 07
I-10 Index- 05

Dr. Hiral Raja
Mathematics
Citation- 72
H Index- 04
I-10 Index- 01

Dr. Pratima Bais
Social Science
Citation- 28
H Index- 04

Dr. Ramratan Sahu
Social Science
Citations- 03
H Index- 02

Dr. Kajal Moitra
Social Science
Citation- 22
H Index- 22

Dr. Supriya Singh
Commerce
Citation- 06
H Index- 02

Dr. Satish Sahu
Commerce
Citation- 20
H Index- 02
I-10 Index- 01

Dr. Anshul Shrivastava
Commerce
Citation- 04
H Index- 01

Dr. Ritesh Mishra
Education
Citations- 01
H Index- 01

Dr. Archana Agrawal
Management
Citation- 24
H Index- 02
I-10 Index- 01

Dr. Abhishek Pathak
Management
Citation- 97
H Index- 04
I-10 Index- 04

Dr. Vivek Bajpai
Management
Citation- 154
H Index- 03
I-10 Index- 03

Dr. Niket Shukla
Management
Citation- 06
H Index- 01

Dr. Anupam Kumar Tiwari
RT
Citation- 42
H Index- 04
I-10 Index- 01

Dr. Kamal Kumar Sen
RT
Citations- 306
H Index- 08
I-10 Index- 08

DR. C.V. RAMAN UNIVERSITY, KHANDWA

Dr. Bhavna Bajpai
Computer Science
Engineering
Citation-13
H Index-1

Dr. Arun R Joshi
Agriculture Science
Citations-73
H Index-3

Dr. Swati Pathak
Chemistry
Citations-10
H Index-1

DR. C.V. RAMAN UNIVERSITY, BIHAR

Dr. Vinod Kumar Sharma
Engineering
Citation- 10
H Index- 01

Dr. Rajeev Ranjan Kumar
Engineering
Citation- 10
H Index- 01

Dr. Dharmendra Kumar Singh
Agriculture
Citation- 25
H Index- 01

Dr. Santosh Kumar
Agriculture
Citation- 10
H Index- 01

Dr. Akanksha
Coscomology
Citation- 10
H Index- 01

Dr. Dinesh Singh
Coscomology
Citation-10
H Index-1

Dr. Surendra Kumar
Social Science
Citations- 10
H Index- 01

Dr. Randhir Kumar
Social Science
Citation- 15
H Index- 02

Dr. Akanksha
Management
Citation- 10
H Index- 01

Dr. Rajesh Kumar Raju
Management
Citation-20
H Index-1

AISECT UNIVERSITY, HAZARIBAGH

Dr. Arvind Kumar
Agriculture Engineering
Citations-21
H Index- 10

Dr. S. P. Vishwakarma
Agriculture
Citations- 10
H Index- 01

Dr. Raj Kumar
Sociology
Citation- 10
H Index- 01

Dr. Sweta Singh
Political Science
Citation-10
H Index- 01

Dr. Rudra Narayan
History
Citation- 10
H Index- 01

Dr. Preety Vyas
Political Science
Citation- 10
H Index- 01

Dr. Manisha Kumari
Economics
Citations- 10
H Index- 01

Dr. Punam Chandra
Geography
Citation- 10
H Index- 01

Dr. Diwakar Pd. Nirala
Botany
Citation- 28
H Index- 20

Dr. Rosy Kant
Philosophy
Citation- 20
H Index- 02

Dr. Alok Kumar
Commerce
Citation- 30
H Index- 03

Dr. Smruti Ranjan Rath
Management
Citation- 20
H Index- 02

SCOPE GLOBAL SKILLS UNIVERSITY, BHOPAL

Dr. Mrs. Priti Maheshwary
Computer Science
Citations- 883
H Index- 12
I-10 Index- 12

Dr. S. Veenadhari
Computer Science
Citations- 672
H Index- 8
I-10 Index- 8

Dr. Anshuj Jain
Citation- 16
H Index- 02
I-10 Index- 01

Dr. Anurag Kulshreshtha
Citation- 536
H Index- 9
I-10 Index- 9

MAJOR RESEARCH FACILITIES AT RABINDRANATH TAGORE UNIVERSITY

CIVIL ENGINEERING

- Los Angels Abrasion Testing Machine
- Marshall Stability Testing Machine
- Ductility Testing Machine
- Benkelman Beam Appratus
- Flexural testing machine
- Conctere mixers
- Compaction Factor Testing Appratus
- Compression Testing Machine
- Briquette Testing Machine
- Aggregate Crushing Test Apparatus
- Aggregate Impact testing Machine
- Rebound Hammer
- Casagrandes Appratus
- CBR Testing App (Electrically)
- Modified Proctor test (Heavy Compaction)
- Permeability test falling head

MECHANICAL ENGINEERING

- Variable compression Ratio Engine
- CNC Machine
- Lathe machines
- Drilling Machines
- Milling Machine
- Refrigeration Units
- Compressors
- Softwares

ENERGY SCIENCE

- Solar Thermal Test setup
- Wind Research Test setup
- Solar PV Research System
- Spectrum Analyzer
- Digital storage oscilloscope
- Variable DC Power Supply
- Function GeneratorLux-Meter
- Complete PCB Design & Fabrication Lab
- Lab view - 2017
- MATLAB - 2017
- Scilab - 6.0.0
- Novarm Diptrace - 3.1.0.1
- Keil Microvision - 4.0

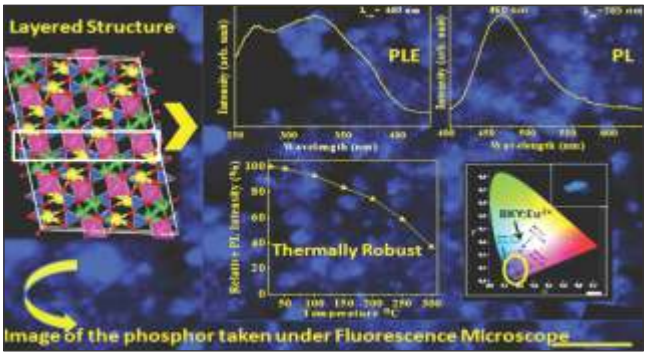
- Arduino - 1.8.3
- AVR Studio - 4.0
- Designsoft TINA Pro - V.9
- Xilinx ISE - 14.1
- Ansys - 15.0
- CATIA (2018)
- Mentor Graphics Model Sim - 10

AGRICULTURE SCIENCE

- Automatic seed/grain counter
- Seed Moisture Meter (digital)
- Bather & Chillers 32 liter
- Sterilizer & Washes
- EC Meter
- Autoclave Vertical 22 liter double wall
- Grinder
- Automatic Filtration
- Calcimeter
- Screw Auger
- Post Hole Auger
- Counting boards
- Florescense Microscope 40x1000
- Grauated Measuring cylinder 1000 ml.
- High speed Refrigerator centrifuge 20000 RPM
- Plant Breeding kit
- Oil eneulson kit
- Shaker and vortex
- Sterilizer and washer
- Vertical gel electrophoresis unit
- Heater
- Incubator
- Spriat lamp
- Colouycaruter
- Cutture tube
- Compound Micros cope
- Balance PGB630
- Automatic filtration
- Dessicutor 210mm.
- Burette stand
- Mechanical shaker
- Precision balance pgb 220
- Rotary evaporator
- Soil moisture meter
- Shaking machine 18x18
- Catheter
- Milk pippets
- Termereic paper strip dozen
- Wood file
- Dissecting microscope
- Seed Counter
- Weighing Balance TTB 30
- Refrectometer
- Innoculatiuon Loop
- Electrical Conductivity Meter
- Water Testing kit
- wind wane
- Single distillation Unit
- Tensiometer
- Hot plate stirrer
- Flame Photometer
- Seed Germinator- 308 liter capacity

CHEMISTRY

- Rectangular Muffle Furnace
- Oven Universal
- Magnetic Stirrer
- Heating Mantle
- Ultra Violet Cabinet
- Electronic Digital L.E.D./ I.C.D. Display top pan
- High Temperature Tubular Furnace
- Spectrometer (Ocean Optics)
- Software. It is attached with High Temperature
- Rota Mantle
- PT 100 sensor hot plate
- Vertical Muffle Furnace
- Double distillation set up



CENTRAL SOFTWARE RESEARCH LAB

- Net Sim
- Sim-2
- Weka
- Gephi
- Python
- Sci Lab
- Cloud Sim
- Lab view XILINXIE3D
- Mentor Graphics
- SPSS
- Computer System (35) in research lab
- R, Language Open Source
- Python Open Source/Anaconda
- Java Open Source
- .Net
- My Sql Open Source
- Cloud Sim, Ns2
- MATLAB
- Weka, Quantminer, Rapidminer

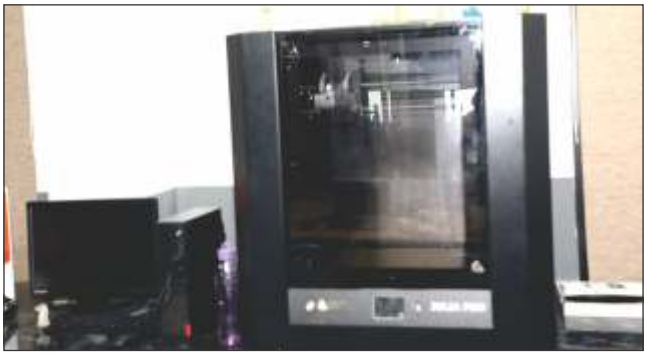
MAJOR RESEARCH FACILITIES AT DR C.V RAMAN UNIVERSITY (C.G.)

ENVIRONMENTAL SCIENCE

- Digital Flam Photometer (Besto) Besto/BLT
- Atomic Absorption Spectrophotometer Sys-WFX-320
- Flame Photometer SYS-128
- B.O.D. IncubatorBes
- Conductivity Meters
- UV-vis. Double Beam Spectrophotometer Sys-2205
- UV-vis. Single Beam Spectrophotometer Sys-118
- Turbidity Meter Sys-135
- C.o.d. Digester Besto/7945
- Auto Karl Fischer Titrimeter Ti-381
- Photoelectric Calorimeter Sys-113
- Soil Testing Kit
- Water Analysis Kit Sys-371
- Kjeldal Apparatus Insif
- Sohxlet Apparatus Borosilicate
- Tlc Apparatus Besto/tlc-37/7550
- Analytical Balance Hst
- Colorimeter Sys-115
- Water Deionizer Waston-50
- Digital Balance Citizen/CY-220
- Vortex Shaker 15WIXJR
- pH Meter MK VI
- Incubator
- Hot air oven CIC
- Autoclave 8192B
- Electrophoresis DPS2003
- Laminar air Flow 4FPTC
- Plant Growth Chamber Th7004
- Digital weighing Balance K ROY
- HPL, CSYS-LC-138
- PCR Thermal cycle T-100(Miorel)
- Distillation Unit
- Microtome BMT-6
- Turbidity meter Sys -135
- Paper chromatography SBCG2

CENTRAL SOFTWARE RESEARCH LAB

- MATLAB 11a
- Internet of Thing (IoT) Kit
- SCI Lab
- Weka
- Latex
- Python



5.7 FOOD PROCESSING UNIT, RNTU BHOPAL

Importance in RNTU

A food processing unit within a university is a pivotal asset that profoundly influences education, research, and community engagement. Serving as a dynamic hub of experiential learning, it offers students invaluable hands-on experience in food science and technology. Through practical application of industry-standard techniques and equipment, students acquire essential skills, preparing them for careers in the food processing sector. Furthermore, the unit serves as a catalyst for research and innovation, facilitating investigations into novel food products, processing methods, and sustainability practices. This research not only advances the field of food science but also addresses critical issues such as food safety, nutrition, and waste reduction. Moreover, the unit acts as a conduit for collaboration between academia and industry, promoting technology transfer and entrepreneurship. By providing incubation facilities, mentorship, and outreach programs, it nurtures the development of food-related startups and initiatives, thereby stimulating economic growth and innovation. Additionally, the unit engages with local communities through training workshops, extension services, and outreach initiatives, promoting food security, nutrition education, and sustainable agriculture practices. In essence, a food processing unit in a university serves as a cornerstone for education, research, and community empowerment in the realm of food science and technology.

Here are several key reasons why such unit is important:

1. Hands-on Learning
2. Research and Innovation
3. Technology Transfer
4. Entrepreneurship and Startups
5. Community Engagement
6. Promotion of Food Security
7. Curriculum Enhancement

Working of Food Processing Unit:

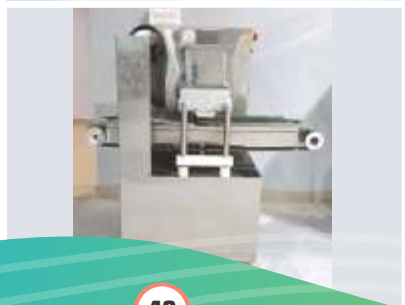
A food processing unit serves as a vital facility where raw agricultural materials undergo transformation into consumable food items. Through a series of meticulous stages and processes, these units result to preserve, enhance, and package food products for widespread consumption. Initially, the unit receives raw materials, such as fruits, vegetables, or grains, subjecting them to rigorous inspection to ensure adherence to quality and safety standards. Following this, the raw materials undergo thorough cleaning and washing procedures to eliminate any impurities or contaminants. Subsequently, sorting and grading mechanisms categorize the materials based on various attributes like size, shape, and quality, ensuring uniformity in the final product. The processing stage is where the transformative magic truly occurs, involving techniques like cutting, cooking, pasteurization, preservation, mixing, and blending to achieve desired food products. Finally, stringent quality control measures are implemented throughout the process to uphold regulatory standards and consumer expectations. Once processed, the food items are carefully packaged to maintain freshness and prolong shelf life. In essence, the working of a food processing unit is an accurately arranged symphony of stages and processes aimed at delivering safe, nutritious, and palatable food products to the market.

Here's an overview of how a typical food processing unit operates:

1. Receiving and Inspection
2. Cleaning and Washing
3. Sorting and Grading
4. Processing
5. Quality Control
6. Storage and Distribution
7. Cleaning and Sanitization





6 RESEARCH PROJECTS

6.1 NTRODUCTION

AGU is committed to inspire collaboration with external universities and research funding organizations to advance its research initiatives. Through its various centers and Departmental Research & Innovation Cells (DRIC), AGU actively seeks opportunities to engage in cooperative projects with private or government sponsors. The Core Research & Innovation Group (CRIG) plays a pivotal role in this endeavour by assisting in the identification of potential sources of funding and collaborating with research centers and DRICs to formulate projects in alignment with the guidelines set forth by funding agencies. By leveraging external partnerships and funding opportunities, AGU aims to enhance its research capabilities, facilitate knowledge exchange, and drive innovation across various domains. This collaborative approach not only enriches the research ecosystem within AGU but also strengthens its position as a leader in cutting-edge research and innovation.

6.2 EXTERNALLY FUNDED PROJECTS

AGU's primary goal is to cultivate externally funded projects that garner global recognition and are poised for publication within existing frameworks. Intellectual property arising from these projects typically belongs to the principal investigator. AGU endeavours to address diverse fields necessitating improvement, including defence, social welfare, science education enhancement, and environmental conservation. Through collaborative efforts with externally funded projects, AGU actively engages in these areas, striving to make significant contributions. The institution maintains a comprehensive list of externally funded projects, highlighting their exceptional achievements and contributions to various fields. These projects underscore AGU's commitment to impactful research and its dedication to addressing pressing societal challenges on both local and global scales.

RNTU Bhopal-List of Externally Funded Projects

S. No.	Title	Funding agency	Name of Research Center
1	Synthesis, Characterization of Lanthanide-based Phosphors as Spectral Converters in Solar Cells.	DST Indo-Taiwan Scheme	Centre of Excellence of Advanced Materials for Research
2	ABO_3 and A_2X_3 compounds under extreme conditions of pressure and temperature.	Funding agency - Spanish Ministry	Centre of Excellence of Advanced Materials for Research
3	Development of Pyrophoric Metal Ceramic Composite Materials for Smart Flare as IR Countermeasure.	Armament Research Board, DRDO	Centre of Excellence of Advanced Materials for Research
4	Assessment study of the Commercialization of already developed technologies of the Public Funded Research Institutes established in Madhya Pradesh.	Scientific and Industrial Research (DSIR)	Agriculture Research Center (ARC)

5	Mission Eco Next, Eco Routes Eco Leads to nurture Young Role Models for Resurgence of Eco Scientific Tradition"	National Council for Science & Technology Communication, (NCSTC), DST, GOI	Centre for Science Communication, RNTU
6	Staff Mobility and Higher studies Program with Romania	Project funded from EU	Centre of Excellence for Advanced Water and Environmental Research
7	Preparation of Biodiversity Register of Obaidullaganj Block, District Raisen.	MP Biodiversity Board, Bhopal.	Department of Basic Science
8	Preparation of Biodiversity Register of Udaipura Block, District Raisen.	MP Biodiversity Board, Bhopal.	Department of Basic Science
9	Preparation of Biodiversity Register of Raisen Nagar palika.	Forest Department Raisen, District Raisen.	Department of Basic Science
10.	Silver nanoparticle containing biopolymer-based nanocomposite as edible coating for active packaging in Food Application	Madhya Pradesh Council of Science & Technology, Bhopal	Science
11.	A study on impact of Startup in Medium, Small, Micro Enterprise in Madhya Pradesh	Indian Council for Social Science Research, New Delhi	Management
12.	High Tech Hub Paddoly Cropy Mechanism		Agriculture
13.	सुकन्या समृद्धि योजना का आर्थिक विश्लेषण भोपाल जिले के विशेष संदर्भ में	Indian Council for Social Science Research, New Delhi	Commerce
14.	Design and Fabrication with New Mechanism for PZT Energy Harvester Applied in Fusing System of Artillery Gun Bullet	Madhya Pradesh Council of Science & Technology, Bhopal	ME CSIT
15.	Evaluation of the Beti Bachao, Beti Padhao Scheme: Suggesting Policy Measures to Enhance Effectiveness in Indore District Madhya Pradesh	Indian Council for Social Science Research, New Delhi	Arts
16.	A Study on Digital Payment System & Consumer Perception With Special Reference to Raisen District	Indian Council for Social Science Research, New Delhi	Commerce

17.	Establishing Central India's first Biotech Incubation facility to support the emerging biotech startups in the region	Biotechnology Industrial Research AC	AIC-RNTU
18.	Traditional And Novel Modes Of Hands-On Stemm & Demonstrations, Scientific Media & Scientific Literacy (Hands on Learning Activities related to Science Media, Nature and Scientific Literacy).	Department of Science & Technology, New Delhi	CSC
19.	Intellectual Property Rights	Madhya Pradesh Council of Science & Technology, Bhopal	Science

CVRU Bilaspur -List of Externally Funded Projects

S. No.	Title of Project	Name of the Funding Agency	Name of Research Centers
1.	Documentation of Traditional knowledge and ethnomedicine uses of medicinal plants from remote villages in Bilaspur District in Chhattisgarh, India	National Innovation Foundation (Nif) & DST	Center of Research Excellence for Arts & Culture
2.	Research Grant for social welfare in 5 adopted villages	Department of Science & Technology, New Delhi	Rural Technology
3.	Seed Fund for Village & House Hold Survey	UBA, IIT, Delhi, MHRD, New Delhi, GOI	Rural Technology
4.	Inclusive Technology Business Incubator	Department of Science & Technology, New Delhi	Engineering
5.	Documentation of traditional knowledge and ethnomedicinal uses of medicinal plants from remote villages in Bilaspur districts in Chhattisgarh, India	UBA, IIT ,Delhi, MHRD, GOI	Rural Technology
6.	"Tribal Development in Chhattisgarh:Shifting perspectives, Issues and Challenges "	Indian Council for Social Science Research, New Delhi	Commerce & Management

CVRU Khandwa -List of Externally Funded Projects

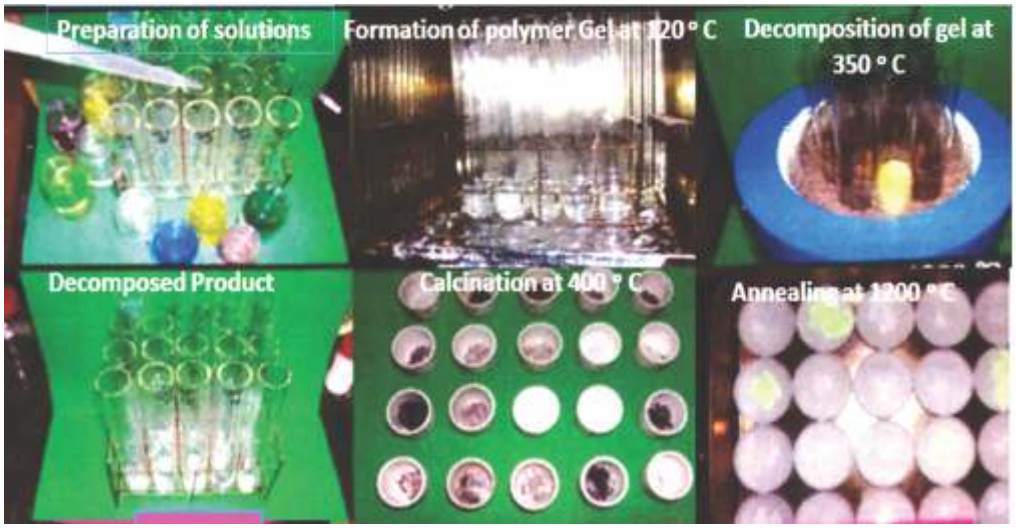
S. No.	Title of Project	Name of the Funding Agency	Name of Research Centers
1.	Harnessing the potential of NEP 2020 in vocational Education	Indian Council for Social Science Research, New Delhi	Rural Management

CVRU Vaishali -List of Externally Funded Projects

S. No.	Title of Project	Name of the Funding Agency	Name of Research Centers
1.	Construction Material Testing	Bihar Govt.	Civil Engineering
2.	Supply of hatchery	KVK Gopalganj	Agriculture
3.	Amrit Jal Sarovar Yojna	All India Council for Technical Education	Engineering

SGSU, Bhopal -List of Externally Funded Projects

S. No.	Title of Project	Name of the Funding Agency	Name of Research Centers
1.	R & D project, Machine learning approach to Predict the Effects of Agro-Climatic parameters Influences on Major Crop yields and Monitoring the Field level Data using Sensors.	Madhya Pradesh Council of Science & Technology, Bhopal	Computer Science



6.3 INTERNALLY FUNDED PROJECTS

The Core Research & Innovation Group (CRIG) at AGU plays a pivotal role in providing funding to support high-quality research endeavours within the campus. CRIG actively encourages inter-university collaborations and multidisciplinary projects, aiming to expand AGU's presence across various sectors and promoting partnerships with external research organizations. Internal grants are allocated to projects demonstrating academic merit and innovative content within specific academic disciplines. Project agreements ensure that investigators retain full rights to determine publication decisions in accordance with professional ethics standards. These measures underscore CRIG's commitment to facilitating impactful research initiatives while upholding academic integrity and promoting collaboration both within and beyond the university campus. However, CRIG may permit a project delay of up to three months under certain circumstances, as outlined in the agreement.

- The projects involved more experimental work,
- The project is a part of a larger project and waiting for permission to disclose results
- The project involves the development of an invention which may be patentable.

CRIG facilitates external appointments as needed for projects, adhering to established university protocols. This responsibility remains exclusive to the university unless recommended otherwise by external funding entities. External appointments are contingent upon academic merit and research experience. All agreements undergo approval by the university Chancellor and CRIG Director, typically establishing CRIG and the AGU researcher as the principal investigator. Intellectual property generated by the researcher is owned by the university and may be licensed for commercial development, serving public interests. This framework ensures that external appointments are conducted transparently and in alignment with the university's standards, while also safeguarding intellectual property rights and promoting the potential for commercialization of research outcomes for the public good.

Completed Projects

CRIG has funded 48 research projects, with 15 successfully completed. These projects cover experimental analyses across various socially relevant subjects. AGU's research policy ensures equal emphasis on projects of both social and industrial significance, reflecting its commitment to addressing diverse societal needs through demanding academic inquiry.

COMPLETED PROJECTS

RNTU, BHOPAL

Social Projects

- Research Project on Parvati River Pollution Check
- Development of a smart Lab and smart class room
- Development of an Innovative Solar system for Rural Application
- Study on financial Literacy in Youth

Industrial Projects

- Design & Development of Ecofriendly Pervious Concrete Blocks
- Master Slave Dual Axis Tracking System Proto type on one set of existing solar panel
- Development of a working model for vertical axis sail type wind mill for water pump in stand along mode
- IoT based smart devices

CVRU, BILASPUR

Social Projects

- Estimation of Pesticide in Fruits & Vegetables in Chhattisgarh Area

Ongoing Projects

CRIG allocated funds to 14 selected projects from AGU universities, addressing various problems. These projects, supervised by researchers and canter heads, include 7 focused on local social issues and 7 tackling industrial problems. They are currently in progress across AGU campuses.

ONGOING PROJECTS

Social Projects

RNTU, BHOPAL

Design and Development of a Moveable Sanitization Machine

CVRU, KHANDWA

A Study of Kalbelia Tribes to preserve their identity

CVRU, BILASPUR

- Performance assessment of primary students undergoing brain development classes in Bilaspur district
- Study of Harmful Effect of Food Preservatives
- Preparation of Eco- Friendly and low cost fly Ash based Materials for various applications
- Sustainable Livelihood Village Model Plan under Atma Nirbhar Bharat at Village

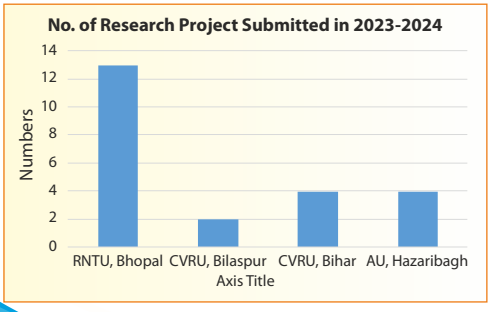
Industrial Projects

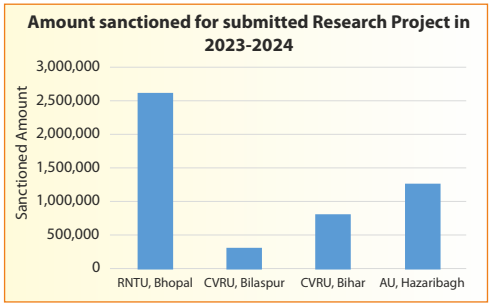
CVRU, BILASPUR

- Recognition of Cationic and Anionic Pollutants using Chemo sensor from the effluents of Sirgitti Industrial area in Bilaspur
- Formulation of Hebo –metallic –nano conjugate for skill in infection therapy: An emerald approach
- Nano synthesis and Characterization of some Phytochemicals used in Hypothyroid Treatment
- Investigation on cation exchange capacity of clay minerals for environmental pollutant

RNTU, BHOPAL

- Development of dust resistant Nano material coating for solar panel
- Development of IoT based Production- VTS, Soap Dispenser, Mask Detector, Temp Controller, Water Quality Monitor, Smart bed
- Development of Internal Management Control System





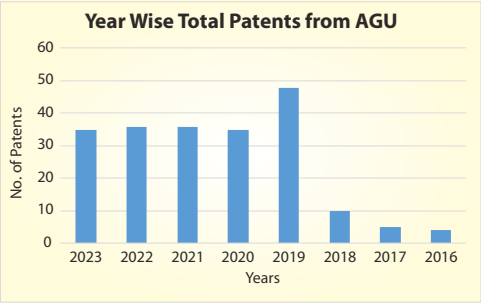
7 PATENTS

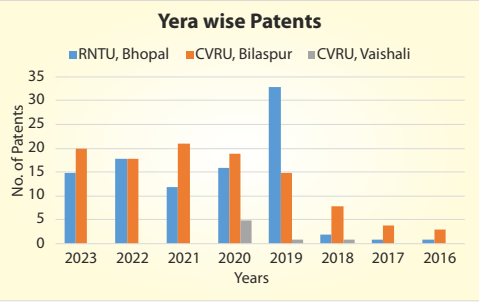
7.1 AGU PERSPECTIVE

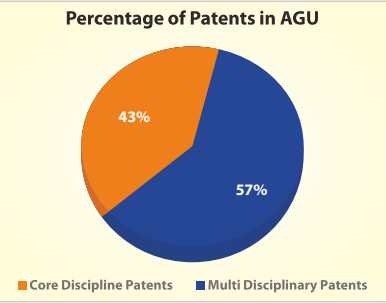
Quality research remains a paramount focus for AGU, often resulting in valuable patents that align with the nation's vision. Patent-centric research paves the path for innovative ideas and frequently leads to commercialization, benefitting society through the development of useful products. AGU consistently files a substantial number of high-quality patents annually. Besides centers, departments actively engage in innovative endeavors, contributing to patent filings and enhancing academic standards. The quantity and quality of patents serve as significant benchmarks for accreditation agencies, underscoring AGU's commitment to innovation and academic excellence. Each patent submitted by AGU undergoes thorough examination by CRIG, often receiving funding and assistance from patent attorneys. To date, AGU has successfully published over 100 patents, highlighting its dedication to innovation and intellectual property protection.

Patents are listed based on two categories: -

1. Core Discipline Patents 2. Multidisciplinary Patents







7.2 CORE DISCIPLINE PATENTS

Patents stemming from fundamental subjects are classified as "Core Discipline Patents," requiring interdisciplinary knowledge for innovative problem-solving. AGU's array of core discipline patents reflects its expertise in integrating diverse subject areas to address specific challenges. Notable patents in this category are outlined below, showcasing AGU's commitment to pioneering solutions through interdisciplinary collaboration.

S.No.	Name of the Patent published/awarded	Patent Number	University
1.	A Transformer Fault detection device	201721034866	RNTU, Bhopal
2.	A Novel System and Method for Automatic Attendance Marking	201721040690	RNTU, Bhopal
3.	Intelligent Solar Street Pole	201721040691	RNTU, Bhopal
4.	A Crank Less I.C. Engine	201721038460	RNTU, Bhopal
5.	A Novel Slider Crank Mechanism	201821035492	RNTU, Bhopal
6.	Fake Data Detection System and Method	201921035659	RNTU, Bhopal
7.	Optimal Path selection Method	201921035660	RNTU, Bhopal
8.	Education Management System and Method	201921035661	RNTU, Bhopal
9.	Waste Water Treatment System	201921035662	RNTU, Bhopal
10.	Concrete composition and a method of Preparation Reparation thereof	201921035663	RNTU, Bhopal

11.	Power Amplification System	201921035654	RNTU, Bhopal
12.	Up conservers ion Nanophosphor Based Photo electrode for Dye Sensitized Solar Cell and a Method of Making there of	201921035656	RNTU, Bhopal
13.	Harmonic detection and reduction system	201921035658	RNTU, Bhopal
14.	Bar Clamp	322260-001	RNTU, Bhopal
15.	Mouth Piece for Analysing Exhaled Breath	322254-001	RNTU, Bhopal
16.	Pneumatic Clutch Actuator	322262-001	RNTU, Bhopal
17.	Sheet Cutter	322255-001	RNTU, Bhopal
18.	Wood Cutting and Trimming Machine	322256-001	RNTU, Bhopal
19.	Frequency Converter	322258-001	RNTU, Bhopal
20.	Vacuum Cleaner	322253-001	RNTU, Bhopal
21.	Portable Charger	322257-001	RNTU, Bhopal
22.	Video Shot Transition Detection Method	201921049693	RNTU, Bhopal
23.	System and Method for constructive effort estimation	201921049688	RNTU, Bhopal
24.	Enhanced Biometric Based Digital Circulation of encrypted question Paper	202041040640	RNTU, Bhopal
25.	Artificial Intelligence Based Efficient Communication Platform Between Deaf & Blind and between Blind & Deaf	202021044631	RNTU, Bhopal
26.	A Heat Recovery System for Use with an IC Engine	202121041817	RNTU, Bhopal
27.	A Compact Mechanical System For Rescuing An Object	4637/MUM/2015	RNTU, Bhopal
28.	System And Method For Identifying Knuckles Of Users	201921049690	RNTU, Bhopal
29.	Iot Based Smart Surveillance Security System With Automatic Santization	202021044245	RNTU, Bhopal
30.	An Image Processing System Using Fixed Point And Fuzzy Logic Unit	202121029056	RNTU, Bhopal
31.	Advanced Fire Detection And Passenger Alerting System Based On Iot For Indian Transportation (Railway) Sector	202141041003	RNTU, Bhopal
32.	Automatic Network Operation And Management To Improve Network Resource Utilization And Operational Reliability Using Machine Learning Algorithms	202141043198	RNTU, Bhopal
33.	In Silico Based Study To Predict And Analyse Drug Molecules For Targeting Cancerous Cells	202211010470	RNTU, Bhopal
34.	Multi-Purpose Hanger	339352-001	RNTU, Bhopal
35.	Smart Solar Wireless Charging System For Electric Vehicle And Its Alert	202221028078	RNTU, Bhopal
36.	An Adaptive Fuzzy Power Controller Based Wind Energy Conversion System	202221046890	RNTU, Bhopal
37.	Influence Of The Interconnection Of Wind Turbines Types I, II, III And Iv On The Parameters of The Hosting Capacity of Distribution Systems	202241050139	RNTU, Bhopal
38.	Smart Solar Grid Management System Based on IoT & Machine Learning	202221051815	RNTU, Bhopal
39.	Recommender System for Telecommunication Industry	202221050432	RNTU, Bhopal
40.	Energy Monitoring Meter	364212-001	RNTU, Bhopal
41.	Artificial Intelligence Powered Robot for Home Assistance	368825-001	RNTU, Bhopal

42.	The Efficient & User-Friendly Approach to File Income Tax Return In Transparent Manner	202321020766	RNTU, Bhopal
43.	Novel-Ni Based Alloy And Process For The Preparation Thereof	202221002412	RNTU, Bhopal
44.	A Panel Connectivity Structure in Assembling A Building and Manufacturing Method Thereof	202341064165	RNTU, Bhopal
45.	A High-Speed Resistance Device	202321026146	RNTU, Bhopal
46.	Energy Managing Device	393716-001	RNTU, Bhopal
47.	Parameter Dependent Analysis of Regression Supervised Machine Learning	202321036162	RNTU, Bhopal
48.	Grid Energy Management Device	397304-001	RNTU, Bhopal
49.	Machine Learning Based Robot for Monitoring Crop Yield	6327252(UK DESIGN)	RNTU, Bhopal
50.	Concept Note on Experiential Learning	993/2024-CO/L	RNTU, Bhopal
51.	Phase Sequence Detection Device	201921026120	CVRU, Bilaspur
52.	Voice And Remote-Controlled Home Automation System	201921026118	CVRU, Bilaspur
53.	Automatic Temperature Based Fan Controlling System	201921026123	CVRU, Bilaspur
54.	Data Loss Prevention System and Method	201921026142	CVRU, Bilaspur
55. 56.	Method for Removing Contaminants from Liquids Using Bio- Separation Technique	201921026144	CVRU, Bilaspur
57.	Method for Estimating Heavy Metals Contamination in Foodstuffs	201921026140	CVRU, Bilaspur
58.	Method for Determination of Heavy Metals Contamination	201921026143	CVRU, Bilaspur
59.	Method and Systems for Two-Wheeler Security	201921008522	CVRU, Bilaspur
60.	Water Filter for Aquarium	319204-001	CVRU, Bilaspur
61.	Fluid Dispensing Bottle	319205-001	CVRU, Bilaspur
62.	Chain Cover for Vehicle	319206-001	CVRU, Bilaspur
63.	Light Fixture	319207-001	CVRU, Bilaspur
64.	Air Pump	319209-001	CVRU, Bilaspur
65.	Public Light Fixture	319210-001	CVRU, Bilaspur
66.	Spark Plug Connector	319211-001	CVRU, Bilaspur
67.	Laser For Drilling	319194-001	CVRU, Bilaspur
68.	Liquid Sorting Machine	319195-001	CVRU, Bilaspur
69.	Hand Cart for Agriculture	319196-001	CVRU, Bilaspur
70.	Adapter	319188-001	CVRU, Bilaspur
71.	Heat Exchanger	319189-001	CVRU, Bilaspur
72.	Retractable Paint Gun	319190-001	CVRU, Bilaspur
73.	Mouth Cleaning Apparatus	319191-001	CVRU, Bilaspur
74.	Drill Chuck	319192-001	CVRU, Bilaspur
75.	Jack For Lifting	319216-001	CVRU, Bilaspur
76.	Device For Cutting Paper	319220-001	CVRU, Bilaspur
77.	Vending Machine	319221-001	CVRU, Bilaspur
78.	Finger Wearable Forceps	319218-001	CVRU, Bilaspur
79.	Chimney For Kitchen	319219-001	CVRU, Bilaspur
80.	Manual Roll Press Machine	319233-001	CVRU, Bilaspur
81.	Hand Juicer	319223-001	CVRU, Bilaspur

82.	Punching Machine for Paper	319224-001	CVRU, Bilaspur
83.	Air Tool Balance	319232-001	CVRU, Bilaspur
84.	Electric Wires Connector	319225-001	CVRU, Bilaspur
85.	Mincer	319227-001	CVRU, Bilaspur
86.	Pump Unit	319228-001	CVRU, Bilaspur
87.	Dispensing Brush	319229-001	CVRU, Bilaspur
88.	Lubricant Container	319230-001	CVRU, Bilaspur
89.	Filter Housing for Water Purifier	319208-001	CVRU, Bilaspur
90.	Public Light Fixture	319210-001	CVRU, Bilaspur
91.	Liquid Sorting Machine	319195-001	CVRU, Bilaspur
92.	Adapter	319188-001	CVRU, Bilaspur
93.	Hand Juicer	319223-001	CVRU, Bilaspur
94.	IOT Based Smart Surveillance Security with Automatic Sanitization.	202021044245	CVRU, Vaishali
95.	Enhanced Biometric based digital circulation of Encrypted question Paper.	202041040640	CVRU, Vaishali
96.	IPF- Voltage Converter Shoe: Intelligent Shoe Power Bank charged by Foot Steps.	202021052201	CVRU, Vaishali
97.	MODI	202011035844,	CVRU, Vaishali
98.	Multi Power Source AC thela	202011037949	CVRU, Vaishali

7.3 MULTIDISCIPLINARY PATENTS

These patents necessitate expertise from various disciplines to tackle complex challenges, often requiring considerable time and effort due to the interdisciplinary nature of the work. Researchers must analyze problems from multiple subject perspectives to identify suitable approaches for solutions. Despite the challenges, AGU has successfully developed numerous Multidisciplinary Patents, showcasing its commitment to addressing multifaceted issues through collaborative research. Below are some examples of such patents from AGU's diverse portfolio.

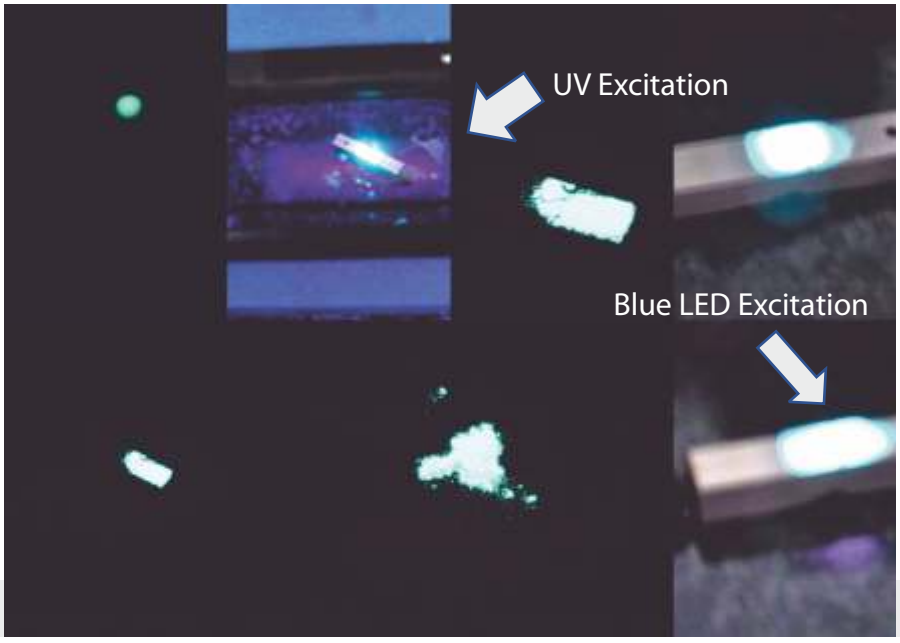
S.No.	Name of the Patent published/awarded	Patent Number	University
1.	Solar Tree Based Structure	201721002193	RNTU, Bhopal
2.	A Multipurpose solar Dryer	201721034865	RNTU, Bhopal
3.	Dual Axis Fault Resistant Solar Tracking Device	201721042400	RNTU, Bhopal
4.	Smart Solar Panel Cleaning Device	201721042401	RNTU, Bhopal
5.	Method for Routing in Vehicle AD-HOC Network (VANET) with Mobility Awareness	201821047991	RNTU, Bhopal
6.	Computer Implemented Method for Semantic Indexing Based Text Classification using Deep Learning	201911042141	RNTU, Bhopal
7.	System of Personalized Physical and Mental Monitoring with Using IOT Sensors Network	201911041380	RNTU, Bhopal
8.	Automatic transformer Maintenance System	201921035655	RNTU, Bhopal
9.	Hybrid Power Generation System	201921035657	RNTU, Bhopal
10.	Method for preparing Stone Matrix Asphalt	201921049692	RNTU, Bhopal

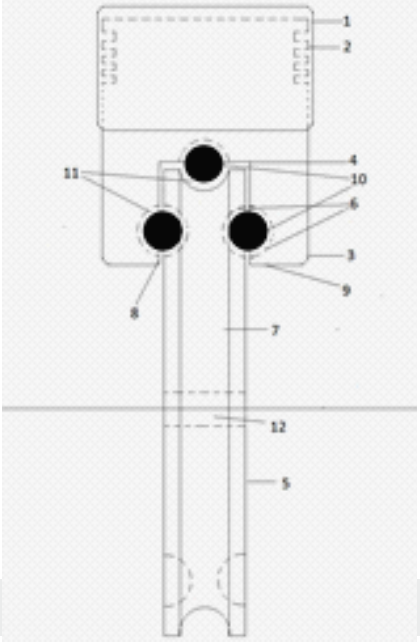
11.	Fog Collecting System	201921049689	RNTU, Bhopal
12.	System and Methods for identifying Knuckles for Users	201921049690	RNTU, Bhopal
13.	Prediction Device for Roughness Surface	201921049691	RNTU, Bhopal
14.	An IOT Enabled Cloud Computing Based Remote Monitoring System of Hazardous, Flammable, and Explosive Leakage for Chemical Industries	202041015822 A	RNTU, Bhopal
15.	A System for Electric Terrain Vehicle Dynamics Analysis& Optimization	202111036381 A	RNTU, Bhopal
16.	An IoT & Cloud Computing Enabled 5G Sensor Network for Smart City Implements	202111041401	RNTU, Bhopal
17.	An Afterglow Material For Cold Tracer and A Process for the Preparation on thereof	201721036125	RNTU, Bhopal
18.	Highly Reliable Dual Axis Solar Tracking Device	201721042400	RNTU, Bhopal
19.	IPF- Voltage Converter Shoe: Intelligent Shoe Power Bank Charged by Foot Steps.	202021052201	RNTU, Bhopal
20.	An Improvement in DTH with Solar Energy Panel	2021101394	RNTU, Bhopal
21.	System For Detecting Profitable Segments of E-Commerce Platform	202021009793	RNTU, Bhopal
22.	A Civil Engineering Water System with Embedded Solar Panels	202121046610	RNTU, Bhopal
23.	Strategies for A Home Charging System for Electric Vehicles	202141048422	RNTU, Bhopal
24.	A System For Monitoring And Mapping of Plantation Cover using Different Global Positioning System	202121049706	RNTU, Bhopal
25.	Effective And Compact Face Descriptor For Driver Drowsiness Detection Applied with Machine Learning and Visual Behavior	202141053106	RNTU, Bhopal
26.	An Intelligent Logistics And Supply Chain System A Novel Parallel Technique Construction over the Obstacle Rectilinear Steiner Tree Electronic Device for Aggregating Sources for Payment to Financial Transaction	202211007580	RNTU, Bhopal
27.	Machine Learning Based Technique To Analyse The Data Of Covid Patients and Chance for Getting Infected with other Variants	202241010381	RNTU, Bhopal
28.	Cost Effective Solar Panels With Photovoltaic Cells Coated With Nanoparticles	202221013684	RNTU, Bhopal
29.	Smart Nanotechnology Based Gas Sensors to Control the Inert Gases from Creating A Poisonous Environment	202211025380	RNTU, Bhopal
30.	Ai Based Automatic Efficient Greenhouse Farming System to Detect and Prevent all kinds of Plant Disease using Image Processing and Deep Learning Algorithms for Higher Crop Yield	202241029604	RNTU, Bhopal
31.	Artificial Intelligence And Machine Learning-Based Techniques to Improve the Detection of Lung Cancer	202221028961	RNTU, Bhopal
32.	Intelligent Power Control Mode for Double Fedinduction Generator Wind Turbine	202221042001	RNTU, Bhopal
33.	A Methods and Apparatus for Multi-Source Converter Topology for Integration of Different Energy Sources	202221048072	RNTU, Bhopal

34.	Analysis Of Diversity Of Plant Growth Promoting Properties of Microbiomes Associated with Plants in Desert Soils	202311012924	RNTU, Bhopal
35.	Device to Detect the Power Consumption of Renewable Energy	379161-001	RNTU, Bhopal
36.	IoT Controlled Charger for Electric Vehicles	379558-001	RNTU, Bhopal
37.	Artificial Intelligence and IoT Based Smart Agriculture Management System for Efficient Irrigation and Crop Monitorin using Machine Learning Algorithms	202311044154	RNTU, Bhopal
38.	Algae-Powered Street Lamps through Photosynthesis	385680-001	RNTU, Bhopal
39.	Implementation of Machine Learning Based Architecture for Detecting Diseases in Plant Leaves	202321037088	RNTU, Bhopal
40.	Crop Yield Production Depleting Classifier	202321034768	RNTU, Bhopal
41.	Locomotive Track Monitoring System	201921026121	CVRU, Bilaspur
42.	Green House Management System	201921026122	CVRU, Bilaspur
43.	Method for Estimating Micronutrients	201921026119	CVRU, Bilaspur
44.	System and Method for Controlling Multi-Media Displays	201921026138	CVRU, Bilaspur
45.	Computational System	201921026145	CVRU, Bilaspur
46.	Denoising System	201921026141	CVRU, Bilaspur
47.	Method for Synthesizing Graphene Nano-Platelets	201921026139	CVRU, Bilaspur
48.	Autonomous Motor Controlling System	201921026135	CVRU, Bilaspur
49.	Cancer Detection System and Method	201921026127	CVRU, Bilaspur
50.	Power Factor Correction System and Method	201921026130	CVRU, Bilaspur
51.	System And Method of analysing Vibration on Machines	201921026131	CVRU, Bilaspur
52.	Risk Assessment Method	201921026129	CVRU, Bilaspur
53.	Cognitive Radio System	201921026132	CVRU, Bilaspur
54.	Cordless Screw Driver	319203-001	CVRU, Bilaspur
55.	Filter Housing for Water Purifier	319208-001	CVRU, Bilaspur
56.	Hydraulic Pipe Cutter	319212-001	CVRU, Bilaspur
57.	Electric Transducer	319213-001	CVRU, Bilaspur
58.	Alternator	319214-001	CVRU, Bilaspur
59.	Robotic Arm	319197-001	CVRU, Bilaspur
60.	Gear Shifter Knob of a Vehicle	319198-001	CVRU, Bilaspur
61.	Fuel Burner for Testing	319222-001	CVRU, Bilaspur
62.	Grill for an Automobile	319217-001	CVRU, Bilaspur
63.	Suspension Assembly	319226-001	CVRU, Bilaspur
64.	Connector for Signal Transmission	319231-001	CVRU, Bilaspur
65.	Crime Detection and Prevention System Using Personal and Public IoT Networks	2020102101	CVRU, Bilaspur
66.	Method For Water Pollutant Concentration Estimation in Water Reservoir Using Laplace Transform	2020102450	CVRU, Bilaspur
67.	Green Building Environment Management Module for Real Time Air Quality Monitoring	2020102451	CVRU, Bilaspur
68.	Disease Detection Using IoT and Machine Learning in Rice Corps	2020102100	CVRU, Bilaspur
69.	An AI Based System for Glucose Monitoring and DeterminingCompliance	2020142112	CVRU, Bilaspur

7.4 GRANTED PATENTS

- An Improvement in DTH with Solar Energy Panel
- A Transformer Fault Detection Device
- A Novel Blue Color Emitting Phosphor Composition and A Process for the Preparation Thereof
- Intelligent Solar Street Pole
- A Multipurpose Solar Dryer
- A Slider Crank Mechanism
- A Crank Less I.C. Engine





8 RESEARCH PAPER PUBLICATION

8.1 PARAMETERS OF AGU

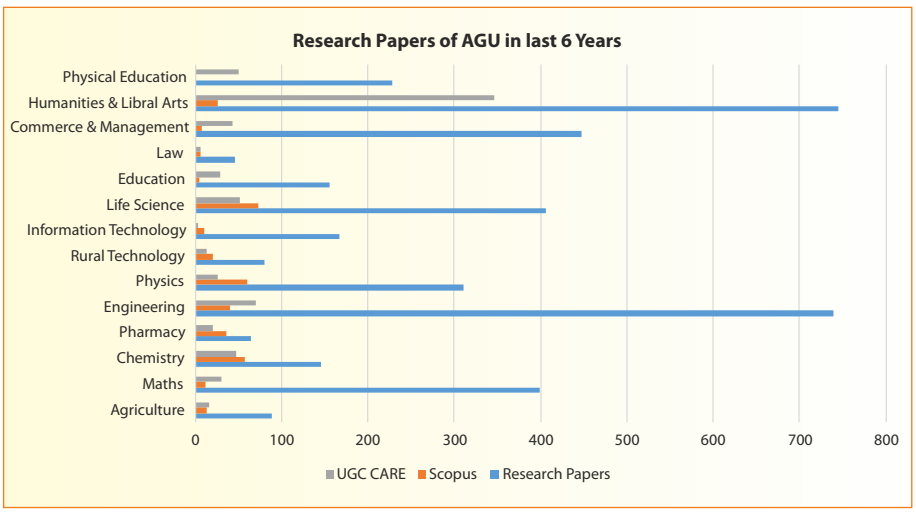
AGU emphasizes three crucial phases in defining the publication of any article: expressive, investigative, and influential. Each phase demands specific skills to craft an informative publication. A quality publication encompasses a literature review to explore opportunities in existing research and methodology to justify research gaps expressively. Data collection and result formulation should adopt an investigative approach. Meanwhile, the discussion should incorporate an influential element, aiming to persuade and impact readers effectively. AGU recognizes the importance of each phase in producing impactful and informative publications.

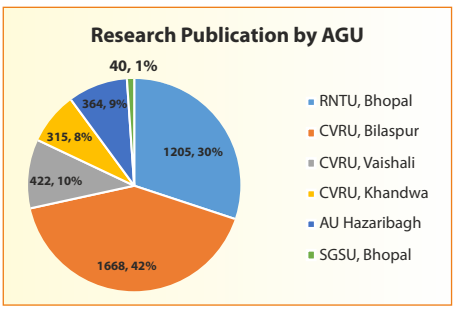
8.2 RESEARCH PAPER WRITING SKILLS

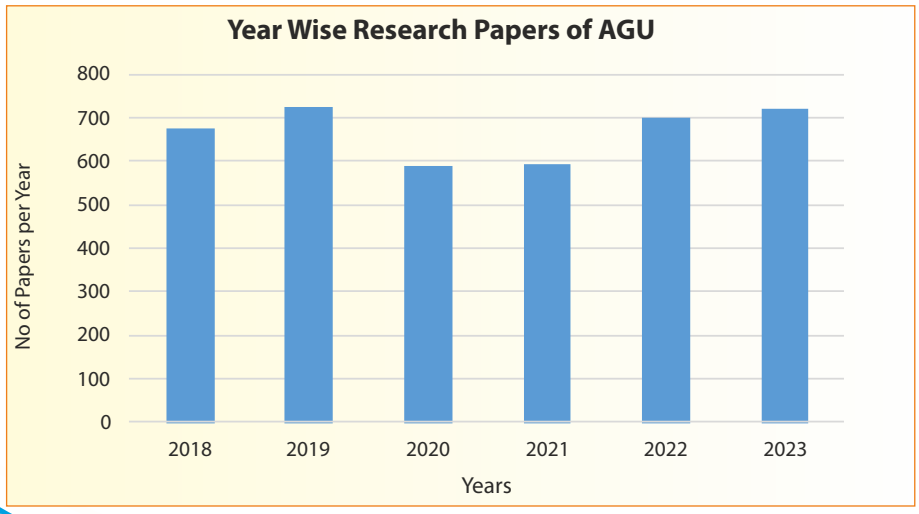
To express research in a technical way, publication writing skill is required. A good notifiable publication comprises following characteristics, those reflects in a publication from up to the end.

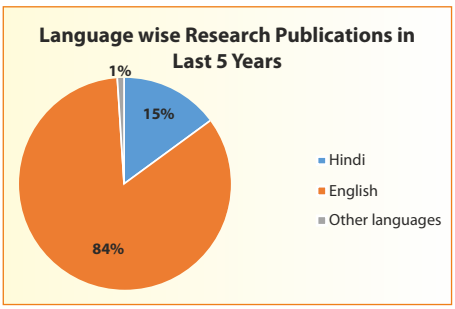
1. Clarity of subject
2. Purpose of Publication
3. Stick to an objective
4. Collection of solid information (facts and data)
5. Be Neutral with results
6. Concise Writing
7. Maintain direction
8. Consistent style and format
9. Content should be archival
10. Citation of contributions

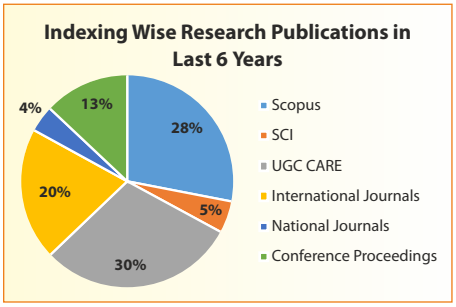
8.3 ANALYSIS











9 BOOK/BOOK CHAPTERS PUBLICATION

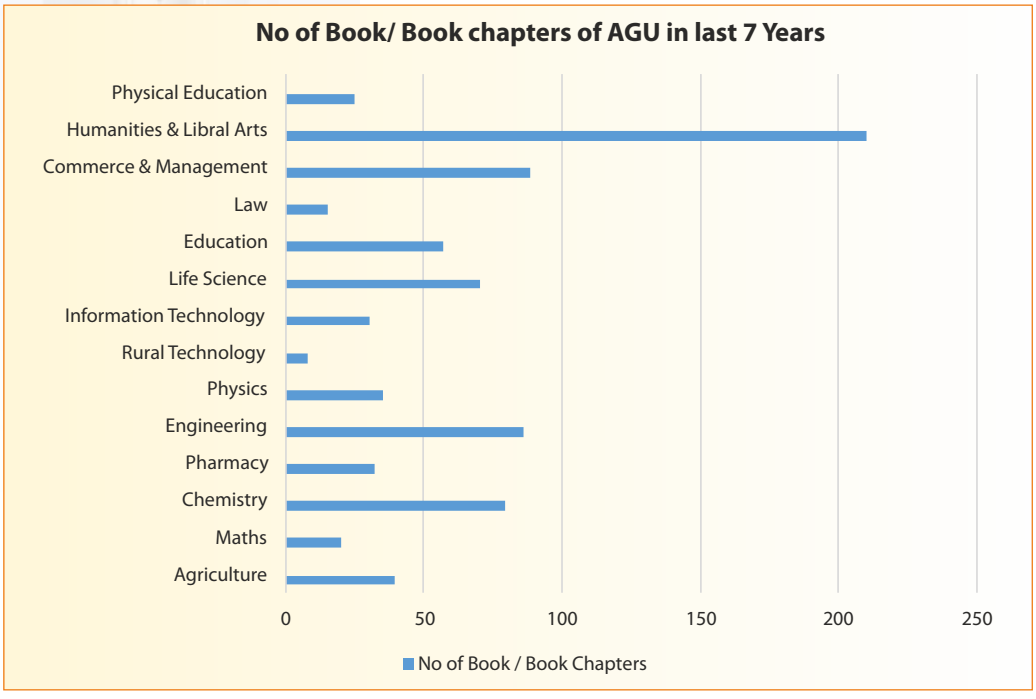
9.1 PARAMETERS OF AGU

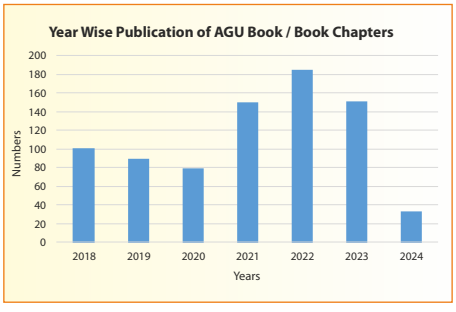
AGU adheres to formatting guidelines to ensure a thoughtful and professional approach to book writing. Proper formatting enhances readability and attracts readers within the same community. Key elements of standard formatting include fonts, margins, indentation, line spacing, alignment, page numbers, scene breaks, italics, sentence and page separation, and word count. These guidelines ensure consistency and clarity throughout the text, facilitating comprehension and engagement for readers.

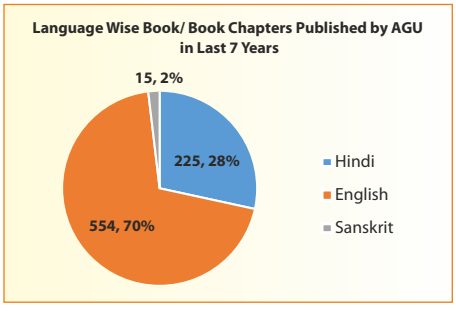
9.2 SHARING KNOWLEDGE WITH SOCIETY

Knowledge sharing is integral to the knowledge management process at AGU. Researchers and professors not only publish their findings but also disseminate knowledge through books and book chapters. AGU faculty members have collectively authored over 100 books and book chapters, which serve as valuable resources for sharing insights and expertise with a wide audience, including peers, students, communities, and organizations. This active engagement in knowledge sharing contributes to the advancement of scholarship and promoting collaboration both within and beyond the academic community.

9.3 ANALYSIS







10 CONSULTANCY AT AGU

10.1 INTRODUCTION

AGU offers consultancy services across diverse fields to both public and private sector organizations. Experts in areas such as Agriculture Science, Engineering & Technology, Humanities & Languages, Physical & Life Science, Economy, Management, Paramedical & Nursing, Library Science, Science Communication, and Yoga are available to provide specialized guidance. With extensive experience and research expertise, AGU's consultants collaborate closely with client organizations to develop efficient solutions tailored to their specific needs. This consultancy service reflects AGU's commitment to leveraging academic knowledge and research for practical applications, benefiting a wide range of industries and sectors.

In today's dynamic business landscape, industries encounter ongoing challenges spanning business model reassessment, technological issues, organizational structure, staffing, marketing, management, and distribution channels. At our consultancy, we collaborate closely with clients to devise viable solutions integrating technological advancements, market insights, and financial considerations. Our well-equipped labs enable us to undertake diverse consultancy assignments effectively, addressing the multifaceted needs of our clients and providing actionable recommendations to navigate the complexities of the modern business environment.

10.2 CONSULTANCY SERVICES

Consultancy skills & expertise as per nature of problems,

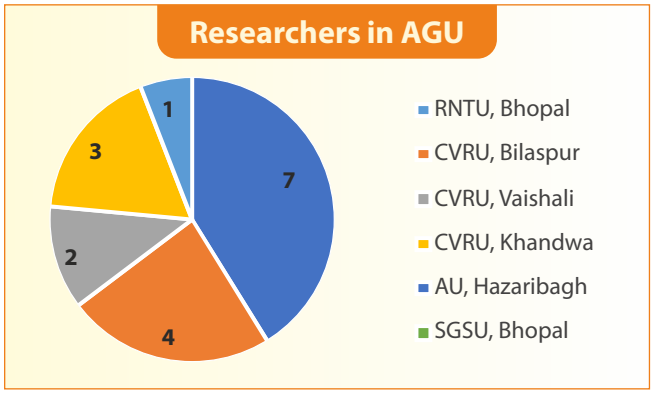
- Inventive thinking.
- Thinking conceptually and practically.
- Problem-solving.
- Communicating clearly and sympathetically.
- Collaboration with all job levels.
- Organization and time management.
- Curiosity.
- Trustworthiness.

10.3 STREAM WISE AREAS OF CONSULTANCY

Agriculture, Farms, Crops and Food Processing

Areas of consultancy

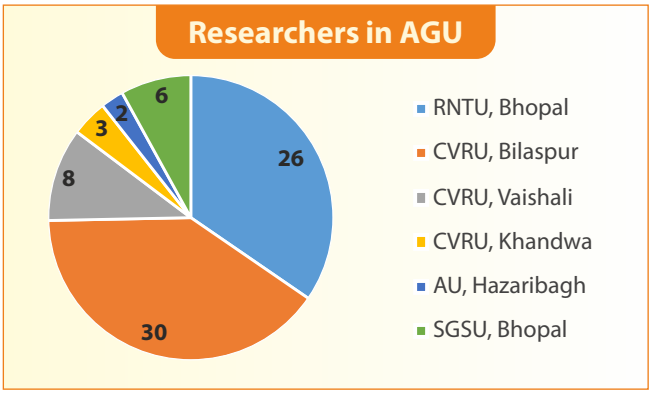
- Renewable Energy & Farm machinery
- Trainer- (Crop Insurance & Rural Finance) / Farmer Training / Inorganic & Organic farming Consultancy.
- Horticulture Science, Vegetable based kitchen garden/farming module, Greenhouse management, Organic farming
- Bee keeping, Insect Population dynamic and Storage grain management
- Social work in Rural & Tribal area / Sociology
- Hindi Literature
- Indian Mythology & Feminism in English Literature, Soft skills & Personality development



Humanities, Arts and Languages

Areas of consultancy

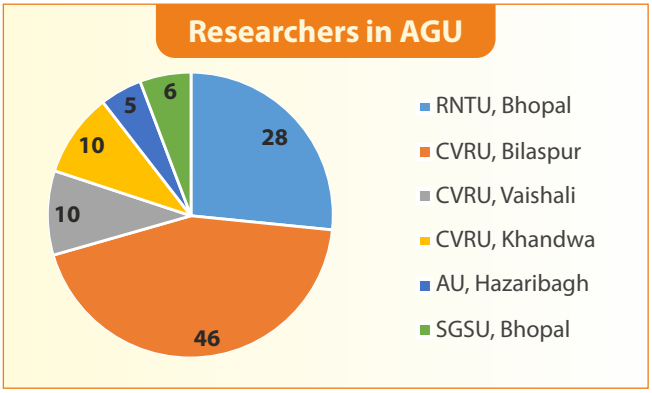
- Social work in Rural & Tribal area / Sociology
- Hindi Literature
- Indian Mythology & Feminism in English Literature, Soft skills & Personality development



Physical, Science, Life Science, Biotechnology & Maths

Areas of consultancy

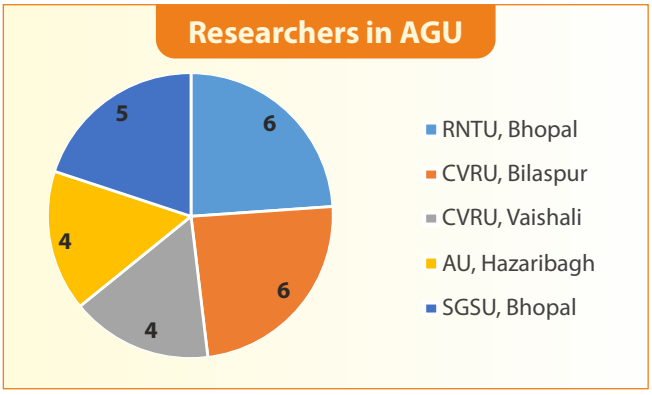
- Environmental Science / Parasitological / Potential of Medicinal Plants
- Advance Material Science/Nano Technology
- Environmental Science, Sustainability analysis & design
- Advance Material Science/Nano Technology
- Maths related topics



Civil Engineering

Areas of consultancy

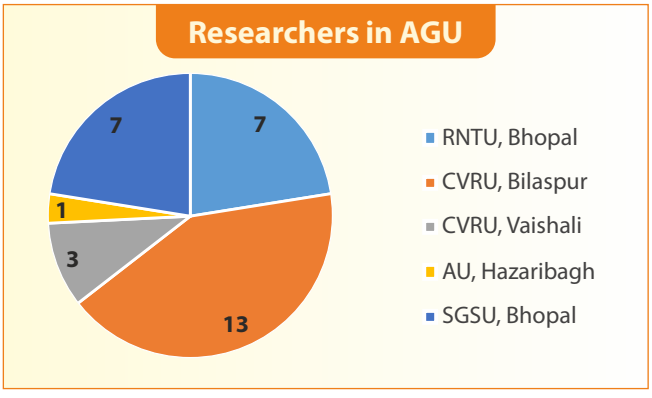
- Wastewater Treatment, Industrial & Solid Waste Management
- Water resources and Environment and Geology
- Transportation



Computer Science Engineering

Areas of consultancy

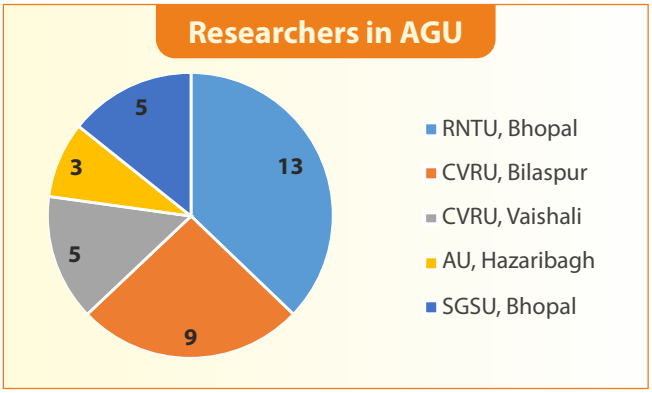
- IOT
- Data Mining / Machine Learning
- Machine Learning, Data analytics, Python



Mechanical Engineering

Areas of consultancy

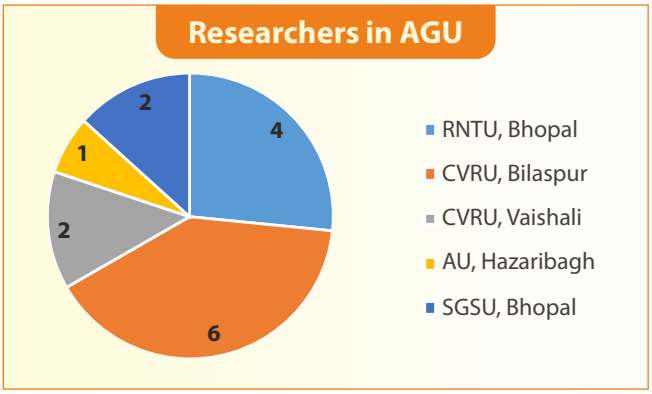
- Energy and Emissions with regards to internal Combustion Engines.
- Renewable energy & Material Management
- Production Engineering
- I.C. Engine, Refrigeration & Air conditioning
- Fabrication, CNC, CAD/CAM
- Solar Energy, Refrigeration & Air Conditioning
- Material Science



Electrical Engineering

Areas of consultancy

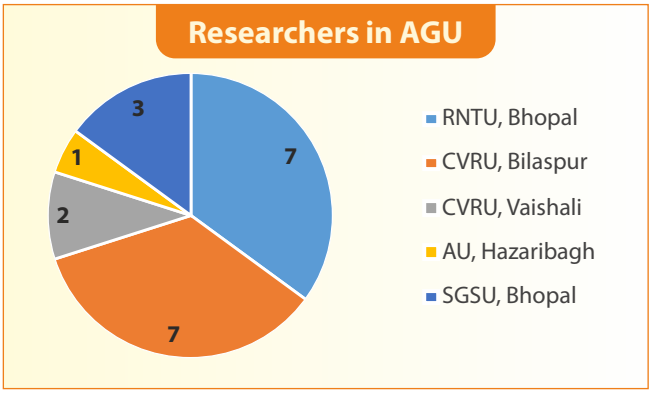
- Control System
- Integrated Circuits & VLSI
- Energy Communication Systems



Electronics and Communication Engineering

Areas of consultancy

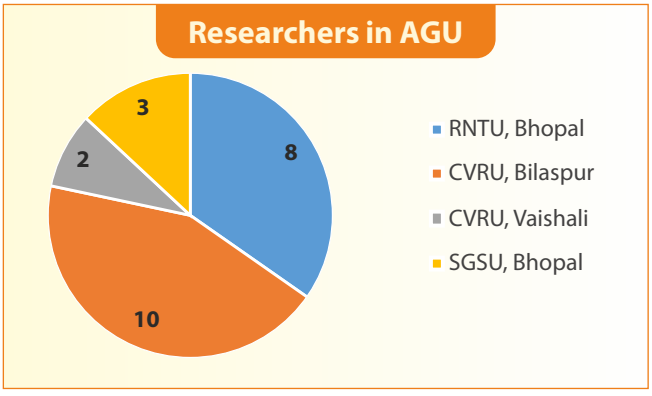
- Wireless Communication, Sensor Networks
- Wireless communication, Digital Electronics
- Single Phase Electrical circuits (Electrician training)
- Digital Communication / Wireless Communication /Optical Communication



Information Technology

Areas of consultancy

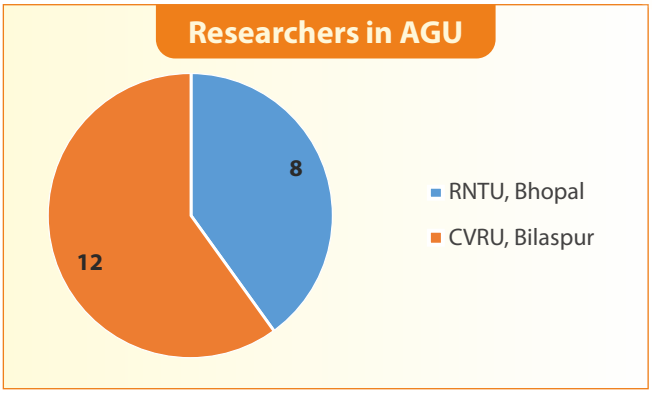
- Data mining / Graphic Designing /2 D Animation
- Information Technology



Paramedical, Nursing & Pharmacy

Areas of consultancy

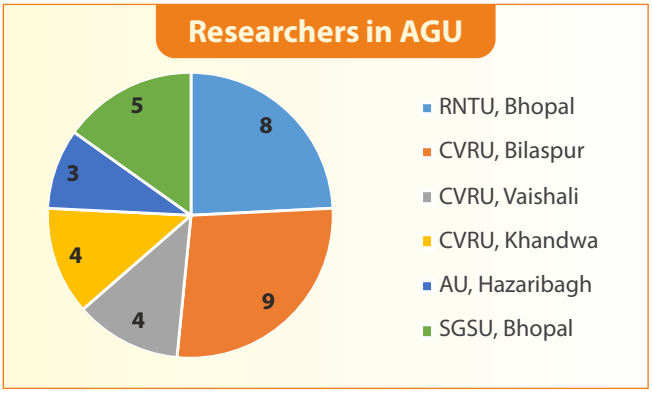
- Specialization in Mental health Nursing
- Nursing
- Yoga & Nutrition Expert / Ayurved
- Physiotherapy / Dry needling / Cupping



Education

Areas of consultancy

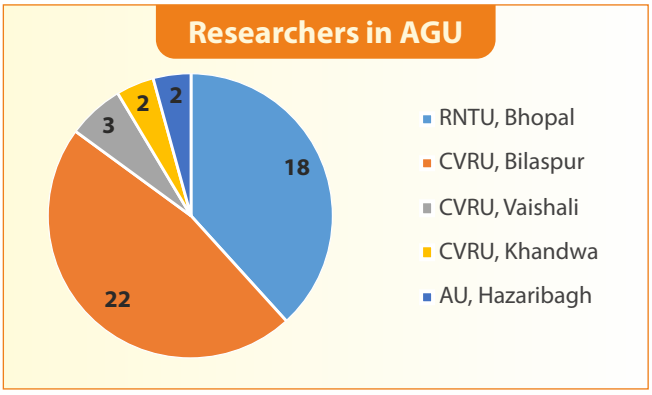
- Psychology / Psychometric Test Research on Educational Issues /subjects



Commerce & Management

Areas of consultancy

- Behavioural Trainer / Statistical Software Trainer/ Taxation
- Statistical Software Trainer/ Taxation/ Stock Market
- Personality development/Communication Skills
- Career Counsellor

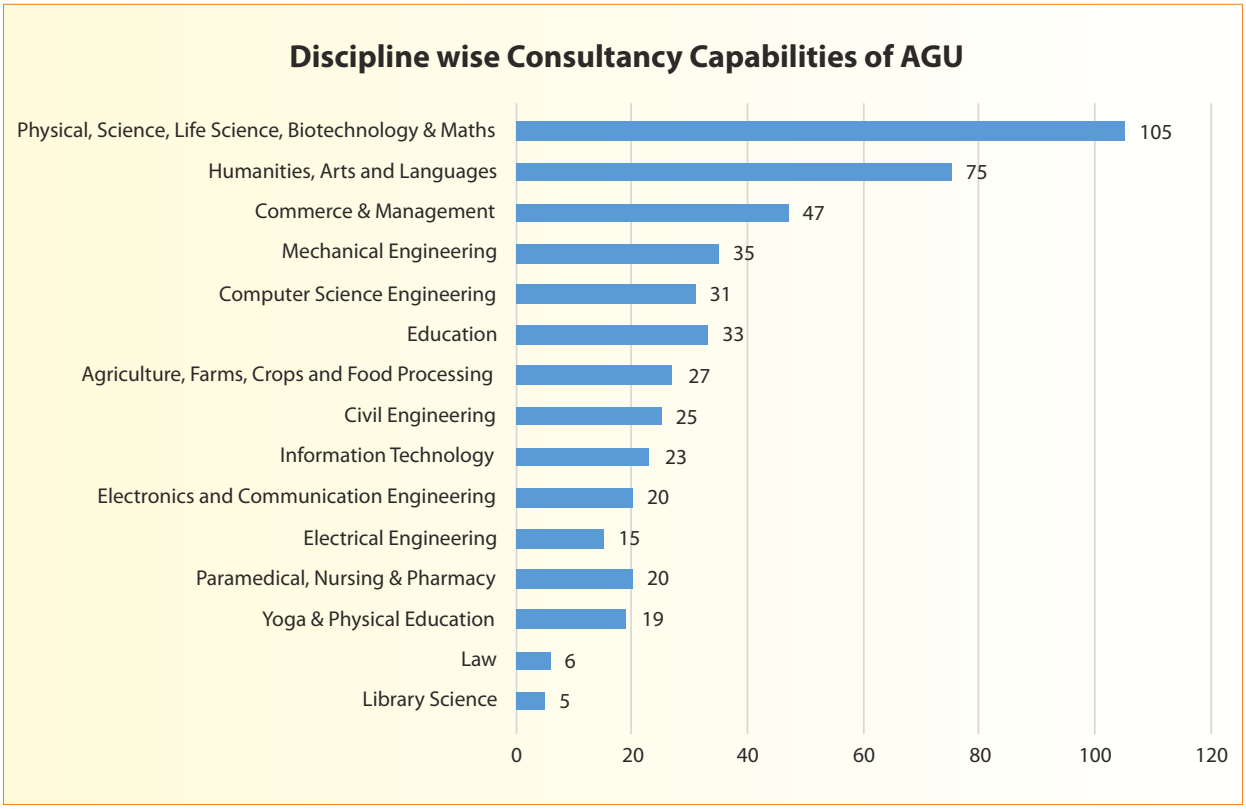


CONSULTANCY SERVICES OF SOME SPECIALIZED DEPARTMENTS

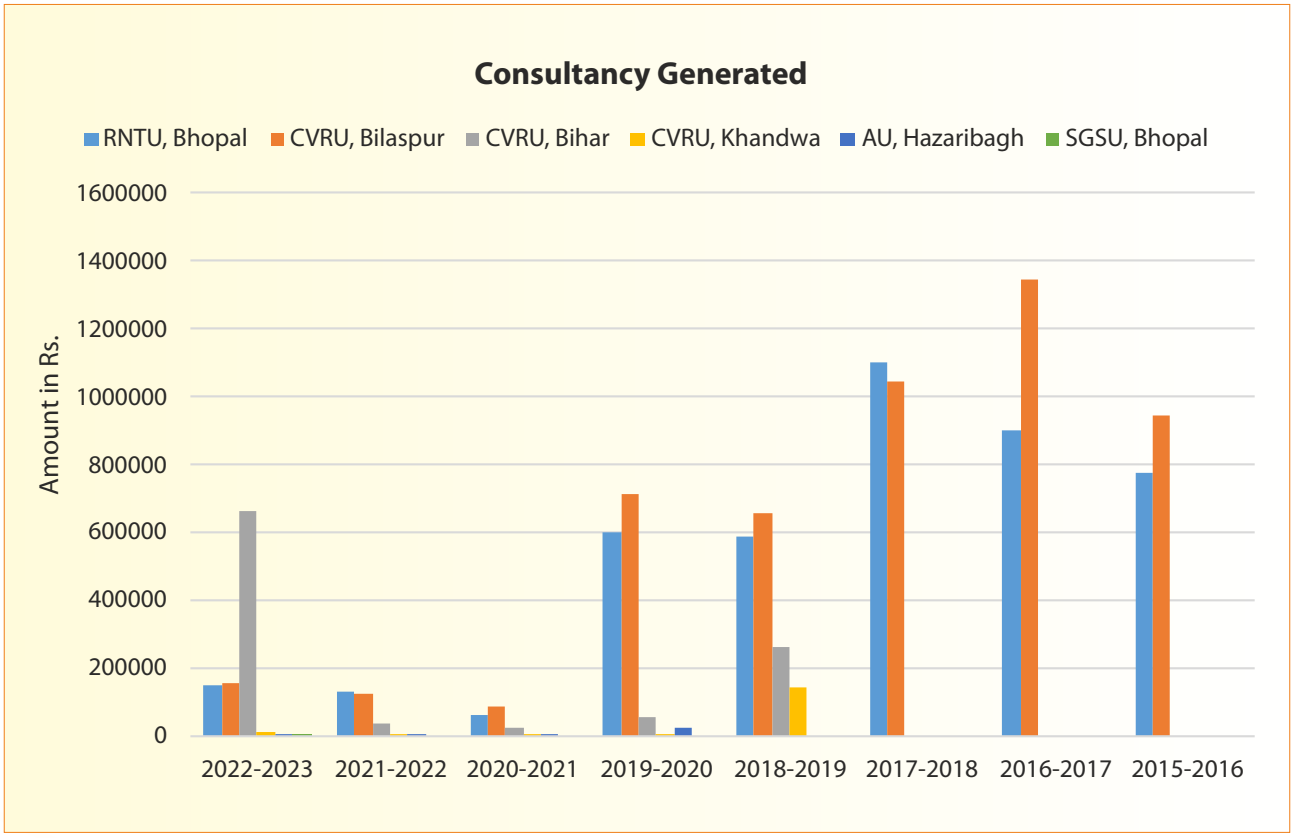
S. No.	Fields	Consultancy Services
1.	Agriculture	• Customization and design of form machinery and equipment using solar energy • Seed to harvesting consultancy for better productivity and enhancement of income • Green house expansion to management with cost effectiveness and efficiency • Project based consultancy for horticulture and vegetable farming from small to mega project • Consultancy for effective organic and inorganic farming for profit. • Training projects for group of farmers and managers on all aspects of agriculture • Finance related consultancy on crop insurance, and other activities. • Training of farmers • Bee keeping Mushroom cultivation and Herbal garden consultancy on turnkey mode
2.	Humanities, Arts and Languages	• Survey based projects in rural and urban areas • Translation work on a turnkey basis • Publication of books journals and magazine on from inception to marketing • Campaign design and management • Design and execution of social work project in rural and urban area • Training project on soft skill, personality groom and other aspects of competitive sphere
3.	Commerce	• Case based and regular Consultancy on taxation and book keeping • Preparation of professional Project Reports • Training on tally, taxation and other aspects of accounting • Project based consultancy in commerce
4.	Management	• Project management right from concept to conclusion • Training of human resources in all spheres at various codes from worker to senior manager • Statistical Analysis and consultancy • Report writing and DPR presentation
5.	Civil Engineering	• Testing of building material • Conduct and Generation of survey report • Architectural design of all kind of civil construction • Civil project design for inception to execution
6.	Physical and Life Science	• Analysis of causes which affects temperature rising • Projects writing of power of recycling • Study projects on invasive and endangered species • Design of projects based on environmental science and sustainability • All types of advanced testing of material • Developing advanced material based solution for various problem in emerging fields of nano material and other material • Project management right from specification design to commission • Development of solar material

S. No.	Fields	Consultancy Services
7.	Computer Science Engineering & Information Technology	• Research projects based on IOT and their model developments • Consultancy and project writing and of Principal Component Analysis, Rule learning, Clustering and Affinity Grouping of Data Mining • Machine Learning research projects based on repetition of past data • Provides Consultancy on Graphic Designing and 2D Animation Projects
8.	Electronics and Communication Engineering	• Consultancy and project writing on wireless LAN, wireless MAN, wireless PAN and wireless WAN • Consultancy for different applications of sensor networks such as IoT, Industrial Automation, Video Surveillance etc. • Hands on Practices on Single Phase Electrical Circuits • Consultancy and project writing on applications of communications in Digital, Wireless and Optical.
9.	Mechanical Engineering	• Consultancy and project writing on Energy and Emission control technologies of Internal combustion Engines • Consultancy for Material and inventory management for industries. • Consultancy and project writing for industrial application of production engineering by using advanced machines such as CNC, Milling, Drilling, Lathe Machines etc. • Training on Refrigeration & Air Conditioning • Hands on training of solar systems in solar equipped labs
10.	Electrical Engineering	• Consultancy and project writing on Control System • Training on Integrated Circuits & VLSI • Consultancy and project writing on Communication Systems

10.4 CONSULTANCY CAPABILITIES



10.5 CONSULTANCY GENERATED



11 COLLABORATIONS & MOU'S

11.1 MEANS TO AGU

The Memorandum of Understanding (MoU) serves to establish strategic partnerships between AGU and universities, research organizations, and industries, each with defined objectives. AGU prioritizes the cultivation of active MoUs and collaborative projects to nurture robust relationships with external entities. Currently, AGU has forged over 320 MoUs and collaborations with national and international organizations, facilitating numerous projects that have yielded tangible outcomes such as products, patents, and comprehensive reports. These initiatives underscore AGU's commitment to develop innovation and knowledge exchange through interdisciplinary collaboration, further enhancing its global presence and impact in both academic and industrial domains.

The research partnerships established through the MoUs involve exploring potential collaborations through a collaborative research module, where researchers from both entities collaborate to generate project ideas. Moreover, there exist problem-specific research MoUs and collaborations aimed at collectively addressing research challenges through mutual cooperation. These initiatives create conducive environment to interdisciplinary collaboration, enabling the pooling of expertise and resources to tackle complex issues effectively. By leveraging the strengths of both parties, these research relationships under the MoUs not only facilitate knowledge exchange but also promote innovation and the development of practical solutions to pressing research problems.

11.2 ACTIVE INTERNATIONAL COLLABORATIONS & MOU'S

ICEWARM (Australia)

Moi University (Kenya)

NCTU (Taiwan)

A & M Texas University (USA)

Tribhuvan University (Nepal)

IAWEES Collaboration UK (Canada)

IAWEES Collaboration (Netherland)

RANA University (Afghanistan)

IAWEES Collaboration (China)

IAWEES Collaboration (France)

IAWEES Collaboration (Czech Republic)

Skyline University College (United Arab Emirates)

Rensselaer Polytechnic Institute, New York (USA)

Polytecnica de Valencia University (Spain)

Usmanu Danfodiyo University Sokoto (North Westarn Nigeria)

Faculty of Civil Engineering Brno University of Technology (Czech Republic)

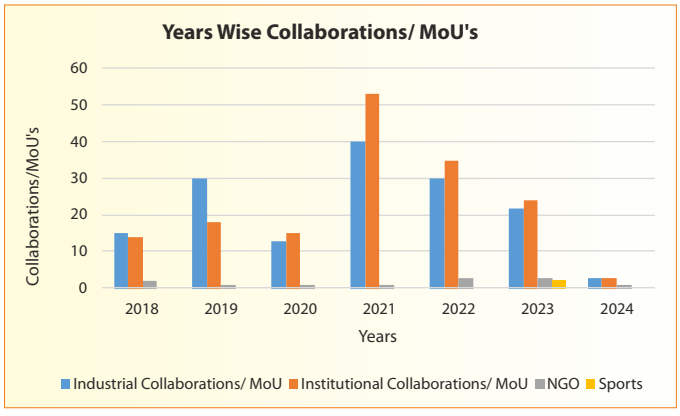
11.3 ACTIVITIES AS PER INTERNATIONAL COLLABORATIONS AND MOU'S

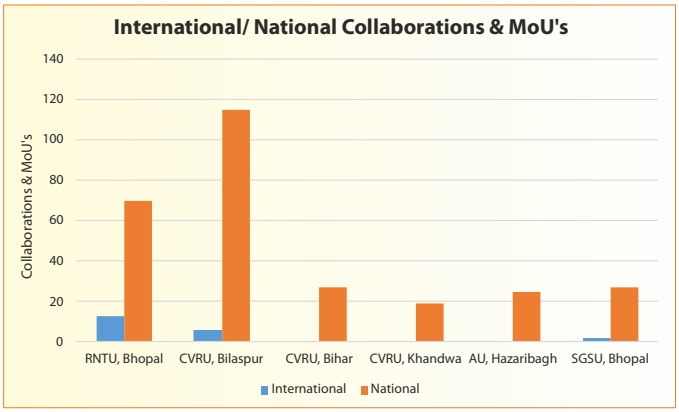
There are 14 active international collaborations and MoU's, and some significant activities under collaborations are as follows:-

S.No.	Organization	Collaborative University	Area of Collaboration	Activities
1.	ICEWARM (Australia)	RNTU, Bhopal	• Water Resource Management • Faculty Exchange • Research Participation	• Jointly organized ICWEES-16 • Two faculty exchange programs
2.	RPI, New York (USA)	RNTU, Bhopal	• Collaborative Research • Exchange Faculty/Student	• Jointly organized ICETST-14 • Faculty Visit
3.	MOI University (Kenya)	RNTU, Bhopal	• Research Oriented Activities	• A research project
4.	Tribhuvan University (Nepal)	RNTU, Bhopal	• Student Research oriented activities	• VC, TU visited AISECT University
5.	NCTU (Taiwan)	RNTU, Bhopal	• Joint Research Projects	• One Indo Taiwan Research Project Ongoing on Phosphors for Solar Cells
6.	Polylecnica de Valencia University (Spain)	RNTU, Bhopal	• Joint Research Work	• Joint Research on ABO_3 & A_2X_3 Compounds
7.	A & M Texas University (USA)	RNTU, Bhopal	• Climate Change and Water Management	• Jointly organized ICWEES-16 • Research Oriented faculty visit
8.	Florida State University	RNTU, Bhopal	• Research in IOT	• Research Oriented faculty visit
9.	MOI University	RNTU, Bhopal	• Research in Environment & Energy	• Research Oriented faculty visit
10.	UK, Netherlands, China, France, Czech Republic, Canada,	RNTU, Bhopal	• IAWEES Activities	• Research Oriented faculty visit under the IAWEES Collaboration
11.	Usmanu Danfodiyo University, Sokoto, North Western Nigeria	CVRU, Bilaspur	• Academic & Research	• Research Oriented faculty visit and project
12.	Skyline University College, United Arab Emirates	CVRU, Bilaspur	• Academic & Research	• Research Oriented faculty visit and project
13.	RANA University, Afghanistan	CVRU, Bilaspur	• Academic & Research	• Research Oriented faculty visit and project
14.	Faculty of Civil Engineering, Brno University of Technology, Czech Republic	CVRU, Bilaspur	• Environment and Water	• Project on Water Purification is running

11.4 ACTIVE NATIONAL COLLABORATIONS & MOU'S

AGU has registered over 250 National Collaborations and MoUs, which can be segmented into various categories including Research Organizations, Industries, Government Universities, and Private Universities. The analysis of these collaborations is conducted through a systematic approach, assessing the distribution and nature of partnerships within each category. This examination provides insights into the diversity and scope of AGU's national engagements, highlighting its multifaceted interactions across different sectors of the academic and industrial landscape. By categorizing these collaborations, AGU gains a comprehensive understanding of its network and can strategically leverage these relationships to promote innovation, knowledge exchange, and societal impact on a national scale. This structured analysis serves as a valuable tool for identifying opportunities for collaboration, addressing challenges, and maximizing the collective impact of AGU's partnerships within the national context.





AGU in Chinese Universities

AGU in European Universities

AGU in American Universities

12 EVENTS

12.1 AGU DIMENSIONS

AGU places great emphasis on fostering strong connections among researchers and academicians within its affiliated universities as well as with external organizations. To facilitate this, AGU regularly organizes research events such as workshops, seminars, conferences, congresses, and competitions, often referred to as research festivals, across all its university campuses. These events serve as platforms for participants to delve into unexplored areas of their respective fields, encouraging interdisciplinary collaboration and knowledge sharing. Additionally, they offer opportunities to critically assess past achievements and envision future prospects related to specific research issues. By providing a space for networking, learning, and innovation, these research events play a vital role in nurturing a vibrant research ecosystem within AGU and beyond, ultimately contributing to the advancement of knowledge and the dissemination of impactful research outcomes.

12.2 LEARNING THROUGHOUT THE YEAR

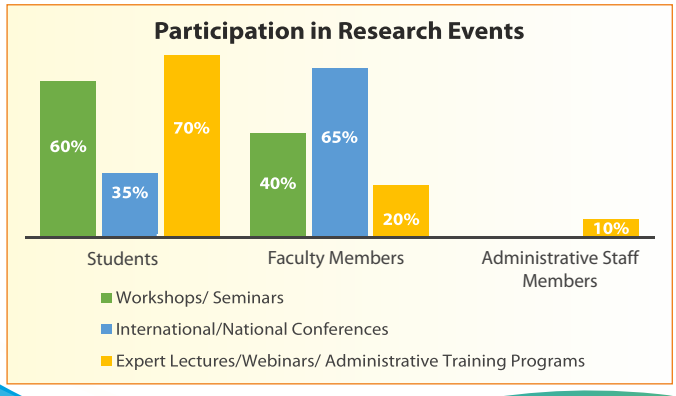
The primary aim of AGU's research events is to cultivate awareness and understanding of specific subjects through engaging discussions and debates, which are integral components of these gatherings. These events consistently attract subject matter experts and scholars from both national and international levels, making an environment of knowledge exchange and mentorship for emerging researchers. Universities affiliated with AGU regularly review their departmental research activities by adhering to a structured research calendar, thereby setting targets and objectives accordingly. To ensure accessibility and participation, these research events are conducted through both offline and online modes, catering to the diverse needs and preferences of participants. By facilitating dialogue, collaboration, and goal-setting within the research community, AGU's research events serve as catalysts for academic advancement and innovation, contributing to the overall growth and development of the research ecosystem within the institution and beyond.

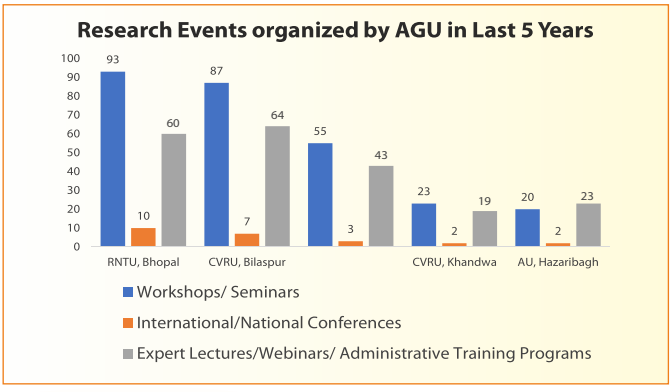
12.3 TYPES OF RESEARCH EVENTS AND THEIR ANALYSIS

Research events can be categorised in following manner to define their importance for research culture in the universities.

- **Workshops and Seminar**

  AGU conducts numerous workshops and seminars annually, serving as Faculty Development Programs (FDP) for both students and faculty. These FDPs typically span 3 to 5 days, tailored to the subject's requirements. Over the past five years, AGU has organized over 700 workshops and seminars, providing invaluable opportunities for skill enhancement and professional growth among its academic community.





- **International and National Conferences**

  AGU regularly hosts International and National conferences, offering a platform for global interaction among experts. Additionally, AGU organizes smaller programs tailored for students, faculty, and administrative staff, often focusing on specific subjects. These initiatives make deeper engagement and interaction with experts. Furthermore, AGU conducts administrative training programs to enhance staff capabilities. Over the past five years, AGU has organized a total of 288 expert lectures, webinars, and administrative training programs, contributing significantly to knowledge exchange, skill development, and institutional growth.

- **Expert Lectures, Webinars and Administrative Training Programs**

  AGU also organizes small programs for students, faculty members and administrative staff. Most of the time, these programs are focused on a topic of any subject. Such programs give opportunity to students and faculty members for interacting more deeply and openly with the experts. AGU organizes administrative training programs to strengthen the administrative capabilities of the staff members. Total 273 Expert Lectures, Webinars and Administrative Training Programs has been organized by AGU in last 5 years.

Glimpses of Some Major Events


AISECT UNIVERSITY
TAGORE UNIVERSITY
MADHYA PRADESH
Where aspirations become achievements.
Pre-Conference Workshop on
GIS, GPS & Remote Sensing
in Association with
Center of Excellence in Geo-Informatics
MANIT Bhopal
AGIS
NATIONAL SEMINAR & EXTENSION
On
PARAMEDICAL
SCIENCES
Orientation
Programme
for
MASTER IN
HOSPITAL
ADMINISTRATION
&
MASTER IN


Rabindranath
TAGORE UNIVERSITY


BRAHMOS


TAGORE UNIVERSITY
IoT
Organizes
ROBO-RAC
Srijan-2018
16 Feb, 2018


स्वतंत्रता का अमृत महोत्सव
शोध शिखर-2022
TAGORE UNIVERSITY


स्वतंत्रता का अमृत महोत्सव
शोध शिखर-2022
TAGORE UNIVERSITY


TAGORE UNIVERSITY


DIALOGUE DASH


DR. C.V. RAMAN UNIVERSITY


दैनिक भास्कर


Business Solutions


Bizspeak
Business Solutions


RNTU
DR. C.V. RAMAN UNIVERSITY
STC ACE


Two Days International Seminar on


GBEA


DAILY INDIAN MEDIA


INDIA'S LEADING PRIVATE


INDIA'S
LEADING
PRIVATE
VERSITY


भारतीय हिंदी साहित्यकार-संसद


RNTU


RN


RNTU
TAGORE UNIVERSITY
WEST ZONE
INTER UNIVERSITY
HOCKEY TOURNAMENT (MEN)
02-07 JANUARY, 2024

Himanshi Tokas
(Judo)
Dushanbe Grand Prix, Tajikistan
Selected in Commonwealth Games, South Africa

Nandini Vats
(Judo)
Commonwealth Games, South Africa
World University Games, China

Priyanshi Prajapat
Bronze Medal,
Jr. Wrestling Championship,
Jordan

Shankar Pandey
(Fencing)
World Championship, Italy

Bushra Khan
Silver Medal,
Asian Championship, Korea

LEADERSHIP TRAINING CAMP PACHMARHI


RNTU
RNTU
RNTU
Rabindranath
TAGORE


POCO
SHOT ON POCO F1
2024/1/25 11:25


वनमाली
सृजन पीठ
राष्ट्रीय वनमाली कथा सम्मान-2024
स्व. उषा किरण खान
कथाशीर्ष सम्मान
शिवमूर्ति
राष्ट्रीय कथा सम्मान
डॉ. ज्ञान चतुर्वेदी
कथा मध्यप्रदेश सम्मान
तेजेन्द्र शर्मा
प्रवासी भारतीय
रचनाकार सम्मान
आशुतोष
युवा कथा सम्मान
अनिल यादव
कथेतर सम्मान
प्रत्यक्षा
विशिष्ट कथा सम्मान
राकेश बिहारी
कथा आलोचना सम्मान
कथा पत्रिका सम्मान - 'तद्भव' (लखनऊ से प्रकाशित चर्चित पत्रिका)
26-28 फरवरी, रबीन्द्रनाथ टैगोर यूनिवर्सिटी

13 AISECT PUBLICATION- INHOUSE PUBLICATION

13.1 INTRODUCTION OF AGU PUBLICATION

AISECT Group encompasses AISECT Publication Private Limited, specializing in publishing a diverse range of literature including books, novels, short stories, and nonfiction works. Many authors affiliated with AGU have their works published by AISECT Publication Private Limited. The content for these publications is developed by the AISECT Content Development Group, aimed at fulfilling the evolving need for high-quality educational materials within the skill development ecosystem. This group benefits from the expertise of a highly qualified team comprising trainers, consultants, and Subject Matter Experts (SMEs) with extensive industry experience. Their collective knowledge ensures the delivery of world-class content, tailored to the requirements of both academy programs and National Skill Qualification Framework (NSQF) aligned job roles. Through these publications, participants gain a comprehensive understanding of their respective job roles, thereby enhancing their training experience and readiness for the workforce. Some of the AISECT Publications are presented here:

13.2 ELECTRONIKI APKE LIYE This is the most popular science magazine of India which has helped spreading science communication to nooks and corner of the country. This is the only science magazine in Hindi being continuously published for last 35 years in over 40 thousand copies.

13.3 CRIG BULLETIN This bulletin is published every year in the beginning of the academic year to show case research and innovation of the constituent universities of AISECT Group of Universities.


Core Research Group
Upgrading knowledge through research
Rabindranath TAGORE UNIVERSITY
CRG Bulletin
Issue-1 Rabindranath Tagore University May-2018

Core Research Group
Making things obsolete which were latest till yesterday

- **CRG - Most Innovative Initiative to promote Research**

Research plays a key role in the academic pursuit of higher education. As a matter of fact, research environment in a university is the barometer of its academic health. Research is a long drawn affair and demands heavy capital expenditure with quite uncertain Returns on Investments (RoI). For private universities, which normally have very little support from the government, research becomes a double edged weapon; no immediate returns from research on one side and students general apathy towards research, clubbed with their calculated focus on the degree alone, on the other side. Yet there are few universities like Rabindranath Tagore University (RNTU) who are very keen on research and ready to take the risk of large investment. Core Research Group (CRG) is a unique initiative of RNTU. With a corpus of Rs. 1 Crore, CRG has been established in the University as an independent group with an annual budget of Rs. 1 Crore for Research related activities. Currently this group is handling 8 Research Projects funded from its own resources. There are 3 ongoing international projects too and many more activities and events on going and in the pipeline. The first issue of CRG bulletin provides the glimpses of research related activities.

- **The Group Composition**

Chairman	-	Shri Santosh Choubey Chancellor RNTU
Director	-	Prof. Vijay Kant Verma Founder VC of RNTU
Member	-	Prof. AK Gwal VC , RNTU Madhya Pradesh
Member	-	Prof. SK Shrivastav VC, AISECT University Jharkhand
Member	-	Prof. RP Dubey VC, CVRU Chhattisgarh
Member	-	Prof. AS Zhedgaonkar Founder VC, CVRU, CG
Member	-	Prof. R.K. Panda VC, CVRU Bihar
Member	-	Maj. Gen Ajay Chaturvedi VSM, AVSM
Member	-	Prof. Murali Mantrala
Member	-	Prof. Anurag Seetha
Member	-	Prof. Sandhya Chaturvedi
Member	-	Prof. CK Ghosh

- **Navratn Centers of Excellence**

Taking deviation from normal protocol, nine Centers of Research Excellence have been set up which throughcome under respective Departments, out across all the other departments in the University and enjoy certain autonomy also in research operations. visit www. aisectuniversity.ac.in for more

Center for Renewable Energy (CRE)	-	Director	- **Dr. Anil Kurchania**
Advanced Material Research Lab (AMRL)	-	Head	- **Dr. Sudeshna Ray**
Center for Space & Earth Science (CESS)	-	Head	- **Dr. Suryanshu Choudhary**
Agriculture Research Complex (ARC)	-	Head	- **Dr. Pragya Shrivastava**
Tagore International Center for Arts & Culture (ICAC)	-	Head	- **Mr. Vinay Upadhayay**
Center for IoT and Advanced Computing (CIOTAC)	-	Head	- **Dr. Preeti Mhaskhwary**
Center for Incubation for Entrepreneur & Startups (CIES)	-	CEO	- **Mr. Nitin Vats**
Center for Environmental Science (CES)	-	Head	- **Dr. R.N. Yadav**


Core Research Group
Upgrading knowledge through research
Rabindranath TAGORE UNIVERSITY
CRG Bulletin
Issue-2 Rabindranath Tagore University April-2019

Core Research Group
Making things obsolete which were latest till yesterday

- **From the Director's Desk**

The debate on quality of research is now at very high pitch. There is a lot of buz to give final shape to New Education Policy and make it a game changer to usher is an era of world quality higher education in India. The dream of establishing world class universities in India is taking shape with identification of 10 universities for special funding. RNTU is the only University which has established 7 Research Centers of Excellence with lot of funding. An independent research group CRG set up at RNTU, shows the vision and foresight of this University. In 2018 this vision has been pushed with lot of vigors which has resulted in many significant miles stones which you can see in this bulletin.

- Prof. Vijay Kant Verma

- **Research Events - 2018**

- RNTU, organised an International Conference on Water Energy Environment and Society at Tunisia in association with IRA Tunisia and A & M Texas University USA
- Dr. Shalini Yadav and Dr. SK Sharma of RNTU present research paper in Research Event organised by Imperial College London at Istambul.
- National Conference on Material Science organised by RNTU in collaboration with NAL, ARCT, RRCAT and AMPRI.
- National Seminar on Green Jobs and Research Potential organised by RNTU collaboration with AGIS Bangaluru.
- A Science Workshop on 'Work to learn'
- Technology Transfer Camp by RNTU for Mushroom Cultivation with research based improvements.
- 'Technology and Innovation as Game Changer – World Education summit at New Delhi coorganised by RNTU
- Start up Stand up National competition organised jointly by RNTU and CII


Core Research Group
Upgrading knowledge through research
Rabindranath TAGORE UNIVERSITY
CRG Bulletin
Issue-3 Rabindranath Tagore University April-2020

Core Research Group
Making things obsolete which were latest till yesterday

- **From the Director's Desk**

The New Year 2020 has come on a dreaded note with Coronovirus spreading all over the world and a total lockdown is eminent. We hope that with lock down and initiatives taken by the government, India will be able to face the challenge without much problem. During 2019, on research and innovation front, RNTU faculty has done an excellent job. It published record number of research papers and bagged prestigious IPRs with some good projects for technology transfer and start up initiatives which have been incubated in Atal Incubation Center of the University. Another good news is that RNTU has been ranked within first 200 in All India ranking by NIRF – The only private university of MP to get the honour.

- Prof. Vijay Kant Verma

- **Research Events – 2019**

- Session on importance of Internship – 9 Jan 2020
- One day workshop on IPR in association with ennoble "Strategies for Plagiarism risks and IPRs to avoid legal challenges" – Feb 2020 and Research Component
- National Research Conference on M.P. Tribal Community 15-16 Feb 2019
- National Conference (Recent Advance in Mechanical, Manufacturing and Industrial Engineering and Technology) NCRAMMIET-2019 – 29-30 March 2019
- International Seminar on Intervention of ICT in teaching Learning and Research 7-9 March 2019
- Two days Workshop on Innovation & IPR: A Way to Sustainable Future 29-30 April 2019
- Workshop on Vibration Containment by GM BHEL- 13 May 2019
- One day session on New & Novel Material – 15 May 2019
- Case Writing Workshop– 12-13 Nov 2019
- Workshop on Research as a tool of Social Transformation and Institutional excellence-8 Dec 2019
- Vishwa Rang 2019- A unique International Festival of Literature Culture and Arts was organised at Bhopal which continued for 10 days (Nov-Dec) with over 50 countries participating, 500 researchers, writers, artists of world repute participated in this mega event facing 10k audiances.

Website - www.rntu.ac.in


Core Research and Innovation Group
Upgrading knowledge through research
Rabindranath TAGORE UNIVERSITY
CRIG Bulletin
Issue-4 Rabindranath Tagore University April-2021

Core Research and Innovation Group
Making things obsolete which were latest till yesterday

- **From the Directors Desk – CRG to CRIG**

The New Education Policy (NEP 2020) and a yearlong pandemic caused by Covid -19, has provided a new direction to the higher education, where; research, innovation, entrepreneurship, regional languages, cultural resurgence and skills are at the core with an additional dimension of on line technology. With a foresight and vision, RNTU had sensed, quite some time back, the inevitable paradigm shift in the education system. Accordingly it established a unique core group for research called CRG way back in 2017. Now it has added innovation in its charter and the new name of the group is – The CRIG (Core Research and Innovation Group) The group has helped in developing a vibrant research and innovation environment in all five universities of the AISECT Group. Despite lockdown and restrictions on moving out, the research and innovation work continued uninterrupted ushering in a new era of skillful use of virtual platforms. In last two years with internal funding RNTU researchers have completed 8 Projects with related patents for them. We hope to take the initiatives of CRIG to a new height in the year of Atma Nirbhar Bharat with a lot of research work, innovations and entrepreneurial initiatives under the mentorship of a new Advisory Board.

-Prof. Vijay Kant Verma

- **The CRIG –Advisory Board - 2021**

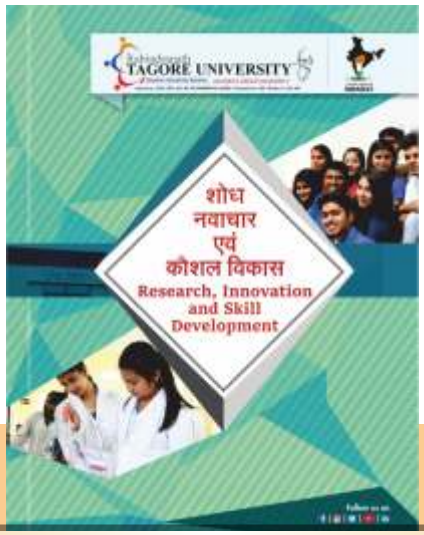
Chairman	-	**Shri Santosh Choubey,**	Chancellor, RNTU
Director	-	**Prof. Vijay Kant Verma,**	Chancellor, CVRU, Vaishali, Bihar
Member	-	**Prof. Bramh Prakash Pethiya,**	VC, RNTU, Bhopal, Madhya Pradesh
Member	-	**Prof. R.P. Dubey,**	VC, CVRU, Bilaspur, Chhattisgarh
Member	-	**Prof. R.K. Pandey,**	VC, CVRU, Vaishali, Bihar
Member	-	**Prof. S.K. Shrivastava,**	VC, AU, Hazaribagh, Jharkhand
Member	-	**Prof. Amitabh Saxena,**	VC, CVRU Khandwa, MP
Member	-	**Dr. Mohamed Ouessar,**	IRA, Tunisia
Member	-	**Mr. Richard Hoskins,**	CRCA, Australia
Member	-	**Prof. S Sapra**	UCF, USA
Member	-	**Prof. F.J Manjon**	UPV, Spain
Member	-	**Prof. Weicheng W U.**	ECUT, China
Member	-	**Prof. Joel Kibiiy,**	Moi University, Kenya
Member	-	**Prof. M. Sundarrajan,**	(Science)
Member	-	**Prof. Salim Abbas Bhai Chanlwala**	(Energy)
Member	-	**Prof. Tarun Pandya**	(Management)
Member	-	**Dr. Vimal Kumar Sharma**	(Science)
Member	-	**Prof. Murali Mantrala**	(Management)
Member	-	**Prof. Sandhya Chaturvedi**	(Sociology)
Member	-	**Dr. RN Yadav**	(Environment)
Member	-	**Prof CK Ghosh**	(Engineering)
Member	-	**Maj Gen Chaturvedi**	(Technology)
Member	-	**Dr. SR Awasthi**	(Renewable Energy)
Member	-	**Dr. Dinesh Kumar Soni**	(Engineering)
Member	-	**Dr. Anil Kurchania**	(Agriculture)

Website - www.rntu.ac.in
Email ID- vnau.bhopal@rediffmail.com; vimalsharma51@gmail.com


CRIG Bulletin
CRIG-AGU


CRIG Bulletin
CRIG-AGU
CORE RESEARCH AND INNOVATION GROUP


AISECT GROUP OF UNIVERSITIES
Research, Innovation & Consultancy
KEY AREAS IN RESEARCH
CORE RESEARCH AND INNOVATION GROUP


Rabindranath TAGORE UNIVERSITY
शोध
नवाचार
एवं
कौशल विकास
Research, Innovation and Skill Development


RESEARCH IN RABINDRANATH TAGORE UNIVERSITY & AISECT GROUP OF UNIVERSITIES

13.4 SOUVENIRS AND PROCEEDINGS Large number of seminars and conferences of international and national level lake place in constituent universities of AGU. Proceedings and Souvenirs of these mega events are published supported by prestigious indexed journals.

13.5 IN HOUSE RESEARCH JOURNALS Anusandhan and Shodhaytan are two prestigious journals of AGU being published for last 12 plus. Covering complete spectrum of higher education disciplines like engineering, science, management, commerce, arts, law, education etc, these journals are published biannually in print and online e-version. So for they have published over 600 quality research papers in these journals.

13.6 KATHA MADHYA PRADESH Representative stories by world renound Hindi writers from undivided MP in 12 volumes covering 100 years of journey is a unique collection published by AISECT – which is helping researchers and students.

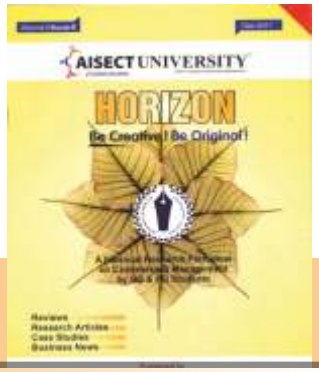
13.7 KATHADESH AND VIGYAN KATHA- In a unique endeavor AISECT has published stories written by prominent Hindi writers of India covering 100 years of journey. Published in 18 volumes this is most referred publication for research work. Vigyan Katha is collection of science fiction written in Hindi. First time such work has been done in India.

13.8 HAPPY HARDA

CVRU model to show the strength of local to global

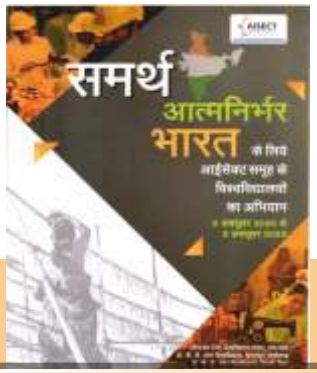
HORIZON

Research magazine of students, by students & for students



SAMARTH BHARAT

Dedication towards National Missions

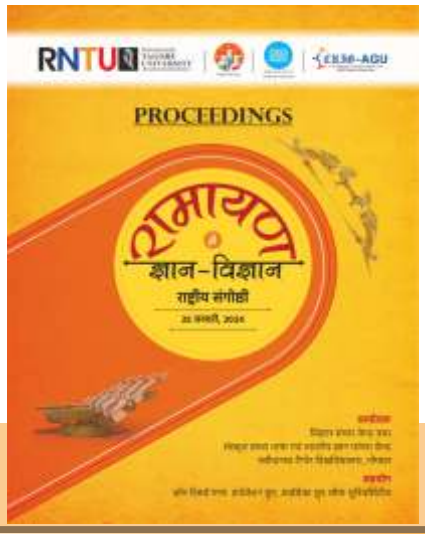


AVIRAL

Showcasing Society connect with university through National Service Schemes (NSS)

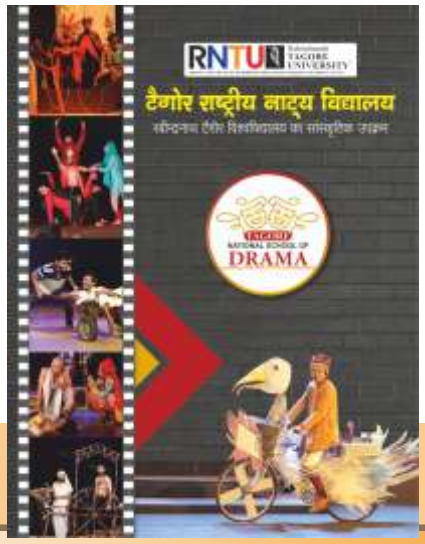

RNTU
संस्कृत, प्राच्य भाषा
एवं
भारतीय ज्ञान परम्परा केन्द्र
रवीन्द्रनाथ टैगोर विश्वविद्यालय, भोपाल


RNTU
प्रवासी भारतीय
साहित्य एवं संस्कृति
शोध केन्द्र
रवीन्द्रनाथ टैगोर विश्वविद्यालय, भोपाल

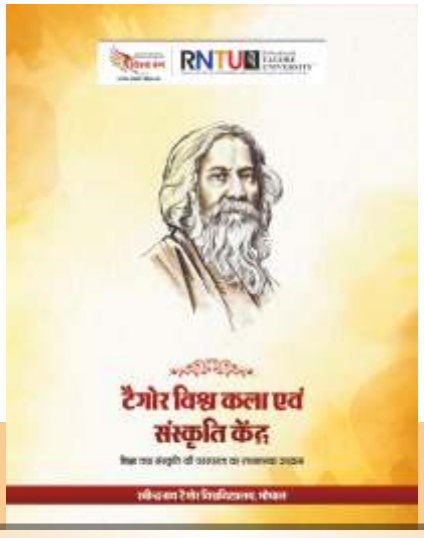

RNTU
PROCEEDINGS
रामायण
ज्ञान-विज्ञान
राष्ट्रीय संगोष्ठी


RNTU
बहुभाषा अनुवाद केन्द्र
रवीन्द्रनाथ टैगोर विश्वविद्यालय, भोपाल

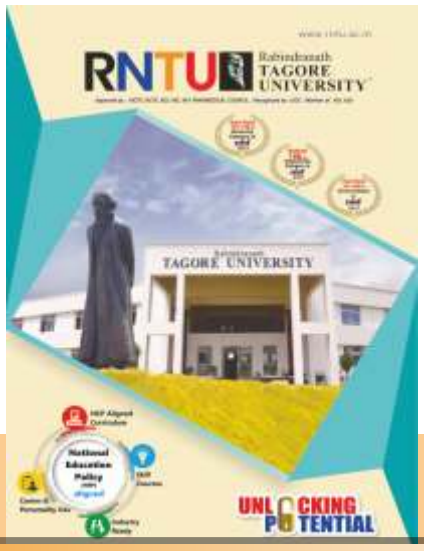

RNTU
भाषा शिक्षण केन्द्र


RNTU
टैगोर राष्ट्रीय नाट्य विद्यालय
DRAMA


RNTU
वनमाली
सृजन पीठ
वनमाली सृजन पीठ
रवीन्द्रनाथ टैगोर विश्वविद्यालय, भोपाल


RNTU
टैगोर विश्व कला एवं
संस्कृति केंद्र


AIC-RNTU
AIC-RNTU
FOUNDATION


RNTU
Rabindranath TAGORE UNIVERSITY
TAGORE UNIVERSITY
National Education Policy aligned
UNLOCKING POTENTIAL

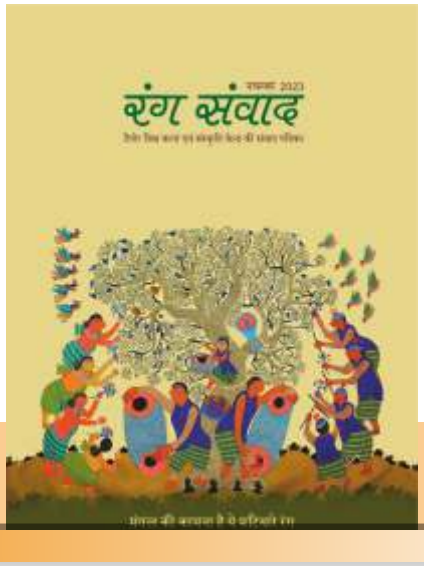

DR. C.V. RAMAN UNIVERSITY
BE THE CHANGE
AISECT

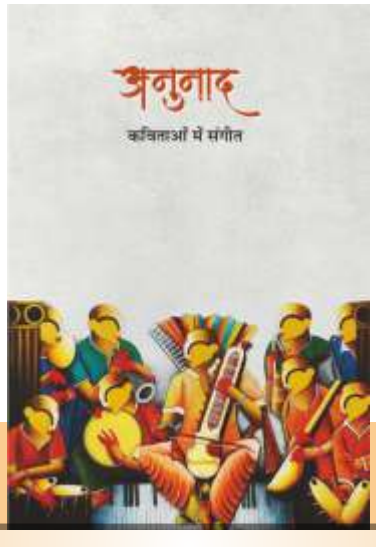

DR. C.V. RAMAN UNIVERSITY
BE THE CHANGE
STL
A UNIT OF AISECT

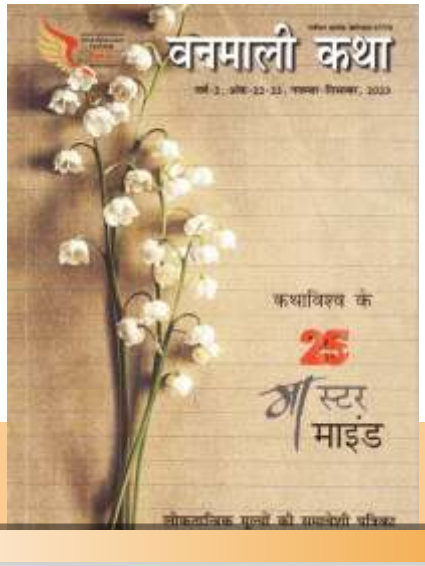

AISECT UNIVERSITY
LEADING WAY
NEP Aligned Curriculum
National Education Policy aligned
Follow us on
A UNIT OF AISECT


DR. C.V. RAMAN UNIVERSITY
DR. C.V. RAMAN UNIVERSITY
BE THE CHANGE
A UNIT OF AISECT
INFORMATION BROCHURE


Futureproof
YOUR CAREER WITH
Skills
SCOPE GLOBAL SKILLS UNIVERSITY

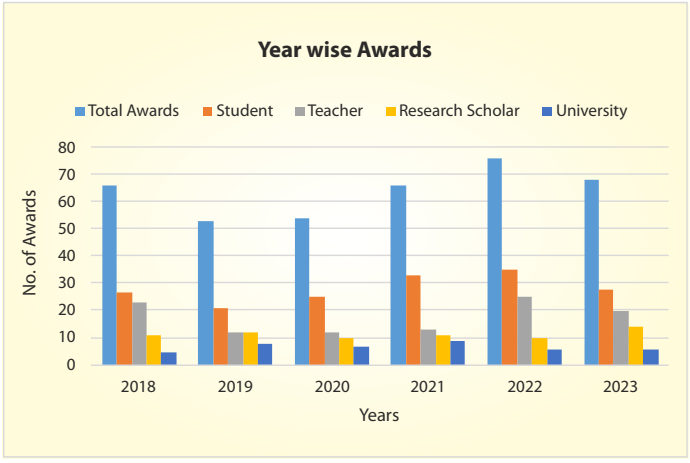

रंग संवाद


अनुनाद
कविताओं में संगीत


वनमाली कथा
कथाविश्व के
25
मास्टर माइंड

14 AWARDS


INDIA
Forbes
HOW AISECT GOT AMONGST THE
TOP 12
WISEST OF THE WORLD
AISECT
WISE INTERNATIONAL AWARDS
AISECT


Year wise Awards
Total Awards
Student
Teacher
Research Scholar
University
No. of Awards
80
70
60
50
40
30
20
10
0
2018
2019
2020
2021
2022
2023
Years


Aisect University, Jharkhand
DL


DL
22 JUNE 2018


EDUCATION
SUMMIT 2015

....and 150+ more awards to the faculty members of AGU

ANNEXURE-1

CONSULTANCY POLICY

1. Background

Rabindranath Tagore University has strong focus on meaningful research activities which should benefit society. It also believes that expertise gained by the university should not only be used in improving teaching - learning and research system within the university but also should be used to benefit larger part of the society. In order to motivate university staff to share their knowledge and expertise for betterment of Society, University shall permit consultancy and project/work in industry, corporate sectors and other organizations by the university staff. The staff may use material resources of the University for such Consultancy Work. The university shall share the monitoring benefits occurring out of such work/association/assignments with the concerned staff.

2. Consultation Activities

Following activities will fall under the consultancy-

2.1 For development of a product/part of product or services for any individual industry or organization external to the university shall fall under consultancy where one or more university staff works for such development for a pre agreed cost and period.

2.2 For modification, augmentation or alteration of any product or process or services where one or more university staff extend their active participation for such job.

2.3 Any kind of professional advice given by one or more staff of the university to external organization/firm/individual for a pre decided cost and time.

2.4 Any research work undertaken by one or more staff of the university for any external individual or organization to develop product or process or services.

2.5 Conduct of any special courses, chairing/participation in organized activities, delivery expert advice/discourse for a fee to any outside organization/individual.

2.6 Any royalty of fees received for any Intellectual Property by a staff and any fees received from outside.

3. Consultancy Process

Research & Development Department (RDD) in the university will be the nodal agency for any consultancy activity in the university RDD. It will be the custodian of all documents for consultancy. Any staff, department or faculty may initiate the ground work and explore such possibilities. After the basic ground work it should be reported to RDD who will put it on their record. RDD will do the initial survey/preliminary inquiry and put up the matter to the VC who may form a team for further discussion with the client or he may himself discuss it with the client.

After the negotiation and on arrival on agreement an Agreement Form will be initiated as per the format given at Appendix A by the RDD. The format gives just the guidelines. It may be changed at the description of the Vice Chancellor. It will be signed by the client and Registrar on behalf of the university. The payment received for consultancy will be deposited by the client/RDD in university bank account as per terms of the agreement. In case of faculty and/or university staff going for chairing an expert session, expert discourse on behalf of the university agreement form will not be raised. Money received from such consultancy event will be deposited in the university Account Section.

4. Contingency and Incidental Expenses

Any contingency expenses incurred in respect of consultancy project will be met from the funds received from the same consultancy project. The fund left after deducting such expenses will be considered as net gain from the consultancy work.

5. Sharing Policy

The net gain as worked out (Money Received from the client minus all incidental charges incurred for the consultation work) will be divided in ratio of 60:40 i.e. 60% of the gain will be paid to the faculty/staff who worked for the project and 40% will be retained by the university. University will plough back the share received by it in developing facilities to improve consultancy infrastructure.

6. Appraisal Report

Consultancy work done by the staff will be entered in the Appraisal Report of the staff and will be given extra weightage in arriving Performance Index.

7. Closing Report

After completion of the consultancy work a detailed report will be submitted by concerning staff in writing to RDD in which he should mention complete details of work, resources of university used resources from outside, results and feedback of the second party for whom the task was undertaken.

ANNEXURE-2

PUBLICATION POLICY

1.0 Introduction

National Education Policy 2020 (NEP-2020) aims to overhaul the country's education system with a clear emphasis on three language formula for teaching – learning, focusing on regional languages and mother tongue. RNTU from its inception encourages its faculty for writing text books in regional languages also so that quality publications are available in our own languages. Translation of classical text books from English to regional languages is also encouraged to enrich the collection. In order to accelerate the efforts in back drop of NEP-2020, the parent body of RNTU, AISECT has established a publication division within house facility for editing, designing and printing of books. Many regulating bodies in higher education are also now coming up with various promotional schemes for publication in regional languages. RNTU provides tangible and intangible benefits to the writers for writing books as laid down in its Research & Innovation Incentive Policy. This document lays down the process of getting a book published in any languages either by regulating bodies of the Higher Education Section or by AISECT Publication.

2.0 Objectives of the Policy

2.1 To motivate faculty members to write books in any languages in order to enrich collection of quality books by Indian authors.

2.2 To lay down the procedure for publication of books either by regulating bodies or by AISECT publication.

2.3 To facilitate faculty members earning credits and getting rewards in terms of cash and certificates.

3.0 Scope of the Policy

3.1 This policy shall be effective from 01 Jan 2021. All the publications initiated on or after 01 Jan 2021 will be governed by this policy.

3.2 The scheme shall cover all the staff members on the roll list of RNTU.

3.3 Respective Deans will be the nodal agency and shall screen the proposals through a departmental screening committee and forward to Expert Committee with their views indicating if the proposed book meets the requirement of any ongoing programme/course in quality and content.

4.0 Process for Publication by AICTE or other Regulating Bodies

4.1 The writer will have to apply as per the format given by respective regulating to Expert Committee headed by the VC RNTU.

4.2 The writer will be required to follow the norms specified by respective regulating bodies. Norms for STM books publication by AICTE.

4.3 The proposal will be examined by an in house Expert Committee chaired by the VC to find suitability of the proposal.

4.4 If proposal is found suitable it will be sent by RNTU to concerned Regulating Body i.e. AICTE, UGC, NCTE etc.

4.5 If the proposal is not eligible or not accepted by the regulating body, RNTU may accept it for publishing in house after required modification/changes recommended by experts. In such cases process as laid down at para 5.0 shall be followed.

4.6 Monetary Incentives for books published by Regulating Bodies will be paid to the writer online as per the norms of the Regulating Bodies.

4.7 For books published by Regulating Bodies, the writer may get rewards as per the norms of respective regulating body. In addition RNTU will also provide incentives as per the Research Incentive Policy.

5.0 Process for Publication by AISECT/RNTU

5.1 The writer will be required to submit a synopsis in minimum 1000 words with abstract, chaptarization plan, specialty, applicability, and novelty in the proposal to the Expert Committee headed by the VC RNTU.

5.2 The writer will be required to give an undertaking certificate that the book is free from any plagiarism and no part has been taken from any other published material. If a breach of trust is found later, the whole liability will be that of the writer.

5.3 The writer has to use standard template for format, font size, styling and layout of the book as per the practice followed by standard Publishers.

5.4 The figures and tables should be clean and free from errors or ambiguity. If they are taken from other sources, the same must be indicated and acknowledged.

5.5 The application will be examined by an Expert Committee headed by the VC RNTU. The same committee will examine final manuscript also. Only with a positive recommendation of Expert Committee after approval of the VC the manuscript will be handed over to Publication Committee of AGU. Normally a book of quality found suitable as text book/Reference book for some Programme/course being run in any AGU University will only be accepted for printing at the cost of RNTU/AGU by the Publication Committee. In such case copy right for the book will be held by RNTU. The writer will be paid incentive as per 'Incentives for Research Policy'.

5.6 If the Expert Committee at RNTU or AGU Publication Committee does not find the Book suitable for publication by AISECT/RNTU, the author may get it printed by AISECT/ RNTU by paying the printing cost.

6.0 Publication by other external Publishers

6.1 The University encourages its staff for publishing books on their own initiatives from other publishers also.

6.2 Writer who publishes his/her book directly from other reputed publishers will also be eligible for incentives provided the University's name appears in the credit. The exact amount of monetary incentive will be decided by the Evaluation Committee constituted by the VC for incentives Expert Committee and Evaluation Committee will see the credential of the publisher, quality of the book and utility in the ongoing programmes of the University.

7.0 Incentive to the Writer

7.1 The writers will be entitled for all the benefits provided by publishers as per their policies.

7.2 In addition to 7.1 the writer will be also provided monetary incentives as per the Policy for Research Incentives of the RNTU, for text/reference books published by the University Regulating Bodies.

7.3 For books published by publishers other than Regulating Bodies also Evaluation Committee may provide monetary incentives to the Book Writer based on merit of the case, on a case to case basis.

ANNEXURE-3

RESEARCH POLICY

1. Preamble

Rabindranath Tagore University (RNTU) promotes meaningful research activities amongst faculty members and students. RDC-RNTU has been established directly under the Vice Chancellor to promote research and innovative skills, to develop research environment and culture in the university and support activities to motivate startups, patent filling and technology transfer as mandated in the National Education Policy 2020.

2. Research Advisory Council (RAC) - Deans of all the faculties, all Coordinators of Centers of Research Excellence and some outside experts as empaneled by the VC, shall constitute Research Advisory Council which will be the apex body for all policy matter related to research and development in the University as mandated in the NEP-20. RAC will function under the Chairmanship of the Vice Chancellor

3. Research and Development Cell (RDC) – A Research and Development Cell (RDC) will look after the research functions in the University. It will have following functionaries: -

3.1 Director R & D Cell (RDC) - Vice Chancellor will be ex office Director RDC.

3.2 Research Coordinators - There will be two Research Coordinators in RDC Cell who will be appointed by the VC, one for all technology and science related research and other for non-technology related research. They will function under the Director RDC. All the activities of Doctoral research will be coordinated through these Research Coordinators is consultation with respective HoDs and Director RDC and overall responsibility of Ph D related work will rest with Research Coordinators.

3.3 Core Research and Innovation Group (CRIG) A Core Research and Innovation Group (CRIG) will be formed directly under chairmanship of the Vice Chancellor.

The CRIG will have following functions: -

3.3.1 Promoting Research environment and facilities in the University

3.3.2 Process internal funding for Research Projects from inception to completion

3.3.3 Monitoring ongoing Research Projects (both internally and externally funded project)

3.3.4 Work as nodal agency for research - initiation to completion and monitoring

3.3.5 Plan and develop research facilities in consultation with departments and research centers

3.3.6 Develop archive to build up research related information

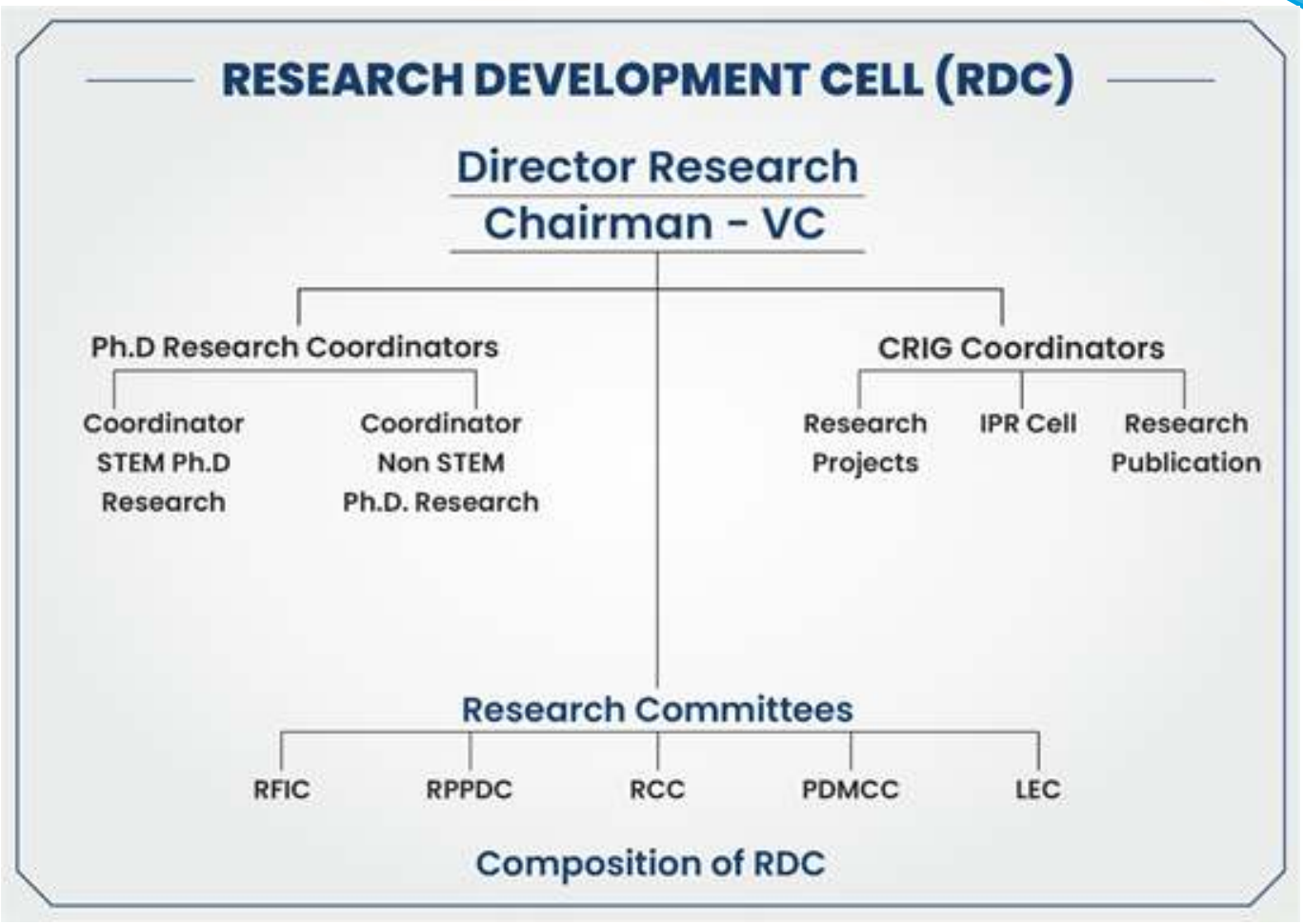
3.3.7 Research Publication including journals – Quality & Qty of publication

3.3.8 Build up research network, liaison system, resource building, framework development and help organizing research related events.

3.4 Research Committees - There will be five Research Committees which will function under the Director RDC advise on different functions related to research in the University as follows:-

3.4.1 Research Finance and Infra Committee (RFIC)- This Committee will advise all centers and departments in the University on funding resources and infrastructure and resource building for Research and Innovation. All the proposals related to eqpt and infra for research will be routed through this committee.

3.4.2 Research Programme Policy Development Committee (RPPDC) - This committee will be responsible for formulating research policies and monitor implementation, as mandated in NEP 20 and guidelines provided by the UGC.



3.4.3 Research Committee for Collaboration & Community (RCCC) - This committee shall create a multidisciplinary and multi organizational research system through various collaborations and MoU. It will ensure that research is for benefit of society and the industry.

3.4.4 Product Development Monitoring and Commercialization Committee (PDMCC) - This committee will work in collaboration with RNTU Atal Incubation Center to promote IPR and technology transfer. It will act as a bridge between researchers RNTU-AIC and industries/incubators.

3.4.5 Legal and Ethical Committee – (LEC) - This committee shall advise all concerned on legal and ethical matters related to research innovation and IPR filling.

3.5 Research orientation in UG & PG Courses. Students will be encouraged for meaningful research, preferably in university focus areas as laid down in para 6 during their programme duration. There will be minor and/or major projects in all UG/PG professional courses as decided by the BoS/syllabus. Literature survey and study of current status of the field will be carried out by the students for zeroing on to the objective and methodology of their project for which they will be encouraged to refer to journals, study materials visit to industries, fields, library etc. Projects should have adequate component of research knowledge building, application, societal needs, experiments etc. In case for those courses where project is not part of the curriculum the students in the course will be divided in groups with maximum 5 to 6 members in each group and take up at least one research project on social problem, case study, survey etc and submit report/do a presentation in front of class/faculty panel. BoS and/or syllabus will be final authority as regard to research in PG/UG courses and VC may waive off need for formal research work where not laid down in the syllabus.

3.6 Research Activities – Control, Coordination and General Guidelines

3.6.1 Research Projects (other than UG/PG/Doctoral research). HoDs, Dean RDC Cell and Center of Research Excellence will encourage faculty to take up research projects in the departments as per following guide lines. A Departmental Research and Innovation Cell (DRIC) will be formed in each department to coordinate and look after research and innovation activities in the Department.

3.6.2 Survey & Exploration. Each department will do extensive surveys to identify areas of research pertaining to their departmental subject and subjects of multidisciplinary nature.

3.6.3 Brain Storing, Studies & Projects Ideas. Research Project Ideas will be discussed on departmental/university level platform to come out with Project Format. A team of PI/CoPI's at departmental/multidepartment/multi organizations level will be made for Project Report formulation with methodology and budget estimates worked out clearly.

3.6.4 Research Project Initiation. All the Research Project other than Doctoral/PG & UG will be under direct control of CRIG. Till CRIG in formed these research projects will be under the control of VC.

3.6.5 Funding of Research Projects. The PI & CoPI's will explore the possibilities of getting the funds from various funding agencies. The university may also fund some projects or part of the projects. CRIG will coordinate internal funding from inception to completion.

3.6.6 Monitoring of Research Projects. CRIG, will supervise all the projects from initiation to completion except UG/PG and Doctoral Research will be the responsibility of RDC.

3.6.7 Functions of DRIC. DRIC will build research environment under guidance of RDC in the Dept. DRIC will be custodian of all records (Ph D thesis, Papers, Patent, events) related to research in the Dept.

3.7 Special Fields for Research and Centers of Research Excellence. Though research will be encouraged by RDC in all departments in any field, some fields have been specially identified for establishing world class facilities to develop resources, lab & manpower, to make them Research Centers of Excellence.

4 Objectives of R & D Cell (RDC) Following are the Objectives of RDC-

4.1 To create an organizational structure with role-based functions of RDC, formulate Research Policy for the RNTU identify thrust areas of research, and form related cluster groups/ frontline teams/consortia of researchers.

4.2 To create enabling provisions in Research Policies for recruitment of research personnel, procurement of equipment, and financial management with adequate autonomy to the Principal Investigator(s) and disseminate research outcomes to stakeholders and the public at large.

4.3 To establish a special purpose vehicle to promote researchers and innovators, identify potential collaborators from industry, research organizations, academic institutions & other stakeholders for cooperation and synergistic partnerships.

4.4 RDC and CRIG will act as a liaison between researchers & relevant research funding agencies, extend guidance in preparation & submission of project proposals and post-sanctioning of the grants to oversee adherence to timelines. (Coordinators for Doctoral Project and CRIG for other projects)

4.5 CRIG will obtain research proposals from the faculty for internal funding of research projects. Evaluate them under the supervision of the Director RDC and relevant experts. Depending on the resources. Director RDC will put up proposals to the Chancellor for granting funds.

4.6 CRIG will monitor the progress of all research project (internal and external) and organise periodical presentation by PI.

4.7 CRIG will be custodians of all Research Project Reports and related documents.

4.8 To foster scientific temper amongst faculty and students.

4.9 To monitor the progress of Doctoral Programmes in the University as per the UGC guidelines through the Research Coordinators.

4.10 To have better coordination among other cells/centers dealing with University-Industry Inter Linkage, Incubation, Innovation and Entrepreneurship Development and Intellectual Property Rights (IPR).

4.11 To develop an Institutional Research Information System for sharing the status of ongoing/ completed research projects/Programmes expertise & resources, etc., making effective use of Information & Communication Technology (ICT) for preparing the database of in-house experts to provide industrial consultancy and services.

4.12 To engage & utilize the services of superannuated active faculty/scientists in research capacity building of talented young minds and promote mobility of researchers across institutions and R&D Labs.

4.13 To serve as nodal center for ideation and conceptualization of research topics/themes by organizing workshops and training programs and ensuring the integrity and ethical practices in research activities including clearance of bioethical committee wherever required.

4.14 To help departments develop an annual/semester programme for Research Activities (Workshop, Seminar, Conference etc) so as to make activities evenly spread during the semester, ensuring inter department and intra department activities well planned. A research activity schedule will be made by all the depts for each semester/year well in advance and displayed through R & D Cell. Adhoc organizing of events should be minimized.

4.15 CRIG will initial screening of research project proposals being put up for internal and external agencies for funding by the faculty.

4.16 To coordinate with departments for research related activities.

4.17 To help plan research equipment procurement by departments.

4.18 To encourage and facilitate publication of research articles in the in-house University journals and in external indexed UGC Care Journals.

4.19 To encourage and facilitate publication of book by the University.

4.20 To help and document research ideas and funding resources for the faculty and students.

4.21 To maintain Research Resources Directories of the University.

4.22 To help faculty members in obtaining IPR and consultancy through IPR Cell.

4.23 To maintain all research related data of RNTU and act as nodal agency for research at RNTU.

5 Responsibilities and Accountability of Research Coordinators

5.1 RDC shall help in creating a research eco system in RNTU for reliable, impactful and sustained research output.

5.2 RDC shall focus on function i.e. Motivate researchers for generation of new knowledge/improved process product through research, innovation and technology development for the benefit of

industries and society, create resources in term of i.e. researchers as experts from outside RNTU, eqpt and funds.

5.3 To monitor Ph D research progress in the University and appraise the VC.

5.4 To ensure upload Ph D thesis on Shodh Ganga.

5.5 To keep Annual/Semester Research Activities Plan of all the departments as made by the DRIC and monitor progress and implementation.

5.6 To ensure Research Activity Report after each activity is made by respective convener and forwarded to IQAC.

5.7 To initiate and coordinate Research MoUs and document activities under these MoUs.

5.8 To arrange periodically Brain Storming sessions and keep record.

5.9 To support faculty to take up external and internal activities as resource person and keep record.

5.10 To help faculty in development of research resources (eqpt/software/publication/infra) and coordinate budget proposal on research spending of the University. Supervise the work of Departmental Research and Innovation Cell (DRIC) on behalf of the VC.

6. Responsibilities of CRIG Coordinators

6.1 To encourage faculty for filing patent and make effort for consultancy in coordination with IPR Cell and keep a record.

6.2 To motivate students and faculty in presenting papers and take part in research activities organized by other organizations and keep record.

6.3 To keep CRIG funding policy updated, review guidelines and format for application for CRIG fund.

6.4 To process applications received for CRIG internal funding from receipt to approval.

6.5 To monitor progress of internal and external funded projects minimum once in three months and obtain written report.

6.6 To ensure accounts settled every year on 31 March for all the internal funded projects.

6.7 To ensure that a Detailed Project Report (DPR) is submitted for each internally and externally funded project by the PI on completion of project.

6.8 To keep record of all the research activities in the University (Research Projects, Patents, Publication, Innovations, Books, Events, Directory of Equipment and Researchers, Research Plans, Progress etc)

6.9 To ensure timely publications of both biannual journals i.e. 'Anusandhan' and 'Shodhaytan'. Right from review, plag check, editing to publication and distribution of journals will be the responsibility of RDC.

6.10 To constitute and maintain editorial boards for journals and composition of Research Advisory Board will be also looked after by RDC.

6.11 To published research bulletin at least once a year for the University.

6.12 To make an annual report on Research Activities and present to VC and submit to IQAC after his approval.

7. Meetings

7.1 Research Advisory Council shall meet once in the beginning of each semester and subsequently whenever called under the Chairmanship of VC ex officio. Director R & D Cell. Coordinators and CRIG-RNTU will record the minutes and monitor the progress of decision taken in the meetings. All Research Committees will meet at least once in every semester and report to the Director RDC on recommendations, plans and proposals.

7.2 CRIG will organise meeting of all Centers of Research Excellence once in a year in the beginning of academic year and subsequently on as required basis in consultation with Research Coordinators and Director Research.

8.0 Appointments for various positions

8.1 Appointment for various positions mentioned at para 2 and 3 will made by the VC in the beginning of academic year and notified to all concerned. Period of appointment may be 1 to 3 years as per the discretion of the VC.

8.2 Guidelines for Appointment of Advisors and their role in Centers of Research Excellence

8.2.1 Advisors for Center of Research Excellence - Each center of Research Excellence will have a minimum of 2 advisors (at least 1 from industry). Center Coordinators will be responsible for coordinating with their advisors. Director (Research)/Vice Chancellor will be the appointing authority of the Advisors.

8.2.2 Advisor's Role

8.2.2.1 Render Advice and assist for initiating projects, and get funding for projects.

8.2.2.2 Render Advice and assist in improving and enhancing scope, capability, capacity and efficiency of the center.

8.2.2.3 Provide industry's outlook and current needs of industry.

8.2.2.4 Help in building database of experts, industry partners, funding agencies and research resources.

8.2.2.5 Help in establishing know how and facilities for consultancy and obtaining consultancy projects.

8.2.2.6 Visiting the center as per his/her (Advisor's) convenience. Advisors from abroad may be invited whenever they come to India for vacation or for any other business work in India. Otherwise the consultation may be done online/telephonically also.

8.2.3 Facilities for Advisor

8.2.3.1 2nd AC fare to and fro for out station advisors once in a year and in exceptional cases more subject to their contribution.

8.2.3.2 Free Stay in RNTU Guest House.

8.2.3.3 Local transport.

8.2.4. Responsibilities of Center Coordinators

8.2.4.1 Obtain written consent of advisors with details of their expertise (biodata) and issue of appointment letter.

8.2.4.2 Organise online Video Conference periodically (at least once in 6 months) with all the advisors of the center simulateously. With individual advisor it can be more frequently.

8.2.4.3 Record, Minutes of all the meetings and take action.

8.2.4.4 Prepare biannual and annual report indicating contribution of the advisors and put up to VC through CRIG Coordinators.


IF OPPORTUNITY
DOESN'T KNOCK
BUILD A D R

SGSU, Bhopal (MP)

CVRU Bilaspur (CG)

RNTU Bhopal (MP)

CVRU Vaishali (Bihar)

AU-Hazaribagh (Jharkhand)

CVRU Khandwa (MP)

COMPILED & DESIGNED BY: CRIG-AGU

CRIG-AGU
Core Research and Innovation Group
AISECT Group of Universities

- Academics per Excellence
- Goal oriented Research, Innovation and Excellence
- Ultimate in Collaboration, Consultancy and Entrepreneurship Development

Village Mendua, Post Bhojpur, Bhopal Chiklod Road, Near Bangrasiya Square, Dist. Raisen-464993 (M.P.)
www.rntu.ac.in, crig_agu@aisect.org
0755-2700431, 0755-2700400