SELF STUDY REPORT

FOR

3rd CYCLE OF ACCREDITATION

QUALITATIVE METRICS

AMRITA VISHWA VIDYAPEETHAM

AMRITA NAGAR PO ETTIMADAI
641112
www.amrita.edu

SSR SUBMITTED DATE: 21-03-2020

Submitted To

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BANGALORE

March 2020

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 5

1.1 INTRODUCTION 5

1.2 STRENGTHS, WEAKNESSES, OPPORTUNITIES, and CHALLENGES (SWOC) 7

Institutional Strengths 7

Institutional Weaknesses 8

Institutional Opportunities 8

Institutional Challenges 9

1.3 CRITERIA WISE SUMMARY 10

Criterion 1 - Curricular Aspects 10

Criterion 2 - Teaching-learning and Evaluation 10

Criterion 3 - Research, Innovations and Extension 11

Criterion 4 - Infrastructure and Learning Resources 13

Criterion 5 - Student Support and Progression 14

Criterion 6 - Governance, Leadership and Management 14

Criterion 7 - Institutional Values and Best Practices 15

4. QUALITY INDICATOR FRAMEWORK (QIF) 17

Criterion 1 - Curricular Aspects 17

1.1 Curriculum Design and Development 17

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the Institution. 17

1.3 Curriculum Enrichment 20

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics ,Gender, Human Values ,Environment and Sustainability into the Curriculum 20

Criterion 2 – Teaching- Learning and Evaluation 22

2.2 Catering to Student Diversity 22

2.2.1 The institution assesses the learning levels of the students and organizes special Programmes for advanced learners and slow learners 22

2.3 Teaching- Learning Process 24

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences 24

2.3.2 Teachers use ICT enabled tools including online resources for effective teaching and learning processes 26

2.5 Teacher Profile and Quality 27

2.5.3 IT integration and reforms in the examination procedures and processes (continuous internal assessment and end-semester assessment) have brought in considerable improvement in examination management system of the institution 27

2.6 Student Performance and Learning Outcomes 30

2.6.1 The institution has stated learning outcomes (generic and programme specific)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents 30

2.6.2 Attainment of Programme outcomes, Programme specific outcomes and course outcomes are evaluated

by the institution 31

Criterion 3 - Research, Innovations and Extension 33

3.1 Promotion of Research and Facilities 33

3.1.1 The institution Research facilities are frequently updated and there is well defined policy for promotion of research which is uploaded on the institutional website and implemented 33

3.3 Innovation Ecosystem 34

3.3.1 Institution has created an ecosystem for innovations including Incubation Centre and other initiatives for creation and transfer of knowledge. 34

3.5 Consultancy 37

3.5.1 Institution has a policy on consultancy including revenue sharing between the institution and the individual and encourages its faculty to undertake consultancy. 37

3.6 Extension Activities 38

3.6.1 Extension activities in the neighbourhood community in terms of impact and sensitizing students to social issues and holistic development during the last five years. 38

Criterion 4 - Infrastructure and Learning Resources 41

4.1 Physical Facilities 41

4.1.1 The institution has adequate facilities for teaching - learning. viz., classrooms, laboratories, computing equipment, etc. 41

4.1.2 The institution has adequate facilities for cultural activities, yoga, games (indoor, outdoor) and sports. (gymnasium, yoga centre, auditorium, etc.) 42

4.1.3 Availability of general campus facilities and overall ambience Response: 44

4.2 Library as a Learning Resource 45

4.2.1 Library is automated using Integrated Library Management System (ILMS) and has digitization facility 45

4.3 IT Infrastructure 47

4.3.2 Institution has an IT policy, makes appropriate budgetary provision and updates its IT facilities including Wi-Fi facility 47

4.4 Maintenance of Campus Infrastructure 49

4.4.2 There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc. 49

Criterion 5 - Student Support and Progression 52

5.3 Student Participation and Activities 52

5.3.2 Presence of Student Council and its activities for institutional development and student welfare. 52

5.4 Alumni Engagement 54

5.4.1 The Alumni Association / Chapters (registered and functional) contributes significantly to the development of the institution through financial and other support services. 54

Criterion 6 - Governance, Leadership and Management 57

6.1 Institutional Vision and Leadership 57

6.1.1 The institution has a clearly stated vision and mission which are reflected in its academic and administrative governance. 57

6.1.2 The effective leadership is reflected in various institutional practices such as decentralization and participative management. 59

6.2 Strategy Development and Deployment 60

6.2.1 The institutional Strategic plan is effectively deployed. 60

6.2.2 The functioning of the institutional bodies is effective and efficient as visible from policies, administrative setup, appointment and service rules, procedures, etc. 62

6.3 Faculty Empowerment Strategies 64

6.3.1 The institution has a performance appraisal system, promotional avenues and effective welfare measures for teaching and non-teaching staff . 64

6.4 Financial Management and Resource Mobilization 66

6.4.1 Institutional strategies for mobilisation of funds and the optimal utilisation of resources 66

6.4.4 Institution conducts internal and external financial audits regularly Response: 68

6.5 Internal Quality Assurance System 69

6.5.1 Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes by constantly reviewing the teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals. 69

6.5.3 Incremental improvements made for the preceding five years with regard to quality (in case of first cycle), Post accreditation quality initiatives (second and subsequent cycles). 70

Criterion 7 - Institutional Values and Best Practices 73

7.1 Institutional Values and Social Responsibilities 73

7.1.1 Measures initiated by the Institution for the promotion of gender equity during the last five years. 73

7.1.3 Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste (within 500 words) 74

7.1.8 Describe the Institutional efforts/initiatives in providing an inclusive environment i.e., tolerance and harmony towards cultural, regional, linguistic, communal socioeconomic and other diversities (within 500 words). 76

7.1.9 Sensitization of students and employees of the Institution to the constitutional obligations: values, rights, duties and responsibilities of citizens (within 500 words). 78

7.1.11 Institution celebrates / organizes national and international commemorative days, events and festivals (within 500 words). 80

7.2 Best Practices 82

7.2.1 Describe two best practices successfully implemented by the Institution as per NAAC format provided in the Manual. 82

7.3 Institutional Distinctiveness 89

7.3.1 Portray the performance of the Institution in one area distinctive to its priority and thrust within 1000 words 89

5. CONCLUSION 94

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

Amrita Vishwa Vidyapeetham (Amrita), established in 2003 under section 3 of UGC Act of 1956, is a multi- disciplinary Deemed to be University that offers more than 180 Academic Programs, through 10 Departments across 6 Campuses in three South Indian states of Kerala, Tamil Nadu, and Karnataka.

The renowned humanitarian leader, Sri Mata Amritanandamayi Devi, popularly known as Amma, is the Chancellor and guiding light of Amrita Vishwa Vidyapeetham. In its sixth year, it became the youngest institution to be accredited with 'A' grade by the NAAC. Spread over 900 acres with eight million square feet built-up space, Amrita is one of India's top-ranked private Institutions, selected for the prestigious award of Institution of Eminence status by MHRD. The University has over 19,000 students and 1,300 faculty serving in a spirit of dedicated diligence, wherein the latest advances in pedagogy and research are integrated with compassion and service mindedness.



Vision

Our vision is to be an exemplary institution that thrives on its commitment to the transformative power of value- based education, providing the impetus to develop the expansiveness to harmonize both scientific knowledge and spiritual understanding, so as to utilize knowledge for societal benefit and contribute to a prosperous and sustainable future for all.

Mission

Amma's profound mission of providing education for life, and emphasis on compassion driven research, has shaped Amrita as a unique institution:

[i] Education for Life

There are two types of education: education for living and education for life. Studying to become a professional is education for a living, while education for life requires an understanding of the essential human values. At Amrita, we believe that education should also impart a culture of the heart, based on enduring values and inner strength. Amrita's culture of education helps to inculcate in our students the right ethos to be rooted in the values of Dharma (righteousness), Karuna (compassion) and Shraddha (mindfulness). Endowed with qualities of acceptance, patience, self-confidence, perseverance and enthusiasm, the benefit of humanity will become uppermost in the students' thoughts, words and actions. They will then pioneer innovative solutions for the benefit of all humankind, leading to sustainable health and prosperity for all. This resonates with the ancient Sanskrit prayer 'Lokah Samastah Sukhino Bhavantu'. It is a reminder of our deeper connection to the entire world around us, "May our work contribute to the happiness of all beings."

[ii] Compassion Driven Research

Our motivation to pursue research is focused on alleviating major global problems related to poverty, starvation, sickness, environmental pollution and contamination. We believe that if we could transform compassion from a mere word into a path of action, we would be able to address most of the world's problems. If we take this step courageously, then our research and its outcomes will have a special impact, spontaneity, and power. This has translated into many latest advancements and innovations that have culminated in greater societal benefit.

[iii] Global Impact

At Amrita, we stand united in our mission towards solving globally recognized scientific and societal challenges, including environment, development, and health. Amrita stands at the strategic juncture of two streams of cultures: East and West. It is our vision to bring the two together to bridge the divide through meaningful collaborations with world class universities and innovative approaches that will benefit the entire planet.



1.2 STRENGTHS, WEAKNESSES, OPPORTUNITIES, and CHALLENGES (SWOC)

Institutional Strengths

Amrita exemplifies multi-disciplinary academic excellence through the exceptional quality of its education system that is modern, comprehensive, inspiring, expansive, inclusive, and invigorating with special emphasis on core human values. It is in this setting that students at Amrita derive maximum benefit from undergraduate, postgraduate, and doctoral programmes which are offered in Engineering, Business, Medical Sciences, Nanotechnology, Biotechnology, Arts, and Sciences. Secondly, compassion-driven research is given predominant importance so that research benefits society and uplifts those in need.

- Unified purpose: An inspired group, whose dedication & commitment to academics is a direct motivation, inspired by our Chancellor, Sri. Mata Amritanandamayi Devi.
- State of the art research facilities provide opportunities for advanced research and for translation of this research to society.
- Fairness and transparency in governance: Governance is decentralized giving maximum freedom at all levels. This brings in unprecedented fairness, transparency, as well as accountability.
- Education: Amrita specializes in value-based education that integrates knowledge, morals, commitment to profession and service to society.
- Interdisciplinary Research: Amrita engages in significant interdisciplinary research that has led to ground-breaking developments in medicine, education, health care, and sustainable living.
- Multi-campus: Allows us to attract the best faculty/student talent from all regions across India.
- International: We have the best international network with eminent institutions across the globe, enabling us to attract exceptional faculty from abroad, and provide student/faculty exchange opportunities and initiate numerous impactful and diverse research collaborations. This allows students and faculty to spend significant time to understand the true nature of the problems and develop a deep desire to solve the problems through innovation, research and practice.
- Innovation and entrepreneurship: Our top-ranked entrepreneurship program is also a strong catalyst for innovation. To date, Amrita has incubated or mentored almost 300 startups.
- Digital DNA: Amrita pioneered digital & on-line learning leading to nationally adopted platforms such as A-VIEW.
- Industry: Translation and transfer of technology of our research into products is facilitated through strong industry collaborations.

Institutional Weaknesses

- University endowments could be improved through more aggressive fund raising
- In this age of aggressive marketing, being a societally conscious organization, Amrita's marketing practices are sometimes seen as conservative
- Need to further integrate modern scientific approaches with traditional knowledge in disciplines such as Ayurveda.

Institutional Opportunities

- The selection of our University as an Institution of Eminence by UGC provides a unique opportunity to build our university into a top 100-ranked world-class academic and research institution, which unfolds significant opportunities to innovate in curriculum, teaching-learning process, research ecosystems and international presence, enabling us to be nimble in incorporating modern approaches to academics and research (e.g., micro and nano credits, interdisciplinary programs), without legacy issues.

- Amrita's emphasis on value-based education, integrating spirituality and India-focused traditions with modern scientific concepts, providing an opportunity to establish substantial uniqueness from an international perspective. In the healthcare arena, traditional and naturally-derived molecules and extracts are making headway into modern medicine as more cost-effective and less toxic. A particular strength is its well established Ayurvedic College and hospital which provides opportunities to amalgamate our traditions into modern clinical practices and research, as well as vice versa - to strengthen traditional practices with modern approaches.

- In India, education as a means to focus knowledge towards helping the poor is gaining momentum. Amrita's historical and long-standing connection with societal service better positions the university to have a unique advantage as a leader and mentor in this area of education. Our adoption of over 150 villages across the country has paved the way for faculty and students to apply innovation and research as well as disaster relief activities in this setting.

- Our super-specialty, all-digital hospital provides unprecedented opportunities to apply the latest engineering and technological advancements towards healthcare, one of the grand challenges of the millennium. Furthermore, Amrita is investing in a large super-specialty hospital in the Delhi area, which will further reinforce its strength and provide more opportunities in healthcare education and
- research.
  Amrita has one of the best international reach among Indian institutions, facilitating opportunities for greater internationalization of the university in terms of foreign student involvement, faculty exchanges, dual-degree programs and joint research initiatives.

- As India establishes a robust economic growth and commitment to scientific progress, Amrita provides opportunities to attract talent back to India to help build our university to world-class standards.

Institutional Challenges

As the world contracts with a rising nationalism and trade protectionism, competition is on the rise internationally which may constrain globalization of education or the easy flow of students and faculty between countries. This can be addressed with much more focused academic and research programs designed to help all international partners. A stronger focus on inviting and bringing more foreign students into our country will help create better understanding and collaboration.

There continues to be a National shortage of high quality Ph.D. holding faculty candidates nationwide and Amrita is committed to invest in a bigger way to help attract faculty. Our university's ecosystem of integration between tradition and modern science is attractive to many young people and could be a way of addressing this threat.

- The level of regulatory control has understandably increased. However such control has come to a point where good institutions suffer bureaucratic hurdles. It is hoped that the IoE scheme will substantially reduce such hurdles for universities such as Amrita.

- It is well established that in India, given national priorities and pressures, public institutions have a substantial advantage in terms of government funding opportunities. Committed and dedicated private institutions which are nonprofit is at a disadvantage in such an ecosystem and will need to be more creative in fund raising to be sustainable. Amrita's historical position as a charitable societally oriented university has greatly helped in raising funds for the university.

1.3 CRITERIA WISE SUMMARY

Criterion 1 - Curricular Aspects

Amrita has substantive breadth and depth in its course offerings with a broad range of interdisciplinary offerings. There are 182 programs spanning Engineering, Sciences, Health Sciences, Arts, Humanities, Ayurveda, Life Sciences and Business. The following are innovative practices in curricular aspects:

- Outcomes-based education (OBE) across disciplines in accordance with statutory regulations. Amrita's in-house AMPLE system quantifies the attainment of POs, PSOs, and COs in each course offering.
- Program outcomes designed so that students develop critical thinking, communicate effectively, and become engaged citizens.
- Curriculum revised regularly with a focus on the quality and relevancy of the content. More than 90% of the courses have been revised in the last five years.
- Amrita's curricula demonstrate relevance to local, state, and national priorities, as evidenced by their successful linking with Digital India, NMEICT, National Mission on Health, National Mission on Water, Unnat Bharat Abhiyan, Kerala Biotechnology Mission, Make-in-India, Skill India.
- Amrita curricula allows flexibility in course structure, choice-based credits for value-add courses, project-based courses, and internships in industry and national labs. Choice Based Credit System (CBCS)/elective course system implemented in 100% of the programs.
- Interdisciplinary curricula, such as, nanomedicine, biomedical engineering, cybersecurity, data sciences. More than 2000 new courses introduced to keep up with rapid advances.
- More than 85% of the courses have components which enhance employability, entrepreneurship and skills for industry readiness. Over 15000 students take advantage of internship opportunities in industries, research labs and international institutions.
- Close to 400 value added courses including yoga and meditation are offered benefiting over 60% of students.

Criterion 2 - Teaching-learning and Evaluation

Faculty at Amrita are highly qualified and come with international training from countries all around the globe. Amrita exemplifies commitment towards students with all learning capabilities, tailoring the courses so that no student is left behind.

- Professors, Associate Professors, Assistant Professors numbering 1392 with 1021 holding Ph.D.'s, DM, M.Ch., MD, and MS. Average teaching experience an impressive 8 years.
- 10 prestigious highly selective national science and technology awards

- The faculty-student ratio is 1:14 and an average of one mentor for every 14 students.
- Slow learners strengthened through remedial classes, tutorials, and bridge courses.
- Advanced learners given the opportunity to fast track through honors courses, research projects.
- Every program enhanced with problem based, hands-on student-centric methodologies.
- Learning pathways provided wherein students of one discipline spend time in another, expanding their horizons.
- Experiential learning is emphasized through live-in-labs, projects and other field works as well as translation of research findings to products.
- Credits assigned for Internships in academic, industrial, or social projects for students with the top 500 ranked universities. In the Semester abroad internship, students spend a semester at a partner university to gain project-based research experience.
- Utilizes several ICT-enabled tools, such as AUMS, A-View, AMPLE, Virtual Labs, OLABS, etc. to enhance the teaching and learning process.
- The Course Articulation Matrix (CAM) plays a pivotal role in quantitatively mapping individual course outcomes to both the program specific outcomes and program outcomes. The examinations system incorporates continuous evaluation and with the help of automation, results are provided within ten days.

As a result of the above initiatives, the pass percentage of students is 95% and the demand ratio for the last five years has risen to an impressive 8.0.

Criterion 3 - Research, Innovations and Extension

Amrita exemplifies interdisciplinary research, and research that translate to societal benefit to help build a sustainable world. This commitment has helped Amrita raise substantial funds. As evidenced below this has brought recognition and success to its research activities.

- **25 Crores seed money to 450 faculty.**
- **100 faculty awarded international research fellowships.**
- **1000 students awarded JRF/SRF.**
- **50% of all departments received infrastructural support from GoI.**
- **825 projects with extramural funding of 155 Crores.**
- **5037 books/book chapters, 6,000 papers and 20,000 citations**

- **Centers of Excellence**

  Amrita Centre for Nanosciences and Molecular Medicine pioneered innovative biomedical and energy products.

Amrita Institute of Medical Sciences [AIMS] performed the World's First male to female upper arm transplant, 584 liver and 148 corneal transplants.

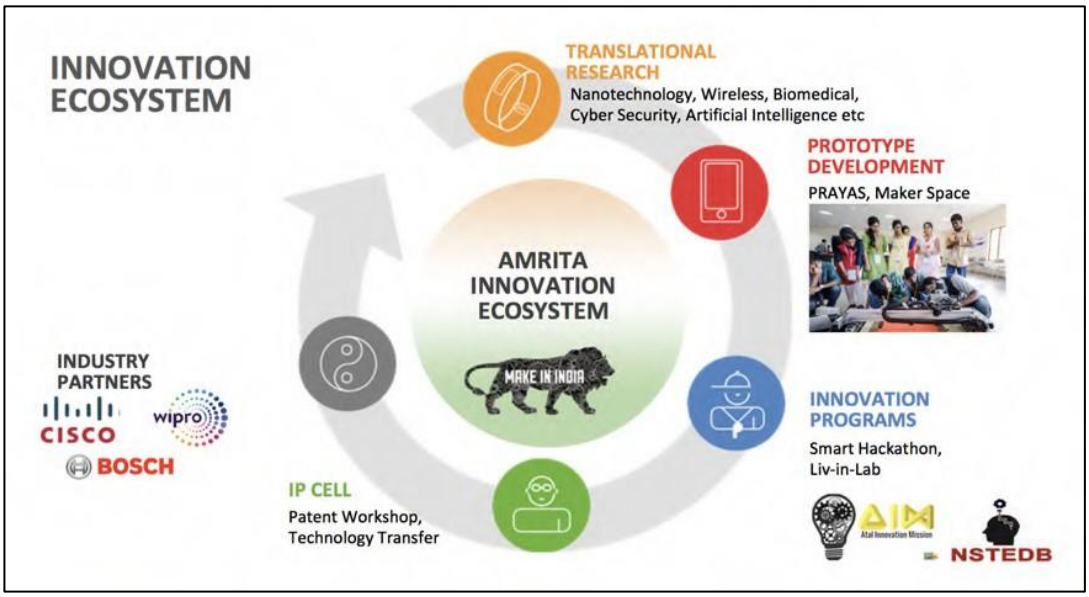
The **Amrita School of Biotechnology** designed prototype of a low cost insulin pump and non- enzymatic glucose sensor.

The **Centre for Wireless Networks and Applications** pioneered wireless sensor development for monitoring and early warning of disasters, as well as OceanNet, to send warning messages to fishing vessels.

The **Centre for Cybersecurity** supports National Defence and Security related to mobile networks, cyber-physical systems, IoT, cloud based applications.

The Centers of Digital Learning (AMMACHI Lab, CREATE Lab & A-VIEW Lab) developed digital learning technologies and analytics for education.

- 747 Ph.D./DM/MCh/MD/MS/MDS/DNB degrees awarded.
- **428 awards and recognitions** for research and innovations.
- The **Technology Business Incubator** (TBI) has incubated 150 startups.
- **158 Worldwide Patents** published or awarded
- **Industry Collaborations**: Collaborative centers with 10 major industry leaders. 900 lakhs of consulting support.
- **1402** extension activities involving **100**% of our students.
- **400 collaborative initiatives and 150 functional MoUs** with reputed international institutions.
    - UNESCO Chair on Gender Equality & Women's Empowerment.
    - First UN-Academic University conference was held with Amrita in 2016



Criterion 4 - Infrastructure and Learning Resources

At Amrita, the delivery of teaching-learning is facilitated by the development and establishment of world-class facilities integrated with digital technologies, including well-furnished classrooms, state-of-the-art laboratories, and ubiquitous computing facilities, as well as excellent sports and recreational facilities.

Amrita campuses are a result of meticulous planning and execution:

- Over 500 classrooms, of which about 300 cater to undergraduate programs and 200 cater to postgraduate and specialized interdisciplinary programs.
- 100% are ICT and WiFi enabled, most of the classrooms are equipped with multimedia presentation facilities that enable lecture capturing.
- Over 6,000 computers for academia and bandwidth exceeding 1 GBPs with a Campus-wide network that has over 1,500 WiFi points.
- 17 auditoriums, numerous conference rooms and meeting rooms.
- 300 teaching and research labs in various disciplines including Manufacturing, Maker, Computational, Robotics, Biotechnology, Wireless, Medical and Technology Business Incubator.
- Our medical research labs include Da Vinci surgical robotic system, Rosa, Mako robotic-arm assisted
- technologies. The radiology department has Cyberknife, Tomography facilities. Medical students can view 3D, 4D images using GE VOLUSON E10 4D ultrasound system.
- Central library in each campus houses barcoded books, printed journals, periodicals and scholarly reference materials.
- Keeping the objective of Free Open Knowledge for all in mind, the Online Library systems are designed to provide access for everyone. Complete automation is achieved using the Integrated Library Management System (ILMS) and the OPAC
- One of Amrita's core goals is to provide an environment for the integral development of body, mind and spirit; to enhance, develop and nurture skills in sports, cultural and performing arts that showcase inherent talent and artistic expression. Towards this end, Amrita provides excellent facilities as follows: Over 200 outdoor and indoor sports facilities including: Complexes, Play Grounds, Jogging Tracks, 15 KM Nature trail for walking, Gymnasiums and Swimming pools.
- Centers for Student Needs: Banking, Photocopy, General stores, Medical, Laundry, Parks, Student activity clubs.
- Centralized Kitchen and Canteen cater to dining requirements for about 20,000 faculty, staff and students. Hostels and Faculty/Staff Residences are provided.

Criterion 5 - Student Support and Progression

Amrita values students as its most important stakeholder, and the future wealth of our society, Amrita mentors, supports and encourages all students to reach their highest potential through various schemes as identified below.

- Amrita's Chancellor's Fellowship is a prestigious scheme to reward outstanding students from India to pursue Ph.D. programs under collaboration between Amrita and top 500 ranked international universities.
- Prestigious scholarships such as Visvesvaraya at the National level and Erasmus Mundus at the International level have been provided to students.
- A total of 87% of the students receive some form of scholarship/freeship.
- Over 80% of students are directly benefited from our Institution's career counselling, guidance and skills enhancement program.
- More than 1200 students have progressed successfully to higher studies and careers through competitive examinations, and more than 60% of all students have been placed immediately after graduation through University placement services.
- Amrita provides facilities that enhance, develop and nurture skills in sports, cultural and performing arts. Amrita organizes over 100 events annually and in national level competitions - our students have won over 200 medals for outstanding sports and cultural performance.
- Amrita University gives emphasis on student representation. Class representatives attend class committee meetings and give feedback regarding teaching and academics. Students are also active participants and leaders in several academic and extracurricular activities committees and clubs
- Amrita has a zero tolerance policy for dealing with sexual harassment and ragging cases and has timely online mechanisms for rapid redressal of grievances.
- With financial contribution of over one crore, alumni provide input on industry needs, academics, and the university also help alumni in their higher studies and job growth through contacts, recommendations, and guidance. Over 11000 alumni are registered, and every year several meets are conducted for the alumni living in India and abroad.

Criterion 6 - Governance, Leadership and Management

Leading the academic and administrative governance is world renowned humanitarian leader Sri Mata Amritanandamayi Devi (AMMA). Amma has been a relentless supporter of education, innovation, and research towards upliftment of society.

The University's Governing Body which is the Board of Management (BoM) steers the policies and practices of the University to strongly promote Education for Life for students of all disciplines. The governance emphasizes decentralized decision-making at all levels of the university to encourage empowerment through participation in governance.

- The University has institutionalized governance structures that provide numerous opportunities for faculty to propose and obtain funding for research that are beneficial to society. The Academic Council also includes highly qualified and accomplished academicians and professionals from some of the most eminent Universities around the world.

- The selection and promotion process for academicians and administrators at all levels of seniority considers their commitment towards imparting core human values along with excellence in research.

- Amrita has developed an innovative Faculty Performance Evaluation Module "FRAP" called AMPLE. About 100 faculty earn incentives every year for their year-round achievements.

- University encourages its faculty to attend professional research conferences and workshops. More than 65% of faculty are provided financial assistance for this purpose. Majority of faculty are also supported to attend FDPs.

- Amrita adopts multi-pronged strategies for mobilization of funds and optimal utilization of resources, such as, trimming overheads through improved management and administrative systems, use of digital technologies, fee-based utilization of state-of-the-art equipment, royalties from licensing of Intellectual Property through Patents and Technology Transfer to startups and corporates.

- Comprehensive and audited performance data is shared through annual reports and newsletters uploaded on the web to stakeholders and global citizens. The fee structure, admission policies and procedures, and academic and administrative policies are also shared via the web portal and handbooks.

Criterion 7 - Institutional Values and Best Practices

Amrita's emphasis on value-based education is its foundational core and every student is exposed to the fundamental principle of values as a defining part of success in all spheres of activity in this world. Amrita's Institutional Values and Best Practices can be summarized as follows:

- Amrita emphasizes education for life. About 400 value added courses emphasize transferable and life skills.

- Amrita has a code of conduct that promotes freedom with responsibility for all members of the university community.

- Tolerance, cultural awareness, and community service is encouraged with the spirit of inclusiveness.

- Amrita's leadership in women's empowerment and gender equality through training, special programs and outreach have been recognized across the world and by International agencies like UNESCO.

- Environmental sustainability initiatives include solar energy installations, nanosolar research, biogas units, LED lighting, solid waste conversion, proper biomedical, e-waste and hazardous material handling, waste management, rainwater harvesting tanks, recharging ground water facilities,

maintenance of water bodies. Kochi campus had banned plastic use in 2018.

- Campuses have restrictions on automobile use and promote pedestrian pathways.
- With 256 species of trees, herbal garden, Amrita's green activities had won Swachh Bharat's top ranking and the Chancellor being awarded by the Prime Minister for contribution towards Swachh Bharat Kosh.
- The University fully subscribes to and implements disabled friendly facilities.
- 200+ events/year sensitize students and staff as responsible citizens.
- 150+ commemorative or celebrative events.
- University's best practices include our international programs, that has connected with 100+ partners and our experiential learning Live-In Labs program that is changing how students perceive and solve real problems in rural India.
- The most distinctive aspect is our compassion-driven research involving faculty solving immediate societal problems.

4. QUALITY INDICATOR FRAMEWORK (QIF)

Criterion 1 - Curricular Aspects

1.1 Curriculum Design and Development

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the Institution.

Response:

Amrita has over 180 programs spanning Engineering, Sciences, Health Sciences, Arts, Humanities, Ayurveda, Life Sciences and Business. The university has broadly embraced an outcomes-based education (OBE) which is practiced across the disciplines in accordance with stipulated statutory regulations. While program outcomes (POs) are overarching and apply to programs across the University, program specific outcomes (PSO) and course outcomes (CO) are applicable at the department level.

Program Outcomes

Amrita's philosophy of 'education for living and life' gives equal importance to the cultivation of disciplinary knowledge that helps prepare for a career as well as the cultivation of values and ethics to help students live wholesome lives. All program outcomes are designed so that students develop critical thinking, communicate effectively, and become engaged citizens of the country.

The university's flagship inter-disciplinary experiential learning program (Live-in-Labs) involves students from programs across seven faculties. As part of this program, student teams put theory into practice in addressing India's societal challenges. To foster international experience, the university has mapped programs and courses as equivalent with several top universities in America, Asia and Europe facilitating semester-abroad, dual and joint degrees.

Program Specific Outcomes

All programs are designed under the guidance of the Board of Studies (BoS) with representation from faculty, industry practitioners, alumni, and experts from government and academic institutions of repute world-wide. The BoS often has representatives from bodies such as NASSCOM and CII, and the PSOs reflect the recommendations of relevant professional societies such as IEEE, ACM, and MCI, as well as national policies from premier think tanks such as NITI Aayog.

Amrita's academic community has made valuable contributions to national and state agendas including Digital India, NMEICT, National Mission on Health, National Mission on Water, Unnat Bharat Abhiyan, Kerala Biotechnology Mission, Make-in-India, Skill India among others. This has led to the development of several interdisciplinary programs, such as computational engineering and networking, biomedical, cybersecurity systems & networks, data sciences, public health, integrative medicine, and social work. Thus, the program outcomes reflect the capacity-building requirements stated in national and state level missions, e.g., Community Medicine, Public Health, etc.


Local & Global
Emerging Trends
Industry | Academia | Govt.
State & National Priorities
Mission Docs & White Papers
UNSDG
Sustainable Development
Global Development Needs
AMRITA
VISHWA VIDYAPEETHAM
Department
Centre
Faculty
BOARD OF STUDIES
Industry
Alumni
Reputed Faculty
Eminent
National and
International
Institutes
LOCAL/INDUSTRIAL/NATIONAL/GLOBAL RELEVANCE
Employability
Innovation
ICT
Research
Latest Developments
Fundamentals
Hands-On Experience
Pedogogic Best Practices
CURRICULAM
SYLLABUS
COURSES
PROGRAM
PO, PSO
THEORY
LAB / PRACTICAL
ASSIGNMENT
PROJECTS
C1,
C2,
C3,
C4,
C5,
C6,
C7,
C8,
C9,
etc..
Y- Year
C- Course
PO- Program Objectives
PSO-Program Specific Objectives
Y1
Y2
Y3
...
FACULTY APPROVAL
E.g.
Faculty of Engineering
Faculty of Medicine
ACADEMIC COUNCIL APPROVAL
PROGRAM LAUNCH
ADMISSION & STUDENT RECRUITMENT
PROGRAM IMPLEMENTATION
Skilled to meet program and program specific objectives
Exposure to Local and Global Emerging Trend
Industry Ready
Hands on Experience with Problem Solving, Articulation, Ethical Reasoning

Course Outcomes

Amrita curricula allows flexibility in course structure and choice-based credits for value-add courses, project-based courses, and internships in industry and national labs. This gives students exposure to local, regional, national and global contexts. As examples, our technology-oriented programs in remote sensing and wireless networks provide students an opportunity to explore regional problems such as Kerala's multi- hazard vulnerability to landslides and floods. National challenges such as water quality, contamination, air pollution or carbon footprint issues and sustainable ways to address them as part of studies in earth observation and renewable energy technologies. Integrating trans-disciplinary projects that bring awareness of UN SDG goals has been an effective methodology to help students quickly understand global development needs in Engineering, Medical, Social Sciences and Business programs. Lastly, the university also offers regular courses in yoga and meditation and strives to inculcate in students a deep appreciation for India's rich cultural and spiritual heritage.

1.3 Curriculum Enrichment

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics ,Gender, Human Values ,Environment and Sustainability into the Curriculum

Response:

"While education for a living is essential for success in the academic and material sense, education for life equips young people with the knowledge, skills and values needed to lead an ethical, empowering and socially beneficial life." - ***Chancellor Amma***

Education for Life is offered to 100% of students both as value-added optional courses and also as coursework integrated into the curriculum.

Human Values & Ethics

Values are not just the cornerstone but the culture that cements the entire educational system at Amrita. Amrita has close to 400 value added courses in cultural education, value education, Live-in-Labs programs, student social responsibility, serve an hour, rural medical camps, ASPIRE program, IAM meditation, and AmritaYoga. Thus, students develop a deep understanding of foundational values such as compassion, empathy, altruism, mindfulness, non-violent communication, mind-body balance, and respect for all creatures and the environment.

A dedicated Center for Excellence in Values, Ethics and Indian Culture focuses on study and research in value-based wisdom rooted in the ancient Indian values of love and compassion, tolerance, truth, selfless service to the needy.

Ethics at Amrita is meticulously rigorous. Research ethics coupled with plagiarism checks are strictly enforced.

Gender

The ratio of female to male students has averaged around 45.4% showing high inclusivity amongst our programs. **Amrita hosts India's first-ever UNESCO Chair in Gender Equality & Women's Empowerment,** conducts research on Women's empowerment, hosts numerous activities and awareness programs on gender equality in light of the UNSDG's.

If gender bias is seen at the university, the Chair recommends policy changes to the academic council and co-organizes activities with students to raise awareness about gender sensitization within the campus and in outlying communities. The Chair also promotes women to learn to code to address the gender bias in AI. The university promotes and mentors all girls teams to compete at national and international events.

Environment & Sustainability

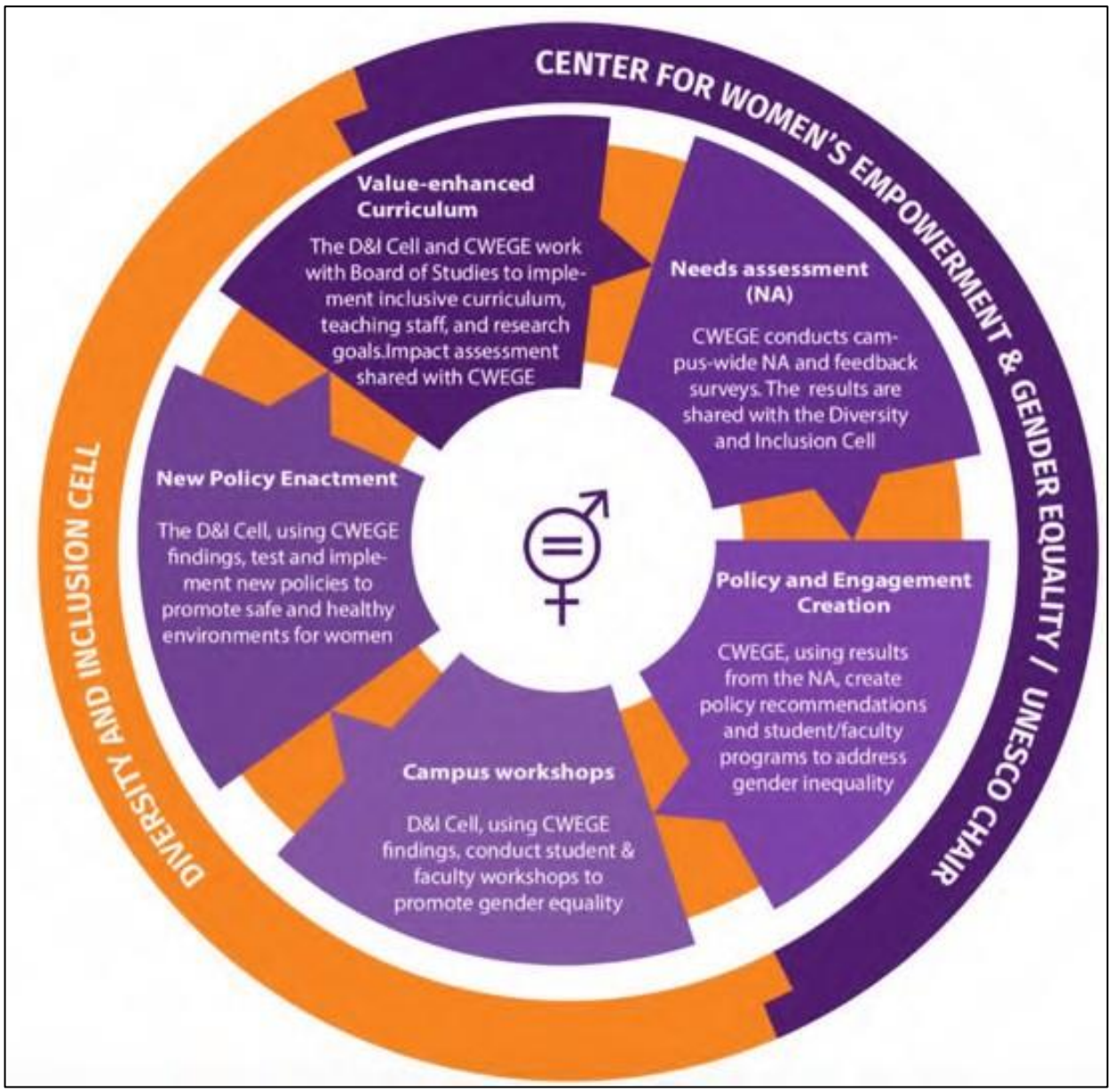
Sustainability is a basic tenet of the Live-in-Labs Program, which offers courses tailored towards sustainable development in rural India. Students are mandated to take this course before designing

solutions to problems afflicting rural India. A new School for Sustainable Development has been launched to address all facets of sustainability.

Protecting and sustaining the natural environment is a core value at Amrita. Amrita has adopted the UN's 'Sustainability Literacy' test (SULITEST) to measure the awareness of students on various dimensions of SDGs, sensitizing students to the global challenges in environmental and societal issues.

The curriculum supports this core value with the courses entitled Environmental Management and Sustainable Development (EMSD) offered at the business school. An interdisciplinary course on environmental decision making and a mandatory course on the environment coupled with an extensive orientation during induction ensures that the value of maintaining the environment is instilled in the student population.

The Kochi campus (School of Medicine, Arts & Sciences) is largely plastic free. The Coimbatore Campus has over 1 lakh trees that hail from 150 species of trees. The different varieties of fauna are labeled toraise awareness about indigenous plant species.



Criterion 2 – Teaching- Learning and Evaluation

2.2 Catering to Student Diversity

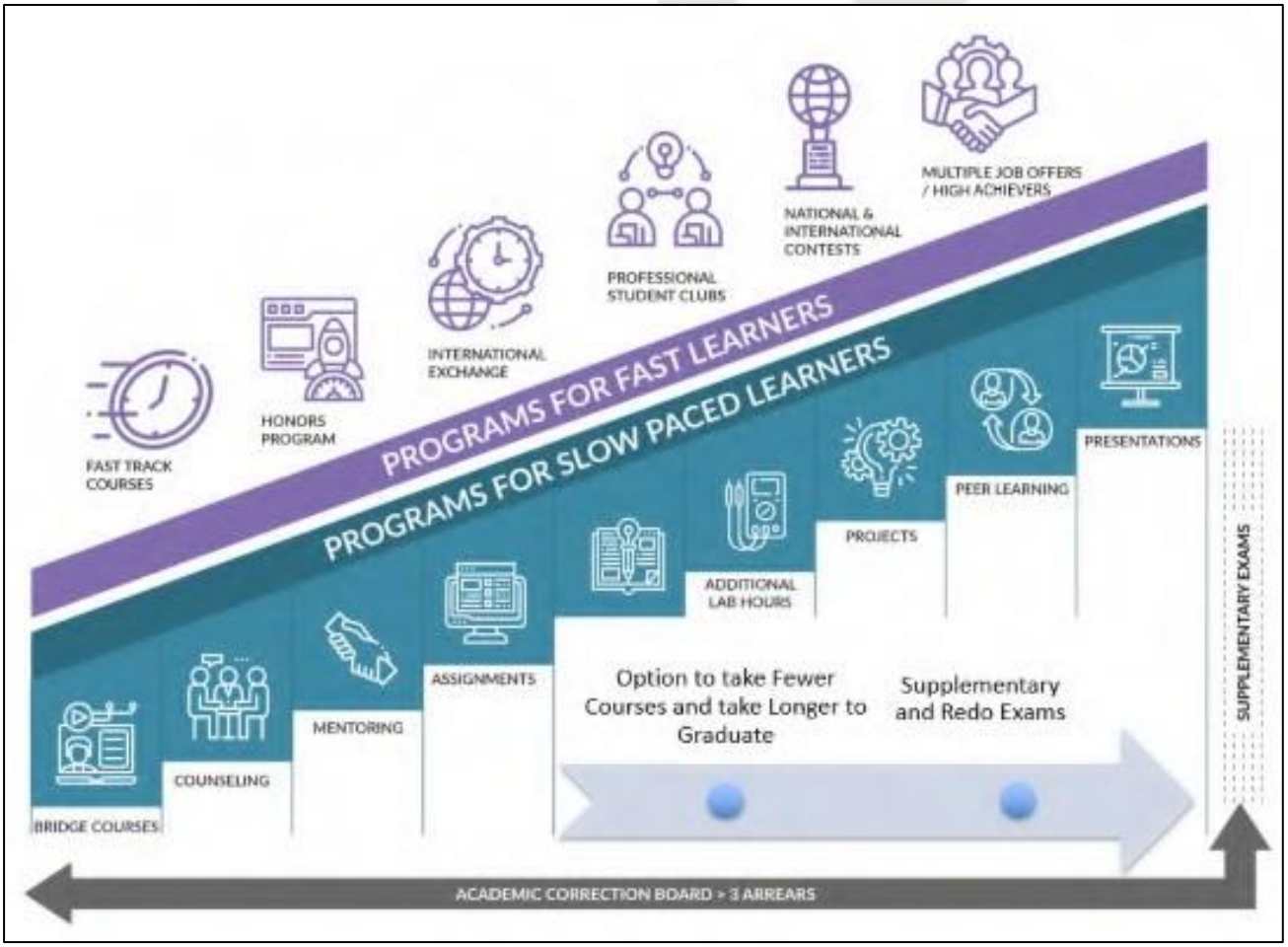
2.2.1 The institution assesses the learning levels of the students and organizes special Programmes for advanced learners and slow learners

Response:

Our Chancellor's vision of "t**ransforming ordinary to extraordinary"** forms the basis for providing an environment that supports both differentiated instruction and inclusive practices. **Students are our primary stakeholders, and they are provided significant mentoring and opportunities to improve, showcase talent and excel during their tenure at the University.**

Counselor training is part of our Faculty Development Program and allows holistic mentoring of students. The student is assigned to a faculty member who serves as her/his counselor/mentor for the duration of his/her study at the university. The principal, counselors and student representatives meet at least once a month to discuss academic and personal issues, challenges the student may be facing, and study habit improvements that can be made.

Amrita's university management system is used to track each student's performance in every course they take. Both slow-learners and advanced learners are identified through periodic assessments and appropriately guided.



Slow Learners:

To ensure that every student receives adequate time and attention, each counselor is assigned a maximum of twenty students. Assistance is provided for slow learners in numerous ways.

- Our curriculum allows slow learners to take fewer courses per semester and take longer duration to graduate.
- Counselors/mentors identify academically weak students and work with the faculty to design a plan for these students.
- Students are offered.
  - Remedial classes
  - Redos and additional end semester exams
  - Tutorial classes
  - Bridge courses
- Further support includes after-hour tutoring and online access to Amrita's digital library, language labs, virtual labs etc.
- Peer teaching is encouraged to help slow learners.
- As an e.g., Computational Thinking & Problem Solving (CTPS) courses are offered to first-year B.Tech students. The adaptive assessment utilized in the course's pedagogy allows us to train slow learners to tackle complex engineering problems that have real-world applications.

All stakeholders i.e. mentors, principals and parents are taken into confidence when additional services such as psychological counseling is required for weak students.

Benefits for Advanced Learners

The University facilitates the progress of advanced learners through various avenues.

- Honors programs and Fast Track Courses for Advanced learners
- Advanced Topics in courses for fast learners
- Special project-based learning for advanced students
- Internship Benefits —A significant number of our students are granted internships to 1) foreign universities via our semester/year Abroad Programs or 2) National Research Laboratories, Industries etc.
- Participation in technically challenging projects as part of various clubs and activities at Amrita: FOSS club, Team Bi0s, Robotics, Idealab and Student ambassador programs.
- Waiving minimum classroom attendance for advanced learners so that they have additional time:

1) to pursue intensive research with faculty 2) training for internationally recognized events such as Competitive Programming & ICPC, Cisco Ideate, Google Summer of Code (GSoC), Capture The Flag (CTF) competitions etc.

Award of distinction is given to advanced learners for their performance.

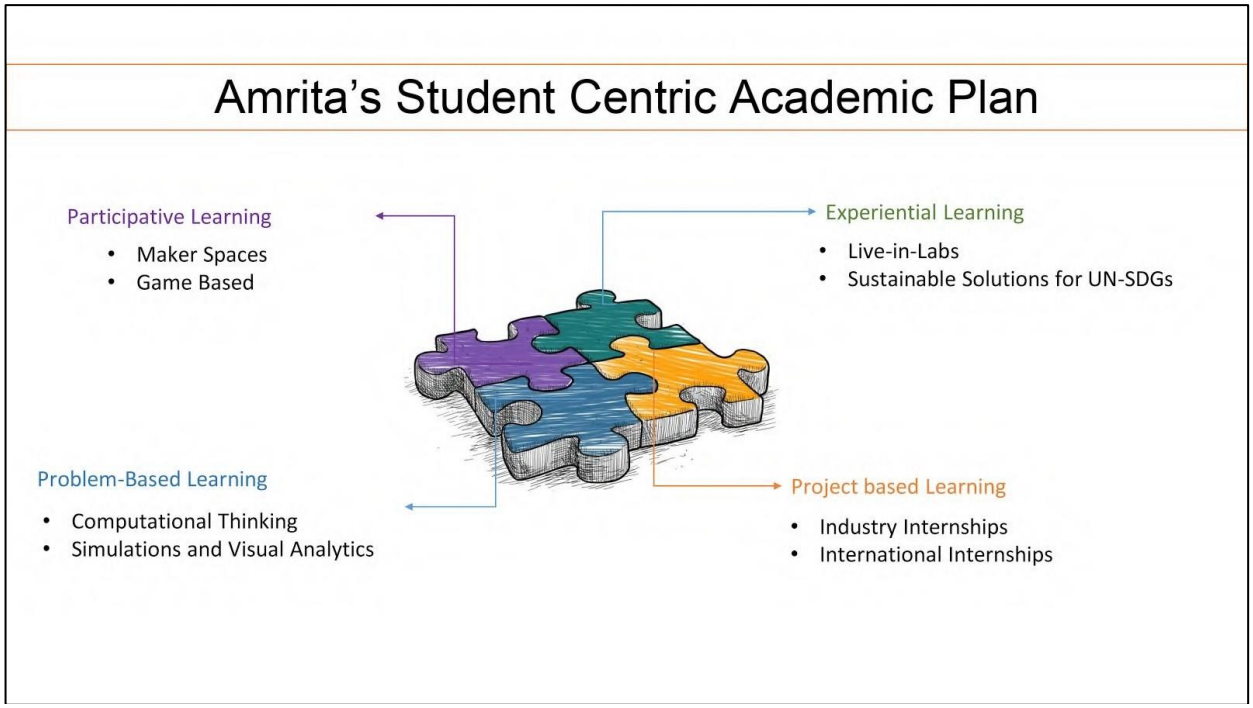
These interventions have resulted in Amrita students 1) having advanced to ICPC World Finals twice 2) World ranked #20 for CTF 3) Ranked #7 for GSoC 4) #1 at MIT's Robocon event.

2.3 Teaching- Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences

Response:

Amrita recognizes the need to prepare students as problem solvers as our highest priority and this enables them to address diverse societal challenges. Towards this end, Amrita's teaching learning process is architected to be both experiential and participative wherein, almost every program has been enhanced with problem based, hands-on student-centric methodologies. Curriculums are structured such that each concept starts with problem description, and students put theory into practice by applying critical and collaborative problem solving abilities to generate innovative solutions.



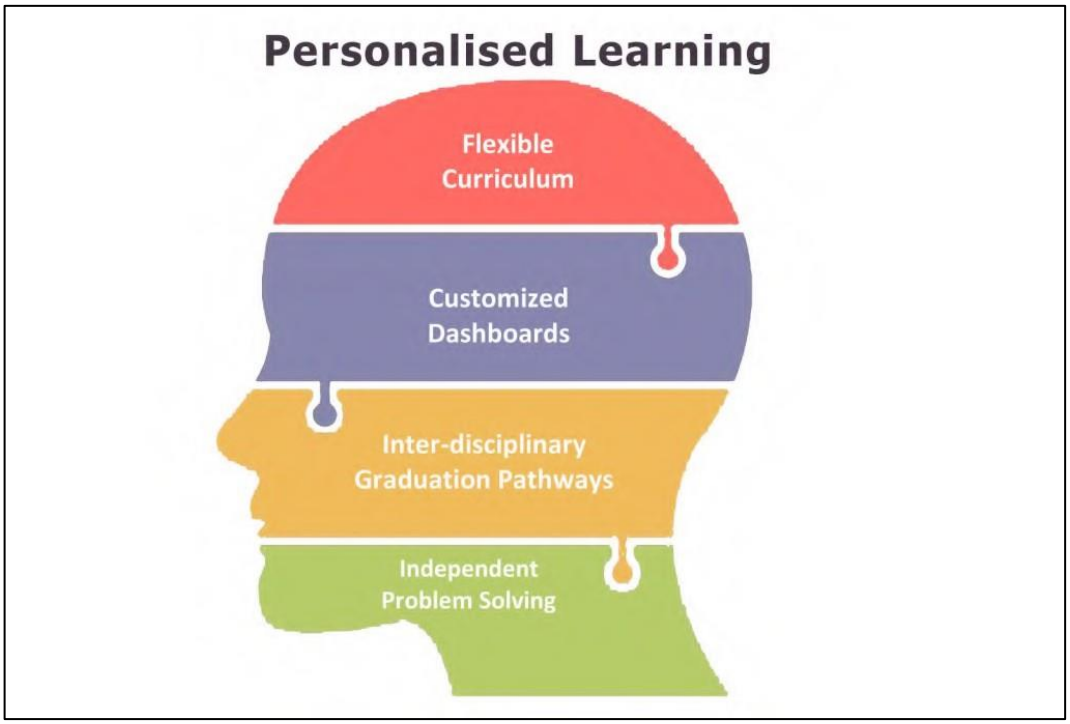
Project-Based & Problem-Based Learning (PBL): This includes experience-based environment projects, undergraduate research, and implementation of socio-technological solutions to problems. Students are required to develop conceptual/functional models, create simulations and visual analytics. Courses such as Computational Thinking & Problem Solving (CTPS) are offered to all first-year students to develop critical thought processes required for problem-solving.

Experiential Learning: Each academic program is enhanced with Live-in-Labs® elective, that takes students out of the traditional classroom and trains them to study, observe, and interact with communities, and gain an experiential insight into their challenges and devise low cost sustainable solutions in the five thematic areas: Health & Livelihood, Education & Technology, Environment & Farming, Energy, and Infrastructure & Basic Facilities.

Participatory Learning: In order to enable innovations to emerge in classrooms and laboratories, Amrita has architected new learning spaces where the layouts can be adaptably changed according to the requirements of each session, integrating lecture delivery, collaborative learning, and open ended design. We have created Maker Spaces which supplement, and in some cases replace, the conventional teaching laboratories, and encourage students to develop prototypes. Furthermore, curriculum for all programs have been expanded to allow the students and faculty to spend adequate time in communities, understand the true nature of the problems and develop a deep desire to solve them through research, innovation, and practice.

Game based learning has been widely adopted as an effective participatory learning method in invoking students interests in areas that require higher order thinking. Participation in global competitive events is often encouraged and performance metrics at each of these well recognized events indicate the effectiveness of teaching that is translated into tangible learning experiences. Programs include case studies, project work, seminars, and workshops all of which contribute to our student's enhanced-learning experience. Students have abundant opportunities for internships that are either at industry, research groups or international partners.

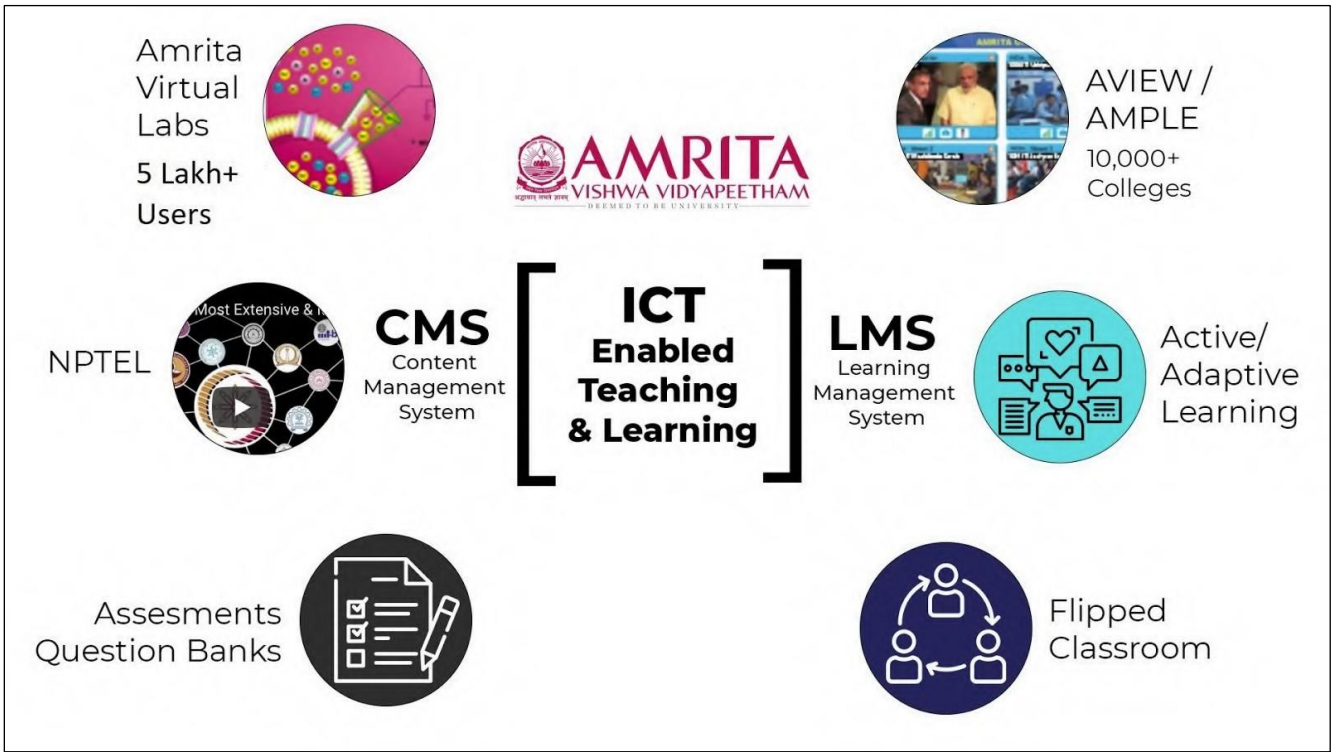
Learning pathways are provided wherein students of one discipline are given learning opportunities in another discipline, expanding their horizons and creativity. The academic plan, with its flexible curriculum, blends interdisciplinarity, innovation and international best practices for personalized learning and transdisciplinary graduation pathways.



2.3.2 Teachers use ICT enabled tools including online resources for effective teaching and learning processes

Response:

The ICT-enabled teaching learning eco-system i.e. Amrita University Management System (AUMS) includes Learning Management (LMS) and Content Management Systems (CMS). Amrita has pioneered indigenous development of ICT systems that have been used widely not only by Amrita faculty but by multitude of institutes in the country. Several of them have been launched nationally and have won international recognition.



The AUMS was created as a comprehensive teaching resource to connect thousands of students spread across all campuses of Amrita. Admissions, attendance, assessments, examinations, question banks etc. are core functionalities facilitated by AUMS. It is also used as a communication portal by which teachers can publish assignments, online examinations or publish results.

A-VIEW (Amrita Virtual Interactive E-Learning World) is a Virtual Classroom developed by Amrita University that helps conduct remote classes using Video Conferencing Technology. With features such as document sharing, virtual whiteboards, and sharable 3D objects, it offers an immersive classroom experience. Currently. A-VIEW is used by over 12,000 colleges and universities across India under the guidance of the Ministry of HRD.

Another e-learning initiative developed at Amrita is **Virtual Laboratories, an interactive online platform for students to perform experiments**. The national platform for Virtual Lab hosts over 4000 experiments in eight disciples of engineering and this is widely used for teaching experimental sciences. In contrast to traditional laboratories that have restricted time and resources resulting in compromised outcomes, the advantages of these ICT enabled online platforms are that it allows students to learn at their own pace and give them additional practice if required.

University-wide subscriptions are available to online resources and repositories such as IEEE, ASTM, J- Gate, McGraw Hill, Springer, Science direct, Scopus, DELNET, PubMed, ASME so as to provide students with access to scientific literature i.e., Journal and Conference publications.

Amrita's Health Information System (HIS), one of the largest healthcare informatics suite built in-house, contains over 50 Million patient electronic health records (containing data from lifestyle to the genomic level) and it has transformed the hospital into a paperless all-digital hospital. The Amrita HIS facilitates evidence-based practices and has become a platform for accelerated learning among medical students. Through adequacy of patient data covering a wide spectrum of variations, Amrita HIS contributes significantly to providing students with a plethora of knowledge far beyond what they are able to gain during their tenure at the medical school. Medical school also has ICT enabled advanced surgical robotic systems, radiology labs, Digital Dental X-ray scanner that are unique in the state of Kerala.

NPTEL Library

Courses from expert IIT faculty in NPTEL is made available to all faculty and students through Amrita's digital library. These online courses act as excellent reference material for teachers and students for usage along with their regular coursework.

AMPLE Platform

Amrita Multiplatform Personalized Learning and Evaluation (AMPLE) platform is designed as the next generation Learning and Content Management System for conducting Flipped Classrooms and Personalized Learning of students. This platform enables the creation of multi-modal digital content utilizing adaptive pedagogical interventions.

2.5 Teacher Profile and Quality

2.5.3 IT integration and reforms in the examination procedures and processes (continuous internal assessment and end-semester assessment) have brought in considerable improvement in examination management system of the institution

Response:

Amrita University Management System (AUMS) automates IT integration in pre-conduct, conduct and post-conduct examination processes resulting in speed, reliability, accuracy and efficiency in evaluation.

Examination Processes involving IT integration

Managing Examinations:

- Online course registrations are mandated to aid management of examinations through AUMS.
- Facility to upload and download question papers (QPs) and automatically encrypt

them ensures additional security.

- Students can view exam timetable and download admit cards online. Admit card contain list of all registered courses for verification by the invigilator.
- Exam hall seat allocation is automated by mapping the registered candidates and courses and designed so that no two students having the same examination sit adjacent to each other.
- The examination room allocation is automatically generated from list of rooms and their capacity.
- Examination attendance sheets are printed with room and precise seat allocation.
- The QP distribution chart automatically lists QPs for each student/seat in individual examination halls.

- Conduct of online exams is utilized by many courses.
- Outcome-Based Education (OBE) is facilitated as per AICTE norms.
- Results are published online allowing confidential, easy and instant access.
- Attendance and examination results are available on Mobile Apps to students and guardians.
- The degree certificate generated online.
- Online application for transcripts is available
- An online ticketing system tracks queries and responses efficiently.

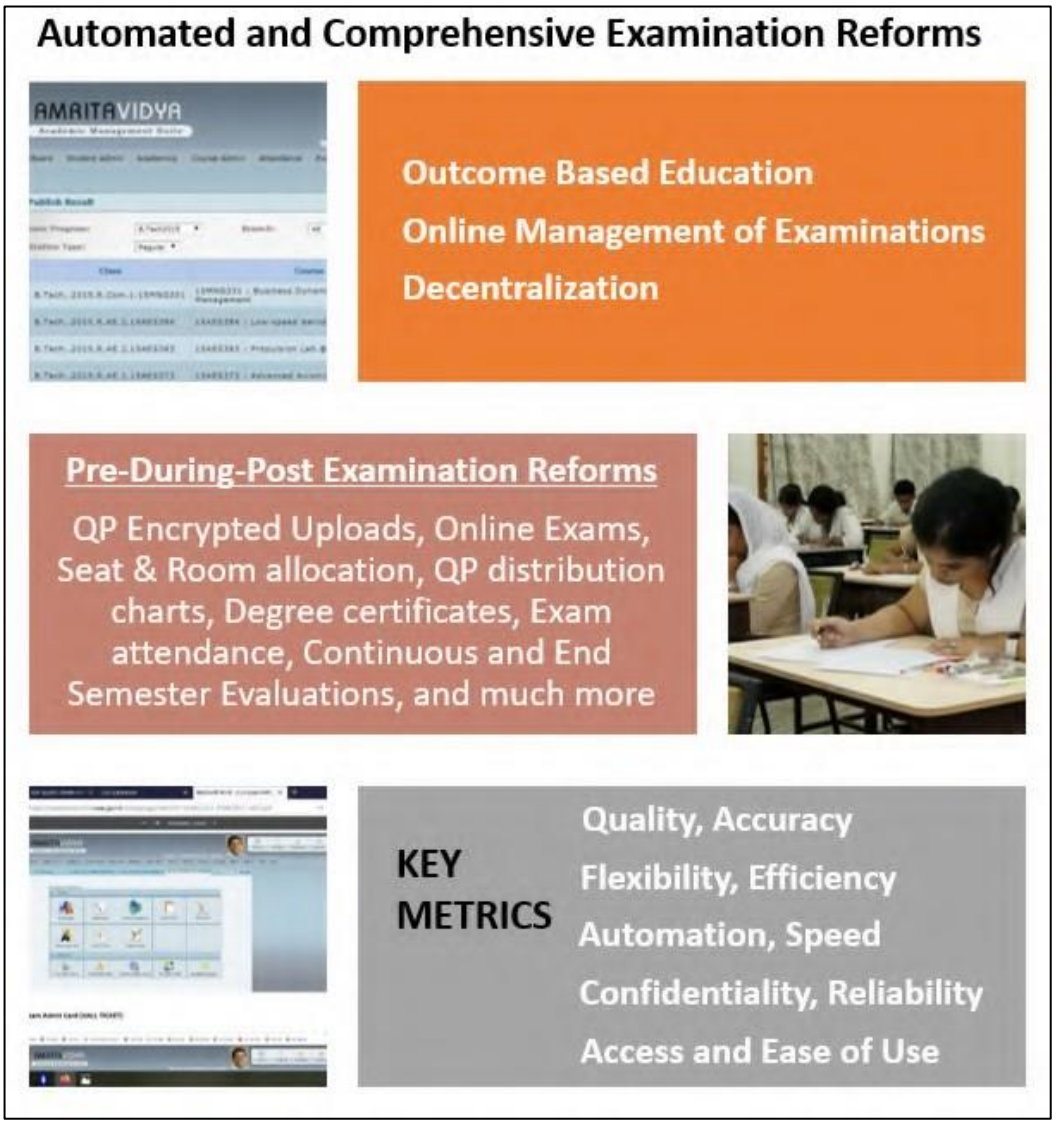
Additional Examination Reforms.

- Open book evaluation is practiced at Amrita.
- While examinations are decentralized, the faculty who teach courses cross-campuses ensure (QPs) remain objective to the course content caught.
- Students can apply for a re-evaluation with the same faculty or another faculty. Students can view their re-evaluation along with their HoD allowing transparency.
- Supplementary Exams allow students an opportunity to retake the exam. Choice of retaking the full course is available too.
- Squad teams in addition to invigilators monitor the distribution of the QPs, answer booklets, extra answer booklets, attendance etc. to avoid malpractice.
- Remedial Options: Re-registration and run-time redo courses are options to improve internal marks. Up to two contact courses can also be taken per study and such measures help slow learners catch up and graduate on time.
- Confidentiality: Every teacher gives three versions of their QPs to the exam cell and one amongst them is randomly selected as the final paper. Physical entry to storage of examination documents is highly restricted.

- Round Robin Evaluation is adopted for common courses taught by many teachers enhancing uniformity in evaluation across batches.
- Quality - The QP scrutiny committee scrutinizes for quality. The controller of examinations also arranges for audit of QPs and answer scripts at the end of every semester.
- Published research papers may also be considered for assessments.

Continuous Internal and End-Semester Assessments

- Every quiz tutorial, classroom and lab session are accounted for continuous evaluation.
- Most Courses containing both theory and lab components have appropriate weightages are assigned depending on the number of dedicated hours per week.
- Flexibility in Assessment - Instructors can vary the type and weightage for internal and external assessments for theory, lab, project or analytical courses



2.6 Student Performance and Learning Outcomes

2.6.1 The institution has stated learning outcomes (generic and programme specific)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents

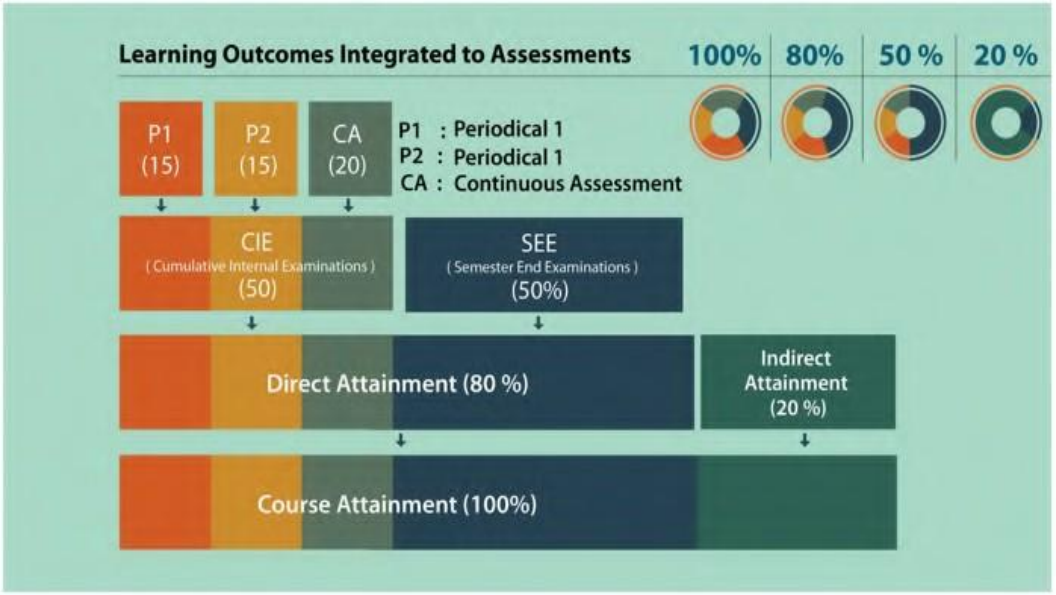
Response:

All the programs in the University have well defined program and program specific outcomes. Curriculum for each program is designed to meet the outcomes specified.

Course Outcomes for all the courses in the curriculum are defined by the course mentors and faculty offering the course, taking every care to customize to the professional orientation of the course. For every course in the respective program, Course Outcomes (CO) are outlined and mapped to PO (program outcomes) and PSO (Program specific outcomes) using a Program Articulation Matrix (PAM). This matrix shows not only the connections, but also the strength or importance of each connection (using an integer scale of 1 to 3, with 1 representing a minor connection or contribution, and 3 representing a direct and strong connection).

For each course, the evaluation components, weightage and maximum marks are first defined. The structured assessment of each course includes: 1) two periodical tests 2) continuous assessment and 3) end semester exam. The individual questions that are part of every assessment are prepared in such a way that each question is mapped to specific Course Outcomes (COs), along with levels based on Bloom's taxonomy. Attainment of course outcomes is calculated based on the student's performance in each assessment.

The Course Articulation Matrix (CAM) plays a pivotal role in quantitatively mapping the individual course outcomes that are ascertained from various assessments to both the program specific outcomes and program outcomes. While this constitutes a direct measure of realization of learning outcomes, additional indirect components such as survey based feedback from students are also fed into the CAM. Both of these approaches ensure the impact of teaching learning processes on learning outcomes are adequately assessed and addressed.



The academic process followed in integrating the learning outcomes and its communication involves:

- Ratification of program, its objectives, and curriculum, are done through Board of Studies (BoS) and Academic Council. Subsequently, any revisions to POs, PSOs and COs are reviewed for approval by the Faculty Committee and the Academic Council.

- The program, POs, PSOs and COs are then disseminated to various stakeholders through one or more of the following:

    - University website under relevant program links and accessible to all
    - Available on Intranet which can be accessed by the faculty, students, and parents
    - Printed in the Curriculum Book
    - As posters available at the department - Chairperson's Office, Laboratories, Department Notice Board, and Faculty offices
    - Available in Work register and Course File
    - Printed in Lab Manuals & Records
    - Department brochure
    - Each semester, in the first lecture of each course, the faculty instructor discusses the COs with all the students enrolled for that course. This comprehensive discussion covers the COs and how that is translated into the: Course plan / Lesson plan, Pedagogy, Evaluation components, and Evaluation scheme. This ensures that all students understand the linkage between the evaluation and the course outcomes.

2.6.2 Attainment of Programme outcomes, Programme specific outcomes and course outcomes are evaluated by the institution

Response:

The university delegates the task of defining the attainment calculations in a decentralised manner. The seven faculties develop the process with the engagement of: Faculty Dean, Controller of Examinations, Department Chair, Department Academic Advisory Committee (DAAC) / senior academicians, and representative of IQAC. The implementation is as per the requirements of the statutory bodies (such as AICTE / MCI), and the strategies of implementation are customized for each faculty.

In the Faculty of Engineering, the subject matter experts develop and map POs, PSOs and COs. For each course, the number of evaluation components is pre-defined as per academic regulations. This is followed by identification of thresholds for the CO attainment (for e.g., 50% of the maximum CO contribution in an exam for each CO), the CO attainment target (in percentage) and the PO attainment target (levels 1, 2, or 3
– which are based on the overall PO attainment being in three different percentage brackets). The evaluation components are classified into internal vs end semester. The internal component contains sub-

components (e.g., exams and continuous assessments such as homework, quiz, and term project). For each assessment component, the individual questions are mapped to the COs, and thereby, the fractional contribution to the CO attainment is incorporated. Subsequently, the overall attainment for the specific assessment component is determined. Each evaluation component is assigned a specific weight. A typical distribution is as follows: 15% each for first and second internal assessment exams, 20% for continuous assessment, and 50% for end semester exam.

NOTE: For MBBS, MD/MS, DM/MCh. students, the number of evaluation components of each course is pre-defined as stated by the regulations laid out by the MCI. The course threshold for the CO attainment is defined and periodic evaluation is conducted to assess the performance. Weightage for these internal assessments is kept at 20% and a threshold of 35% is set for theory and practicals in a particular course to be eligible to appear for university examination. Through periodic formative and end term summative assessments, learning outcomes are evaluated for knowledge, skills and application capabilities. Additionally, viva voce helps assess ability in problem solving, situation management, attitude and communication. Soon competence based curriculum and assessment will be adopted.

A weighted average is computed from fractional weights of assessment components and their corresponding outcomes. The aggregate CO attainment is computed from weighted averages of the contributions across all the COs. The overall CO attainment % is then determined by taking the ratio of the number of students with attainment above the threshold to the total number of students.

Each faculty unit also sets the target for the PO attainment. The PO attainment is either directly calculated from a weighted average of all COs for a specific PO, using the ratings from the program articulation matrix as the weights, or indirectly via surveys from stakeholders. Thus, PO attainment is an average of the individual PO attainments. The DAAC conducts reviews and coordinates with the IQAC and Departments to implement suitable quality improvements.

Criterion 3 - Research, Innovations and Extension

3.1 Promotion of Research and Facilities

3.1.1 The institution Research facilities are frequently updated and there is well defined policy for promotion of research which is uploaded on the institutional website and implemented

Response:

Research facilities are enhanced periodically to support faculty and student research activities. New labs are added in new areas of testing and characterization and manufacturing. Examples of such new labs include, Field Emission Scanning Electron Microscopy Lab, Interactive Electronics, AI/Big Data Computing, High Performance / Super Computing Labs, Maker Space, Additive Manufacturing, Smart Grid, Embedded Systems Lab, Automotive Electronics, Rapid Prototyping, Four Cluster Deposition Manufacturing Tool for thin films, GMP Lab for clean room processing, etc. All labs are open to students conducting research so as to provide maximum exposure to laboratory testing and characterization methodologies. The approval process involves schools and departments submitting their requests to Campus Directors which is then submitted to the Dean of Research and through the Vice Chancellor to the Chancellor for approval. In the past 5 years, Amrita has grown significantly in its research portfolio, added several well-equipped schools and a campus. A new healthcare campus is reaching a state of completion in Faridabad, in the Delhi NCR area, and this campus consists of a 1.8 lakh square feet research building with space for computer and AI technology labs, Medical research and development of medical technology.

The institution has structured guidelines for research and its promotion as established in the research policy document included in the supporting documents. Also included in the supporting documents are policies for research ethics and plagiarism to ensure that quality standards are maintained. The initiatives to promote research include:

1. Providing state of the art labs for faculty and research students
2. Providing seed grants for research faculty
3. Mentoring faculty seeking extramural research grants.
4. Assisting formation of startups and/or technology transfer through Technology Business Incubation
5. Advocating publications by Post Graduate students - As per academic council mandate - all Masters students are required to submit a paper for publication as a requirement towards their degree. This policy was implemented across all schools and PG programs except for visual media
6. Supporting publication charges that may include registration and/or travel to conferences to enhance exposure and self-development.
7. Providing collaborative opportunities to engage with national and international research

groups.

8. Scholarships to PhD and Masters students.

9. Recognizing students with distinction who have pursued research that results in publications.

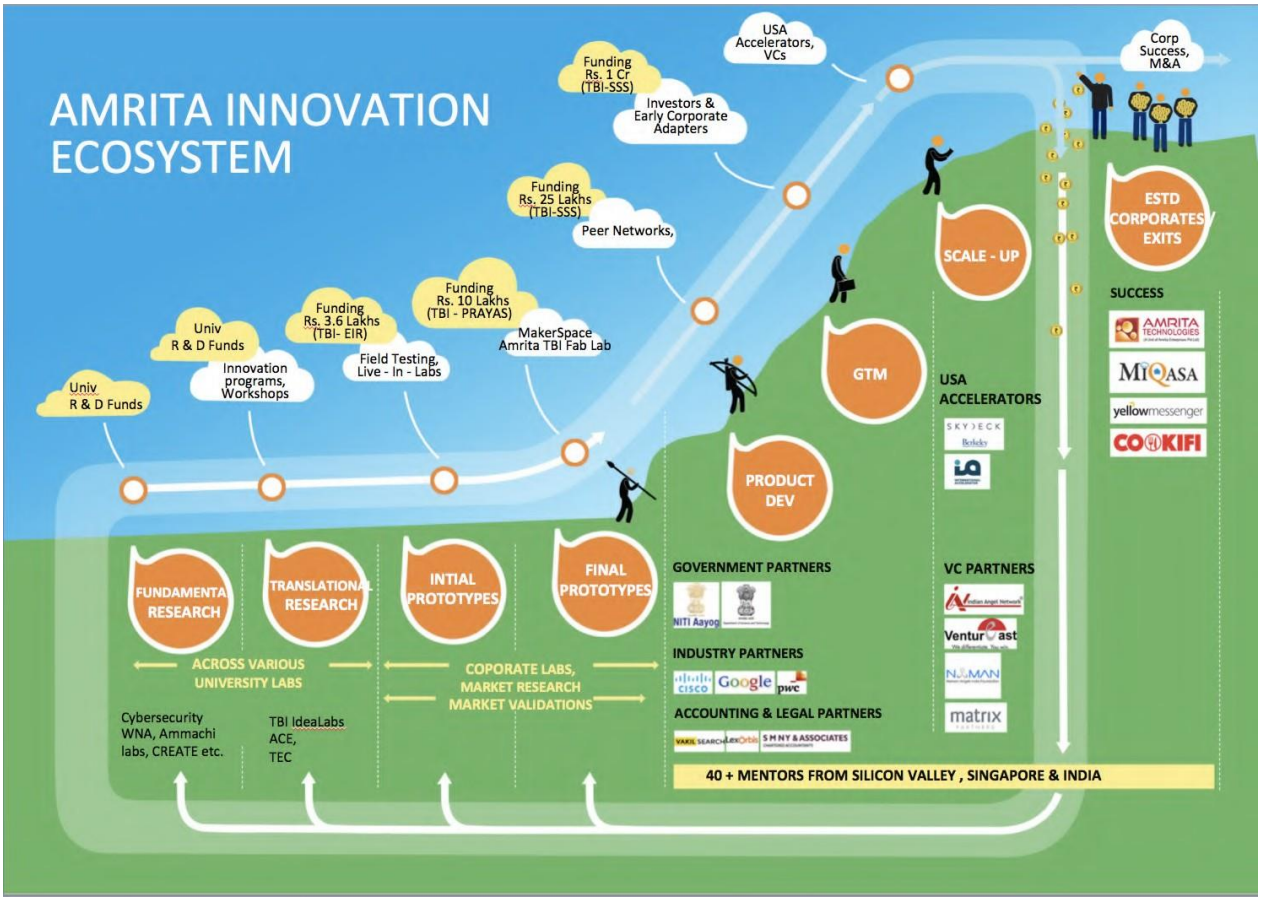
3.3 Innovation Ecosystem

3.3.1 Institution has created an ecosystem for innovations including Incubation Centre and other initiatives for creation and transfer of knowledge.

Response:

Amrita has cultivated a culture of innovation in research, academia and entrepreneurship. The University has pioneered incubation of innovative ideas through its Technology Business Incubator (Amrita TBI) and has been steadfast in building a prolific and international eco-system. Amrita TBI has:

- Nurtured over 150+ startups in IT, ICT and Deep technology areas with:
    - Dedicated Incubation facilities of 30000 sq.ft in Tamilnadu, Kerala and Karnataka.
    - Access to 30+ laboratories for design, development of hardware & software, prototyping & testing facilities i.e., PRAYAS Center, Fablab, MakerSpace, Specialized Laboratories in emerging areas such as 5G, Blockchain, AI, Cybersecurity, Bio & Nanotech etc.
- Comprehensive value-added services in business, strategy, finance, talent acquisition, and legal
- An eco-system with:
    - 300+ Industry partners including CISCO, PwC etc. for market access and scale up
    - Govt. i.e. NITI Aayog, TDB, MeitY, DST, who support and scale our innovations.
    - Academic, and National Laboratories - IITs, NITs, NPL, etc. fostering joint collaboration
    - International NGOs & Academia - UN, UNESCO, UNDP, 200+ Universities from the US, Europe, Asia and Australia
    - Global Mentor and Investor Network and formal engagements with Serial entrepreneurs, VC firms such as Indian Angel Network, Norwest Ventures etc.



Prominent Role in National Entrepreneurial Development

Amrita TBI

- Won ‘Best Incubator Award’ from the Honorable President of India, Shri Pranab Mukherjee in 2017.
- Is amongst select few supported by Atal Innovation Mission with a mandate to become a World-Class Incubation center.
- Has been a leading contributor to DST’s National Initiative for Development and Harnessing Innovations’ in NIDHI-PRAYAS, NIDHI-SSS, NIDHI-EIR, NIDHI-Accelerator initiatives.
- Nurtured startups for MeitY supported Technology Innovation and Development of Entrepreneurs center at Amrita.
- Establishment of Amrita Technology Enabling Center by DST to enhance the innovation potential in Kerala state.

Major Programs Promoting Entrepreneurship

- Amrita Center for Entrepreneurship (ACE) and Idea Labs helps students ideate, inculcate design thinking, build business plans and pitch. We have trained over 20000+ aspiring entrepreneurs
- Technology Innovation and Development of Entrepreneurs program that mentors students on socially relevant products and funds ideas

- Entrepreneur-In-Residence program that supports fresh graduates pursue their entrepreneurial passion.
- Amrita TBI Pitchfest - Flagship event that attracts over 800 startups yearly from all across India.
- Seed Support Scheme - Funding from Rs. 5 lakhs to Rs. 1 Crore to help startup's with scaling activities
- Mentoring K-12 children on entrepreneurial thinking as part of Atal Tinkering Labs
- Accelerator program - 100 day program to help startups overhaul their strategies and make them investment ready

Creation & Transfer of Knowledge:

- Amrita's 25+ specialized R&D centers (www.amrita.edu/research) in strategic areas. They nurture innovation by
- Taking on challenges of high national relevance, social impact and industry appeal.
- Inspiring and mentoring students to build solutions and showcase talent in national and global forums.

Amrita Technology Enabling Center includes:

- Patent & IP Cell - Assistance for prior art searches, defining claims and patent disclosures of inventions in Europe, US, Asia and India.
- Technology Transfer program showcases innovations to industry partners and facilitates the licensing agreements. Centre has successfully completed technology transfers to WIPRO, OMNEX etc.

Guidelines for Consultancy

At Amrita Vishwa Vidyapeetham, Consultancy is seen as a service to the community and to the industry as well as an outreach activity of the institution. Faculty, research scientists and post-doctoral scholars at the University are constantly encouraged to expand and fortify the research profile of the University and to widen and expand current knowledge and experience. In doing so, the goal is to imbibe best practices and engage with external organizations for exchange of knowledge.

Amrita Centre for Research and Development has been conceived as a Special Purpose Vehicle dedicated to industrial consultancy and sponsored research. It has been conceptualized to showcase the capabilities of faculty, while providing the students with much needed exposure. It blends the best of academia and industry, a synthesis that has generated considerable synergy. The Centre provides a platform for faculty to devise innovative solutions to industry problems. It promotes the translation of research outcomes into adaptable technologies, as well as last mile delivery of state of art technology

developed by the faculty through technology transfer and intellectual property support. Constant update with emerging and best practices is encouraged through seminars, plenaries and symposiums. The Board of Management has accorded a standing approval for collaboration, in line with the institutional consultancy policy

Examples of Consultancy which are promoted at the University include expert advice, testing services, help with product/process development for a company, policy and planning, support for collaborations and conferences, project planning, marketing, business analysis and support, modelling and predictive analysis and training.

In such cases, the researcher receives consultancy charges as remuneration. The limits on the remuneration and time spent on such activities will be according to the policy and guidelines on consultancy at Amrita Vishwa Vidyapeetham. All consultancy activities will be carried out with prior approval of the Head of the institution. Any use of the institutional facilities, resources, infrastructure and equipment must be appropriately considered in the costing as per institutional norms. Hence a proper consultancy agreement must be formulated with the institution for each consultancy activity to ensure that resources are properly utilized, and the institution supports the services rendered.

On completion of the consultancy, an official completion report with details of the services rendered including a utilization report and other financial details should be submitted with reference to the consultancy.

3.5 Consultancy

3.5.1 Institution has a policy on consultancy including revenue sharing between the institution and the individual and encourages its faculty to undertake consultancy.

Response:

Amrita Vishwa Vidyapeetham Consultancy Policy

Guidelines for Consultancy

At Amrita Vishwa Vidyapeetham, Consultancy is seen as a service to the community and to the industry as well as an outreach activity of the institution. Faculty, research scientists and post-doctoral scholars at the University are constantly encouraged to expand and fortify the research profile of the University and to widen and expand current knowledge and experience. In doing so, the goal is to imbibe best practices and engage with external organizations for exchange of knowledge.

Amrita Centre for Research and Development has been conceived as a Special Purpose Vehicle dedicated to industrial consultancy and sponsored research. It has been conceptualized to showcase the capabilities of faculty, while providing the students with much needed exposure. It blends the best of academia and industry, a synthesis that has generated considerable synergy. The Centre provides a platform for faculty to devise innovative solutions to industry problems. It promotes the translation of research outcomes into adaptable technologies, as well as last mile delivery of state of art technology developed by the faculty through technology transfer and intellectual property support. Constant update with emerging and best

practices is encouraged through seminars, plenaries and symposiums. The Board of Management has accorded a standing approval for collaboration, in line with the institutional consultancy policy Examples of Consultancy which are promoted at the University include expert advice, testing services, help with product/process development for a company, policy and planning, support for collaborations and conferences, project planning, marketing, business analysis and support, modelling and predictive analysis and training.

In such cases, the researcher receives consultancy charges as remuneration. The limits on the remuneration and time spent on such activities will be according to the policy and guidelines on consultancy at Amrita Vishwa Vidyapeetham. All consultancy activities will be carried out with prior approval of the Head of the institution. Any use of the institutional facilities, resources, infrastructure and equipment must be appropriately considered in the costing as per institutional norms. Hence a proper consultancy agreement must be formulated with the institution for each consultancy activity to ensure that resources are properly utilized and the institution supports the services rendered.

On completion of the consultancy, an official completion report with details of the services rendered including a utilization report and other financial details should be submitted with reference to the consultancy.

3.6 Extension Activities

3.6.1 Extension activities in the neighbourhood community in terms of impact and sensitizing students to social issues and holistic development during the last five years.

Response:

"We cannot be like the person sitting on the 10th floor who hears shouting that the ground floor is on fire and says, "It's only the ground floor. Let the people down their deal with it." We should realize that the fire will soon spread and our floor also will be engulfed in flames. To ignore this reality is to dig our own grave." - Chancellor Amma

Amrita has an exclusive commitment to nurture and develop socially conscious individuals through participation in nation building activities that are executed at the local, regional and national level driven by a deep sense of social responsibility. Our impact has been:



Our outreach and extension activities are integrated through:

1) academic programs through project based courses involving field study, development of innovative interventions to meet end-beneficiary needs and deployment

2) research agenda that incorporates pressing societally relevant challenges with the objective of developing cost effective and affordable solutions.

Our major extension activities go far beyond our neighborhoods with active presence in 21+ states of India. Examples include:

The Amala Bharatam Campaign with clean-ups at public places, Sabarimala pilgrim site, Pampa river, Sanstangota lake, helping several villages in clean-up efforts, planting over 1 million trees, encouraging social innovations around preserving nature etc.

Students and staff have played an active role in the Swachh Bharat Mission promoting the need for sanitation through awareness campaigns and helping women build toilets in their houses.

Use of environmentally friendly sanitary napkin, “Saukhyam”. This indigenous product made at Amrita is embraced by hundreds of students that are socially conscious not to burden the environment with alternate non-biodegradable options. This effort is augmented by awareness on menstrual hygiene.

Addressing literacy and education - The activities here include building technologies, creating awareness amongst communities on digital literacy and disseminating the negative influence of substance abuse. Mentoring school children on 21st century skills using makerspaces, robotics and AI to solve social problems.

Providing sustainable engineering solutions to provide purified drinking water to hundreds of communities. 500 clean drinking water systems have been set up across Kerala and other places nationally. Students are heavily invested in research, design and implementation of these systems.

Rural electrification and setting up of a micro-hydropower system that was fully designed and built by students.

Digital solutions to monitor basic health were designed and implemented at rural villages.

School of Medicine has frequent medical outreach programs along with the community Medicine department.

During the 2018 Kerala floods, the students, assisted by faculty, spearheaded a massive disaster response task force that was recognized and appreciated by the state.

Supporting women in self-help groups, with access to education, livelihood and life skills training, helping them lead micro enterprises amongst others.

Amrita was awarded a UNESCO chair to oversee research, education and grassroots level interventions towards Gender Equality and Women’s Empowerment.

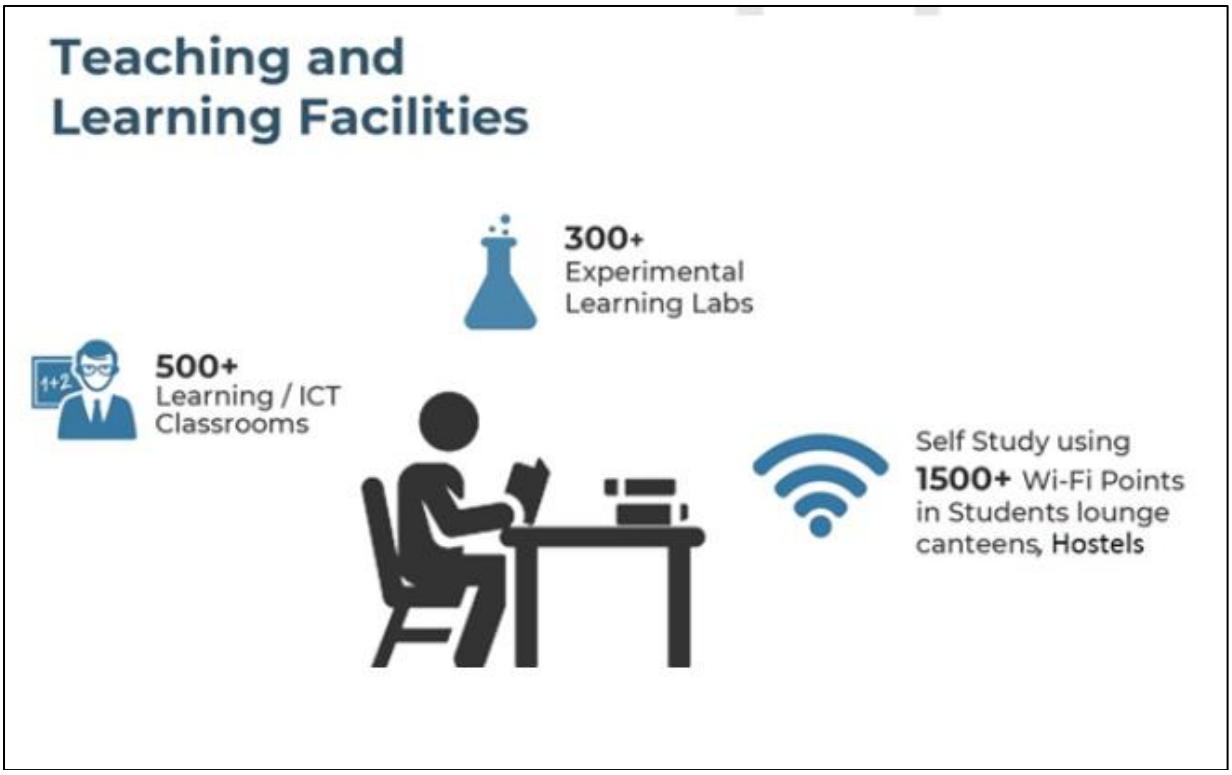
Criterion 4 - Infrastructure and Learning Resources

4.1 Physical Facilities

4.1.1 The institution has adequate facilities for teaching - learning. viz., classrooms, laboratories, computing equipment, etc.

Response:

At Amrita, the delivery of teaching-learning is a multi-modal process involving the interaction and engagement between the student and the teacher in classrooms, laboratories and information centers. We have built well-furnished classrooms, state-of-the-art laboratories and ubiquitous computing facilities so that both the faculty and the students bubble with enthusiasm to interact. The following picture shows how the facilities are integrated so that the student can learn effectively.



Classrooms

We have a total of over 500 classrooms, out of which about 300 cater to undergraduate programs and 200 cater to postgraduate and specialized highly interdisciplinary programs. Most of the classrooms are Wi-Fi network enabled and equipped with multimedia presentation facilities that enable lecture capturing. All the classrooms conform to norms of their respective statutory bodies. For example, in Engineering, the UG classrooms accommodate 60 students and PG classrooms accommodate 30 students. In Medicine, as per the MCI norms, the UG classrooms accommodate 100 students and PG classrooms accommodate 20 students. There are also much larger classrooms for combined popular lectures, auditorium style seminar halls (58 in total), smaller group discussion meeting rooms, and eight studios for multimedia recording and editing.

Teaching & Research Laboratories: The university is very well equipped with laboratory facilities for hands-on training of undergraduates and PG students as well as more advanced labs that have interdisciplinary facilities suitable for students conducting research towards their degree programs, such as PG students doing their thesis and PhD students.

We have over 300 teaching and research labs in various disciplines. There are numerous Industry sponsored laboratories from corporate giants such as CISCO, Robert Bosch, SOPHOS, IBM, ABB, L&T, TCS, Keysight etc. that expose and train students in state-of-the-art instrumentation and software tools. Our medical research center has some of the most sophisticated robotics labs with Da Vinci surgical robotic system, Rosa, Mako robotic-arm assisted technologies. The radiology department has Cyberknife, Tomography facilities. Medical students also have an opportunity to view 3D and 4D images using GE VOLUSON E10 4D ultrasound system, high resolution MRI scanners etc.

Computing Equipments:

Since computing has become like the nervous system of every discipline and students are mobile and Wi-Fi enabled, Amrita provides ubiquitous access to information and network services. All the academic blocks, laboratories and hostels are all connected over high speed fibre connectivity with access to Internet over multiple links through multiple ISPs. A robust tiered network enables the connectivity without compromising on security and confidentiality for all user data. All computers are connected to the internet over high speed CAT6 cables facilitating a 1:1 availability of computers to students. The computing labs cater to several cutting edge research areas such as Big Data Analytics, Machine learning, ICPC, DNS and RGP to name a few.

Amrita has subscribed to a wide array of software licenses. The servers are enabled with the latest virtualization software. A large data storage caters to the needs of the stakeholders for storage of their academic materials. The Data Center also hosts a High Performance Computing System (HPC).

4.1.2 The institution has adequate facilities for cultural activities, yoga, games (indoor, outdoor) and sports. (gymnasium, yoga centre, auditorium, etc.)

Response:

One of Amrita's core goals is to provide an environment that allows integrated development of body and mind through provision of facilities that enhance, develop and nurture skills in sports, cultural and performing arts that showcase inherent talent and artistic expression. Towards this end, Amrita provides adequate facilities and opportunities. The picture shows the Olympic sized swimming pool with a background of Ettimadai campus hills.



The table below shows a summary of the facilities. Additional details of each facility such as area, year of establishment and user rate can be found in the supporting document.

Sl. No	Activities	No. of Facilities	Total Size/Area (in Sq. Meters)
1	Cultural Facilities	17	9810.15
2	Yoga Facilities	9	1949.39
3	Indoor Games	195	4907.83
4	Outdoor Games	79	112359.70
5	Sports	4	26642.04
6	Gymnasium	11	1921.50
Total		315	157590.605

Cultural

The auditoriums at Amrita have capacities ranging from 100 to 3700 students and are used to host university-wide cultural festivals like Amritotsavam, Amritakalotsavam, Kalamritam, national-level multi- fests such as Anokha and Vidyut, and music & dance programs by legendary & professional artists.

Additionally, students have access to practice rooms (12 in total) of capacities ranging from 15

students to 60 students to nurture and train aspiring students to groom their innate talent and compete at various national and international events. These practice rooms are also used to host club meetings, and various activities for music, dance, arts, literary and youth empowerment clubs. The quality and content of programs organized by these clubs adhere to the norms of the Association of Indian Universities.

Festivals, National holidays and large cultural events such as Diwali, Republic Day, International Yoga Day are organized in the large outdoor grounds and can hold up to 6000 people.

Furthermore, Amrita utilizes its classrooms for courses in Indian culture such as Cultural Education, Bhagavad Gita, Upanishads, and Amrita Value Program.

Yoga

Amrita has pioneered the yoga and meditation techniques called Amrita Yoga and Integrated Amrita Meditation that help students, faculty and staff to develop mindfulness and self-awareness. Both yoga and meditation have been incorporated into the core curriculum for all students and are taught in both indoor and outdoor settings of matching ambience.

Sports & Games

At Amrita, Physical Education is an integral part that not only enhances physical fitness, but also promotes sportsmanship and teamwork. Our sports and recreational facilities include Olympic standard swimming pool, 79 courts for outdoor games, such as tennis, football & cricket, 195 indoor games, such as carrom, table tennis & chess, and 4 athletic running tracks. These facilities are used to their full capacity by students for their regular practices as well as for the annual sports events such as Amrita Sports Day, Annual Sports Meet and Inter University Tournaments in South Zone / All India Level conducted by AIU.

In addition, Amrita's state-of-the-art fitness gymnasiums with 50-100 fitness equipment & machines are available to the students, faculty and staff during regular working days and holidays.

4.1.3 Availability of general campus facilities and overall ambience Response:

The overall ambience of the campuses reflects the spiritual underpinnings of the institution - calmness, proximity to nature, smoke free, lush green, open spaces, unique symbolic architectural designs, yet have areas of congregation that underscore the youthful vibrancy of a campus. And the day in Amrita starts with the prayers Aum Sahana Vavatu, Lokha Samstaha Sukhino Bhavantu - "let there be peace and harmony … "

- The main medical school building is designed as a lotus with 6 radiating petals that symbolize the spreading of true knowledge, the seat of Saraswati. The engineering building has one of the most beautiful natural settings. The campus roads curve around by the mountains giving extraordinary views that makes a mind expansive and peaceful. The biotechnology building is by the shore of the famous backwaters of Kerala. The architecture reflects the subtle tradition of Kerala with fine woodwork

Amrita campuses provide comprehensive facilities for all aspects of student life and personality development. These facilities can be grouped into the following main functional divisions:

- Accommodation: Amrita provides on campus accommodation for over 10,000 students in more than 25 hostels which are fully serviced to act as home-away-from-home to the students. There are dedicated hostels for boys and girls, and for UG and PG students. Guest houses including international standard rooms are available for parents and visitors.

- Central Kitchen and Dining Facilities: A central kitchen prepares food for all campus residents. The menu is decided by a committee that includes dieticians, so as to ensure a healthy and hygienic preparation of food. There are also attractive canteen facilities that serve as food courts. Purified cold and warm water is provided to the students.

- Safety: Campus safety and security services include 24-hour foot and vehicle patrols, late night transport/escort service, Wi-Fi, 24-hour emergency telephones, lighted pathways/sidewalks, and controlled dormitory access. Other facilities like fire alarms and firefighting cater to emergency and safety requirements.

- Sports Facilities: Specialized sports facilities such as gymnasium with its fitness equipment, swimming pool, tennis courts, football grounds, cricket pitches running tracks etc. available in Amrita campuses.

- Medical Facilities: Medical clinics are available in all campuses. The medical facilities like ambulance, doctors are also available inside the campuses around the clock.

- The ARC (Amrita Recycling Centre) ensures a zero waste campus with its staff & students ensuring complete conversion of food waste garden waste into compost to be utilized for Gardens and Farms.

- Cleanliness & Hygiene: The housekeeping division is responsible for cleanliness in central institutions, classrooms, laboratories and offices, as well as cleaning of toilets and bathrooms.

- Horticulture and Gardening - Approximately 1000 trees are planted every year with a survival of 92 – 95%. The university employs a major work force for maintenance of pathways, lawns and other areas.

- Other amenities include laundry facilities, convenience shops, saloon, tailor shop, copier, and ATMs.
- Within this joyful ambience we have set up some of the most modern of facilities, like a blending of East and West, academics and tradition, forward-looking but timeless.

4.2 Library as a Learning Resource

4.2.1 Library is automated using Integrated Library Management System (ILMS) and has digitization facility

Response:

Amrita's philosophy is that knowledge should be shared to all without any boundaries. In that spirit, the Online Library systems at Amrita provides all its faculty and students maximum access to a

large printed and digital knowledge base.

The complete automation using the Integrated Library Management System (ILMS) was realized in 2009. The OPAC (Online Public Access Catalogue), which is available on the campus via LAN and the Web- based OPAC system, which is available on the internet, provide easy access to the online database of books, journals and e-resources.

The Integrated Library Management System (ILMS) is a software system featuring end-to-end manageability of the library operations through its comprehensive modules. As a Web-based solution, it provides platform independence. The interactive features include:

- The Web-Aware OPAC facility
- Cataloguing system
- Circulation system
- Acquisition system
- Serial control system
- Advanced Search Options
- Electronic Resource Management package for e-journals
- Federated searching tools to search articles in multiple databases

The ILMS allows faculty and students to:

- search all the bibliographic records available in the Central Library database through the web-based search interface
- identify the status and location of a document online from any networked computer in any campus
- check-out and return all the books, printed journals, periodicals, and printed forms of scholarly reference materials from the central library (available in every campus) using bar-codes

Amrita has made several strides to provide automation in the library processes:

- E-Resources and Library databases are well secured through efficient password protection and modern e-security methods.
- The ID-Card issued by the Institution is also used as the ID-Card for gaining entry into the Library, including borrowing of books

- All physical access to the library facility is digitally captured and hence provides the utilization of the library.

- Information dissemination through e-bulletins, published quarterly through intranet

In addition, the library provides digitization facilities to convert printed hard copy books, articles, in-house lecture materials and notes, into online digital format with indexing and formatting that can be carried out on 100 computer systems. Such digitization is carried out both at the request of users and independently in the background for copyright free materials. All these digitized documents are hosted on a web based DSpace server.

Furthermore, Amrita actively uses the Shodhganga service from INFLIBNET Centre, a platform for research students to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The Ph.D. theses of Amrita students are added to this open national online library.

Amrita also provides access to the e-ShodhSindhu service to all Amrita faculty, researchers and students. e- ShodhSindhu from INFLIBNET provides current as well as archival access to more than 15,000+ core and peer-reviewed journals and number of bibliographic, citation and factual databases.

4.3 IT Infrastructure

4.3.2 Institution has an IT policy, makes appropriate budgetary provision and updates its IT facilities including Wi-Fi facility

Response:

Amrita Vishwa Vidyapeetham recognizes that we are living in a digital world, and IT infrastructure is critical at all levels of University's functioning which includes Governance, Academics and Research for all stakeholders including faculty, researchers, students, administrators, staff and parents. This includes two aspects, one is data storage, retrieval and analysis and second is access to worldwide information networks, while preserving the safety and security of information.

For this purpose, Amrita has established an Office of Information and Communication Technology Services (ICTS) which has architected a comprehensive IT Policy that is founded on the following principles:

Facilitate education, research, instructional and university approved business practices

- Build and utilize an agile, resilient IT and telecommunication network to concurrently provide infrastructural and operational efficiency playing a pivotal role in teaching, learning and research activities.

- Provide leadership for planning, installation , expansion and maintenance of state-of-the-art critical computing infrastructure including the latest IT and Networking resources

- Define acceptable user responsibilities, policies for provisioning and maintaining IT resources
- Place foremost importance and priority for preserving and protecting data integrity and security for the university and its legitimate users.
- Ensure legality of all software and compliance to government regulations.

The implementation of the above IT Policy objectives is made very complex by the heterogeneity and scale of the IT infrastructure consisting of :

- 200+ servers including blade servers
- 9000 computing terminals
- 1200 WiFi access points supporting 25,000 users, deployed in both academic blocks and hostels blocks for 24X7 internet service
- Gbps internet bandwidth over multiple links
- 43 virtual laboratories with over 350 online experiments in the Sciences and Engineering.
- Large collection of licensed software from diverse vendors

Our key approach in implementing the IT Policy in such a complex network is as follows :

- Unified Threat Management (UTM) System including Intrusion Prevention System, Intrusion Detection System, Content Filtering and Deep Packet Inspection.
- Anytime anywhere access to IT services for users on the go. Ease of use of multiple services through Single Sign On (SSO)
- Use of virtualized servers to optimize resource utilization and promote green computing Continuous logging of user activity to ensure compliance to IT Policy

The Budgetary provisions made in the last 5 years is shown in the supporting document. The budgetary allocations have been mainly directed towards enhancing computing/network infrastructure and development of in-house ERP solutions.

Expansion Plans:

- Enhancement of Internet Bandwidth (5x in 5 years)
- Upgrading of WiFi to IEEE 802.11ax standards providing a whopping speed of 11 Gbps
- Massive storage to enable faculty and students to use media rich content in their teaching learning process and digital library access

4.4 Maintenance of Campus Infrastructure

4.4.2 There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.

Response:

Amrita's objective is to provide a very healthy, clean, immaculate physical environment as well as academic and support facilities that are robust, reliable and high-performance. We believe that such an ecosystem forms the foundation for the teaching-learning process and fosters the creative thinking process for faculty and students.

In order to achieve this objective, Amrita has established a dedicated General Administration Department (GAD) which has architected systems and processes for regular and timely maintenance as well as optimal utilization of buildings, classrooms, laboratories, sports facilities, hostels, canteens, gardens, and lawns.

At the policy level, all maintenance work is categorized into annual maintenance, routine maintenance, and preventive maintenance. Amrita's policy mandates that all equipment including laboratory and computer systems either have up-to-date annual maintenance contracts or supported by well-trained in-house technical staff. Policies such as zero litter policy, no spitting policy, no smoking policy, which relate to public cleanliness and hygiene are strictly enforced as well. For speedy resolution of issues encountered by students and faculty, a ticketing system with logging and tracking ensures fairness in policy.

To efficiently and effectively implement the above policies, the General Administration Department (GAD) consists of the following functional divisions:

- Highest importance is given to Civil, Electrical, Water & Sanitation, and Air-conditioning (AC). In each of these major portfolios, we have created specialized teams for immediate first response and action so that dependency on external agencies is minimized.

- All buildings are periodically inspected and painted fresh.

- The electricity department is equipped to ensure 24 x 7 continuous power supply with generators and Uninterrupted Power Supply (UPS) units as fail-over backup.

- The dual dimensions of Water & Sanitation are to ensure safe drinking water with the help of fully serviced Reverse Osmosis (RO) filters and an environmentally friendly zero wastewater recycling system consisting of the three sewerage treatment plants. This recycled water feeds into maintaining the vast and lush greenery of the campus.

- The ARC (Amrita Recycling Centre) ensures a zero waste campus with its staff ensuring complete conversion of food waste garden waste into compost to be utilized for Gardens and Farms.

- Central Air Conditioning is selectively provided through well-maintained chiller plants, Air Handling Units (AHU), and ducts.

- Well-staffed housekeeping division is responsible for cleanliness & hygiene in all the facilities within the buildings such as classrooms, laboratories, offices, libraries, as well as bathrooms.

- The horticulture and gardening division is responsible for tree plantation and their maintenance. Approximately 1000 trees are planted every year with a survival of 92 – 95%. The university employs a major work force for maintenance of pathways, lawns and other areas.

- Specialized sports facilities such as gymnasium with its fitness equipment, swimming pool with powerful filtration and pumping system, tennis courts with synthetic turf and grass, are maintained by professionally trained personnel. The football grounds, cricket pitches, running tracks, are inspected for weather related degradation such as water logging, weeds, dry and dusty soil, and corrective measures are taken immediately.

- Campus clinics, ambulances and doctors are always available and medical facilities are regularly maintained throughout the year.

- The University takes security very seriously and is regarded as one of the safest campuses by parents for the well-being of their children. The security is enforced by a squad who are trained to be firm but courteous in their engagement with the campus community. Security is enhanced by technology such as monitoring and surveillance cameras. Biometric access controls are in place to restrict entry and usage of the research labs with sophisticated equipment to authorized staff.

- The guest house is maintained at levels commensurate for international visitors.

- The transport division is entrusted with the responsibility of maintaining a large fleet of buses, cars, ambulances, vans. For this purpose, professionally staffed in-house service centers ensure the timely maintenance of all vehicles so that they are in excellent operative condition

- Computer software and hardware maintenance is performed by trained engineers and technicians who form the Information & Communications Technology Services (ICTS) division of the University. ICTS, through its policies for maintenance, regular backup, system failover, disaster recovery, etc. ensures uninterrupted access to all information and network services. ICTS also handles maintenance of Audio-Visual equipment which includes projectors, Public Address systems, lecture capturing systems, etc.

- Library is given special importance for maintaining a very conducive atmosphere for students and faculty to pursue independent reading and complete access to worldwide scholarly resources.

Smooth operations and transactions in the library are ensured by following good practices and conforming to established policies. A brief summary of the same is given below:

- Adequate number of sign boards are placed at appropriate places. A clear floor plan is displayed in a prominent place in the Library
- Fire alarms are installed. Protection against accidental fire is ensured through the use of fire- extinguishers placed at strategic locations in the library
- Extra care is taken for good house-keeping practices like regular vacuum
- 181 shelves etc., to prevent the attack of the physical paper books from insects like Silver- fish, booklice, book-works, cockroaches etc.

Amrita is well known for pioneering efforts aimed at involving all of its faculty, students and staff in cleaning India's public places, popularly known as Amala Bharata campaign (ABC). This culture has led to the combination of comprehensive policies and effective implementation mechanisms that have rewarded Amrita with the following national recognitions:

Number One Rank in the 'Technical Institutions' category in the Swachhta Rankings for academic years 2016-17 and 2017-18, released by the Union Human Resource Development Ministry, India.

Kerala State Pollution Control Board's Best Environmental Practice Award for 5 consecutive years from 2014 to 2019.

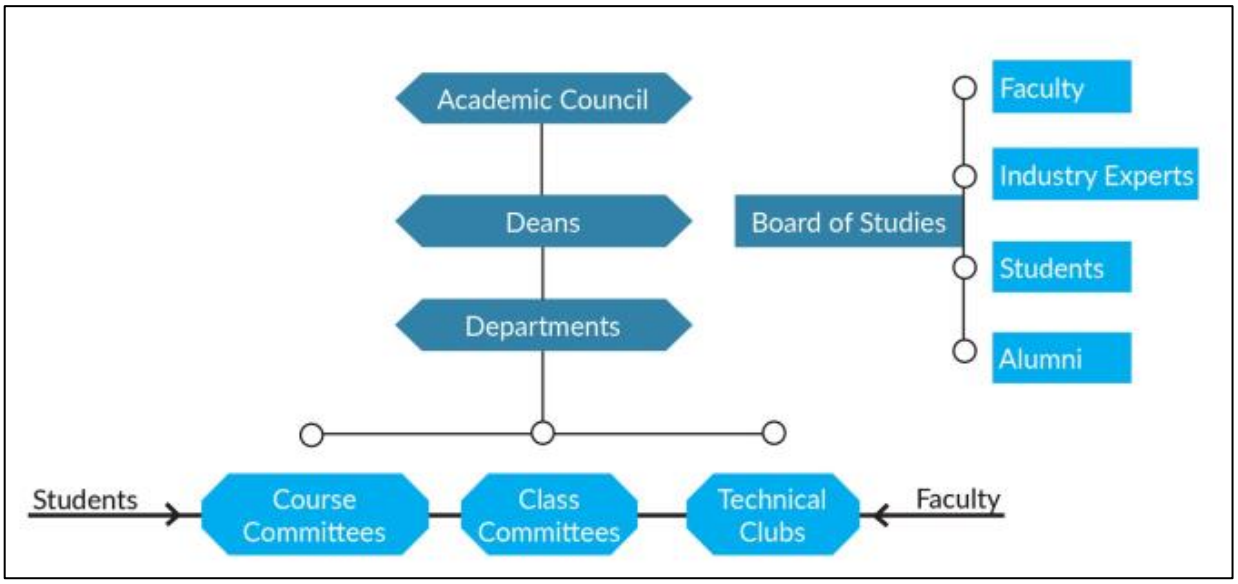
Criterion 5 - Student Support and Progression

5.3 Student Participation and Activities

5.3.2 Presence of Student Council and its activities for institutional development and student welfare.

Response:

One of the unique characteristics of Amrita is that our Chancellor gives significant emphasis to holistic development of students and this is manifested in the abundant opportunities students have to express their opinions, ideas, skills and receive recognition.



Student Facilitated Academic bodies :

Each class has a Class Committee (CC) with elected student representatives (2 boys and 2 girls). Student council for Academics (SCA) includes these student representatives.

- Periodic class committee meetings (at least thrice a semester) are held with CC representatives and all faculty teaching that semester.
- The collective feedback of students on pedagogical and academic aspects are discussed and followed up during these meetings.
- Topics of discussion include course delivery, teaching effectiveness, syllabi enhancements etc.
- Any revisions from these suggestions are reviewed for further action in Departmental meetings, Board of Studies and Faculty Committees.

- SCA play an integral role in contributing to several academic clubs. These empower students to achieve significant feats.

Academic clubs are active in all campuses, with students assuming major responsibilities in creating roadmaps, planning, organizing and executing both internal and external events.

The club office bearers are elected by students enjoy a high degree of autonomy.

A few Amrita student teams and clubs have received national and international recognition for their expression of talent through competitive events. Examples are: BAJA, Supra, inCTF, FOSS, Bi0S, SAE, Robotics, 2nd Foundation Maker Space, etc.

- Academic and Technology driven Muti-tech fests

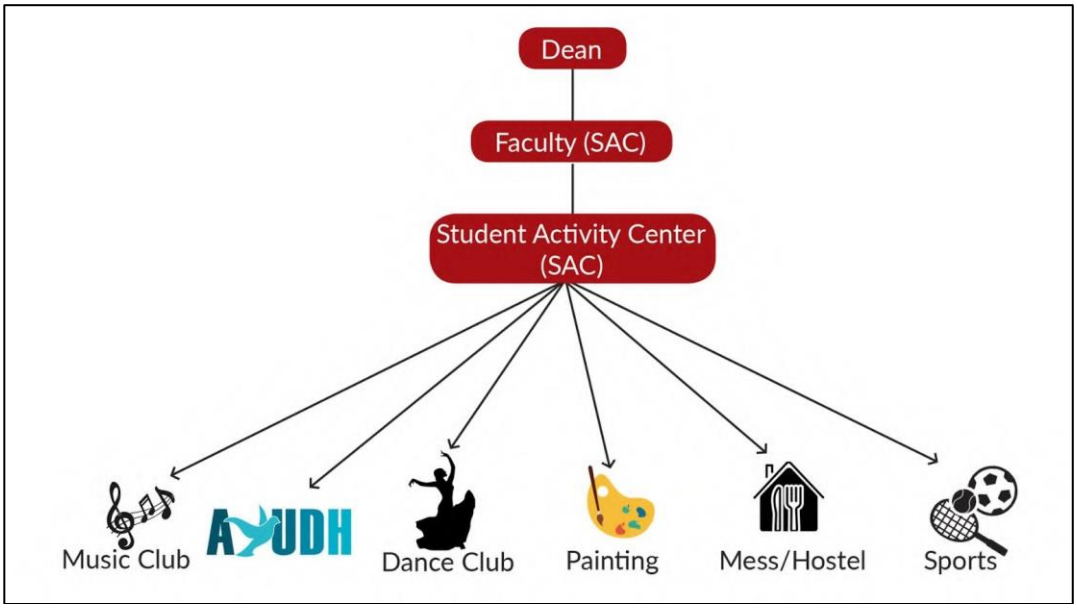
  Events such as Vidyut, Pragati, Amrita kalolsavam, Anokha etc. have student organising and executive committees. They raise funds and plan every aspect of these events.

  National & International conferences and workshops are jointly organized by SCAs

- Active IEEE student forums in campuses have won several awards: the outstanding student chapter, best branch counselor and outstanding student volunteer etc.

- Student Nurses' Association of India (SNAI) is very active at Amrita in promoting professional, social, and cultural personality development of nurses.

Student Facilitated Administrative bodies



- Hostel and mess committees include students who deliberate on any hostel and mess issues.

- Sports council organises football leagues, basketball leagues, cricket matches , chess matches

both intra-amrita and inter-collegiate matches.

- Exclusive Women's grievances and redressal committee includes girl students in them**.**

- **Student Social Responsible Activities and Clubs**

  Students and young faculty (Engineering, Medicine, Pharmacy, Sciences, Arts, Media and Commerce) engage in activities aligned to university's mission, under the direct guidance of senior administration headed by the president of the university. Activities include: medical and health awareness camps, green friends initiative (distribution of seedlings, saplings, organic gardening), clean up drives, distinguished lecture series, cultural tours, talks on indian heritage, blood drives, leadership summits etc.

- **Arts, Culture and Crafts**

  Dedicated clubs for Music (Ragasudha), Dance (Natyasudha), Painting, and other forms of arts and crafts facilitate showcasing of talent and participation in national competitions.

  Festivals like Ugadi, Pongal, Sri Krishna Jayanthi are conducted and executed by students locally at the respective campuses.

  The IQAC cell has good representation of students in addition to faculty and parents to monitor both teaching learning process and administrative activities

5.4 Alumni Engagement

5.4.1 The Alumni Association / Chapters (registered and functional) contributes significantly to the development of the institution through financial and other support services.

Response:



ALUMNI ENGAGEMENT @ AMRITA

Amrita Global Alumni Network, is a well-established, close-knit community that strives towards the social and economic growth of the institution and its network.

As ambassadors of the institution, the members play a key role in

- Industrial collaboration
- Research collaboration
- Academic collaborations.
- Training and development
- Scholarships
- Societal contribution

The senior members of the association help in securing placements, internships, and final year projects by conducting bootcamps and workshops every year for current students to prepare them for interviews. Alumni have contributed financially through scholarships for students, and additionally as general donations towards the university of about 1 crore over the last five years.

The alumni also conduct pre-recruitment talks to offer the current students an idea of what to expect in the recruitment process. And they provide our trainers with the specific skill set requirements of the industry as to how to redesign training programs accordingly to increase the employability factor of our students.

Skype meetings and discussions are conducted with interested alumni mentors (belonging to Academia and Industry) with the relevant faculty and students across the University. These alumni mentor the current students with regard to writing journal papers and research work. Alumni also visit our campuses and conduct workshops/sessions for our current students and also guide our students with advice regarding conduct of multi fests and cultural fests etc. We publish regular alumni newsletters and our Amrita Center of International Programs(ACIP) maintains an active interaction with alumni throughout the world.

The association members contribute to the curriculum and syllabus revision. The inputs provided by them about the research and technology currently used in the industry help us update our syllabus to the most modern requirements. They are a key part of the Board of Studies which deliberates on and sets the curriculum for the various programs at the university.

The Alumni web portal, AlmaConnect, is a virtual chapter in which the Alumni updates the institution of their current job profile, location, and field of expertise. We have more than 11,000 registered users including our current students, faculty, and alumni. The portal also has a referral program, in which one alumnus/student can request the referral of another alumnus who is working in

an organization that the former is interested to join.

Yearly meetings are held in various cities throughout the world, where the alumni can meet with senior management of the university, including the Chancellor, and are given opportunities to give feedback and suggestions.

Alumni are also engaged as Amrita Ambassadors and speak at various forums across the world about the university's programs and are, in many cases, the main points of contacts in different countries and also help in hiring new faculty at career fairs

Criterion 6 - Governance, Leadership and Management

6.1 Institutional Vision and Leadership

6.1.1 The institution has a clearly stated vision and mission which are reflected in its academic and administrative governance.

Response:

Our Vision

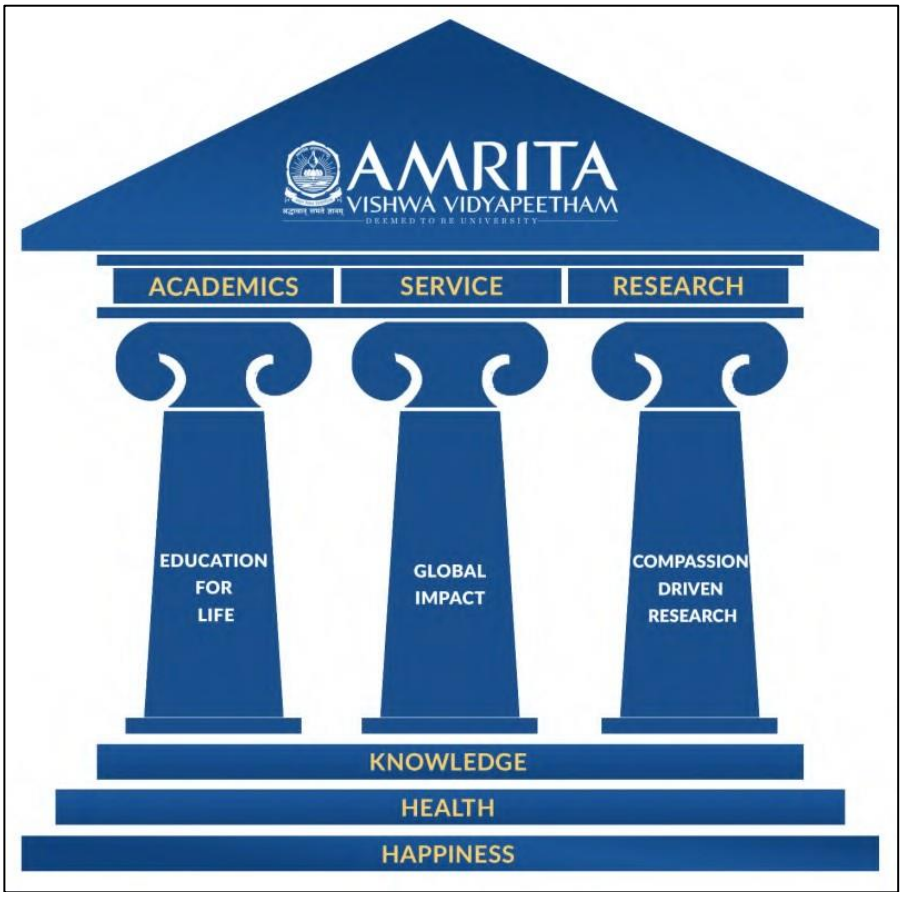
Our vision is to be an exemplary institution that thrives on its commitment to the transformative power of value-based education, providing the impetus to develop the expansiveness to harmonize both scientific knowledge and spiritual understanding, so as to utilize knowledge for societal benefit and contribute to a prosperous and sustainable future for all.

This vision translates into three major missions:

Education for Life

Compassion Driven Research

Global Impact



Leading the academic and administrative governance is world renowned humanitarian leader Shri Mata Amritanandamayi Devi (Amma). Amma has been relentless supporter of education, innovation and research towards upliftment of society.

The University's Governing Body i.e. Board of Management (BoM) includes three members from the monastic order, all of whom have demonstrated and inspired an exceptional level of commitment to transformative education. Through ideals and action, the BoM steers the policies and practices of the University to strongly promote Education for Life for students of all disciplines. This results in students enriching their lives and those around them.

The Academic Council also includes highly qualified and accomplished academicians and professionals from some of the most eminent Universities around the world. These individuals have brought in the best practices from International universities reflective of our mission to ensure Global impact. The Amrita Centre for International Programs (ACIP) represents a governing body which links the university activities to global partners.

Inspired by the Chancellor, the University has institutionalized governance structures that provide numerous opportunities for faculty to propose, initiate and obtain funding for research that are translational and beneficial to society.

The administrative and academic governance is structured to support accountability, interdisciplinary and participatory engagement, transparency, sustainability and efficiency.

Accountability - The accessibility of senior faculty right up to the Chancellor provides for automatic and intrinsic levels of accountability, raising the bar to a high level among the senior administration. Decision- making is decentralized through empowerment of Deans of Faculties and Directors of campuses, which are then assessed and reviewed by the Planning and Monitoring Board.

Interdisciplinary and participatory engagement - Several Interdisciplinary centers of excellence have been initiated and strongly promoted. These research centers enjoy a significant amount of autonomy and are open to faculty from multiple departments, who are empowered through seed funding to propose and carry out ambitious research projects with societal impact in line with our dominant theme of compassion- driven research whose culmination is translation into cost effective deployable solutions for common man's problems.

Faculty work with ACIP for large-scale collaborations with multiple top-ranked international universities to achieve global impact in strategic research thrust areas aligned with our mission.

Transparency Sustainability & Efficiency - The university-wide committees consisting of faculty with a good representation of gender and cultural diversity, strive to ensure transparency, sustainability, and efficiency in all matters. Comprehensive performance data is shared through annual reports and newsletters to stakeholders and global citizens; publication of annual quality assurance report on the institution web portal; fee structure, admission policies and procedures, academic and administrative policies, via web portal and handbooks.

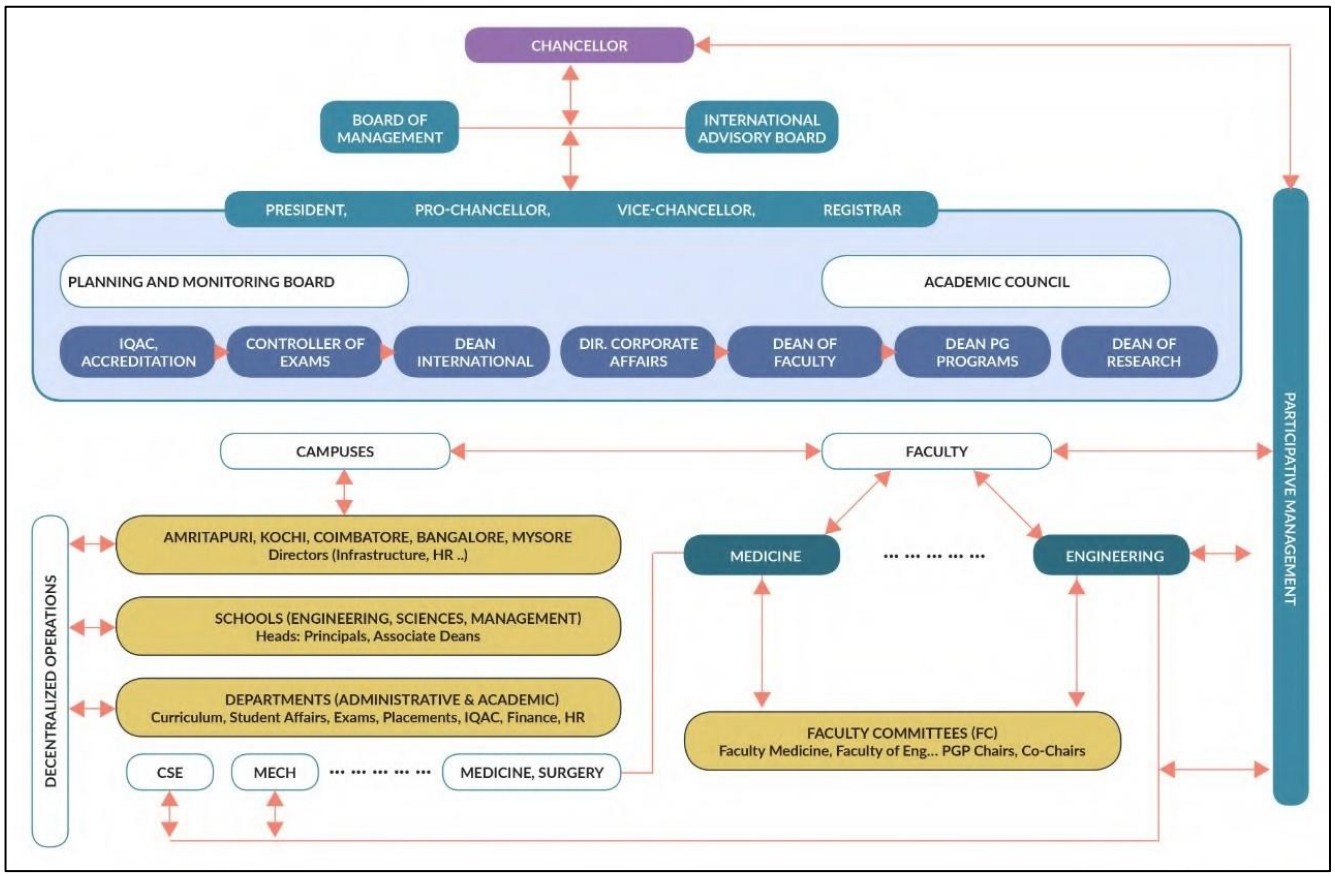
6.1.2 The effective leadership is reflected in various institutional practices such as decentralization and participative management.

Response:

Decentralization

To ensure that university policy accurately represents the needs of its community, both students and teachers are included in the decision making processes. Faculty members are involved in all bodies of the university including the Board of Management, Academic Council, Planning and Monitoring Board, Faculty Committee and Board of Studies. Students sit on class committees in order to evaluate and give feedback on courses, their teachers, and the course delivery.

Given the unique geographical diversity of Amrita campuses spread among 4 different states of India, the university has been very successful in implementing a decentralized model of governance. This model ensures participative management yet allows for a fair degree of freedom to the constituent units when it comes to financial autonomy, academic flexibility and research agenda.



The University has five campuses which are autonomous with regard to academic administration to an extent. A few examples include:

- Courses offered and course syllabi are designed at the department level that is overseen by the Board of Studies (BoS) committees with subject matter experts established at the campus level. This is reviewed by the undergraduate and postgraduate university level committees and

approved by the Academic Council.

- PG exams are decentralised from 2013 onwards; UG exams are decentralised from 2017. The examination calendar, preparation of question papers and result finalisation are done independently in different campuses.

- HoD or Principal of each department or School has full responsibility and authority to run the department/school. Each department builds its own quality indicators along with the responsibility to champion it.

- Deans of Faculty are fully empowered to take day to day operational decisions with respect to their Faculty.

- Beyond this, the University has set up inclusive university-level committees to address issues at the university level. These committees are overseen by the Vice Chancellor. Such university committees include: Research Committee, PG Programs Committee, etc.

- Recruitment - Each Head of Schools is empowered to advertise their need, carry out interviews, and appointments of faculty members.

- Budgetary plans are initiated at the department level within each campus in consultation with Principals and campus Directors. The individual campus budget is reviewed and approved by the Dean, faculty of studies. The overall budget is then submitted by the Academic Council to the Board of Management.

Participative Management

One of the unique aspects of Amrita is the priority set by our Chancellor towards participative management practice. The Chancellor and board of management continually engage with stakeholders (faculty, students, teaching and non-teaching staff, alumni, well-wishers and partner organizations) to ensure that their input and ideas are considered for the formulation and implementation of policies.

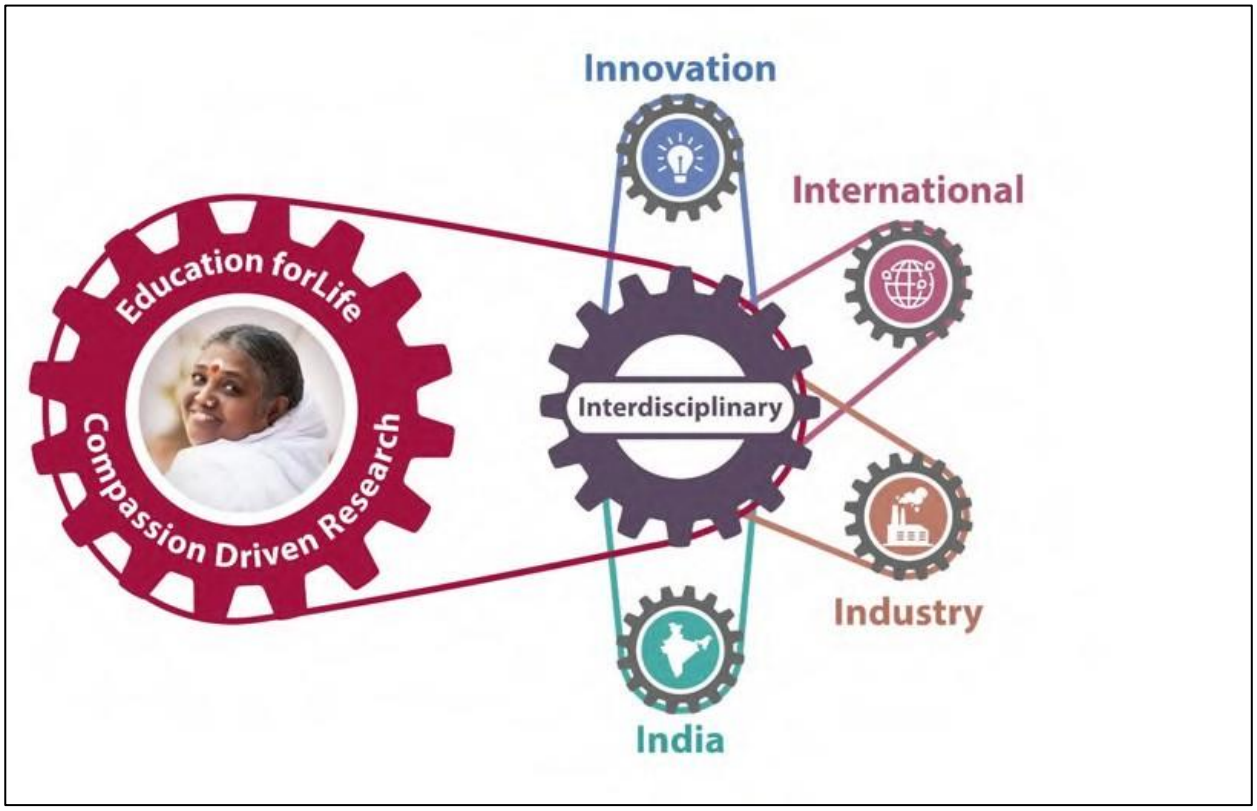
Faculty serve as members of all decision making bodies of the University such as, Board of Management, Academic Council, Planning and Monitoring Board, BoS, etc. Important administrative processes such as faculty performance appraisal and promotions are carried out through active involvement of departmental peers. Similarly, key academic activities are planned and executed through class committees involving both faculty and students.

6.2 Strategy Development and Deployment

6.2.1 The institutional Strategic plan is effectively deployed.

Response:

Amrita's strategic plan for academic and research excellence is driven by the following five priorities, namely: Interdisciplinary, Innovation, India, International and Industry.



Academic Excellence

- Enable Interdisciplinary learning pathways through fully flexible choice based credit system
- Create new learning spaces that will foster critical thinking, collaborative learning, problem solving and project-based learning, such that innovations emerge in classrooms and
- laboratories Expand the Live-in-Labs experiential learning program to include all faculty and students.
- Leverage International collaboration to introduce integrated, dual-degree, and academic exchange programs to elevate the pedagogical quality to world class standards.

Research Excellence

- Foster interdisciplinary research to holistically address national and global challenges
- Co-guidance of masters and Ph.D. thesis by international faculty to instill good/effective research methodologies.
- Translation of innovations emerging from research labs into sustainable deployable solutions for societal benefit.
- Facilitate transfer of technologies from our research labs into products through industry collaboration and incubators.

The above strategic approach has been employed effectively in many of our programs, and we now present illustrative examples in:

1) Faculty of Engineering (Center for Wireless Networks & Applications)

Wireless Research started out as a seed project at Amrita, got initial project funding from European

commission and performed interdisciplinary research in wireless networks, sensors, geology, and computer science for early warning of disasters. This resulted in innovations such as the early warning system for landslides, OceanNet, etc. with several patents and 250+ publications. The projects did not end with these impressive achievements. In tune with our strategic plan of translating research into societal benefit, Amrita granted seed funding for field deployment of the landslide early warning system in Kerala. This system has shown its impact on the society by issuing advanced warnings and saving lives since inception. With the success of early warning system in landslides, Govt. of India requested replication in Himalayan regions. In 2017, the International Consortium of Landslides awarded the World Center of Excellence in Landslide Disaster Reduction. To enable students to benefit from these latest advances, PG programs were initiated. The center's future outlook extends the frontiers of the sensor technology in climate change & disaster management, smart energy, water & sanitation etc. that are recognized as highly impactful by top ranked universities. Around the world.

2) Interdisciplinary Biomedicine Program at Faculty of Medicine:

Clinicians, biologists, and engineers jointly develop and implement highly interdisciplinary biomedicine and bioengineering solutions. Key accomplishments are: a) use of 3D printing of organs to help surgeons with pre-surgery protocols and demonstrated for pediatric cardiology patients. b) Development of a "less toxic" bio nanomedicine option for 4th stage liver cancer jointly by Oncology and Nanosciences centres c) development of a tough bone regenerating composite for reconstructive surgery in oral cancer patients. Other examples include departments of Public health, Oncology, Pathology working on biomarker identification for early treatment and adaptive cancer care. A dedicated Good Manufacturing Practice (GMP) clean room processing facility (first such facility in India for bio-nano-engineering products integrated to a research hospital) translates laboratory innovations into sterile products for regulatory approval.

6.2.2 The functioning of the institutional bodies is effective and efficient as visible from policies, administrative setup, appointment and service rules, procedures, etc.

Response:

Amrita's administrative structure is tailored to achieve operational effectiveness and efficiency in a large geographically distributed multi-campus, multi-disciplinary setup. Efficiency is achieved through autonomous functional units in each campus that are empowered to take independent decisions while nurturing uniformity and distinctiveness in campus specific academic, social, and cultural environments.

Each campus has two types of functional units: academic and administrative, which function as follows:

Academic Functioning:

The academic departments are grouped under different Faculties. Each Faculty is an intellectual grouping of all departments belonging to a major discipline and may be spread across different schools and campuses. Faculties remove inter-campus, inter-school, and inter-department barriers for

scholarly learning and innovation.

Each Faculty is headed by a Dean. The Dean of the Faculty has overall leadership responsibility for all academic programs belonging to that Faculty. The Dean of Faculty is responsible for policy level involvement and decisions pertaining to Programs of that Faculty.

Dean Research has overall responsibility for quality of research and funded research projects conducted at the University.

Dean PG (Post Graduate Programs) oversees at University level, policies and all aspects of the PG Programmes starting from admissions, fellowship and scholarship allocation & selection, research progress, output, productivity and reviews, monitoring quality of PG Programs, compliance & certifying completion, record keeping etc.

Dean ACIP (Amrita Center for International Programs) oversees, approves, and monitors all collaborations, including faculty and student exchange, research collaborations and deputations, adjunct professorships, etc. with foreign universities.

Heads of Schools namely, Principals and Associate Deans, have operational leadership responsibility for day to day administration and functioning of classes and courses in departments belonging to their respective schools, including quality and effectiveness of Teaching-Learning, monitoring progress of the students, interacting with the parents, managing the examinations, etc.

Each Faculty can also constitute its own special purpose committees to oversee the curricula through Boards of Studies, academic standards, continual improvement & upgradation, new courses & programmes, degree requirements, results analysis of all of the Undergraduate (UG) & Postgraduate (PG) programs.

Administrative Functioning:

1. Campus Directors are responsible for

    1. Infrastructure, facilities, development, and maintenance of their respective campuses

    2. Recruitment and managing of the non-teaching staff

    3. Fiscal planning and budget setting

    4. Student and faculty welfare activities - inclusive of food, sports, entertainment, extra-curricular clubs, placements, convocation etc.

The Deans and the Campus Directors together with HR and Finance coordinate through the Planning and Monitoring Board to efficiently and effectively deliver as per the University wide strategic priorities and policies set by the Academic Council, Board of Management and the Chancellor of the University.

6.3 Faculty Empowerment Strategies

6.3.1 The institution has a performance appraisal system, promotional avenues and effective welfare measures for teaching and non-teaching staff .

Response:

Amrita has developed an innovative Faculty Performance Evaluation system "FRAP". Parameters for evaluating various faculty activities are built into this system that incorporates

- Teaching Evaluation - This includes courses taught, project guidance that may include master's level and PhD students.
- Research Evaluation - This includes the research projects that they are formally associated with, publications in reputed journals, etc.
- Awards and Recognition in National and International Forums
- Administrative Activities within the University
- Voluntary service oriented outreach activities
- Additional contributions

Individual faculty submit their self-evaluation and achievements and these are approved by the department chair, school heads and further forwarded to the University management for sanction.

The Welfare measures for teaching and non-teaching staff include:

- **Holistic Wellbeing:**
    - Our Chancellor is available in person to all members of the University irrespective of their role or designation. Her counselling and deep commitment has had a profound impact on the wellbeing of staff, students and faculty.
    - Unique programs such as the "Integrated Amrita Meditation Technique" and "Amrita Yoga" have been specifically designed for mental relaxation and holistic wellbeing and are offered free to all staff, students and faculty. These programs are integrated into routine day- to-day activities as well as teaching and learning practices. Refresher courses for these are offered periodically.
- **Health**
    - Medical Insurance: Group Medical Insurance for all employees and their family
    - Local Charitable Hospital/ Medical Clinic - 24/7 care with attending doctors and nurses
    - Basic diagnostic facility, ambulance, 24/7 well stocked Pharmacy

- Super Specialty Medical Care at our health sciences campus for all University employees and their families
- Maternity Leave - 180 days for all eligible women
- Access to alternate medicine in School of Ayurveda
- Access to Olympic standard swimming pools, courts, and grounds
- Idyllic campus life away from pollution and congestion of cities.

- **Education Welfare**

  - Priority given to staff in terms of admission to pursue higher education
  - Fee concessions and waivers based for merit cum means candidates.
  - Leave for pursuing higher studies
  - Mentoring by industrial professionals to help faculty and students take on entrepreneurial careers.
  - Admission to higher education and fee concessions on case to case basis under
  - Amrita Vishwa Vidyapeetham for wards of faculty and staff

- **Financial**

  - Reimbursement of membership fees to Professional bodies
  - Employees can avail of interest-free salary advances
  - In case of unfortunate demise of a parent, an insurance to ensure the student's education continues uninterrupted.
  - Seed grant awards to fund infrastructure and research
  - Support for professional development such as, attending conferences & seminars, international collaboration & visit and industry engagement

- **Transport**

  - Conveyance facility for employees from various parts of the city to and from the campus. Distance varies from 15 kms to 30 kms
  - Over 12 buses travel from various parts of the city to pick up and drop off faculty and day- scholar students.
  - 24/7 Carpool facility and
  - Free transportation to women off hour

- **Food**

  Multi-cuisine canteens with subsidized costs

- **Housing**

- On-campus residential quarters available for staff
- Amenities (Grocery shop, provision store, tailor shop, gift shop, personal grooming shop, salon etc. are available in the campus)

6.4 Financial Management and Resource Mobilization

6.4.1 Institutional strategies for mobilisation of funds and the optimal utilisation of resources

Response:
Amrita adopts multi-pronged strategies for mobilization of funds and optimal utilization of resources. As an entirely self-financed institution, we have developed a broad strategy to generate the necessary funds from a wide variety of sources. Optimal utilization involves trimming overheads through improved management and administrative systems, digital technologies and other innovative solutions.

Mobilization of Funds

1. Active project funding from various Government departments, such as MeitY, DST, DRDO, CSIR, DBT, ICMR, etc.

2. Amrita Vishwa Vidyapeetham is a research institution approved under the U/s 35(1)(ii) of the Income Tax Act, which incentivizes industry funding. This is an attractive avenue for corporates since donors can claim a tax deduction of 150% of their donation for research.

3. Establishment of Amrita Centre for Research and Development, dedicated to raising funds for sponsored research and consultancy.

4. Infusion of funds by the parent agency, Mata Amritanandamayi Math for infrastructure.

5. Voluntary contributions from philanthropists, to partially fund the augmentation of infrastructure.

6. Development of a dynamic research web page for the university which highlights opportunities for research at Amrita, scope for societal impact, and facilities and resources available

7. Voluntary contributions from alumni.

8. Fellowships, awards accompanied by research funding to support salaries and contingencies (e.g. Ramalingaswami award, Sir Visvesvaraya award to faculty etc.).

9. Industry sponsored laboratories.

10. Organization of plenaries, symposiums and workshops with corporate sponsorships and delegate fees.

11. Sustainable practices such as fee-based utilization of state-of-the-art equipment for training, characterization and simulations. For ex. surgical and medical skills training using sophisticated robots and simulation.

12. Strong emphasis on best practices and innovations has led to national and international awards for innovative solutions and practices in educational and research domains. For ex., Amrita recently won the FACEBOOK Innovation Challenge, was a Barbara Bush X-PRIZE finalist, won the Grand Challenges Canada Award, won the Bill and Melinda Gates Toilet Challenge, etc. Each of these carried with it significant funding.

13. Establishment of a pipeline towards generation of royalties from licensing of Intellectual Property through Patents and Technology Transfer to startups and corporates.

14. Student fee serves as a partial source of funds. Amrita follows a differential fee structure that rewards merit and performance through scholarship. An enhanced fee structure for international students is in place. Innovative programs are offered, which bring greater enrollment and augments fee income.

Optimal utilization of Resources

a. Amrita has pioneered the development of in-house technology solutions to reduce costs and increase operational efficiency.

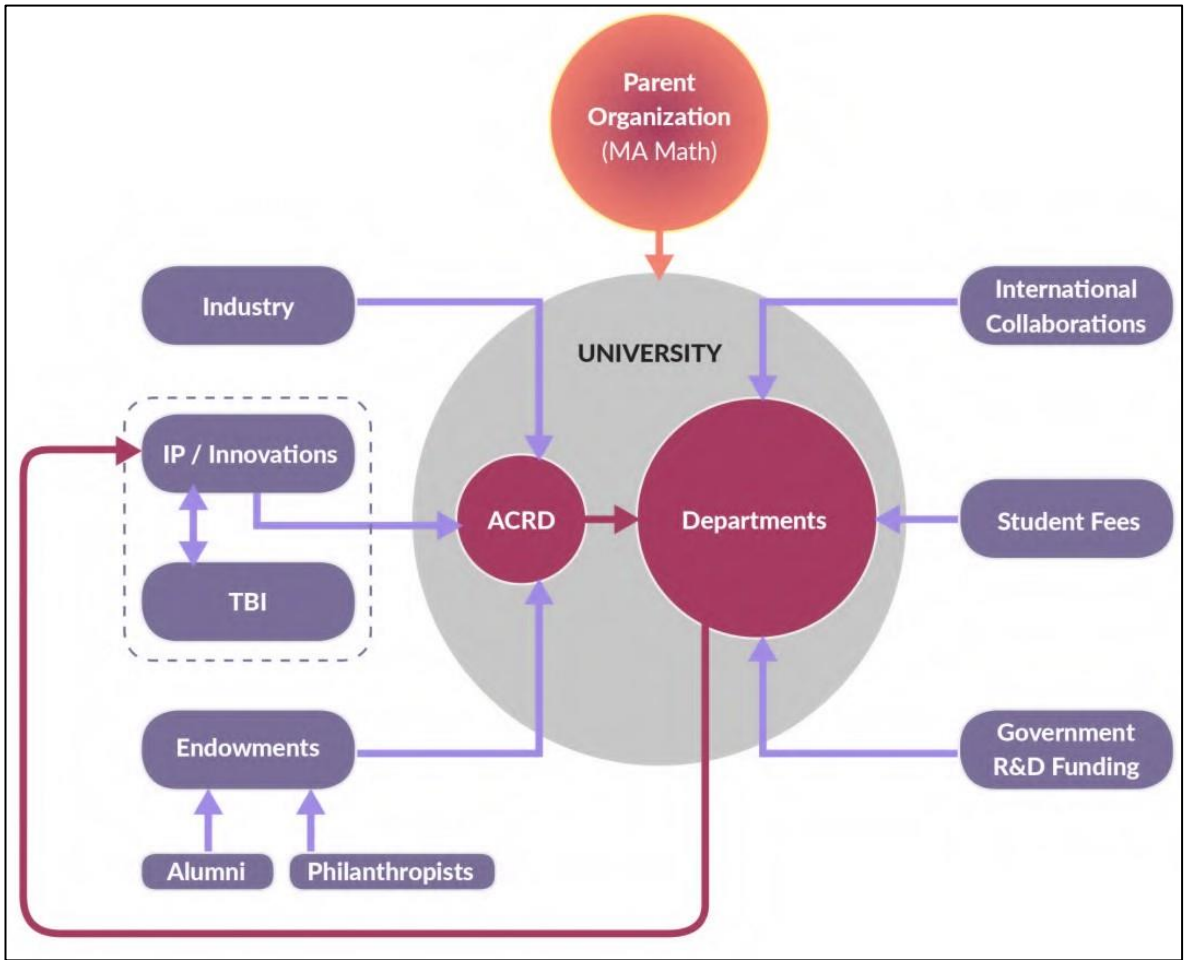
b. Minimization of low-value additive activities, streamlining of processes and workflows and reduction of overheads

c. Efficient procurement policies that exploit economies of scale.

d. Management structure and hierarchy to decentralize utilization and enhance efficiency, and to speed up expenditure decisions through consensus committees

Examples of Some Best Practices

1. Amrita University's management system (AUMS), an ICT based comprehensive end-to-end academic management suite, has been developed in-house.
2. Amrita's Hospital management ERP system ensures a seamless flow of clinical and non-clinical operations online to manage the vast healthcare activities.
3. An extremely well-focused effort, such as the use of Section 35(1)(ii), has brought in substantial private funding.



6.4.4 Institution conducts internal and external financial audits regularly Response:

External Audit

Amrita Vishwa Vidyapeetham has been instituted to provide tertiary education, pursuant to the educational objects of a public charitable trust. The trust is registered U/s 12AA of the Income Tax Act, 1961. The books of account are audited by independent external auditors and reports filed U/s 12A(b) of the Act. The audit takes into cognizance the various verticals of operation and the legislative framework the institution operates in. The audit program is based on the auditors' judgement and assessment of risk and encompasses checks to verify that internal controls are commensurate with the size of the institution, the distribution of resources across verticals, the nature of its activities and. In addition to its own examination, the external auditors take into account references made by the Audit Committee(AC).

Internal Audit

The Internal Audit system is conceived as an autonomous function to elicit assurance on the efficacy of processes, policies and controls. It acts as an independent review of the financial systems, to evaluate the outlays and utilizations for optimality, across the various focus areas (viz. academics & classroom instruction, research and innovation, societal impact & outreach).

The Internal Audit Function works under the aegis of the Audit Committee (AC). The Audit Committee acts as the apex body for the design & performance of audit, as well as resolution of audit

objections. Multiple independent audit teams formed under the oversight of the AC, execute the audit of the various locations / verticals. The Faculty of Audit comprises a selection from management representatives, CAs, CSs, accountants / audit clerks and personnel from the banking industry. The team is reinforced as necessary by co-opting (internal / external) domain experts, with experience in the focus area.

The elements of review financial discipline, optimal resource allocation, budgetary provisioning and controls, timely emergence of outcomes, cost effectiveness and propriety elements. Compliance with legal and regulatory requirements are also examined. Given the largely computerized environment, the review also looks into elements of cyber security. Cyber Security professionals including certified Information Systems Auditors are tasked with setting the framework and protocols. Adherence to standard security measures, and necessary firewalls to obviate threats and attacks are also reviewed.

Observations made by the audit team, along with the queries are shared with the respective departments / faculties / verticals / centres, and responses to the same are sought. Where the justifications and explanations are resolved to the satisfaction of the audit team, the thread automatically attains closure. Instances of departure from standard procedures, loopholes and unresolved observations are flagged to the AC. These are classified into two broad categories viz. systemic weaknesses and deviations. The former is addressed by re-tweaking the systems to ensure reinforcement of checks and balances. Deviations are examined to see if there is a prima facie case of unacceptable developments. Justifiable exceptions, where subject to necessary approvals, do not merit further action. All other cases are investigated and taken to logical conclusions. They include re-assignment of approvals, warnings, and disciplinary action where needed.

6.5 Internal Quality Assurance System

6.5.1 Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes by constantly reviewing the teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals.

Response:

Initiative 1: Outcome Based Education (OBE) for engineering and management programmes

Objectives of the Practice: IQAC recommended a goal-centric institutional structure for the end-to- end educational delivery in all programs, and to implement outcomes-based education in its true spirit, in conformance with and in adherence to the global best practices.

- The Context: In alignment with the institution's development plan aimed at achieving world class educational experience for all stakeholders, resulting in being bracketed in the highest tiers of global ranking, national ranking, and the highest standards of curriculum design & delivery, the adoption of OBE assumes great importance.

- The Practice: Teams comprising IQAC coordinators and other senior faculty members were formed by the vice-chancellor to design and develop the plan for OBE implementation. For all programs, the program objectives and outcomes were developed in alignment with the department and institution vision and mission, and subsequently the course outcomes were

developed in alignment with the programme outcomes. Orientation and training sessions were conducted for teaching & non-teaching staff, as well as students, to ensure detailed understanding of the plan and process. A department academic audit committee (DAAC) was formed to monitor and review the effectiveness of OBE implementation as well as the course and programme attainments.

- Outcomes: The adoption and implementation of OBE has resulted in official recognition and certification via successfully completion of the NBA accreditation process (for several engineering programmes) and AACSB (for business management programs), greater global mobility for students via alignment with international standards, and more accurate design of quality improvement programs.

Initiative 2: Research and Technical Writing in the Curriculum

- Objectives of the Practice: Integrate research skills into the curricular teaching-learning processes and outcomes, to provide greater flexibility in professional career development

- The Context: IQAC recognized that the institutional strength in terms of a vast pool of accomplished research-oriented faculty could be more effectively leveraged to add value to the various degree programs by more formally integrating research goals into the curriculum for the UG and PG programs, to foster research excellence.

- The Practice: The university instituted a curricular requirement that all PG students undertake research leading to a publication, based on the rationale that research and technical writing experience would contribute substantially to the intellectual growth of the student. A pilot implementation was carried out at the PG level in engineering programs, and subsequently extended to all PG (masters and doctoral) as well as UG programmes (where the requirement was for graduation with distinction). A publications coordinator was appointed in 2016 as the nodal officer for research in every school & department/center.

The research output has enhanced the skill set of students and proved to be of value in their career progression. Compared with 2014, the number of publications has doubled over the last five years. This increase in research papers has also been reflected in our positions in India rankings 2018. AMRITA was the 8th best university in India. This is an improvement of one place from 2017 rankings.

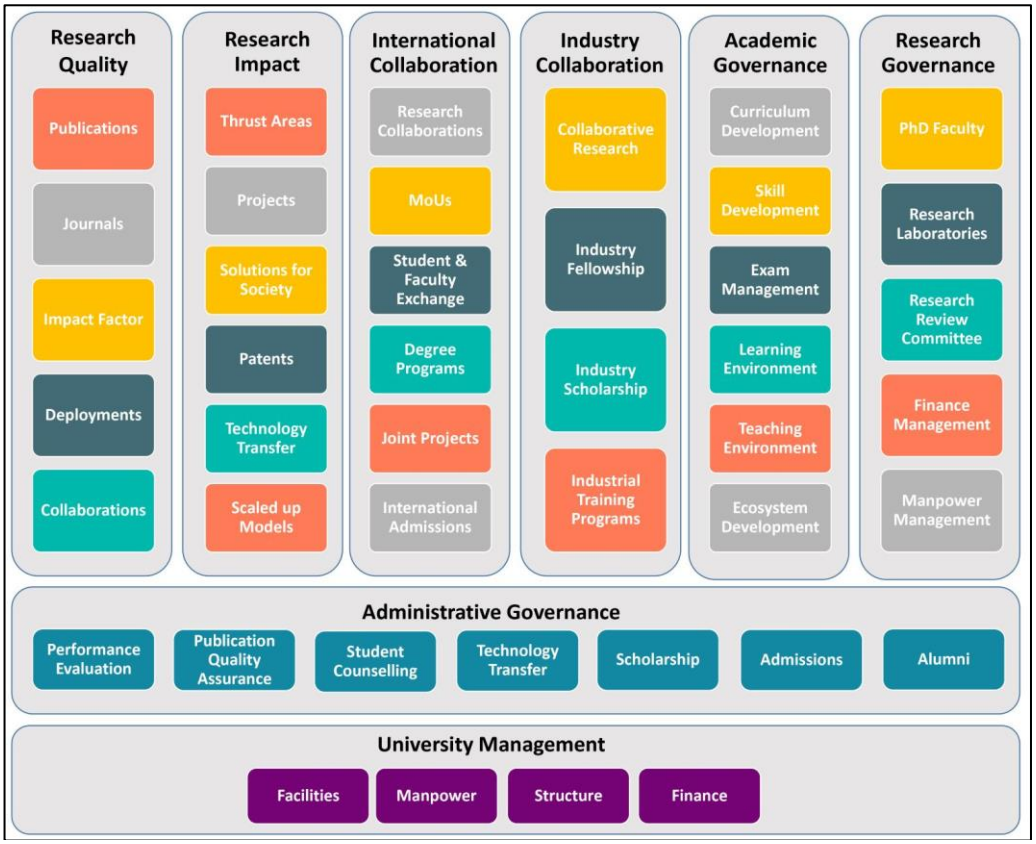
6.5.3 Incremental improvements made for the preceding five years with regard to quality (in case of first cycle), Post accreditation quality initiatives (second and subsequent cycles).

Response:

AAA of the institution

The academic and administrative audit (AAA) mechanism is coordinated by the IQAC, which requires annual submission of a department level evaluative report based on various quality benchmarks, along with SWOC analysis. These are reviewed by IQAC and Academic Council,

and instructions given for quality improvement initiatives to be undertaken.



Academic Quality Initiatives

Teaching and Research Excellence:

Amrita has over 250+ (PhD qualified) faculty from international nationally renowned institutions, excellent student teacher ratio of 12:1, over 300,000 sq. ft. of built up state-of-the-art lab space, access to seed grants, and provision to dedicate 20% of their time to collaborative research discussions and writing. For students, there is a requirement of Scopus-indexed publication for all Masters projects, as well as for Bachelors projects for graduation with distinction. These have resulted in enhancing the citations/paper to 5.1, H-index to 38, and doubling of publications over five years.

Building Excellence in Social Sciences - Under the Chancellor's directive, there has been significant progress. AMMACHI Labs implemented effective intervention strategies to empower women and strengthen gender equality. Three new research centers excellence were formed: (1) UNESCO Chair, for the Center for Women's Empowerment and Gender Equality (CWEGE), (2) Center of Excellence for tribal well-being, and (3) center for sustainable future.

Student Support - The 200+ international collaborations with eminent institutions (of which 59 belong to the world's top 500 ranked universities) provide student exchange and mobility, dual degrees, internships, and collaborative projects. Students have achieved international recognition at multiple forums such as the IEEE, Cyber CTFTIME.org, ACM ICPC, and Hackathons.

Administrative Quality Initiatives

Autonomy and Delegation of Authority - To ensure greater autonomy at all levels, the institution was restructured under seven Faculties: 1) Sciences, 2) Engineering, 3) Management, 4) Medicine and Allied Health Sciences, 5) Arts, Media and Commerce, 6) Humanities and Social Sciences, and 7) Interdisciplinary Studies, with each faculty headed by a Dean.

Corporate & Industry Relations (CIR): This directorate's programs and activities have facilitated our graduates being employed globally at top brands like Google, Amazon, IBM, and Samsung. With connections to over 21000 global alumni, CIR successfully liaises with SMEs and Industry.

Excellence in Entrepreneurship - Amrita Technology Business Incubator (TBI) was selected by NITI Aayog as one of the top six incubators in the country in its first cohort and won Best Incubator of the Year Award in 2017. Patents have increased from 10 granted in 2014 to over 150 granted/published by 2019. Over 150 startups have been nurtured, and over 20000 students have been trained.

Outcomes from Academic and Administrative Initiatives

The university has been recognized as an Institution of Eminence (IOE). In a short span of 16 years, Amrita has been featured in the Top 1% universities in the world, in THE's 2020 World University Rankings 2020. Significant improvements in subject-wise rankings were achieved in Medical Sciences (Top 300) and Engineering & Technology areas (Top 500). Among Indian Private Universities that are world ranked, Amrita's ranking has scaled to No. 1 position.

Criterion 7 - Institutional Values and Best Practices

7.1 Institutional Values and Social Responsibilities

7.1.1 Measures initiated by the Institution for the promotion of gender equity during the last five years.

Response:

Academic teaching, research, and community outreach with a focus on addressing gender equality gaps plays a vital role in the development of key policies and programmes that have contributed towards our status as a champion of women's empowerment.

> *"... like the two wings of a bird, women and men are of equal value. For without the two in perfect balance, humanity cannot progress." - Chancellor Amma*

Amrita holds India's only UNESCO chair in Women's Empowerment and Gender Equality. Our Centre for Women's Empowerment and Gender Equality plays an important role in advising the university on gender-related issues with emphasis on educational attainment, health, preparation for economic opportunity, and safety. Excellence in all its diversity has become the organising principle of Amrita's policy. **Leadership by our Chancellor, Sri Mata Amritanandamayi Dev**i has channeled Amrita with formal equality work since its setup. A 13-member expert team consisting of leading researchers globally also help in shaping the policy around Women's Empowerment and gender equity.



There is a conscious effort to maintain gender balance among faculty, senior management, students in STEM education, and projects. Through strategies to promote equal and respectful cooperation across several levels, our women leadership allows removing hindrances created by managerial and financial

systems that create and foster inequality. **Led by women deans, administrators and departmental chairs**, we have constantly created a safe learning and teaching environment for female students and staff. Our schools have created and involved annual programs that allow women students and faculty to organize events within and outside the University promoting solutions to issues related to **women and community**. Regular student-teacher mentorship programs, problem and solution-centric counselling programs have been conducted across the campuses.

A project that takes our culture beyond the campus to impact the community is the 250,000 women strong social movement called AmritaSREE. The women are supported by the University system not just in the **formation of self-help groups and training** but also in terms of supporting their micro enterprises.

Programs and Activities supporting Women's Empowerment Health

Awareness programs are conducted on menstrual health for female student population. Amrita School of Medicine has a gender clinic that is staffed completely by women for women including clinical staff. Along the lines of women's health, a product from Amrita is the Saukhyam sanitary napkins made safe for women and the environment by using absorbent material made from banana fiber.

Education

Our curriculum caters to the cultural and occupational needs of women. Public speaking and Leadership are two examples.

There is an all women team in Cyber Security Training named "Shakti". Women in Computing events and international conferences held promote removing hindrances to women empowerment. With safety in context, women empowerment across all strata of society is centric to many of our programs and projects.

Safety and Security

Counsellors specifically address women's issues. Special rooms and committees monitor women safety and security within all schools.

Inclusion and Financial Incentives

Scholarships are available for female students who show promise in academics.

7.1.3 Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste (within 500 words)

- **Solid waste management**
- **Liquid waste management**
- **Biomedical waste management**
- **E-waste management**

- **Waste recycling system**
- **Hazardous chemicals and radioactive waste management**

Response:

All our campuses have **systematic waste management systems**, ensuring the primary sorting of solid waste. Sorting stations for itemized segregation of recyclable waste and proper handling of non-recyclable waste guarantees zero liability and protection to the environment. Our solid waste management involves organic waste processing, using the Bioneer 400 Composter System, Organic Waste Composter 500, Vermi-composting, Windrow, and Wasteburner handling non-biodegradable waste at 150 kg/hour. Amritapuri campus handles 2 ton/day biodegradable waste, 75-200 kg/day vermi-composting and 50 kg/day biosludge. Coimbatore campus handles 3.89 ton/day of biodegradable wastes, 2.89 ton/day of non- biodegradable wastes and STP biosludge of 79 kg/day. The waste management at Kochi campus handles 1.5 ton/day of solid waste. Non-degradable wastes are collected and converted before taken to a landfill.

Wastewater collection tanks at Amritapuri campus includes 6 Lakh L/day, 2.5 Lakh L/day and Parayakadavu with 5 Lakh L/day. For liquid wastes, a sewage treatment plant in Amritapuri Engineering campus handles 2.5 Lakh L/day and 200 cu.m ultra-filtration units are used as filters. We also have testing laboratories attached to our STP and at School of Biotechnology. At our Coimbatore campus, 3 STPs for liquid water are in operation and treated water is reused as toilet flushing and gardening purposes. 4 STPs producing 1000000 L/day are part of our sewage wastewater treatment at Coimbatore campus. High pressure sand filter and UV filters are used for clearing the wastewater. At Kochi campus, water filtration plant, an effluent treatment plant filtering 800000 L/day and a waste management system processes liquid wastes and recycled water is reused for organic farming at the campus. At Bengaluru campus, 300000 L/day is treated at our STP. The filter water collection tank at Bengaluru campus has a capacity of 1.5 Lakh L and treatment is processed 7-8 batches a day.

Biomedical waste management is handled through our custodial department at Kochi campus and transported in covered containers to our waste receiving area. Categorized into 6 colors, none of



biomedical wastes are mixed with other wastes. Implemented as a policy, no biomedical waste shall be

kept beyond a period of 48 hours. For Kochi campus, the authorized recycler is Kerala Environ Infrastructure Limited. For Amritapuri campus, IMAGE (KLM 0112) handles biomedical waste.

For e-waste, campuses have teams that discards electronic items via authorized agents. Earth Sense Private Limited for Kochi and Green Era Recyclers handle most of our e-waste at Amrita.

With shredders as part of our **waste recycling system**, plastics are converted to bricks for construction of retention and compound walls. Compression facilities handle thermocol and other solid wastes. Our organic waste converter (OWC 500) has a capacity of 600kg per hour, processes a batch in 15 minutes and can handle >14,000 kg per day.

Hazardous wastes such as incinerator ash, dangerous chemicals, radioactive materials are packed appropriately, transported and are handled to authorized recycler, Kerala Environ Infrastructure Limited.

7.1.8 Describe the Institutional efforts/initiatives in providing an inclusive environment i.e., tolerance and harmony towards cultural, regional, linguistic, communal socioeconomic and other diversities (within 500 words).

Response:

- Multiple voices, perspectives, and personalities have been engaged in actions and plans across **administrative and academic competence** versatility at Amrita. The University has been organizing programs that restore balance in our global outreach providing integration to the under- privileged and addressing challenges through democratic participation.

- There are **leadership and training programs** that promote students and staff to live and work harmoniously in diverse environments.

- A significant focus on diversity at the **socio-economic levels** charter our University's compassion- driven scholarship and special programs.

- University also focuses on allowing **all religious practices** and promotes **Indian and international cultures** within the ethos of respect and cultural sensitivity.

- Through programs of **cultural awareness and cross-cultural communication** skills, our training programs and events allow conscious collaborations connecting students, staff to communities and heritage across all support groups, activity clubs, schools and units.

- Amrita has been focusing **community-oriented** cleanup activities in line with Swacch Bharat and people-centered Amritavarsham celebrations, Seva events like blood donation camps, gender equity and empowerment, disaster rescue and relief and other activities that have involved several thousands of the fraternity with their unique skills and cultures working together for a common cause.

- Special focus on **empowerment of women and men** at the campus and activities for scaling

this towards community outreach in India's villages are part of the University's mission.

- Through several **academic and extra-curricular programs**, Amrita has been working on integrating the diversity towards innovation and productization at the student-faculty levels.

- Amrita focus on **disaster and post-disaster management** has been a forerunner in connecting the diversity in University and in relating several of our teaching and research programs.

- Our **student internship and research** in the rural villages involve orientation courses on honoring differing traditions and ways of being for our students and students from our partner universities before they visit the villages.

- **Gender Equality** is a priority led by our UNESCO Chair in Gender Equality and Women's Empowerment. The Center for Women Empowerment and Gender Equality at Amrita hosts courses, student awareness exercises, international conferences, etc. and brings any infractions to the attention of the Administration.

- Our **transgender clinic** at the School of Medicine allows assessing psychological, social and medical issues of individuals with gender identity.

- Courses are offered to teach the awareness and skills necessary to interact effectively and respectfully **regardless of differences**, whether race, ethnicity, religious commitments or political perspectives. We are working to increase equity and to eliminate any harassment or

courses, student awareness exercises, international conferences, etc. and brings any infractions to the attention of the Administration.

- Our **transgender clinic** at the School of Medicine allows assessing psychological, social and medical issues of individuals with gender identity.

- Courses are offered to teach the awareness and skills necessary to interact effectively and respectfully **regardless of differences**, whether race, ethnicity, religious commitments or political perspectives. We are working to increase equity and to eliminate any harassment or discrimination.



7.1.9 Sensitization of students and employees of the Institution to the constitutional obligations: values, rights, duties and responsibilities of citizens (within 500 words).

Response:

Amrita places a great emphasis on the inculcation of values that makes all students and staff **responsible citizens of the country and the world**.

Programs and activities that students and staff engage related to inculcating values and being responsible citizens include:

1. **Independence day** programs instilling patriotism are held giving opportunity for the students and faculty to honour the freedom fighters. Celebrated as Bharat Mata Puja, flag hoisting and special events are held at our campuses. This is normally followed by an "**Amala Bharatam**" activity, which engages students in cleaning the surrounding areas. These activities, while instilling the importance of cleanliness amongst students, also inspires contribution to local community.



2. **Republic Day** honoring the uphold of constitutional values are celebrated with a flag hoisting ceremony.

3. Our **annual AYUDH leadership summit** exposes a majority of the youth in University to the empowerment of leadership values and innate talents and abilities. The event involves today's leaders addressing and advising youth through direct talks and workshops. AYUDH wisdom series addressing

4. Experiential Learning opportunities for students and faculty to work in **rural communities** to help plant the seed of compassion in the impressionable minds of youth. Serves to remind them of their duties to the underprivileged populace of India.

5. **Cultural tours** (2018-2019) organized by AYUDH bring in two thematic perspectives – culture

   and mother nature. Students experience the rich heritage as well as this sensitizes them to the importance of protecting the environment

6. **Raksha Bandhan and Vijayaraksha** – events that celebrates the strength of women and embeds the respect for women.

7. **Vishuthaineetam** – an opportunity to use the traditional festival of VIshu to sensitise students to environmental issues and encourage students to plant tree saplings.

8. Massive **volunteers clean up campaigns** aligned to Swacch Bharat missions have involved thousands of students and staff in Sabarimala, Amritapuri , Kochi, Coimbatore and other areas.

9. **Skill Development Programs** for women in the rural India

10. **Serve-an-Hour** program that requires students to spend an hour every week in neighborhood communities to share and serve society.

11. **Students Social Responsibility** provides opportunities for students to participate in Village Internships and also for them to stand up for right causes such as helping the poor, knowledge sharing, guiding school children.

12. World Social Work Day – Partnering with international associations to conduct events that create awareness about the importance of influencing international, regional and local policies, and government actions and to highlight the value and contributions of **social workers**.

13. **International Day of Yoga** - In addition to the Yoga training that is conducted for all students, IDY is celebrated in all our campuses with thousands of students participating.

14. Anti-ragging, anti-substance abuse, blood donation, constitution day programs, legal literacy, corruption free India talks promote awareness of core values.

15. **National Education Day** - Panel discussions, special sessions by educationists.

16. '**4 MINUTES FOR INDIA**' an event to put forth their ideas that have potential to transform India.

17. Volunteering during **national and state disasters** - stories from Kerala floods 2018-19, Chennai floods 2015.

7.1.11 Institution celebrates / organizes national and international commemorative days, events and festivals (within 500 words).

Response:

Unifying students, faculty, staff, Amrita's multiple campuses celebrate National days such as Independence day, Gandhi Jayanthi, Republic Day and cultural and religious festivals such as Gokulashtami, Christmas, Diwali, Navaratri, Shivaratri. We celebrate several national days, international days and festivals of most prominent religions.

Our Independence Day celebrations have involved joint celebrations with the local CRPF battalion and is followed by a clean campaign in the regions. On August 14, students put together cultural programs and patriotic plays that portray that celebrates the diversity of cultures in India. Later in the day, students and faculty of Amrita make it a point to participate in Swachh Bharat campaign and

venture out to clean extensively their neighborhoods during the day. On **Republic day**, all campuses celebrate flag hoisting. Rashtriya Ekata Divas involves hundreds of students and joint events.

Car free day is promoted as a day of celebration of public transport. School of Ayurveda celebrates **National Ayurveda Day** (Dhanwanthary day) involving a themed event with students and faculty every day. Students celebrate ethnic day with attire and cultural programs. Four minutes for India motivates Amrita students to present on ideas that can potentially change India. International Day of Yoga is celebrated massively involving yoga practice and training sessions with staff and students. The campuses also celebrate **World Women's day, International literacy day, International Day of Girl Child, World Water day, World Social Work day, World Mathematics Day, Earth day**. Amritavarsham

celebrations on September 27 transcend boundaries and involve students and staff from all campuses and without distinctions. Being focused on societal benefit, many days have been dedicated to service, launch of products and services free of cost to citizens in need. Mysuru campus celebrates **Kannada Rajyotsav**, Basav day. **World No-Tobacco Day**, **International Nurse Day** are celebrated at our Health Care campus.

For **Gokulashtami**, students from different departments build decorative floats depicting various historically important stories from Bhagavatam. Students design the entire 8ft to 15 ft float s





pending hours after their classes over a 2-3 week period building them. A large number of students and staff participate in the biggest of religious celebrations at our Coimbatore campus. **Holi, Ganesh Chaturthy, Guru Purnima, Navarathri, Deepavali, Saraswathi puja** are celebrated across campuses.

Ugadi, Onam, Vishu are celebrated with feasts involving students and staff and capture the cultural uniqueness of the local traditions beyond religious and other barriers. **Gandhi Jayanthi, Ambedkar Day, Sankaracharya Jayanthi** are celebrated by students and staff. Pharma Sport fest, National Pharmacy week are part of our School of Pharmacy. **Raksha Bandhan and vijaya raksha** are part of the celebrations that honor women. Kalotsavam is the cultural fest of the Amritapuri campus. **Ramayana day** and **Mahabharata day** are celebrated organized by AYUDH. **National Science Day** is celebrated by our School of Biotechnology and Arts and Sciences. Amrita School of Engineering conducts national fests of which **ANOKHA** is of our Coimbatore campus and **VIDYUT** of Amritapuri campus. **Sports fests** are held at campuses and inter-campus levels.

7.2 Best Practices

7.2.1 Describe two best practices successfully implemented by the Institution as per NAAC format provided in the Manual.

Response:

A. Best Practice -- International Programmes for Global Reach

Amrita has emerged as a leader in the development of international programs. We strongly believe that by holding hands and sharing knowledge and experience between students, teachers, and researchers from different parts of the world, new horizons open in the highest realms of science and technology to those thirsting for education.

Objectives of the Practice:

Multifaceted Education

- Global education at an affordable cost to enhance accessibility for students from diverse economic and social backgrounds
- Immersion in diverse teaching-learning environments
- Advanced multidisciplinary skill sets relevant to the dynamically changing ecosystem

Cutting-Edge Research

- Engagement with world class faculty and international industries in emerging research areas
- Access to state-of-the-art laboratories
- Problem solving that addresses constraints from a global perspective

Global Impact

- Hands on experiential learning for our students working with international students, researchers, and faculty to build solutions for communities around the world through multi- level engagement

The Context:

To address the universal nature of the problems that the world faces today, we are moulding students and faculty to have an expansive vision coupled with an all embracing approach of fusing disciplines, thus extending beyond barriers and effectively transcending mindsets.

Internationalization opens the door to participative problem solving, thus inspiring more innovative solutions through:

- enhanced teaching/learning processes that are co-created,
- dual degree programs for our students and those abroad,
- opportunities for faculty and student exchanges,
- expansion of the faculty's research vision, and
- access to and engagement in collaborative research,

all with significant outcomes impacting society.

The Practice:

We have developed unique multidimensional, multi-scale participatory approaches to international collaborations integrating both top down and bottom up approaches.

Faculty and senior members of the administration work together in selecting prospective university collaborations in specific strategic research thrust areas and explore wider engagements at the university level. In order to achieve large-scale collaborations with multiple top-ranked international universities, the Chancellor established a dedicated Amrita Center for International Programs (ACIP).

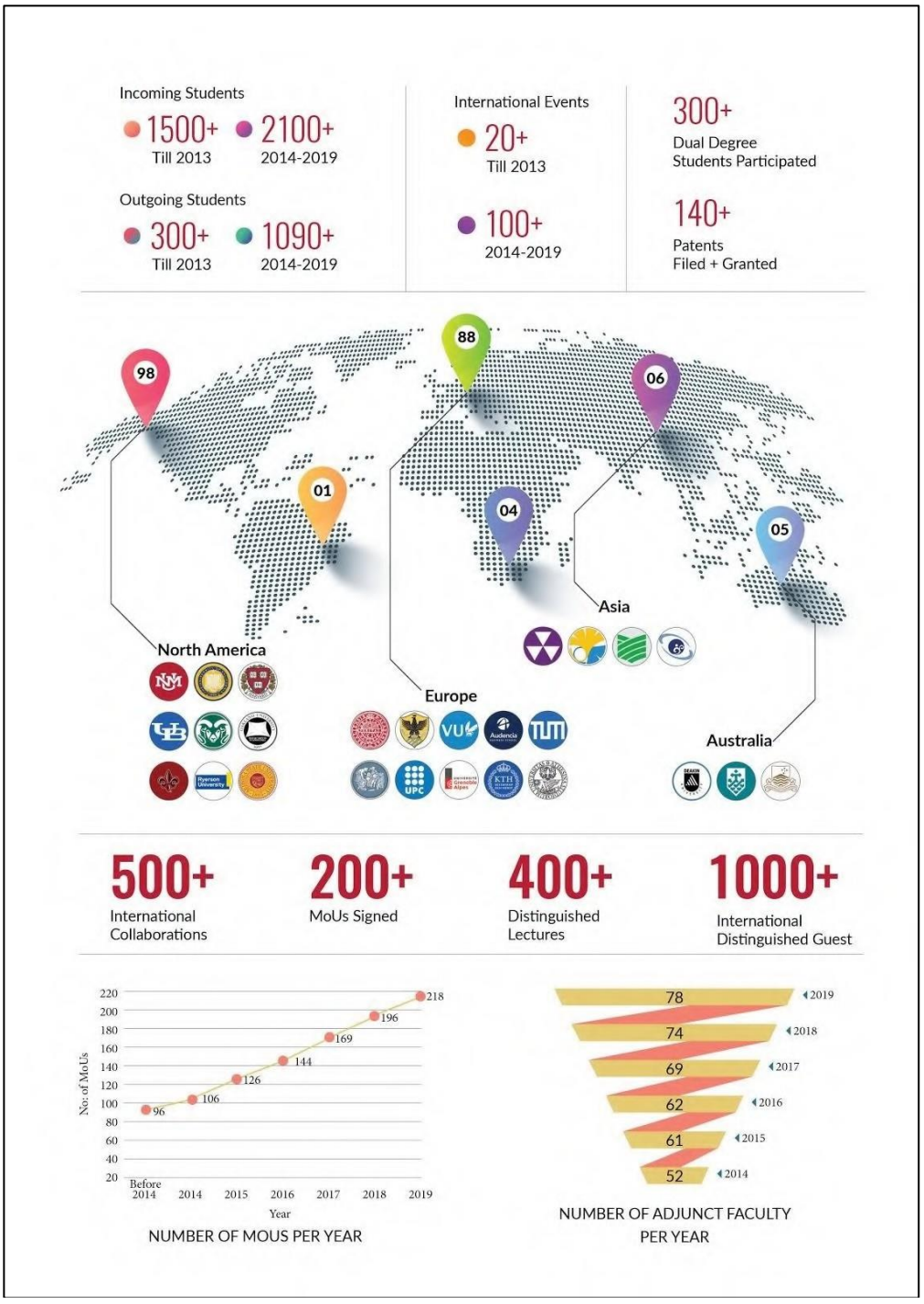
ACIP takes direct responsibility to develop and nurture all collaborations with support from the Departments, leading to signing of MoUs. ACIP actively seeks international, bilateral and multi-lateral funding opportunities to fuel and sustain these collaborations in order to make them a 'win-win' for both partners involved. Senior administration provides the necessary seed funding, allocates resources such as research scholars, infrastructure, etc., thereby encouraging the faculty member to focus on research and enhance collaborations through joint activities such as:

- Regular discussions focused on development of ideas and novel solutions Exchange of research materials and expertise
- Joint advising of graduate and post-graduate students Joint high impact publications/patents

The collaboration is further expanded to provide international educational experience. Teams of senior faculty work in tandem with the international university faculty to develop joint curriculum, course equivalency and credit equivalency resulting in unique joint, double, and integrated degree programs that are of interest to students and other stakeholders. Unique financial models are explored to make the programs affordable for students from varied socio-economic backgrounds.

In exchange, international students are given ample opportunities to experience the Indian value system, multicultural perspectives, and experiential learning for building sustainable solutions for the Planet.

Evidence of Success:



Student progression to postgraduate and doctoral studies at eminent international universities has significantly increased over the last five years, because of student centric guidance and career counselling (over 4500) motivating them to pursue higher studies. Thousands of students have benefited from extensive mentoring in all aspects of pursuing successful global opportunities available to them.

Problems Encountered:

- Regulatory impediments: lack of clarity on processes required by multiple agencies including immigration procedures
- Higher cost of international programs and lack of adequate external funding opportunities to cover such costs
- Misalignment of academic calendars
- Complexity of course credit mapping and mismatches in the grading systems

Resources Required:

- Scholarships for foreign students at Amrita and Amrita students studying abroad
- Research laboratories of international standards
- Knowledgeable and dedicated staff to develop international collaborations and facilitate regulatory approvals
- International standard hostels including multi cuisine food courts.

B. Best Practice -- Live-in-Labs®: Experiential Learning for Sustainable Development and Innovation employing collaborative problem-solving skills

"there are two types of poverty in the world—the poverty caused by lack of food, clothing and shelter, and the poverty caused by lack of love and compassion. Of these two, the second type needs to be considered first because if we have love and compassion in our hearts, then we will wholeheartedly serve those who suffer from lack of food, clothing and shelter." **- Amma, Chancellor**

Objectives of the Practice:

- **Education that Transforms Lives: D**eveloping a comprehensive program for academic engagement in building sustainable communities by designing and integrating a curriculum based on experiential learning that enable participants in contributing to 14 sustainable development goals (SDGs).

- **Building Knowledge Societies:** Bringing academicians and members of a community together to create inclusive knowledge societies and empower remote communities by increasing access to information and knowledge.

- **Science and Innovation for Sustainable Future:** Faculty and students from multiple domains immerse themselves in remote communities to empower them and ensure sustainability through affordable scientific solutions and technological innovation.

The Context:

Traditionally, teachers and students in academia have not been intimately involved in understanding the problems of the vast underserved rural population. At best academia has pursued a top down presumptive approach of defining problems and prescribing solutions based on limited understanding. Such uni- dimensional solutions were either not accepted by the members of the rural community or were discarded down the line for a variety of reasons and hence were not sustainable.

Experiential learning that is not confined to four walls of the classroom:

- Training students to think 'outside the box' and build innovative solutions that are sustainable by the community through a participatory, multi-dimensional bottom-up approach

- Designing a flexible curriculum that provides a multi-disciplinary problem based learning opportunity.

- Fostering a team based synergistic approach that enables solving bigger challenges with wider impact.

The Practice:
The Live-in-Labs® program utilizes a unique comprehensive framework for academic engagement, Education for LIFE: E4LIFE, implemented at Amrita for the development of SDG champions. The four phases of engagement through the E4Life frame are experience , embrace, engage and empower.



The Live-in-Labs® is a credit-based course for both UG and PG programs. This multi-dimensional framework facilitates the development and effective implementation of customized, scalable, and sustainable technological solutions to foster rural development through the four cells:

1. **Multidisciplinary Innovation Cell:** Train the students to identify challenges from multiple perspectives, deconstruct these multidomain challenges into smaller units, assess and evaluate the feasibility and skill set required for proposing holistic interventions.

2. **Experiential Learning Cell:** Teaches a network of methodologies that provides the capability to map attributes of technological demands of rural communities in accordance with the community's rationale for rural development.

3. **Implementation and Performance Cell:** Teaches methodologies used for testing, assessing, and monitoring technology interventions for rural development and the evaluation of interventions for sustainability and scalability.

4. **Services Cell:** Trains in a network of methodologies that creates an ecosystem for the continuous exchange of knowledge and resources among disciplines, and actors.

These multiple cells provide experience in integrating human centered design, participatory rural appraisal, sustainable social change, ethnographic action research, user need assessment, rural development policies, and sustainable business models.

Evidence of Success:

Since its inception, the Live-in-Labs program has been highly successful as evidenced by 58,953 beneficiaries and the following measured outcomes:

- **Training:** More than 1100 students have successfully completed the program

  Outreach: Implemented in 60 villages

  Sustainability: Interventions related to water (implemented in 3 villages with 2,700 beneficiaries), energy (implemented in 2 villages with 600 beneficiaries including rural electrification, and microgrids), education (implemented in 41 villages with 1,150 beneficiaries), sanitation (implemented in 30 villages with 850 beneficiaries) and income generation (390 beneficiaries : lemon grass distillation unit, tailoring unit, craft manufacturing unit, metal crafts, sanitary napkin manufacturing unit, and automated irrigation systems, health care had (2,500 beneficiaries: wearable diagnostic tools and awareness programs).

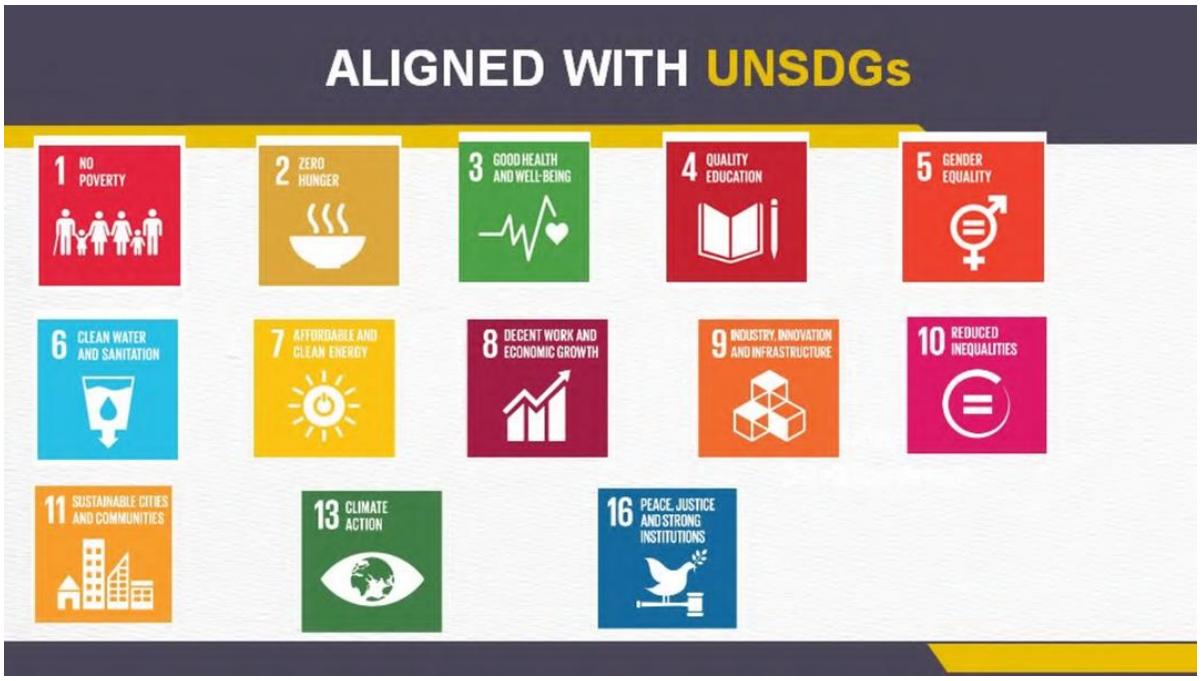
  Community: Participants of the program have clocked over 200,000 hours of direct engagement with rural communities.

Knowledge: Many of these have created sub-interventions or spin-off interventions. For instance, the Phase 3 Research of solar electrification produced spin-off interventions such as a Real-Time Monitoring System of Energy Generation and Distribution as well as Distributed Real-Time Energy

Management Algorithms for a Sustainable Micro-Grid.

Technology: 300 problems/issues have been successfully addressed through affordable Technology interventions

International: The program attracted over 400 students from 30 eminent International Universities



Problems Encountered:

- Integrating interdisciplinarity in already existing curriculums
- Remodeling existing curriculums to integrate Live-in-Labs program in a phased and aligned approach in the programs offered by multiple domains
- Faculty development to understand, embrace, engage, and teach the interdisciplinary concepts of Live-in-Labs
- Constraints due to regulatory agencies
- Deployment challenges faced due to political influence, cultural variability etc.

Resources Required:

- Capacity building - Need motivated faculty & staff with the right skill sets and interests:
- Laboratories for prototyping
- Financial – CSR funding for student support

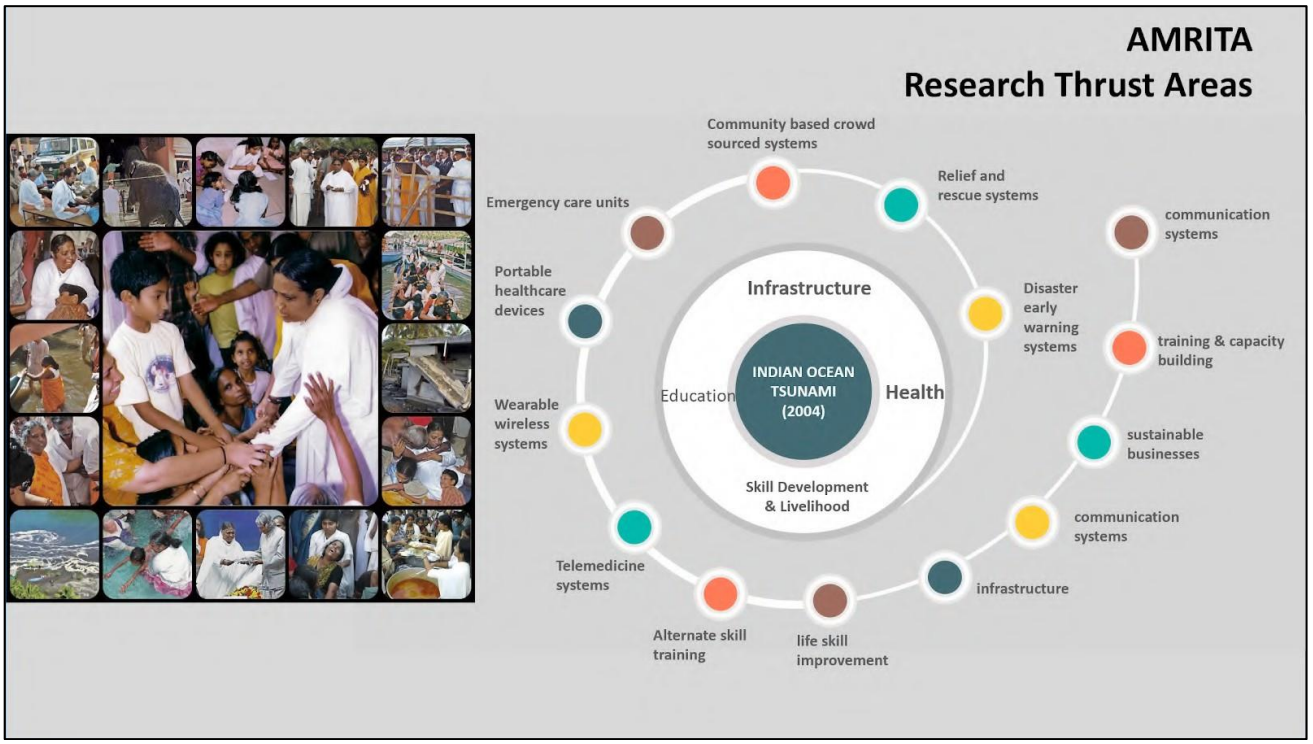
7.3 Institutional Distinctiveness

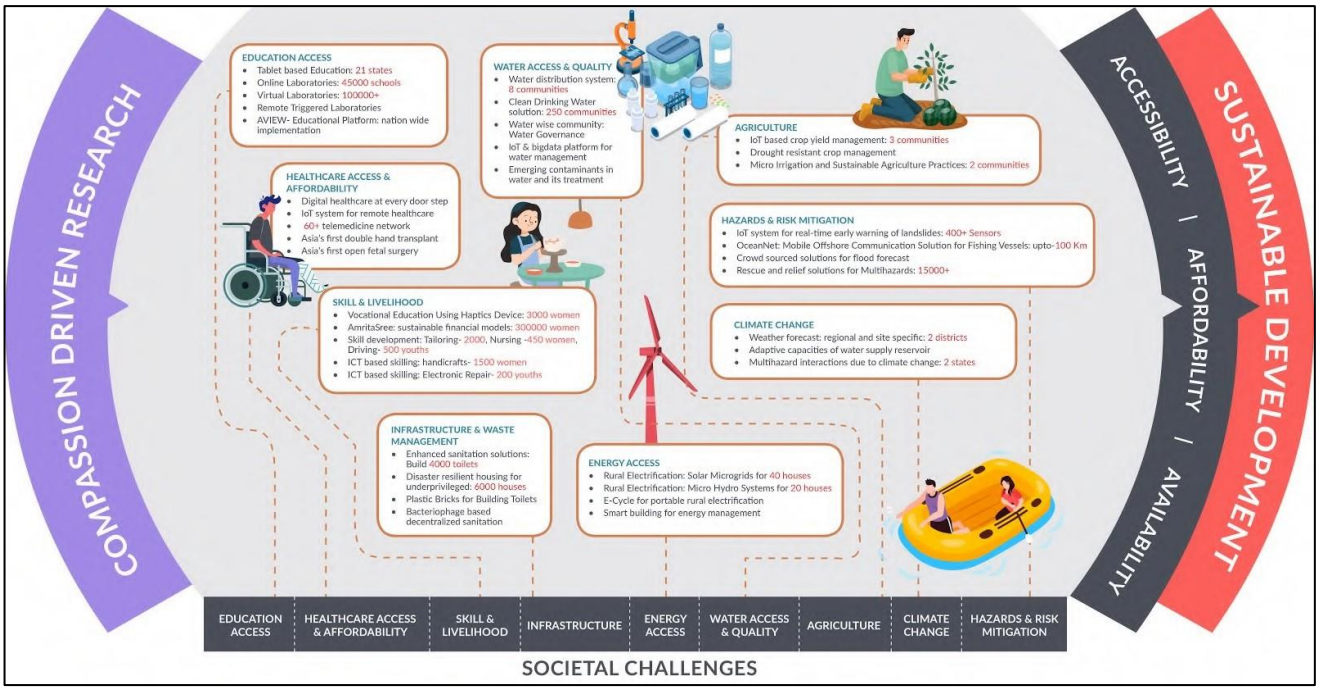
7.3.1 Portray the performance of the Institution in one area distinctive to its priority and thrust within 1000 words

Response:

> Today, universities and their researchers are ranked mainly based on the amount of funding they receive, the number of papers they publish, and their intellectual caliber, but along with this, we should take into consideration how much we have been able to use their research to serve the lowest and most vulnerable strata of society." - Amma, Chancellor.

Right in the formative years of the University, Chancellor AMMA led the students and faculty to immerse themselves in a humanitarian rescue and relief effort of unprecedented magnitude when the massive Tsunami struck in 2004. This became a gold mine of experiential learning in the areas of disaster management, healthcare, education, skills & livelihood, information and communication, sustainability etc., all targeted towards building resilient communities. Indeed this set our trajectory of compassion driven research. In addition to having a strong societal benefit through real-world deployments that are saving lives and improving the quality of living, research at Amrita has also resulted in high-impact publications and patents.





In Medical Sciences, compassion-driven research connects the world-class healthcare innovations and practices at the Amrita Institute of Medical Sciences (AIMS), our Medical school and super-specialty hospital. With an annual patient volume of over 1,500,000, a significant percentage of them comprising of the economically under-privileged, and over Rs.41.31 crores worth of free/subsidised medical treatment,

AIMS is reputed for its state-of-the-art medical care and translational research, which has resulted in several ‘firsts’ to its credit:

- World’s first male to female upper arm transplant
- World’s first nanotechnology wafer for preventing recurrence of brain cancer
- Asia’s first double hand transplant
- Asia’s first Open Fetal Surgery, where the baby with birth defects is taken out of the mother’s womb, corrective surgery performed, placed back inside the womb and successfully carried to term.
- India’s first wind-pipe transplantation on a cancer patient.

Other pioneering research innovations are 3D printed heart valves from the patient's own pericardium, non- enzymatic glucose sensor, automated insulin pump and lab-on-a-chip.

Amrita’s “Digital Health at Every Doorstep” project is an innovation leader in applying sensor and mobile technologies towards integrating smart and connected wearable IoMTs (Internet of Medical Things)

All these research innovations have paid particular attention towards evolving advanced health-care strategies that meet the three A's of global and population health: Affordability, Accessibility and Availability of experts for those who need their services.

In Science and Technology, compassion-driven research achievements are diverse and span multiple disciplines:

- World's first real-time wireless sensor networks for early warning of landslide disasters leading to effective and safe evacuation of people. Soon after the Principal Scientific Advisor to PM urged immediate deployment of a similar network in the Himalayas. This project was highlighted by the Prime Minister at the Indian Science Congress as one of the best innovations of 2018. The University is now officially recognized as a world centre of excellence for disaster risk reduction by the International Program on Landslides.

- A-VIEW: connects over 11,000 institutions in the country, benefitting over two million students and teachers. A-VIEW was recognized by Prime Minister Modi at the National Skill Development Conference (2015).

- Sustainable smart-grid solutions integrated with renewable energy technologies for rural electrification: multiple projects using locally available natural resources (solar, micro-hydro, solar thermal, biogas etc.) have been successfully implemented for seamless generation, transmission and distribution in several villages since 2014.
- Solar powered vehicles and innovative solar battery recharging using bicycles (extensively used by villagers) to generate and store energy produced during the cycling process and use it later for lighting rural households. The prototype, called E-Cycle, has been patented and the research published in an international IEEE conference.

- Solar powered, IoT based intelligent system using sensors, that can prevent crop damage, increase yield and improve farmer self-sufficiency.

- A low-cost internet connectivity solution for fishermen at sea, providing safety and emergency risk management, OceanNet provides connectivity for more than 60 km away from shore.

- Development of drones (UAVs) for disaster reconnaissance and delivery of medical and other essential supplies. The team has developed and tested over 21 UAV variants for various payload sizes, diverse configurations for endurance of flight.

- Several research projects have been initiated to develop sustainable smart and efficient citizen- centric technology solutions to address pressing challenges of societal importance.

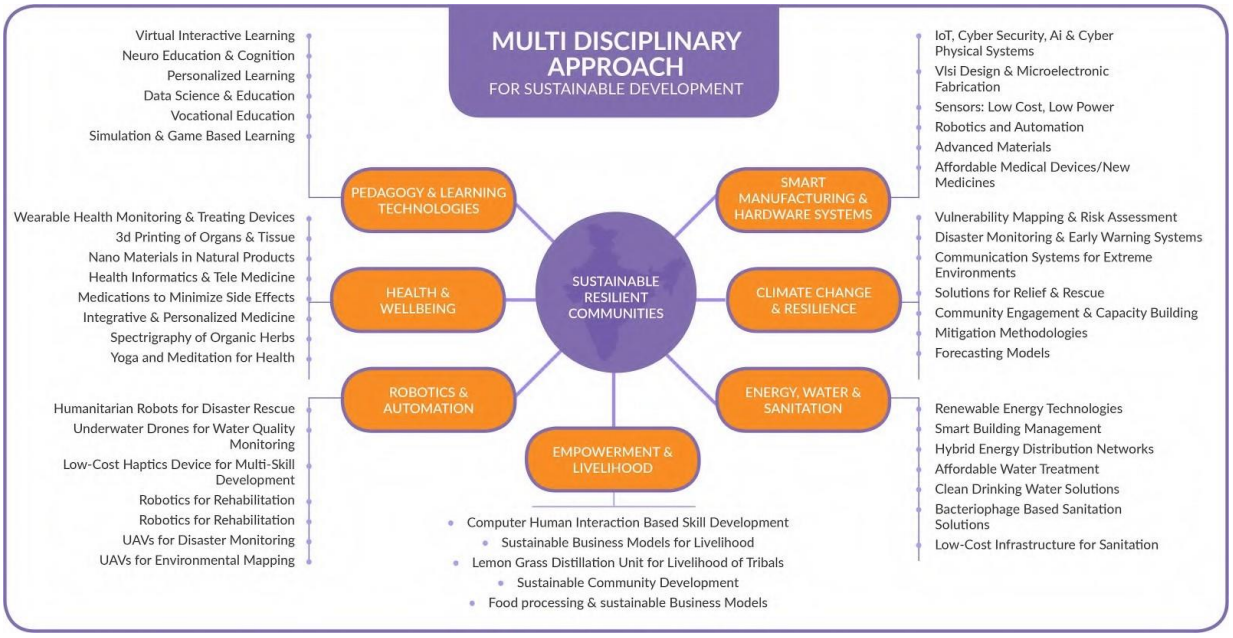
- Specially designed low-cost water filters deployed in more than 250 communities across the country, enabling sustained supply of drinking water to all (Jivamritam). Ongoing research also includes water filtration techniques, designing new water filters, solar powered desalination, removing heavy metal contamination, novel strategies for waste-water treatment

etc.

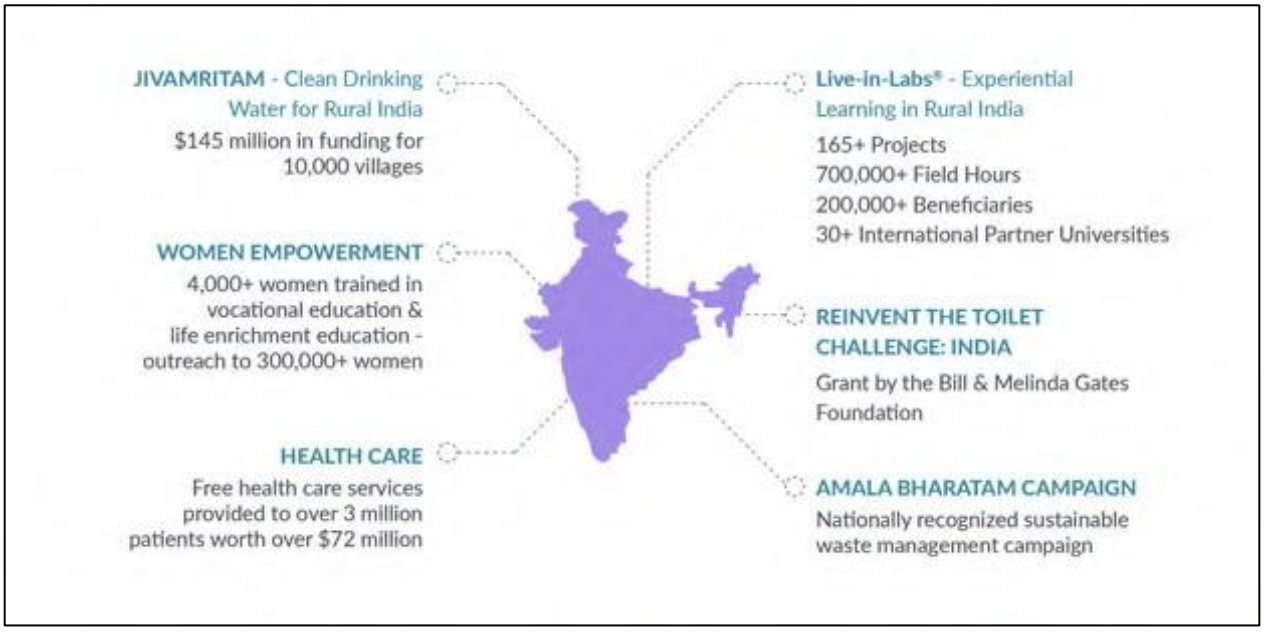
- Other projects include:
    - Gesture-driven wheelchairs to help handicapped patients
    - Coconut tree climbing robot to help farmers,
    - Robots for disaster relief
    - Robotic (prosthetic) arm with myoelectric sensors that can be used for amputees.

Compassion-driven research in Humanities and Social Sciences has resulted in:

- The 3A model (Adaptability, Agility and Alignment) as a best practice for providing effective humanitarian relief during disaster management.
- Vulnerability mapping using a systems thinking approach supported by AI and GIS to benefit women across geography, time and context, enabling intervention simulations.
- In partnership with UNDEF, the development of state-of-the-art haptics technology for advanced vocational education and training. Innovative approaches in virtual, augmented, and mixed reality user interfaces that transform uneducated rural women into self-reliant employable workforce in rural communities.
- Accurate character recognition software for multiple Indian languages (AmritaRITE), offering quality education to rural communities.
- Community-based training program for women in innovative financial strategies (AmritaSREE), leading to their financial independence, emotional strength and social respect. The first self-help group (SHG) has now grown to a network of over 13,000 SHGs with over 250,000 women.
- Saukhyam: Reusable Sanitary Napkins from banana fiber, a natural absorbent with therapeutic qualities. This project was lauded for its sustainable financing model at the UN Climate Change Conference (2018) in Poland and received a most innovative award by the National Institute of Rural Development (NIRD), India.



In all of the above endeavors, in tune with Amrita's vision, the culmination of research is its translation into cost effective deployable solutions for the common man's problems, thereby transforming and saving lives.



5. CONCLUSION

Within 15 years of its inception, Amrita Vishwa Vidyapeetham has earned impressive international rankings and awards in several major disciplines. An abbreviated list of some of these are as follows:

1. THE World University Rankings 2020: Amrita placed in 601-800 category.
2. THE Impact Rankings 2019: Amrita ranked in the 201-300 category
3. THE Young University Rankings 2019: Amrita placed in the top 25
4. THE ASIA University Rankings 2019: Amrita placed in the top 170
5. THE Emerging Economies Rankings 2020: Amrita placed in the list of top 100 in Emerging Economies category.
6. QS Asia International rankings, 2019: Amrita ranked as the Number 1 Private University in India.
7. In the NIRF India Rankings, 2019: Amrita awarded the eighth rank
8. Swachhta Rankings 2017 & 2018: Amrita has been awarded the Number One Rank in the 'Technical Institutions' category and Chancellor Amma has been honoured by Prime Minister Modi.
9. Amrita, has received the Excellence Award instituted by the Kerala State Pollution Control Board (KSPCB) for five consecutive years respectively.
10. The United Nations conferred Amrita with India's first-ever UNESCO Chair on Gender Equality & Women's Empowerment.
11. Nobel Laureate Lee Hartwell joined Amrita as Distinguished Adjunct Professor in 2016.
12. Amrita's Technology Business Incubator (TBI) received the National Award from the President of India for being the best Technology Business Incubator in the country.
13. Amrita has earned International accreditation from the prestigious AACSB International for its School of Business and joins the league of Top 5% of the world's business schools.
14. The Amrita Live-in-Labs® program has won the "Innovation by Private University' award at the 14th World Education Summit.
15. Amrita is the first university teaching hospital to get NABH accreditation in the country.
16. DST recognized interdisciplinary TIFAC-CORE in Cyber Security, Biomedical Engineering (Biotechnology) and Center for Nanoscience and Molecular Medicine.



Concluding Remarks :

In summary, Amrita is a holistic non-profit charitable institution founded upon interdisciplinary and integrative education designed to serve society and bring together traditional and modern approaches to solve the problems of today. The university has managed to evolve into the best private university in India, ranked in the top 100 of universities in emerging economies and, having been selected as an Institution of Eminence (IoE,) is on track to be one of the top 100 among all educational institutions in the world. Of course this requires substantial commitment of additional funds and intellectual manpower. Given the trajectory Amrita has proven in the last 17 years of its existence, this is indeed a possibility for this very young university.

The underpinnings of spiritual inspiration that drives this university derives from the vision and mission established by its Chancellor, Sri Mata Amritanandamayi Devi, one of the most internationally revered humanitarians today who sees no difference between spiritual strength and modern materialistic progress through science, and one who has demonstrated this in practice through the institution of this university. Many of the problems of society today can be attributed to the divergence between spiritual and material progress and our Chancellor has shown that the two can and should be brought together. The rise of this university in just 17 years to a five campus multidisciplinary and multidimensional university with outstanding international faculty and successful student body is a measure of its tenacity and success. The university has received many accolades and awards and distinguished itself in research through its publications and citations. There is no doubt that there is much to be done. This university is confident that its philosophical foundations, international outlook, global impact, and modern scientific integrative perspective will be rewarded with new innovations and substantial new reputation as one of the world's leading universities.