

# ACADEMIC INFORMATION BOOKLET 2023



HEALTH SCIENCES CAMPUS, KOCHI

Keep Choosing  
to be Great.  
Choose **AMRITA!**



**AMRITA INSTITUTE OF MEDICAL SCIENCES**

**AMRITA HEALTH SCIENCES CAMPUS**

# **ACADEMIC INFORMATION BOOKLET**

**2023**



Amrita Institute of Medical Sciences and Research Center  
Kochi, Kerala  
INDIA

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## The Guiding Light of Amrita Vishwa Vidyapeetham

# Our CHANCELLOR, Founder and Inspiration **Sri Mata Amritanandamayi Devi**



**A** renowned humanitarian leader and spiritual teacher, Sri Mata Amritanandamayi is the guiding light of Amrita Vishwa Vidyapeetham. Amma's concept of education, with emphasis on research and commitment to instilling universal values, has come together to shape Amrita Vishwa Vidyapeetham into an institution where the latest advancements and discoveries combine with compassion. As Mata Amritanandamayi said in 2010 when the State University of New York honoured her with an honorary Doctorate in Humane Letters: *"It is Amma's prayer that we develop the expansive-mindedness to embrace both scientific knowledge and spiritual wisdom. We can no longer afford to see these two streams of knowledge as flowing in opposite directions. In truth, they complement one another. If we merge these streams, we will find that we are able to create a mighty river—a river whose waters can remove suffering and spread life to all of humanity."*

Aside from serving as the Chancellor of Amrita Vishwa Vidyapeetham, Mata Amritanandamayi also runs the vast humanitarian mission known as the Mata Amritanandamayi Math, the headquarters of which is home to one of Amrita Vishwa Vidyapeetham's five campuses. A world-renowned institution, Mata Amritanandamayi Math has several welfare initiatives like building over 45,000 homes for the poor throughout India, is currently providing scholarships for more than 46,000 impoverished children, and has helped more than 100,000 poverty-stricken women form self-help groups, and much more.

Mata Amritanandamayi is also a spiritual guide and teacher to millions throughout the world, giving people the strength to face the challenges of life with peace and mental equanimity through her teachings. Her days are spent receiving thousands, placing men, women and children on her shoulder, addressing their concerns and instilling in them the confidence and inner strength to move forward in life. In this manner, more than 34 million people have come to Amma for darshan.



# MESSAGE FROM THE DIRECTOR

**W**e have witnessed phenomenal growth in a short period of 24 years and today we are known the world over as a center of excellence in healthcare, education and research.

Our 125 acre healthcare campus boasts of a vibrant mix of medicine, science and technology. By learning and applying the Amrita Model of Care, which integrates clinical practice, biomedical research and lifelong education, you will be well prepared to succeed in any medical practice setting, from private practice, to academic medicine, to global outreach healthcare. Our 670 strong faculty members, drawn from the best institutes across the world, continue to inspire young minds in developing a compassionate and holistic approach to healthcare delivery, not to mention the excellent support of our administrators, support staff and volunteers, all of whom lend their skills to the educational experience of our students.

Our goal is to give students an educational environment that is second to none. The colleges are the heart of the academic community where students can know and be known by faculty and staff where individual attention fosters intellectual, emotional and spiritual growth.

The most significant element in the establishment of Amrita is the compassion of Amma whose vision and constant encouragement were the inspiration to create this facility with the objective of relieving the suffering of individuals and their families who suffer with them. Amma's life of selfless service has helped so many, not only through curing physical illness, but also by bringing hope, clarity and peace of mind.

May Amma's blessings be continuously with us to help us sustain this growth and for attaining greater accomplishments.

Sincerely,

**Dr. Prem Nair**

Group Medical Director

Amrita Hospitals

Amrita Institute of Medical Sciences

## Mission Statement

To provide value-based education and mould the character of the younger generation through a synthesis of science and spirituality, so that their earnest endeavour to achieve progress and prosperity in life is matched by an ardent desire to extend selfless service to the society, one complementing the other.

# Welcome to Amrita Vishwa Vidyapeetham

**W**e are delighted that you are exploring the opportunities available at Amrita Vishwa Vidyapeetham (AVVP), the river of knowledge with Her Holiness Sri Mata Amritanandamayi Devi as its fount. This river finds its course across six campuses, with 15 constituent schools offering more than 207 degree programs (Undergraduate, Postgraduate and Doctoral) with a strong contingent of 1470+ faculty, 800+ Ph.D faculty and 20,000+ students. It is today a multi-disciplinary institution in the real sense with path-breaking research in the areas of Engineering, Medicine, Management and Communication.

Amrita Vishwa Vidyapeetham is a multi-campus, multi-disciplinary research academia that is accredited 'A++' by NAAC and is ranked as one of the best research institutions in India. Amrita is spread across six campuses in three states of India - Kerala, Tamil Nadu and Karnataka, with the headquarters at Ettimadai, Coimbatore, Tamil Nadu. AVVP continuously collaborates with top US universities including Ivy league

universities and top European universities for regular student exchange programs, and has emerged as one of the fastest growing institutions of higher learning in India.

The Institution is managed by the Mata Amritanandamayi Math. AVVP has adopted a credit based system in keeping with the best traditions of international universities. AVVP, with its best infrastructure, regularly updated curricula and syllabi in line with industry demands, along with gratifying corporate relations, assures academic excellence with a global outlook. AVVP is ranked along with the top institutions in India in the Ivy league of Indian universities and it continues to grow from strength to strength under Amma's guidance. With the mission of offering value-based education in letter and spirit, the Institution designs the courses of study that are continuously reviewed and updated, keeping abreast with the advancements in the field. The Management is committed to creating and sustaining an ambiance that is most conducive to learning and nurturing youth who are intellectually competent and socially committed.





COLLABORATIONS WITH WORLD'S LEADING 200+ UNIVERSITIES



RANKINGS



# STATISTICS & RANKINGS



## AMRITA PERFORMS CONSISTENTLY IN THE NAAC ACCREDITATION AND THE NIRF RANKINGS.

Amrita University unfailingly exceeds the parameters measuring the delivery of excellence in education. Most recently, NAAC - an autonomous accreditation agency under the UGC - has granted Amrita an A++ grade, the highest it can offer. Alongside, in the NIRF rankings, Amrita has consistently found a place among the top 10 universities in India every year since 2017.

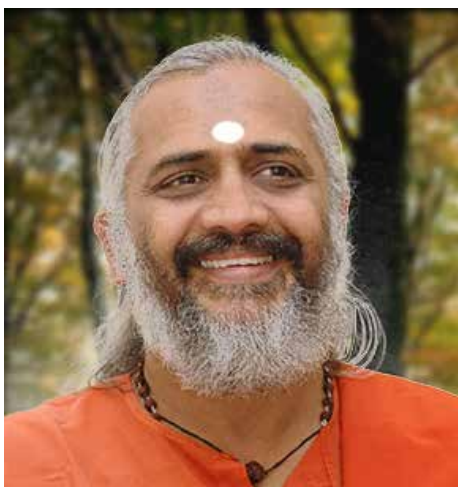
Additionally, Amrita has also been indexed high on various international ranking criteria. The reason why such a young university performs at par with well-established legacy universities is easy to find. It lies in the core of our founding values - Education for Life and Education for Living, and the unmatched accent we place on compassion-driven research. However, what's hard to find elsewhere is the unswerving and unbending commitment we accord to this belief.

# BOARD OF ADMINISTRATION

Swami Amritaswarupananda Puri is the Vice-Chairman of the Mata Amritanandamayi Math and President of Amrita Vishwa Vidyapeetham (Amrita University). He is the head disciple of renowned humanitarian and spiritual leader Sri Mata Amritanandamayi Devi (Amma). He has been living in Amritapuri Ashram since its inception in the late 1970s. He holds a Master's in Philosophy and is a renowned author and translator, has written: "*The Irresistible Attraction of Divinity*" (2019) and "*The Colour of the Rainbow: Compassionate Leadership*" (2014), as well as Amma's Biography. He has also translated into English more than 10 volumes of conversations between Amma and devotees, for which he also served as a compiler. He is a magnificent singer and composer of bhajans and has traveled around the world more than 30 times with Amma in her service.



**SWAMI AMRITASWARUPANANDA PURI**  
**PRESIDENT**



**SWAMI RAMAKRISHNANANDA PURI**  
**MEMBER, BOARD OF MANAGEMENT**



**SWAMI ABHAYAMRITANANDA PURI**  
**PRO-CHANCELLOR**

# BOARD OF ADMINISTRATION



**DR. P. VENKAT RANGAN**  
**VICE CHANCELLOR**

In 2003, Amma appointed Dr. P. Venkat Rangan as the Vice Chancellor of Amrita Vishwa Vidyapeetham. Previously, Dr. Rangan founded and directed the Multimedia Laboratory and Internet and Wireless Networks (WiFi) Research at the University of California, San Diego, (UCSD) where he served as a Professor of Computer Science and Engineering for 16 years. He is an internationally recognized pioneer of research in Multimedia Systems and Internet E Commerce. In 1996, Dr. Rangan became one of the youngest faculty members to be awarded the Full Professor position at the University of California - just 7 years after his Ph.D from U.C. Berkeley in 1989. Dr. Rangan has over 75 publications in International (mainly IEEE and ACM) Journals and Conferences, and also holds over 20 US Patents.

In 1993, Dr. Rangan founded the first International Conference on Multimedia: ACM Multimedia 93, for which he was the Program Chairman. This is now the premier world-wide conference on multimedia. Dr. Rangan also founded the first International Journal on Multimedia: ACM/Springer-Verlag Multimedia Systems, which is now the premier journal on Multimedia. Several startup companies have emerged from Dr. Rangan's Multimedia Lab: San Diego based Intervu (1995) and InnoVA TV (1997), successful pioneers in Internet video streaming.

In 1999, Dr. Rangan took a two and a half year leave of absence from UCSD to found Yodlee, Inc.. He raised about \$40 million for Yodlee from Sequoia Capital, Accel Partners, AOL, Bank of America, etc., invented online account aggregation, built Yodlee's business with major portals and banks, served as its President and CEO during the first two years, after which he hired a full management team to run Yodlee. Dr. Rangan continued to serve as Founder and Chairman of the Board of Yodlee till August 2002. Yodlee is now a multinational company with a 98% market share in online account aggregation with over 100 customers that include almost all of the top 10 portals and top 50 financial institutions of the world.

In July 2000, Internet World featured Dr. Rangan on its cover page and named him as one of the top 25 Stars of Internet Technologies.

# A Student's Experience at AMRITA

The excellence consistently displayed by Amrita University is truly a matter of pride for its diverse, enthusiastic student body spanning across several states and courses pan India. The National Institute Ranking Framework serves to remind us of how far we have come, being ranked the fifth best in the country.

It is one of the best Universities not only on paper but in practice as well. Equal opportunity is given to all students to showcase their talent. It is already good but still keeps improving in terms of academics, sports, club activities, seva, value programs etc.

The teachers are very experienced and themselves have a great academic background, with most teachers having Ph.Ds in their subjects.

Infrastructure of all the campuses is very good with well equipped labs, canteens, hostels, and play grounds to name a few.

One thing that comes to everyone's mind when they hear about Amrita is the spiritual teaching and related subjects. But trust me, this helps a student calm down after other academic pressures throughout the semester. Moreover, many parents want their children to join Amrita mainly because of the disciplined atmosphere in the college. The motto of the college is to prepare students for entering the competitive world and find therein a place for themselves. They believe in Education for Life along with Education for Knowledge.

Co-curricular activities are encouraged here, with clubs for everything. Celebrations of most of the major festivals are done in the campus with massive participation.

Overall, a different experience for a student. Good luck and welcome to the family if you plan on joining Amrita!



# What Others Say...



When all our sages, saints, Vedas and Puranas have discussed about “happiness and welfare everywhere,” then the question comes, “what can be the way towards that all-encompassing happiness?” Amma has showed us that way today.

—**Sri Narendra Modi, Prime Minister of India**



When I look at what Amrita Vishwa Vidyapeetham is, its mission, the hospitals, the various campuses, there is a close synergy between what Princeton wants to do and what AVVP is doing. Our faculty will be interested in collaborative research with AVVP for the possibility of working on a real life problem.

—**Dr. Maria Klawe, Dean of Engineering and Applied Sciences, Princeton University**



Amrita Vishwa Vidyapeetham has a major role to play in transforming our society into a knowledge society through its unique value-added education system.

—**Dr. A.P.J. Abdul Kalam, Former President of India**



What makes Amrita Vishwa Vidyapeetham students special? Western science leads to knowledge. Eastern science leads to understanding. AVVP has both Western and Eastern traditions in education.

—**Dr. Lee Hartwell, Nobel Laureate**



As a young institution that is unburdened by history and full of bold ideas for the future, Amrita Vishwa Vidyapeetham has much to teach its older counterparts. Truly you are building a world-class university for the 21st century, and my UB colleagues and I are deeply impressed by the success you are clearly already achieving.

—**Dr. John B. Simpson, President, State University of New York, Buffalo**



Amma has been a leader in expanding educational opportunity in India, particularly through the establishment of Amrita University, which in its first 27 years has become one of the most distinguished private universities in India.

—**Dr. Stephen Durnett, Professor and Provost for International Education, State University of New York, Buffalo**



Amrita Vishwa Vidyapeetham has a vision that Amma created. It has various disciplines including a top medical college. Amrita wants to broaden the interactions between India and the United States, and I hope, in fact, that we can work with them in that capacity.

—**Dr. Venkatesh Narayanamurthi, Dean of Engineering and Applied Sciences, Dean of Physical Sciences, Harvard University**



It is extraordinary what Amrita Vishwa Vidyapeetham has been able to accomplish in its short history. To have developed in the space of only 27 years a first-class research institution with the highest accreditation rating from the national accrediting agency is remarkable. I know of no other institution in India with a comparable record of achievement.

—**Dr. Satish K. Tripathi, Provost, Academic Affairs University at Buffalo, State University of New York (SUNY)**

# Introducing Amrita Hospital, Kochi...



**A** home to the earth's second largest population, India's health problems are the world's health problems. And by the numbers, these problems are staggering – 77 million (7.7 crores) cases of diabetes, over 20% of the world's blind population, and 60% of the world's incidence of heart disease. But behind the numbers are human beings, and we believe that every human being has a right to quality healthcare.

Since opening its doors in 1998, Amrita Hospital, Kochi's charitable medical care stands at a whopping Rs. 82 million (8.2 crores) that has provided much needed free treatment to over 6 million (60 lakhs) deserving patients. We have treated more than 10 million (1 crore) patients across India.

The Amrita Healthcare System stands on an edifice of sophisticated care being provided with love and compassion. Today, Amrita Hospitals is recognized as one of the premier healthcare institutions in South Asia. Our commitment to affordable quality care has attracted a dedicated team of highly qualified physicians, surgeons and other healthcare professionals of the highest caliber and experience.

The massive healthcare infrastructure with over 3.33 million (33.3 lakhs) sq. ft. of built-up area, is spread over 125 acres of land. It supports a daily patient volume of approximately 4500 outpatients, with 95% inpatient occupancy. Annual patient turnover touches an incredible figure of almost 1 million (10 lakhs) outpatients and nearly 68,000 inpatients. There are 12 super-specialty departments, 45 other departments, 4500 support staff and 740 faculty members.

The educational institutions of Amrita Vishwa Vidyapeetham, a Deemed-to-be-University, has at its Health Sciences Campus in Kochi, Kerala—the Amrita School of Medicine, the Amrita School of Nanosciences, the Amrita School of Dentistry, Amrita College of Nursing, and the Amrita School of Pharmacy, committed to being centers of excellence providing value-based medical education, where dedication, purity and service are instilled in the youth. Amrita School of Ayurveda is located at Amritapuri in the district of Kollam.

Amrita Vishwa Vidyapeetham strives to help all students attain the competence and character to humbly serve humanity in accordance with the highest principles and standards of the healthcare profession.

## ...and Healthcare Campus



**E**stablished in September 2002, the Amrita School of Medicine has achieved great academic recognition from the students, community and educational fraternity as an institution providing not only world-class training but also the right perspective on life. The present School tower comprises 12 storeys with a total floor area of 120,000 sq. ft. The hospital has an additional floor area of 1,100,000 sq.ft.

Incorporating state-of-the-art educational facilities that meet international standards, the Amrita School of Medicine is a fusion of the latest technology with core human values. The School of Medicine building houses laboratories, lecture halls and a well-furnished central library complete with an outstanding collection of the latest editions of international and Indian medical books and journals. It also provides for electronic access to many scientific and medical databases in India and abroad. An anatomy museum has been established with all the latest teaching devices and with elaborate models detailing the different parts of the human body.

The School offers various undergraduate and postgraduate programs like B.Sc., M.Sc., M.D./M.S./P.G. Diploma, D.M./M.Ch, etc., as well as a five-and-a-half year program in Medicine, including a year of internship, culminating in the award of an M.B.B.S. degree. The curriculum is based on the directives of the Medical Council of India.

The course involves both theory classes and practical sessions. Clinical exposure begins in the second year with classes conducted by clinical specialists emphasizing the relevance of the basic sciences to clinical practices. Hospital postings and field visits to public health centers aim at exposing the candidate to different scenarios in which doctors in India might find themselves, and how to go about providing the best care in all the circumstances.

A commitment to the practice of medicine in its highest form is a lifelong commitment to humanity. Our resolve to be a Center of Excellence both in medical training and in the practice of medicine will well prepare eager and talented young men and women to play a key role at the forefront of their chosen professions.



# Accreditations

## Awards



- ◆ British Medical Journal (BMJ) - India  
2014, 2015, 2016 Health Care Award



- ◆ NABL Accredited Laboratories
- ◆ NABH Accredited Hospital Services
- ◆ NAAC with "A++ Grade"



- ◆ ISO 9001:2008 Certified Services
- ◆ National Excellence Healthcare Awards  
for Patient Safety and Innovation in  
Medical Technology by FICCI (2016)





## The Health Sciences Campus

**A**mrita Vishwa Vidyapeetham is located at Kochi in Kerala. The campus, spread over 125 acres, is compact and yet not confined. Students will appreciate the convenience of having teaching rooms, lecture theatres and clinical skills laboratories so close to their accommodation. All important support and leisure facilities too, such as the library, communication suites, student clubs, and cafeterias are all located in and around the Medical School buildings.

Student life at Amrita is more than just study. The Amrita Schools are an integral part of a vibrant University community that offers an array of intellectual, cultural and recreational opportunities.

Being a green hostel campus, the premise has a canopy of trees and plants that make the environment carbon dioxide-free and maintain the health of all the students. A tropical climate enhances a comparatively informal campus lifestyle.



BOYS HOSTEL

## ACCOMMODATIONS & FACILITIES

### M.B.B.S. BOYS HOSTEL (INDRAPRASTHAM BUILDING)

The M.B.B.S. boys hostel is a four storey building with great facilities allowing students to relax for as long as they need. There are two hundred and seventy rooms. On the right side of the hostel compound, there is a student sports ground. A service road in front of this is a calm and quiet area with plenty of trees nearby. There are also four additional boys hostels, Vaikuntha, New PG Hostel, Sreerangam and Old Nalanda.

### FACILITIES

A 24-hr. surveillance camera and security personnel are posted in the hostel area. There are punching machines for students in the reception area for monitoring their coming and going. There is a dining hall with a 240 seating capacity where 4 meals are served per day. There is also a coffee hut near the reception.

We have high-end water purifiers (Cross Field's Doctor Water Cooler) for providing clean drinking water. There is a TV room near the dining hall.

There is a gym with modern exercising machines for cardio and strength building workouts. It a great place for all our students to get fit mentally and physically at a reasonable price.

To encourage harmony and team spirit, we have several indoor sports grounds. Students can take part in playing badminton, volleyball, cricket and table tennis under the guidance of professional trainers.

Other features in hostel ground floor:

- VIP refreshment area
- Laundry room with washing machine facilities
- Prayer hall
- A/C study hall
- First aid or sick room

The passage in the ground floor connects to Hostel A block which consists of 25 well lit airy rooms for P.G. students and doctors

First, second, and third floors are identical and there are 55 rooms for medical U.G. students. Modern and western style bathrooms and toilets for medical students and 26 rooms for P.G. medical students.

The hostel office is open 24/7 and at anytime the staff are there for attending to student complaints and other matters.





GIRLS HOSTEL

The girls hostels are Vrindavan, Dwaraka, Ambadi, Gokulam, Mithilapuri and Madhura Puri. All undergraduate programs of the Health Sciences Campus are 100% residential courses providing comfortable accommodation to all students. Accommodation is as per the respective council's requirements and each student is provided with a cot, a table, a chair, and a cupboard.

Each hostel has a common room with cable TV and newspapers where students can meet and keep abreast of the news. There is a full-time warden based at every hostel and a security guard is on duty 24 hours a day. Hot



and cold water and laundry facilities are available in every hostel. Water and electricity are always available, but students are requested to use these precious resources wisely.

Amrita attaches great importance to the nature of the lifestyle on the campus. Tobacco, in any form, and any other intoxicants are strictly prohibited.

Shops within the campus include a mini-super mart that sells confectioneries, fruits, stationery, toiletries etc. Tailoring facilities, hairdressers, photo copying and photo studio shops are within walking distance of the campus. The campus has a fully-fledged post office counter with Speed-Post facilities, a bank with 24-hour ATM facilities, 24-hour taxi service, a 24-hour Emergency Medical and pharmacy services, an ice-cream parlor, ten cafeterias, a bookstall and an optical shop.

## DINING

Pure vegetarian food prepared under hygienic conditions is served in the student dining halls and the canteens from a central kitchen. The food menus include Indian, Chinese and Continental fare.





## LIBRARY

The library is a focal point of study in any educational institution. Should students feel the desire to burn the midnight oil, they can do so in the Central Library of Amrita that remains open until 12 midnight and also in the air-conditioned study halls which are available in the hostels and are not time-bound.

Internet access is available in the library and the hostels.

Total Number of Books	17,191
Textbooks	16,728
Reference Books	4836
Journals (National)	109
Journals (International)	170
Electronic Databases	20
CD/DVDs	2461
Back Volumes of Journals	9795
Thesis - 1569	
E-books - 5859 ; E-journals - 9795	
Facilities available – Internet browsing, scanning, computer print outs, photocopying, remote access to digital resources	
Computers - 47	

## PRAYER HALLS

Amrita prides itself on being a welcoming place for students of all religious faiths and denominations. There are ample opportunities for spiritual growth through organized Satsangs, Yoga, Meditation, Seminars, Retreats and Service Projects. For the convenience of students belonging to different faiths, multi-religious prayer halls are available on the campus and hostel. Also, a serene and spacious hall is available for yoga and meditation in the hostel.



Life as a student has its own stresses and strains, and sometimes the need may arise to confide in, open up to, or even seek guidance from someone. At Amrita, a Gurukula system is operational wherein each student is designated a Mentor/Acharya to whom students can turn for help. Students are free to discuss their problems, whether they are of an academic or personal nature.

Students at Amrita are encouraged to join one of the many clubs functioning on the campus.

## GREEN FRIENDS

Those wanting to commune with nature can look forward to joining Green Friends, an initiative at Amrita to promote the environment - Green Friends and Amala Bharatham.

An organic vegetable garden is raised on the hostel terrace.

The youth members of the nature club recognize the need for nurturing and conserving nature inside and outside the campus. The activities include growing saplings, environmental cleanliness etc.



## ATMA CLUBS

### ARTS AND LITERARY CLUB

The art forms are well represented by music and drama societies that conduct regular intra-faculty competitions and intercollegiate programs.

Students can exhibit their talents in traditional dance forms, music, painting, drawing, mime etc. through this club.

There is a debate club that undertakes brainstorming idea exchanging sessions. It also improves the ability of extempore.

### AMRITA SANTHWANAM

#### (Social Service)

Students who are interested in voluntary work within the local and wider community will be able to do so in various ways through societies and programs coordinated by monastics from the Math.

This undertakes to assist in the form of services like food kits, clothes etc. to poor/needly people. Health education is provided to the public and patient bystanders on various occasions. Students participate in various voluntary activities like blood donation, medical camps etc.

### SPORTS COUNCIL

Special coaching is given to improve sports talents like outdoor and indoor games. Inter College, intra college and university level competitions are held in volleyball, basketball, football, cricket, badminton, etc.

### EDUCATIONAL TOURS / VISITS

Educational tours are organized for the students.



# 24 STUDENTS EXTRACURRICULAR ACTIVITIES



**GREEN FRIENDS**



**GIRLS GYM**



**SPORTS**



**MEDITATION**





## AYUDH

AYUDH stands for **Amrita Yuva Dharma Dhara**, a Sanskrit term that means 'The youth who perpetuate the wheel of Dharma (righteousness)'. AYUDH, a youth wing of Amrita University, aims to build a future filled with hope, peace, leadership and social engagement with an awareness of spiritual principles.

The Sustainable Development Goals are AYUDH's blueprint for action. AYUDH projects help young people to express creative potential, gain self-confidence and implement ideas for how to make the world a better place. Ultimately, the goal is to reach a more sustainable and equitable society that will bring a future of peace and unity for our fragile planet.

## AWARDS

Annually, the Institute presents awards to the students who demonstrate excellence in academic, clinical practice and co-curricular activities.



# DEGREES, DIPLOMAS & PROGRAMS



# Degree, Diploma & Programs in a Nutshell

## ALLIED HEALTH SCIENCES

a) B.Sc. in Medical Radiologic Technology and Imaging Technology (MRT) b) B.Sc. in Radiotherapy Technology (RT)		Post Graduate Diploma in Medical Radiological Sciences (PGDMRS)
Bachelor of Optometry (OPT)	M.Sc. Cardio Vascular Technology (CVT)	Master of Hospital Administration (MHA)
Bachelor of Physician Associate (PA)	M.Sc. Clinical Nutrition and Food Science (CNFS)	Master of Public Health (MPH)
B.Sc. Respiratory Therapy (RT)	M.Sc. Dialysis Therapy (DT)	Executive Master of Public Health (Ex. MPH)
B.Sc. Intensive Care Technology (ICT)	M.Sc. Diabetes Sciences (DBS)	M.Phil. Clinical Psychology
B.Sc. Operation Theatre Technology (OTT)	M.Sc. Emergency Medical Technology (EMT)	
B.Sc. Anaesthesia Technology (AT)	M.Sc. Medical Laboratory Technology (Biochemistry, Microbiology, Pathology)	
B.Sc. Cardiac Perfusion Technology (CPT)	M.Sc. Neuro Electro Physiology (NEP)	
B.Sc. Cardio Vascular Technology (CVT)	M.Sc. Physician Associate (Medical Oncology)	
B.Sc. Diabetes Sciences (DBS)	M.Sc. Physician Associate (CVTS)	
B.Sc. Dialysis Therapy (DT)	M.Sc. Deglutology and Swallowing Disorders (DSD)	
B.Sc. Echocardiography Technology (ECT)	M.Sc. Respiratory Therapy (specialization in Adult and Pediatric)	
B.Sc. Emergency Medical Technology (EMT)		
B.Sc. Medical Laboratory Technology (MLT)		
Bachelor in Audiology and Speech Language Pathology (B.ASLP)		
B.Sc. Neuro Electro Physiology (NEP)		

# Degree, Diploma & Programs in a Nutshell

## MEDICINE

M.B.B.S.	M.S. Obstetrics and Gynaecology	M.Ch. Urology
M.D. Anatomy	M.S. Ophthalmology	M.Ch. Reproductive Medicine and Surgery
M.D. Biochemistry	M.S. Orthopaedics	M.Ch. Cardio Vascular Thoracic Surgery
M.D. Physiology	M.S. Otorhinolaryngology	M.Ch. Gastrointestinal Surgery
M.D. Microbiology	D.M. Cardiac Anaesthesiology	M.Ch. Head and Neck Surgery
M.D. Community Medicine	D.M. Cardiology	M.Ch. Neurosurgery
M.D. Forensic Medicine	D.M. Clinical Haematology	M.Ch. Paediatric Surgery
M.D. Pathology	D.M. Endocrinology	M.Ch. Plastic and Reconstructive Surgery
M.D. General Medicine	D.M. Gastroenterology	M.Ch. Gynaecological Oncology
M.D. Geriatrics	D.M. Medical Oncology	Fellowship in Cardiac Anaesthesia
M.D. Dermatology	D.M. Nephrology	Fellowship in Gynaecological
M.D. Anaesthesiology	D.M. Neurology	Fellowship in Neonatology
M.D. Emergency Medicine	D.M. Paediatric Cardiology	Fellowship in Neuro Oncology and Cranial Base Surgery
M.D. Nuclear Medicine	D.M. Paediatric Neurology	Fellowship in Surgical Oncology
M.D. Paediatrics	D.M. Pulmonary Medicine	Ph.D
M.D. Physical Medicine & Rehabilitation	D.M. Rheumatology	
M.D. Psychiatry		
M.D. Radio Diagnosis		
M.D. Radiation Oncology		
M.D. Respiratory Medicine		
M.D. Pharmacology		
M.D. Palliative Medicine		
M.S. General Surgery		

# Degree, Diploma & Programs in a Nutshell

DENTISTRY
B.D.S.
Diploma in Dental Mechanics
M.D.S. Conservative Dentistry and Endodontics
M.D.S. Oral and Maxillofacial Surgery
M.D.S. Oral Medicine and Radiology
M.D.S. Oral Maxillofacial Pathology and Microbiology
M.D.S. Orthodontics and Dentofacial Orthopaedics
M.D.S. Paediatric and Preventive Dentistry
M.D.S. Periodontology
M.D.S. Prosthodontics and Crown and Bridge
M.D.S. Public Health Dentistry
Ph.D
NURSING
B.Sc. Nursing
M.Sc. Nursing <ul style="list-style-type: none"> <li>• Medical Surgical Nursing with sub-specialties: Cardio Vascular and Thoracic Nursing, Oncology Nursing, Neurosciences Nursing and Nephro-Urology Nursing.</li> <li>• Obstetric and Gynaecological Nursing</li> <li>• Child Health Nursing</li> <li>• Mental Health Nursing</li> <li>• Ph.D. will be commencing in 2023</li> </ul>

PHARMACY
B.Pharm
M.Pharm
Pharm.D
Pharm.D PB
Ph.D.
NANOSCIENCES
B.Sc. (Hons) in Molecular Medicine
M.Sc. Molecular Medicine
M.Sc. Nanoelectronics and Nanoengineering
M.Sc. Nano Biotechnology
M.Tech Molecular Medicine
M.Tech Nanoelectronics and Nanoengineering
M.Tech Nanobiotechnology
Ph.D.

## Broad Specialities

PRE & PARA MEDICAL	MEDICAL
Anatomy	Anaesthesiology
Physiology	Dermatology
Biochemistry	Emergency Medicine
Community Medicine	General Medicine
Forensic Medicine	Genetics
Microbiology	Geriatrics
Pathology	Nuclear Medicine
Pharmacology	Paediatrics
SURGICAL	Psychiatry
ENT	Radiodiagnosis
General Surgery	Radiotherapy
Obstetrics and Gynecology	Respiratory Medicine
Ophthalmology	
Orthopaedics	

# Super Specialities

MEDICAL	SURGICAL
Cardiac Anaesthesia	CVTS
Cardiology	Gastrointestinal Surgery
Clinical Haematology	Gynaecological Oncology
Endocrinology	Head and Neck Surgery
Gastroenterology	Neurosurgery
Medical Oncology	Paediatric Surgery
Nephrology	Plastic Surgery
Neurology	Reproductive Medicine and Surgery
Paediatric Cardiology	Urology
Paediatric Neurology	
Pulmonary Medicine	
Rheumatology	

# AMRITA SCHOOL OF MEDICINE

A commitment to the practice of medicine in its highest form is a service to humankind. Our resolve to be a Center of Excellence both in medical training and in the practice of medicine will well prepare eager and talented young men and women to play a key role at the forefront of their chosen profession.





# PRINCIPAL

## Amrita School of Medicine



**DR. GIRESH KUMAR KP, MD, MBBS**  
Principal - Amrita School Of Medicine

Dr Gireesh Kumar KP currently serves as the Principal of Amrita School of Medical Sciences. He joined Amrita Institute of Medical Sciences in 2001 in the Dept. of General Medicine.

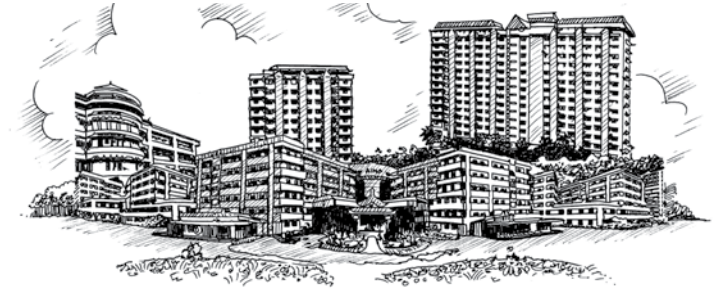
Foreseeing the changing healthcare landscape of India and upcoming challenges, he took it as a mission to develop the speciality of Emergency Medicine. He started the Department of Emergency Medicine at AIMS, Kochi in 2008 and was heading the department till 2022. Under his leadership the department has grown into a state-of-the-art centre in terms of infrastructure, clinical outputs, academics, and research and was awarded “Center of Excellence” by Society of Emergency Medicine in India (SEMI).

He is also a vocal advocate of integration of digital technologies in medical education and need of tailoring medical education to the changing times and sensitivities of the current generation. He is a popular medical educator and has written 14 Medical Books including the bestseller “Medicine at your Fingertips” and founder of the popular YouTube channel “AETCM-Emergency Medicine”. He commands immense experience in teaching undergraduate, post graduate medical and paramedical students.

Dr Gireesh Kumar is also an examiner for National Board and NMC postgraduate examinations and has numerous publications in national and international journals.

His areas of interest and research are snakebite management and HIV.

He was awarded the “National Excellence Award” in 2015 by Society of Emergency Medicine in India (SEMI) and honoured with “Fellow of Indian Society of Toxicology” in 2019.



## MESSAGE FROM THE PRINCIPAL...

Humble Pranams at the feet of Amma.

Amma’s values for education and research have shaped the mission and vision of Amrita Vishwavidyapeetham (AVVP). AVVP is currently ranked as the fifth best university in the National Institutional Ranking Framework (NIRF) Rankings 2022 and Amrita School of Medicine (ASM), Kochi has been ranked 8th Best in Medicine in NIRF Rankings 2022.

Our mission is to provide education for life, emphasis on compassion driven research and have a global impact.

At Amrita school for Medicine, we give shape to the dreams of aspiring medical students in a unique environment with the right mix of technology and human values.

Our faculty members are renowned experts in their field with extensive experience in clinical practice, teaching and research. We are committed to providing our students with best possible education and mentoring them throughout their academic journey.

Aligning with current Competency Based Medical Education we at ASM aim to:

- Offer digital learning solutions and capitalize of e-learning.
- Focus on Skill Development
- Inculcate Problem solving approach
- Provide Individualised Learning

We focus on academic excellence, clinical training, community engagement, research & innovation. By prioritising on these key focus areas, we ensure that we are providing the best education and training to our students, making them confident, skilful and compassionate doctors of the future.



**A**mrita School of Medicine is founded on the highest principles, with an emphasis on service, compassion, charity and excellence through education. The blending of the vital ingredients of competence and compassion is an extension of the vision and inspiration of our founder, Sri Mata Amritanandamayi Devi, from whom we draw our strength and dedication and whose life exemplifies these high principles in every action. The nurturing of these values at the Amrita Health Sciences Campus complements a fine technical education by enhancing skills with a unique understanding and compassion for the patient. The faculty is dedicated to these sustaining values and has diligently worked on the curricula, techniques and methods that will be of the greatest help to the students.

Established in September 2002, the Amrita School of Medicine has already achieved great academic recognition from the students, community, and educational fraternity as an institution providing not only world-class training but also the right perspective on life. The present School tower comprises 12 storeys with a total floor area of 120,000 sq. ft. The hospital has an additional floor area of 1,100,000 sq.ft.

Incorporating state-of-the-art educational facilities that meet international standards, the Amrita School of Medicine is a fusion of the latest technology with core human values. The School of Medicine building houses laboratories, lecture halls and a well-furnished central library complete with an outstanding collection of the latest editions of international and Indian medical books and journals. It also provides for electronic access to many scientific and medical databases in India and abroad. An Anatomy Museum has been established with all the latest teaching devices and with elaborate models detailing the different parts of the human body.

The School offers various undergraduate and postgraduate programs like B.Sc., M.Sc., M.D./M.S./D.M./M.Ch., etc., as well as a five-and-a-half year program in Medicine, including a year of internship, culminating in the award of an M.B.B.S. degree. The curriculum is based on the directives of the National Medical Council.

The course involves both theory classes and practical sessions. Clinical exposure begins in the second year with classes conducted by clinical specialists emphasizing the relevance of the basic sciences to clinical practices. Hospital postings and field visits to public health centers aim at exposing the candidate to different scenarios in which doctors in India might find themselves, and how to go about providing the best care in all the circumstances.

### **Anatomy**

Anatomy is a dynamic science, which is fundamental to clinical practice. It is of paramount importance to have clear knowledge of the structure of the normal human body and the possible variations from the developmental point of view. At the undergraduate level, the department is occupied in teaching Medical, Dental, Nursing and Pharmacy students in addition to postgraduate students of pre-clinical, para-clinical and clinical subjects. The department facilitates cadaveric dissection exercises for surgical skills development of various clinical procedures for departments like E.N.T., Orthopaedics, Neurosurgery, Plastic Surgery, etc.

### **PROGRAM**

#### **M.D. Anatomy**

### **Biochemistry**

Biochemistry is the language of life, the science concerned with the chemical constituents of living cells. Biochemistry encompasses the study of cell biology, molecular biology, and molecular genetics. The aim of biochemistry is to explain, in molecular terms, all the chemical processes of living cells. Biochemistry has become an essential subject in medical science for understanding the concept of mechanisms for the maintenance of normal health. The Department conducts a B.Sc. M.L.T., M.Sc. M.L.T. course and Ph.D programs. The faculty members are involved in many research projects funded by external agencies.

The tools for research in all branches of medical science are mainly biochemical in nature. The study of biochemistry is essential to understand the basic functions of the body. This study will give information regarding the functioning of cells at the molecular level.

**PROGRAMS**

- **M.D. Biochemistry**
- **M.Sc. Medical Laboratory Technology**
- **B.Sc. Medical Laboratory Technology**

**Physiology**

Physiology is a basic medical science which deals with functions of the human body. The Department of Physiology includes four well-equipped laboratories for undergraduate teaching and for P.G. students. The haematology laboratory consists of modern binocular and monocular compound microscopes. The large extension Kymograph and its accessories are a special feature of the mammalian lab. It also has a Dales bath for recording intestinal movements. The clinical laboratory possesses a number of excellent static and working models of human systems including a unique seven feet tall wooden model of the human nervous system. The Research Laboratory is also provided with four single channel physiographs and two multi-channel polygraphs to record biological activities. Moreover, the departmental library has an excellent collection of the latest textbooks in physiology and allied subjects. The regular journal club and review article presentations for faculty help to update recent advances on the subject.

**PROGRAM****M.D. Physiology****Community Medicine**

The Department of Community Medicine provides an innovative, rural based, primary health care oriented medical education. Value based medical education, using a student friendly, need oriented and evidence based curriculum has been formulated. This field trains doctors to be competent to function as care providers, decision makers, communicators, community leaders, and managers. These doctors will function in the community to uplift the health of the people. The department provides cost effective primary health care and health promotion and delivery strategies characterized by equity, intersectoral coordination and community participation.

**PROGRAMS**

- **M.D. Community Medicine**
- **Master of Public Health**

**Forensic Medicine**

Forensic Medicine deals with the application of medical knowledge for the purpose of law. The students will learn how to handle cases of injury, poisoning, sexual assault, medico-legal autopsies and so on, document the findings, issue certificates and tender evidence in courts of law. The department has a Poison Control Center functioning under Analytical Toxicology.

**PROGRAM****M.D. Forensic Medicine****Microbiology**

Medical Microbiology is the study of micro-organisms that cause infectious disease in humans. A thorough understanding of this subject is essential for the student to understand the natural history of infectious diseases through etiopathogenesis and laboratory diagnosis, thus complementing the treatment and control of infections in the community as well as in the hospital.

Modern teaching aids and methods are used to make learning easier and more interesting for the students.

**PROGRAMS**

- **M.D. Microbiology**
- **B.Sc. in Medical Laboratory Technology**
- **M.Sc. in Medical Laboratory Technology**

**Pathology**

Pathology deals with abnormal changes caused by disease. The Department of Pathology supports the clinical services of the physicians at Amrita. The Department offers full diagnostic services in all areas of pathology. There is a focus on oncology, pulmonary, soft tissue, orthopaedic, endocrine, and cytologic pathology.

The Department's partnership with the transplantation surgery program translates pathology research into intellectual advances in transplantation. The department operates an advanced immunohistochemistry laboratory for diagnostic application of research techniques. The haematology laboratory is equipped with the latest instruments that combine optical light scatter and impedance technologies. The Molecular Biology Laboratory undertakes specialised investigations such as PCR based analysis and HLA typing.

## PROGRAMS

- **M.D. Pathology**
- **B.Sc. in Medical Laboratory Technology**
- **M.Sc. in Medical Laboratory Technology**

### Pharmacology

Pharmacology is the detailed scientific study of drugs, particularly their actions (beneficial and harmful) on living animals and man at the organs' cellular and molecular levels. The main objective is to optimise drug therapy. The department has set the following goals for the medical students:

- Assimilate the concept of "Rational Drug Therapy".
- Practice "Rational Use of Drugs".
- Develop good prescribing skills.
- Understand the essence of "Essential Drug Concept" and be competent to make/modify the essential drug list.
- Imbibe "Medical Ethics" and uphold the principles in patient care, drug development and research.

## PROGRAM

### M.D. Pharmacology

## DEPARTMENTS OF MEDICINE

### Cardiology-Adult and Paediatric

The Department comprises the adult and paediatric divisions for medical and surgical services. Our Cardiology Department has set the benchmark for cardiovascular care in South India. Approximately 10,000 new patients are treated annually.

The paediatric cardiac program is now among the largest in India in terms of number of patients undergoing surgical and non-surgical treatment of congenital heart disease. The program caters to patient referrals from all over India in increasing numbers. Children from Uganda, Tanzania, Ethiopia, Middle East, and from neighbouring countries such as Maldives, Bangladesh and Mauritius have also benefited from the program. Over 3000 new children with heart disease visit the Paediatric Cardiology clinic annually.

## PROGRAMS

- **D.M. In Cardiology**
- **D.M. In Paediatric Cardiology**
- **B.Sc. In Cardiovascular Technology**
- **B.Sc. in Echocardiography**
- **M.Sc. In Cardiovascular Technology**

### Center For Digital Health

In an effort to impart state-of-the-art healthcare education to learners at all levels, Amrita has established a Center for Digital Health (CDH), which is a Center of Excellence for the provision of multidisciplinary medical education of an international standard. It focuses on improving patient care at the bedside by a judicious combination of enhancing basic and advanced clinical skills, procedural aptitude, development of electronic medical records and the use of point-of-care decision support modalities. These facilities will be made available not only to the students and faculty at Amrita but also to trainees and physicians from elsewhere in India and abroad. The two primary components of CDH are the Institute of Medical Informatics and Multimedia Education (IMIME) and the Department of Telemedicine.

Center for Digital Health (CDH) includes:

- Division of Informatics
- Division of Medical Multimedia
- Center for Advanced Surgical Education (CASE)
- Learning Resource Center (LRC)
- Research and Technology Assessment Unit

- Division of Continuing Medical Education and International Programs
- e-Learning Center
- Clinical Practice Unit
- Virtual Reality Lab

The Department of Telemedicine at Amrita is one of the most active amongst such departments in the country, providing clinical consultations and facilitating educational interactions between Amrita and other Indian as well as international centers.

### Endocrinology and Diabetology

The Endocrinology Department at Amrita is the only one of its kind in the state of Kerala. The department provides full facilities for investigation and treatment of endocrine problems in adult, paediatric, and adolescent patients (including in-house hormone assays) and all complications of diabetes.

The Endocrinology Department consists of a dedicated and well-qualified team of healthcare professionals comprised of consultant endocrinologists, an endocrinology specialist, a diabetic foot surgeon, diabetic educators, a physiotherapist, a psychologist, podiatry assistants, a medical social worker, a dietician, and other support nursing, administrative and research staff.

### PROGRAMS

- **D.M. Endocrinology**
- **M.Sc. Diabetes Sciences**
- **B.Sc. Diabetes Sciences**

### Gastroenterology

This Department has facilities for the early detection, diagnosis, and treatment of complex gastrointestinal, liver, gallbladder, and pancreatic diseases. The core units of the Institute are the Department of Gastroenterology and Hepatology and the Gastrointestinal Surgery Department. The departments of Imaging, Interventional Radiology, Nuclear Medicine, Oncology and Lab Services also work closely with the Digestive Diseases group.

The Department of Gastroenterology is comprised of the following services and areas of speciality:

- Gastroenterology/Hepatology
- Liver Center
- Center for biliary and pancreatic disorders
- Center for luminal disorders
- Diagnostic and therapeutic endoscopy and ERCP
- Center for swallowing and oesophageal disorders
- Gastrointestinal haemostasis
- Cancer detection and palliation unit
- Paediatric gastroenterology
- Intensive care services
- Tele-medicine and tele-education services

### PROGRAMS

- **D.M. Gastroenterology**
- **Therapeutic Endoscopic Fellowship**

### General Medicine

The Department of Internal Medicine at the Amrita School of Medicine is one of the premier departments of the Institution, bringing together an elite cadre of clinicians, investigators and educators in one of the world's top medical schools. The Department has 35 full-time faculty members and is embedded in a remarkable basic science environment at the Health Science Campus at Amrita, Kochi with a collaborative culture that affords numerous opportunities for interdisciplinary and translational research.

### PROGRAM

- **M.D. General Medicine**

### Geriatric Medicine

The expectancy of life has increased significantly in the last few decades. The trend is likely to persist in the coming years, and expectancy of life at birth may well surpass 80 years in most countries of the world, including



India. Our society is rapidly undergoing change. Increasingly, women, who are the traditional caregivers for the elderly, are taking to work. Many in the working generation leave the state in search of jobs. So we are faced with a situation where in the elderly are increasing in numbers and living longer while the number of care givers are rapidly decreasing. This is reflected by a rapid increase in old age homes.

The old age homes for the most part do not offer anything by the way of healthcare maintenance. The problem is compounded by the lack of adequate insurance coverage for the elderly. To meet this acute need of comprehensive geriatric assessment, Amrita hosts a separate Geriatric Department with a team of healthcare personnel—geriatrician, geriatric nurses, medical social workers, geriatric physiotherapists, occupational therapist, speech therapist, nutritionist etc. This is the first of its kind in India which started functioning in January 2001. The benefit for the comprehensive geriatric consultation is that the patient can meet all the team members at the same time during their visit. Geriatric medical care differs from usual medical practice because the focus is on preservation of function and improving the quality of life rather than on investigating, diagnosing, treating and curing specific diseases. This means that the Geriatrician must deal with the patient's social and psychological problems as well as his/ her medical problems and also frequently work with the family or caregivers who are assisting the older person.

## PROGRAMS

### M.D. Geriatrics

#### Medical Oncology

Medical Oncology provides medical expertise for multidisciplinary programs for the treatment and prevention of solid tumours and haematological neoplasms in adults and children. Both solid tumours and haematological malignancies are managed in the Center. Facilities are available to undertake outpatient chemotherapies in a specialized day care unit. Specialized methods of administering chemotherapy include the use of catheters and chemo ports. In addition to routine chemotherapies, autologous and allogeneic bone marrow transplantation services will be

available in the near future. Management of all haematological problems are also provided.

## PROGRAMS

- Fellowship in Paediatric Oncology
- Fellowship in Clinical Haematology
- Fellowship in Transfusion Medicine
- D.M. Medical Oncology
- D.M. in Clinical Haematology

#### Nephrology

The Nephrology Department provides comprehensive health care for patients with different types of renal (kidney) diseases. Acute and chronic renal diseases and renal problems due to diabetes mellitus, hypertension, stone disease, infections, hereditary illnesses and poisons are diagnosed and managed. The Nephrology Department also works closely with the Amrita Solid Organ Transplant Program.

## PROGRAMS

- D.M. Nephrology
- M.Sc. in Dialysis Therapy
- B.Sc. in Dialysis Therapy

The program is run by the Department of Nephrology, along with assistance from various other departments and specialities.

During the program, the candidates are taught: The relevant medical aspects of patients with kidney failure.

- The technique of dialysis
- Functioning and maintenance of dialysis machines
- Patient care during dialysis

Candidates undergo practical training in the hospital and would have to stay in the hospital premises. The working hours would be decided by the department. The degree certificate would be issued only after successful completion of internship.



## Neurology

The Department of Neurology provides care to patients with diseases of the brain, spinal cord, peripheral nervous system, and muscle-related diseases and conditions utilising state-of-the-art technology and a world-class medical team. It includes the following disciplines:

- Clinical Psychology
- Cerebrovascular Diseases (Stroke) Center
- Epilepsy Center
- Headache Service
- Movement Disorders and Gait Service
- Neuromuscular Service
- Comprehensive Neuro Rehabilitation
- Clinical Neurophysiology Laboratory
- Speech Therapy
- Sleep Medicine
- Paediatric Neurology

Formally trained and experienced specialists are available for consultation and management of neuro behavioural and memory disorders, neuromuscular diseases, cerebrovascular disease, movement disorders, seizure disorders, headache, paediatric neurology and sleep disorders.

The Neurology Department provides:

- Compassionate, tertiary level, state-of-the-art medical care to patients with neurological diseases
- Comprehensive investigations of neurological disorders
- An environment conducive for basic and clinical research
- Training for neurological and rehabilitation doctors
- State-of-the-art diagnostic facilities

### Diagnostic services include:

- Non-invasive vascular testing
- Magnetic resonance spectroscopy

- Functional magnetic resonance imaging
- Cerebral angiograph
- Nerve conduction study
- Electromyography (EMG)
- Electroencephalography (EEG)
- Poly sonnography (sleep study)

These imaging services offer capability for digital storage and facilities for remote site access.

## PROGRAMS

- **D.M. Neurology**
- **M.Sc. in Neuro Electro Physiology**
- **B.Sc. in Neuro Electro Physiology**

The course in Neuro Electro Physiology enables the students to assess the patient and plan various electro-diagnostic procedures and implement them. The candidate, thus trained is called a Neuro Technologist and is an integral part of the neurology team.

## Pain and Palliative Medicine

Pain and Palliative Medicine is one of the youngest branches of modern medicine. It is the active total care of persons suffering from advanced and non-responsive diseases as well as advising their families. It is concerned with quality of life, not only quantity, and addresses physical, psychological, social and spiritual aspects of suffering. It seeks to provide total care for people suffering from cancer or chronic non-cancerous ailments.

## Cardio Vascular Thoracic Surgery

The Adult Cardiac and Vascular Surgery Program at Amrita is one of the busiest programs in the country. Over 3000 cardiac surgical operations are performed annually. The operations performed include coronary artery bypass grafting, heart valve repair and replacement and operations for congenital heart defects in adults.



DA VINCI ROBOT

## PROGRAMS

- **M.Ch. CVTS**
- **B.Sc. in Cardiac Perfusion Technology**

The B.Sc. course in cardiac perfusion technology enables a student to undertake cardiovascular perfusion for a patient undergoing cardiac surgery. The candidate thus trained is called a Perfusionist who is an integral part of the cardiac surgical team.

### Gastrointestinal Surgery

The Amrita Department of Gastrointestinal Surgery has a comprehensive surgical program focusing on:

- Oncological surgery of the GI tract
- Pancreatico–biliary surgery
- Gastric and oesophageal surgery
- Liver transplant
- Advanced laparoscopic surgical procedures
- Specialised colorectal surgery including sphincter saving, stapled and pouch procedures
- Intra–abdominal vascular reconstructions
- Retroperitoneal tumour excisions
- Intra–abdominal trauma

The operating rooms are one of the best equipped in the country with advanced facilities such as a dedicated C–arm image intensifier, harmonic scalpel, argon beam coagulator, CUSA, daVinci Surgical Robot, and intra–operative ultrasound and endoscopy.

## PROGRAMS

- **M.Ch. Gastrointestinal Surgery**
- **Post Doctoral Certificate Course in Vascular Surgery**
- **Post Doctoral Certificate Course in Hepatobiliary/Pancreatic Surgery**

### General Surgery

The Department of General Surgery is geared to offer teaching programs for both undergraduates as well as postgraduate students. Computer assisted teaching aids on clinical examination and operative procedures are being generated. Research activities in several areas are already on. Video conferencing facilities will enable students sitting in the auditorium to see live transmission of surgical procedures and interact with the faculty at the same time.

## PROGRAM

### M.S. General Surgery

### Head and Neck Surgery

The Department of Head and Neck Surgery is organized as a multidisciplinary team, supported by the most modern diagnostic and treatment infrastructure to deal with all major problems arising in the head and neck region. This is the first of its kind clinical service, which brings under one umbrella a multidisciplinary team of specialists in the fields of Head and Neck Surgery, Plastic Surgery, Maxillofacial Surgery, Neurosurgery and Otorhinolaryngology for the management of complex ailments of the head and neck region.

Amrita offers a three year advanced Fellowship in Head and Neck Surgical Oncology in conjunction with Roswell Park Cancer Institute, Buffalo, New York and Memorial Sloan Kettering Cancer Institute, New York, leading to Fellowship from Amrita Vishwa Vidyapeetham. The first and last year will be spent at Amrita in India and the second year will be spent in New York. The fellow will be involved in all aspects of multidisciplinary management of head and neck cancer, skull base surgery, and reconstructive microsurgery.

## PROGRAMS

- **M.Ch. Head and Neck Surgery**
- **M.Sc. Deglutology and Swallowing Disorder**

### Neurosurgery

Neurosurgery is the speciality concerned with the surgical treatment of diseases of the nervous system composed of the brain, spinal cord and spinal column, as well as the nerves that travel through all parts of the body.

The Department of Neurosurgery at Amrita is fully equipped to perform all types of surgeries for a wide range of illnesses. These include:

- Congenital diseases of the brain and spine and other illnesses affecting children
- Tumours of the brain, spine and spinal cord
- Vascular diseases such as aneurysms and vascular malformations
- Degenerative disc and other spinal diseases
- Instrumentation of the spine and the cranio-vertebral junction
- Diseases of the pituitary gland
- Stereotactic surgery
- Surgery for epilepsy and movement disorders
- Stroke and haemorrhage in the brain and spinal cord

The department is supported by state-of-the-art dedicated neurosurgical operation theatres, equipped with a Carl Zeiss OPMI NC4 Operating Microscope, a Karl Storz Neuroendoscope, a Midas Rex drill system, a ValleyLab Ultrasonic Surgical aspirator, a Siemens C-arm with facility for DSA, Codman and Aesculap operating instruments, and a Leksell Stereotactic frame. A dedicated Neurosurgical Intensive Care Unit provides comprehensive care for postoperative and acutely ill patients. The Department also now offers stereotactic radiosurgery in connection with Radiation Oncology and Medical Physics.

## PROGRAMS

- **M.Ch. Neurosurgery**
- **Fellowship in Paediatric Neurosurgery**
- **Fellowship in Neuro-Oncology**
- **Fellowship in Neurovascular Surgery**

### Paediatric Surgery

Department of Paediatric Surgery takes care of children from day one to seventeen years of age. All the facilities to take care of surgical babies are available under one roof. A well-experienced team of doctors is available to take round the clock care of children. All types of open and endoscopic

procedures are performed in the department. Excellent supportive care in the form of a tertiary care NICU is also available for sick and critical neonates.

## PROGRAM

### M.Ch. Paediatric Surgery

#### Plastic and Reconstructive Surgery

Plastic and Reconstructive Department deals with restoration of forms and functions of various parts of the body. Plastic Surgery includes Micro Surgery, Cancer Reconstruction, Management of Burns, Hand Surgery, various Cosmetic Surgery and many others. We are the pioneer department to conduct first double hand transplants in India and the only department with such a service in the whole of South Asia.

## PROGRAM

### M.Ch. Plastic and Reconstructive Surgery

#### Vascular Surgery

The operating rooms are one of the best equipped in the country with advanced facilities such as a dedicated C-arm image intensifier, harmonic scalpel, argon beam coagulator, CUSA, daVinci Surgical Robot, and intra-operative ultrasound and endoscopy.

#### Anaesthesiology

The Department of Anaesthesiology and Critical Care Medicine offers consultations to referring patients in all areas of anaesthesia and critical care as well as chronic and acute pain management.

The department is equipped to provide anaesthesia during a full range of surgeries and is also a primary component of the Trauma Center Team, performing airway management, pulmonary and cardiovascular assessment, patient resuscitation, and follow-up care of patients in the intensive care units.

Active Undergraduate/Postgraduate teaching and research opportunities are available.

**PROGRAMS**

- **D.M. Cardiac Anaesthesia**
- **One year post doctoral certificate course after M.D./D.N.B. Anaesthesiology**
- **Fellowship in Cardiac Anaesthesia**
- **Two year fellowship program after M.D./D.N.B. Anaesthesiology**
- **M.D. Anaesthesiology**
- **M.Sc. in Respiratory Therapy**
- **B.Sc. in Respiratory Therapy**
- **B.Sc. Anaesthesia Technology**

The Amrita Institute of Medical Sciences has 28 operation theatres and 270 intensive care beds, with state-of-the-art equipment giving students exposure to the most modern techniques in critical care.

**Dermatology**

The Dermatology Department offers procedures and services, both investigative and curative, pertaining to general dermatology, cosmetic dermatology and venereology. Comprehensive consultation and treatment is provided for both outpatients and inpatients covering all dermatological conditions including:

- General Dermatology
- Cosmetology
- Sexually transmissible diseases
- Leprosy

**PROGRAMS****M.D. Dermatology****Laboratory Medicine**

Laboratory services at Amrita are dedicated to clinical service, research and teaching.

The Clinical Laboratories perform a large range of diagnostic laboratory analysis in hematology, immunology, microbiology, transfusion medicine, genetics, metabolism, toxicology and chemistry.

**Biochemistry**

The Biochemistry Unit conducts automated assays on Olympus automated analyser (2700) and Hitachi 912 and two Hitachi 911s. These systems perform fully automated, computerized, random access chemistry analyses that utilize a variety of technologies. There are two types of photometric assays (end point and rate) on these instruments for assaying parameters such as glucose and parameters for kidney and liver function and risk factors for coronary artery disease. Proteins such as immunoglobulins, complement fractions, glycated hemoglobin and microalbumin are assayed by immunoturbidimetric methods.

**Cytology**

Cytology, more commonly known as cell biology, studies cell structure, cell composition, and the interaction of cells with other cells as well as the larger environment in which they exist. Cytology can also refer to cytopathology, which analyzes cell structure to diagnose disease. Microscopic and molecular studies of cells can focus on either multi-celled or single-celled organisms.

**Haematology**

The Laboratory manages patients with a whole variety of haematological conditions and diseases. The majority of these individuals are cared for as outpatients in one of our clinics; however, some patients who require complex or intensive treatment, or who are unwell, are managed as inpatients as well. The ward nursing staff are all highly trained and experienced in the management of haematological diseases and work closely with the medical staff and other health care professionals to provide a high quality service to patients and their families in our effort to improve the treatment of, and knowledge about, haematological cancers by participating in ethically approved clinical trials and other studies.

**Histopathology**

Pathology being the study of disease and disease processes, the Department of Pathology helps in identifying the exact disease, its nature and possible cause through study of tissues and cells removed from the diseased part of the body. The correct and effective treatment is decided on the basis of this identification or The Final Diagnosis. The department has



**AUTOMATED LAB SYSTEM**

two units, Histopathology which examines structural changes due to disease in tissues, organs or their parts, and Cytopathology which tests for changes in cells constituting the tissues.

#### **Human Cytogenetics**

The Cytogenetics Laboratory was established in January 2006 and is involved in research and academic activities and provides state-of-the-art genetic diagnostic services to the patients attending Amrita and other hospitals. The Department of Human Cytogenetics offers comprehensive diagnostic services including high-resolution chromosome analysis and Fluorescence In Situ Hybridization (FISH). The laboratory performs FISH analysis for many genetic disorders and is active in the area of cancer cytogenetics. The laboratory is equipped with a colour imaging system and computerized karyotyping system. This not only enables a broader spectrum of our services and a substantial shortening of turn around time of the results, but also provides the referring physician with higher quality of results.

#### **Metabolic Laboratory**

Our Metabolic Diagnostic Laboratory is a full-service laboratory specializing in the diagnosis of inborn errors of metabolism. The Lab uses cutting-edge techniques of gas chromatography-mass spectrometry and nuclear magnetic resonance imaging for metabolite analysis and clinical diagnoses. Enzymatic analyses in red and white blood cells as well as cultured skin fibroblasts for diagnosis of enzyme-deficient disorders are available. All reports include an interpretation and suggestions for further testing and treatment. Consultations can be done with our staff on the results.

#### **Microbiology**

Microbiology provides services for the diagnosis of infectious diseases of a bacterial, viral, parasitic, fungal or tubercular nature. In addition to routine diagnostic methods (cultural and microscopy), automated systems aid in the rapid detection of infectious agents in blood or body fluids. Automated systems for identification of micro organisms and their susceptibility to antimicrobials further expedite reporting which may be life-saving for patients. Special microscopy (fluorescent and dark-field) helps in rapid diagnosis of tuberculosis and viral infections. Serological investigations are

also performed for a variety of infectious agents (including viral agents such as HIV and Hepatitis viruses).

#### **Molecular Diagnostics**

The Department of Molecular Biology was established during January 2002. The department started functioning with molecular diagnosis of infectious diseases and HLA tissue typing for transplant program. This is the only lab in the state meeting the International standards for a molecular diagnostics facility. Cross matching and tissue typing was started for the first time in the entire state of Kerala. The method is more accurate and provides more information on the HLA antigens. Gene testing was started with thrombophilia genetics wherein Factor V Leiden and Prothrombin genes are analyzed for their mutations.

#### **Serology**

Serology is the science dealing with the serum component of blood in regards to its reactions and properties. Our Serology Laboratory is a high volume laboratory dedicated to performing diagnostic tests for our patients as well as for other hospitals.

It provides a full range of assays, which can be grouped in seven major areas:

- Serological markers of autoimmune disease
- Analysis of the complement system
- Serodiagnosis of infectious disease
- CSF markers of multiple sclerosis
- Special protein studies for monoclonal protein detection
- Diagnosis of immunodeficiencies
- Allergen testing

#### **Toxicology and Poison Control Center**

Analytical toxicology is the detection, identification, and measurement of foreign compounds (xenobiotics) in biological and related specimens. Analytical methods are available for a very wide range of compounds. These may be chemicals, pesticides, pharmaceuticals, drugs of abuse and natural toxins.

Analytical toxicology can assist in the diagnosis, management, prognosis, and prevention of poisoning. Additionally, analytical toxicology laboratories may be involved in a range of other activities such as the assessment of exposure following chemical incidents, therapeutic drug monitoring, forensic analysis and monitoring for drug abuse.

The Toxicology Department offers unique facilities in the area of toxicology (poisons and poisoning) to all hospitals, government doctors, and private practitioners of Kerala state and neighbouring regions. This is the first time that such a department has been started in a hospital in the entire state of Kerala, and has been recognized by the World Health Organization as one of four functioning Poison Centers in India.

### Medical Physics

The Department of Medical Physics provides scientific and technical services mainly to the following departments:

- Department of Radiation Oncology
- Department of Radiology
- Department of Nuclear Medicine
- Amrita School of Dentistry
- All other Radiation users in the Amrita Institutions

The unit comprises eight Medical Physics faculty, and has responsibilities for the areas of Radiation Dosimetry, Quality Control of all radiation producing equipment, Treatment Planning systems, Software Control, Acceptance Testing and Commissioning of Radiation Producing Equipment, Maintenance of all radiation producing and radiation measuring equipment in proper calibration, and Radiation Safety.

Medical Physics provides Clinical Radiotherapy Physics Services to approximately 2,100 new cancer patients a year and also monitors accurate delivery of all treatments in Radiation Oncology.

### PROGRAM

#### **P.G. Diploma in Medical Radiological Science (P.G.D.M.R.S.)**

### Medical Statistics

The discipline of Biostatistics has contributed substantially to the development of health, medical and biological sciences, and has emerged as an important tool for research. By applying various statistical methodologies, a variety of easily applicable diagnosis, treatment and prognosis methods have been developed with scientific validity, and many diseases and health conditions have been understood and dealt with appropriately. Statistical methodologies form the strength of any research study so as to make valid judgements and conclusions. Statistical design and analysis methods are very widely used in Clinical Trials, Pharmacology, Genetics, Biotechnology, Basic Sciences, Epidemiological studies, Demography, Quality Control of Medical and Biological equipment, Medical Diagnosis and Prognosis and Health Economics. Any research work is incomplete without treating the data statistically and interpreting the results with scientific and statistical reasoning and evidence. Its importance in Public Health administration in identifying causative factors of various diseases and identifying health priorities and proper allocation and utilisation of the available budget appropriately and judiciously has also been well recognized now. There is an ever growing demand for this subject due to all these reasons.

Statistician plays a major role in research studies right from the planning stage till the report is prepared. In the past, as well as in the present, postgraduate education in Statistics in most of the universities in our country is mostly on the theoretical aspects. Topics on practical aspects covering examples on the application of statistical methods on different fields, especially on medical problems, are very limited. Hence, it is natural that students who are not exposed to the applications of statistical methods to medical and health problems find it difficult when they join medical colleges or medical research institutes for employment.

For that reason, it becomes essential to provide appropriate professional education in Biostatistics to the candidates interested in pursuing a career in medical education and research. Such courses are essential for improving the quality of teaching Biostatistics to the medical students and also the quality of research work being carried out in medical and health research institutions. Such courses will be highly beneficial to the young statisticians



in advising the medical and health researchers in designing their research projects scientifically, in maintaining the quality of data and its management and in analysing the data applying appropriate statistical methods and also in the interpretation of the results obtained, meaningfully and validly.

With this background a postgraduate course of two years duration was started at Amrita Institute of Medical Sciences for the benefit of those students who would like to specialize in Biostatistics after their graduate/postgraduate courses in Statistics or Mathematics with Statistics.

## **PROGRAM**

### **M.D. Nuclear Medicine**

#### ***PET MRI Scanner***

Early stage cancer detection is the main aim of most of the existing diagnostic procedures in the field of modern medicine. Although anatomical (structural) investigations like CT, MRI, etc. are more commonly and widely performed, physiological (functional) nuclear medicine gamma camera investigations are more sensitive to detect early cancer.

The ultimate investigation to detect early cancer is PET–Positron Emitting Tomography. Simultaneously performing an MRI scan and fusing these two scans–PET MRI scan, further enhance PET scan’s cancer detection capability.

This sophisticated and technologically advanced scan is performed on a PET MRI scanner. A state-of-the-art PET MRI scanner has been installed in the Department of Nuclear Medicine, the first of its kind in the state of Kerala.

A PET scan is performed by injecting minute amounts of a radioactive substance i.e. 18 Fluoro Deoxy Glucose (18 FDG) which has a structural and functional similarity to glucose, the substrate of any living cell. It is a phenomenon that cancerous cells concentrate, utilize more glucose thereby they show increased concentration of 18 FDG. While even the smallest cancer focus is detected by a PET study, the simultaneously acquired MRI scan helps to localize precisely to a particular organ (like lung tissue, lymph nodes, bones, etc.).

PET MRI is a whole-body imaging procedure, clinically proven, cost-effective and safe method used in the staging, follow-up for most cancers, including lymphomas, lung, colorectal, gynaecological, head, neck and

breast cancers, etc. It is also used to evaluate treatment response to various chemotherapy regimes and radiotherapy in cancer patients. PET MRI scan also has immense potential in the Radiotherapy planning of a patient.

Hailed as the “Investigation of this century,” PET MRI has revolutionized the cancer care and the availability of this PET MRI scanner in Amrita will help the cancer specialists of our state to provide the best cancer cure care.

Apart from being primarily used to detect cancer, PET MRI is also very helpful in the detection of surgically curable seizure (“fits”) focus in the temporal lobe of the brain. PET MRI has immense value in evaluation of fever of unknown origin (detection of unknown infection focus) and also in the accurate assessment of viable heart muscle after a myocardial infarction (heart attack) before proceeding for a high-risk coronary bypass surgery (CABG).

## **Neonatology**

The Division of Newborn Services commenced functioning in April 2002. Our Neonatology Department has been reputed to be the most technologically advanced unit in the country. The Neonatal Intensive Care Unit is state-of-the-art with 24 beds, 9 ventilators and all types of warmers. The ventilators have all high frequency options. Babylog 8000 HFO, SLE 2000 HFO+ and Bubble CPAP are the other equipments in the Neonatal ICU. Volume ventilation is done in larger babies with Siemens 300C, Nitric Oxide delivery systems are incorporated with Siemens 300C and also with separate stand alone units. Complex monitoring of all ventilated babies includes invasive blood pressure monitoring and spirometry. Capnography is used in selected cases and an in house blood gas analyzer adds to the ergonomics of the unit.

## **PROGRAM**

### **Fellowship Program in Neonatology**

## **Obstetrics and Gynaecology**

The Department offers all the routine obstetrics and gynaecology services. In addition, the Department manages high-risk pregnancy by prenatal diagnostic testing like chorion villus sampling, amniocentesis, foetal colour doppler, and velocimetry studies. Cancer screening for

perimenopausal women using colposcopy and colour doppler studies are also conducted. We routinely perform all endoscopic surgeries including hysteroscopy and laparoscopy.

## PROGRAM

### M.S. Obstetrics and Gynaecology

#### Ophthalmology

Amrita Ophthalmology Service offers state-of-the-art facilities for complete examination, diagnosis and treatment of all ocular diseases in adult and paediatric patients. It has the finest equipment available in ophthalmic care including Humphrey field analyzer, ultrasound A and B scan, YAG laser and Visupac 450 digitised fundus camera for retinal imaging and fluorescent angiography and optical coherence tomography (Syscan Version IV), 532mm laser for retinal diseases.

## PROGRAMS

- M.S. Ophthalmology
- B.Sc. Optometry

#### Orthopaedics

The Orthopaedics department is an acclaimed resource for treating muscle, bone, and joint disorders. Areas of special emphasis include arthritis, joint replacement, spine surgery, sports medicine, hand, foot and ankle, orthopaedic oncology, trauma, and paediatric orthopaedics. Our orthopaedic surgeons have diverse expertise and are committed to provide effective solutions for people with a wide range of orthopaedic problems from broken bones to spinal disorders, from crippling arthritis to sports medicine. These services include:

- Spine Surgery
- Arthritis Care
- Joint Replacement Services
- Sports Medicine and Arthroscopy

- Musculoskeletal Tumour Surgery and Reconstruction
- Physical Medicine and Rehabilitation
- Orthopaedic Trauma
- Children's Orthopaedics

## PROGRAM

### M.S. Orthopaedics

#### Otorhinolaryngology (E.N.T.)

The Department of Otorhinolaryngology, Speech Pathology and Audiology is one of the most well equipped departments with experienced faculty and instruments. Otorhinolaryngology, as it stands now, is not merely dependent on routine outdoor evaluation and conservative management as it used to be in the past. The department has adjusted well with the advancement of medical technology. With the advent of modern day telescopes, operating microscopes and lasers, the department now handles various ear-nose-throat and neck disorders efficiently and precisely.

The department has state-of-the-art microscopes to perform micro ear and micro laryngeal surgeries including cochlear implant.

Speech Pathology and Audiology is associated with the Department of Otorhinolaryngology. There are nasal and nasopharyngeal endoscopes for diagnostics and video endoscopy facilities for all types of endoscopic sinus surgeries including transnasal pituitary and surgery for CSF Rhinorrhoea.

## PROGRAMS

- M.S. Otorhinolaryngology

#### Paediatrics

The Department of General Paediatrics offers comprehensive primary well-child and ill-child care as well as consultation.

The division provides medical care for children in both inpatient and outpatient settings, including:

- Paediatric Primary Care Center
- Diagnostic Clinic



- General Paediatric inpatient services
- Vaccination
- Certified baby friendly hospital

A multidisciplinary team of general paediatricians, subspecialty consultants, paediatric nurses, nutritionists and social workers also provides general paediatric care and coordination of subspecialty services to children with special needs due to chronic illnesses and multiple handicaps.

## PROGRAMS

- **M.Ch. Paediatric Surgery**
- **M.D. Paediatrics**

### Physical Medicine and Rehabilitation

Rehabilitation is the tertiary phase in the treatment of all human sufferings. The Department of PMR caters to rehabilitation services for patients. The Physiatrists determine treatment plans for the rehabilitation of patients after acute problems are settled. Physiotherapists and Occupational therapists carry out the work of rehabilitation as directed by the Physiatrist. The major work of this department is in association with Departments of Orthopedics, Neuro Medicine, Neuro Surgery, Pediatrics including Neonatology, and other medical and surgical departments. The proposal to expand Neuro Rehabilitation and establish an artificial limb center to serve the needs of patients are under active consideration. Twenty-one Physiotherapists and Occupational Therapists are available in the department.

## PROGRAMS

### M.D. Physical Medicine and Rehabilitation

#### Podiatric Surgery

The Podiatry Center provides comprehensive treatment approach to all foot problems in diabetic patients. The service is run by a doctor trained in the treatment of chronic, diabetic foot ulcers, a chiropodist, and vascular surgeons who provide services like angioplasty and by-pass surgery for patients with blocked arteries in their feet. Regular preventive care classes are also held.

## PROGRAM

### Fellowship in Podiatric Surgery

#### Psychiatry

There has been a growing need for mental health and psychological services both from within the hospital and outside. These services were available in the Departments of Psychiatry for the last few years.

In order to increase the range and provide more specialized services, an independent department of Clinical Psychology was also created.

## PROGRAMS

- **M.D. Psychiatry**
- **M.Phil Clinical Psychology**

#### Pulmonary Medicine

The Department of Pulmonary Medicine is the most comprehensive diagnostic and treatment resources in this area. The center for pulmonary medicine undertakes the prevention early detection diagnosis and treatment of variety of pulmonary diseases in adults and children, and is designed to perform patient evaluation using a team approach that spans multiple sub specialities. The departmental team works together to provide comprehensive inpatient and outpatient care. Dedicated Intensive Respiratory Care for Critically Ill Patients.

Comprehensive pulmonary medicine programs include specialized treatment of specific diseases such as Asthma, Chronic Obstructive Pulmonary Disease, Interstitial Lung Disease, Cystic Fibrosis, Occupational Lung Diseases, Lung Cancers and Sleep Disordered Breathing. Pulmonary Rehabilitation and dedicated Smoking Cessation Clinic Service are provided.

The diagnostic facilities in the department include Advanced Pulmonary Function Testing – Spirometry-Exercise Challenge (PFT), Diffusion Study (DLCO), Body Plethysmography, CPET (Cardio Pulmonary Exercise Test), 6MWT Walk Test and ABG (Arterial Blood Gas Analysis).

The Diagnostic Facilities of Advanced Bronchoscopy (Video Bronchoscopy for TBNA, TBLB and Tissue Biopsy and EBUS TBNA0). The interventional facility for diagnostic and therapeutic Rigid Bronchoscopy,

Airway Stenting and Tumor Debulking, Mini Probe Radial EBUS, Cryo Therapy and Argon Photo Coagulation and Thoracoscopy Procedures.

The facility for Allergy Testing – Allergy Skin Prick Test and RAST, Sublingual Immunotherapy, Sleep Study (Polysomnography) and CPAP and NIV Titration for Sleep Disorder Assessment. Spiral and higher resolution CT Guided Imaging Biopsy, Ventilation Perfusion scans for pulmonary embolism.

## PROGRAM

### D.M. Pulmonary Medicine

#### TB and Respiratory Medicine

The TB and Respiratory Medicine Department deals with common chest diseases including tuberculosis. The department undertakes prevention early detection and treatment of various chest conditions. Treatments of Chronic Asthma (COPD) are routinely done. RNTCP Government Undertaking Program for Tuberculosis conducting every day. Mantoux test and AFB Smear for Sputum done every day as part of RNTCP Program. The diagnostic facilities of routine Pulmonary Function Test, 6MWT Walk Test, ABG, Allergy testing and Immunotherapy and Diagnostic Bronchoscopy (BAL, TBLB, TBNA). Pleural Procedures (Aspiration, ICD) Pleural Biopsy FNAC and Thoracoscopy Procedures are performed in the department. Special Clinic in Smoking cessation conducted weekly. The department also helps in critical care of ICU patients.

## PROGRAM

### M.D. Respiratory Medicine

#### Radiation Therapy

Radiation Therapy specializes in the medical use of ionizing radiation for the treatment of cancer and other medical conditions. The Department of Radiation Therapy at Amrita is of international standard and has the most technologically advanced clinical radiation therapy programs in the country. The department is equipped with the Cyberknife M6 Series System and the TomoTherapy H Series, as well as linear accelerators with three photon energies with multi-leaf collimation and a full set of electron beams.

The department also has a CT simulator, a conventional simulator and a computerized treatment planning system with CT/MRI/PET fusion capability. The services offered by the department are Stereotactic Radiosurgery, Intensity Modulated Radiotherapy (IMRT), 3-D Conformal Radiotherapy (3-DCRT), Total Skin Electron Therapy (TSET), Total Body Irradiation (TBI), Conventional Radiotherapy, High Dose Rate Brachytherapy, Strontium Ocular Brachytherapy etc. for the treatment of cancers and many non-malignant conditions. The accuracy of radiation treatment delivery is ensured by the electronic portal imaging for real time verification of the treated area and a range of sophisticated quality assurance equipment.

## PROGRAM

### M.D. Radiation Oncology

#### Radiodiagnosis

The Medical Imaging Center is one of the finest international centers of its kind. New high performance equipment together with a hospital-wide, all digital imaging, archival and retrieval system establishes Amrita as an important referral site.

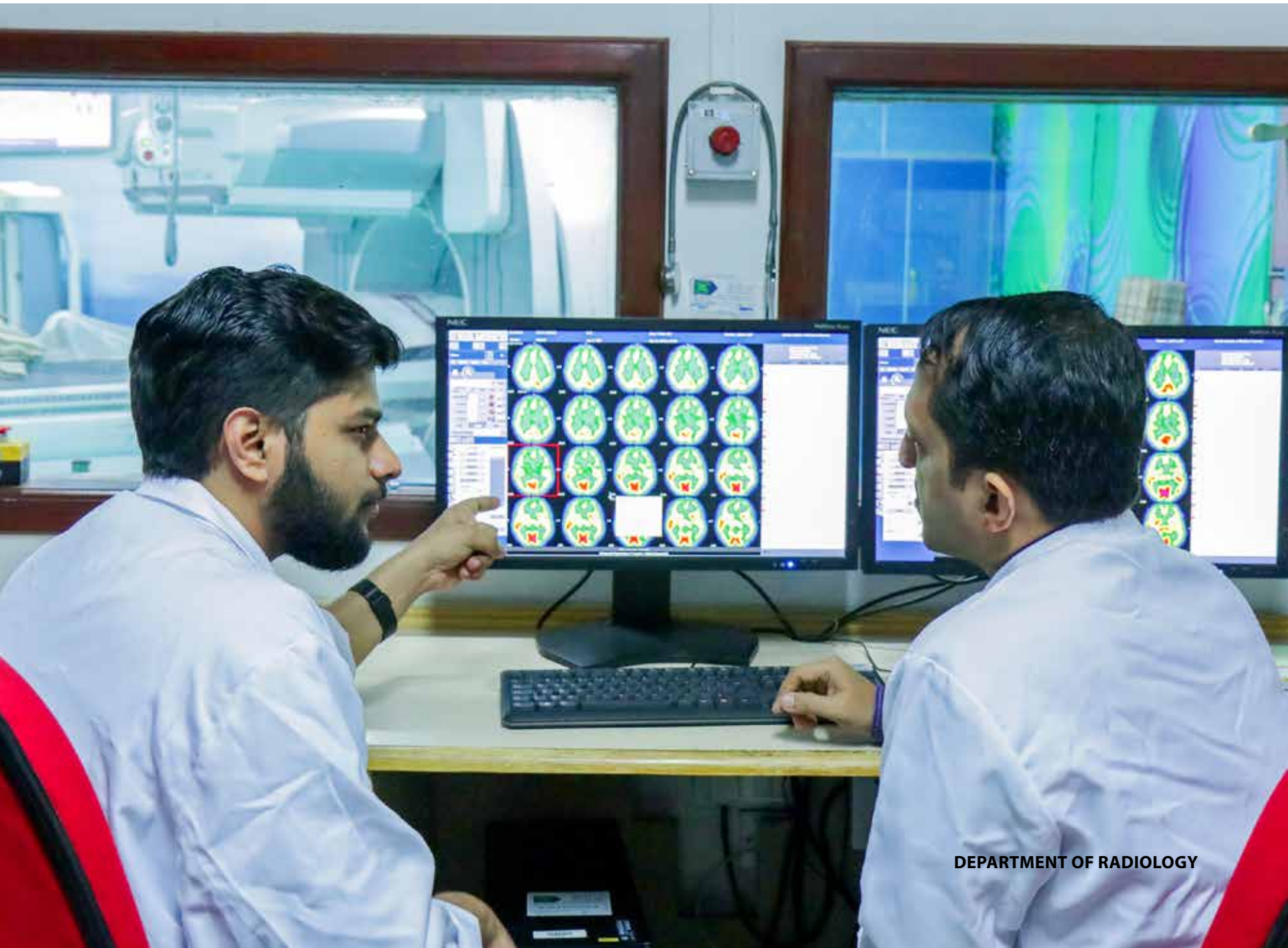
Procedures using imaging equipment for guidance (Interventional Radiology) reduce hospital stays and costs, reduce the need for major surgery, and can save lives. Hundreds of patients have benefited from interventional procedures like guided biopsy, abscess drainage, nephrostomy, angioplasty, and embolizations.

## PROGRAMS

- **M.D. Radiodiagnosis**
- **B.Sc. in Medical Radiological and Imaging Technology**
- **B.Sc. in Radiotherapy Technology**

B.Sc. in Medical Radiologic Technology is a four-year degree program. It provides knowledge and skill development in understanding and applying the principles of science and medicine as they relate to medical radiological and other imaging, as well as radiotherapy.

The student will become technically competent in the techniques of diagnostic imaging and the therapeutic use of radiation. The student will



be well versed in the handling of highly sophisticated medical imaging and therapeutic equipment related to these specialities. The course content includes:

- Anatomy, pathology and physiology
- Medical imaging and radiation oncology equipment
- Professionalism and patient care
- Radiobiology and radiation protection
- General radiology and radiotherapy techniques
- Specialized radiologic and imaging procedures in MRI, CT, DSA, Mammography, Cardiology, Orthopaedics, etc.
- Specialized radiotherapy procedures like 3D CRT, IMRT, SRT and SRS.

### Gynaecological Oncology

The Oncology Department includes surgeons trained in oncology surgery from all surgical subspecialities. The department offers a three-year M.Ch in oncology and gynaec-oncology for Post Graduate students of surgery and gynaecology interested in pursuing a career in Oncology.

### PROGRAM

#### M.Ch. Gynaecological Oncology

### Urology

The Center for Urology and Renal Transplantation offers comprehensive facilities for the diagnosis and treatment of genitourinary problems in adults and children. A highly qualified and experienced team of dedicated urologists and resident surgeons who are available 24 hours a day mans it. The latest state-of-the-art technology and equipments are available. The faculty subspecializes in the fields of paediatric urology, urological oncology, laparoscopic urology, endourology, andrology, female urology, neuro – urology and reconstructive urology. Along with the support of the nephrology services more than 240 renal transplantation operations have been successfully performed. The department has established itself as one of the best of it's kind not only in the country but comparable to the best in the world.

### PROGRAM

#### M.Ch. Urology

### Amrita Clinical Skills Simulation Center

#### *Innovative, Noninvasive Medical/Surgical Technology and Education*

Physicians and surgeons at Amrita Institute of Medical Sciences are nationally and internationally recognized for their expertise in developing leading-edge medical and surgical techniques as well as educating the medical community about them. The new era of medicine revolutionizes all medical and surgical procedures through our ability to perform and develop a full range of sophisticated, minimally invasive techniques. These state-of-the-art techniques result in less post-surgery pain, fewer complications, less scarring, faster recovery time and early discharging of the patients from the hospital. These procedures are used across all clinical disciplines. By the introduction of the unique Simulation Center in Amrita, we are one step ahead in developing new teaching methodology in the field of medical education.

#### *Simulation-Based Medical Education (SBME)*

During the past decades, Simulation-Based Medical Education (SBME) has been a rapidly growing field, as evidenced by the increased development of simulation centers worldwide. SBME is becoming a powerful force in addressing the need to increase patient safety through quality care training. Changes in healthcare delivery and academic environments that limit patient availability for teaching purposes have spurred widespread reports on medical errors since the spread of modern medical practices worldwide. Both the public and health professionals are alarmed by these reports. The Medical Council of India has suggested clinical skill labs should be mandatory for all Medical Colleges in India. These are mainly dedicated to enhancing hands-on Medical education, performance assessment and evaluation, as well as improving clinical and communication skills.

#### *What is Simulation and Simulaid (Mannequins)?*

Simulation is a technique to replace or amplify real experiences with guided experiences on mannequins. A mannequin is an artificial human body made of silicon rubber and PVC. It mimics accurate anatomical structures,

with electronic devices to auscultate normal/abnormal heart, lung and abdominal sounds and give realistic tactile impressions for abdominal palpation of normal/abnormal liver, spleen, intestines and all pelvic organs. Obstetric and gynaecologic mannequins mimic antenatal palpation of foetus with foetal heart sounds. CPR mannequins are optimal tools for basic and advanced life support skills training. Various clinical conditions and scenarios can be programd on these simulaids, and they will prove instrumental for evaluating the performance of skills, especially for Emergency Medicine P.G. students. Simulaids are for basic, advanced surgical skills and various non-invasive procedures. We can use these to conduct U.G. examinations with programd clinical conditions instead of using live patients. Students can engage in repetitive practice with increasing levels of difficulty.



We have the following Simulation Stations with mannequins for:

### 1. General Medicine

- Complete Cardiovascular auscultation- normal and abnormal heart sounds, provision for pericardiocentesis.
- Respiratory system auscultation, provision for demo of pneumothorax, ICD, aspiration of pleural effusion, etc

### 2. Surgery for all basic surgical skills:

- Abdomen for normal palpation of the viscera
- Incision and suture training, IV, IM injections, trocar-cannula for puncturing, vascular catching and ligation
- Laparoscopic examination and surgery
- Male and female catheterization
- Breast examination

### 3. Obstetrics and Gynaecology

- Complete antenatal palpation of abdomen with different presentations and positions of the foetus
- Automated delivery mannequin with provision to conduct normal delivery, and breach as well, with abnormal presentations and obstructed labour, with provision for episiotomy. Foetal heart can be monitored, provision for maternal CPR available
- All Gynaecological conditions of the uterus, tubes and ovaries assessed by PV and speculum examination

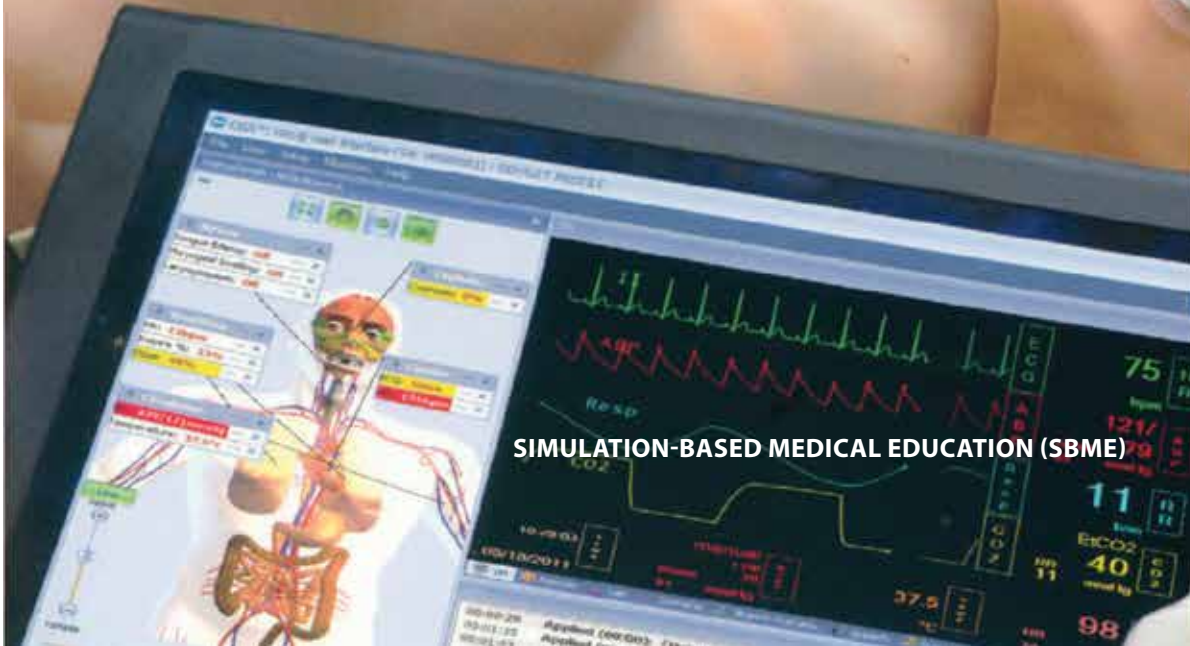
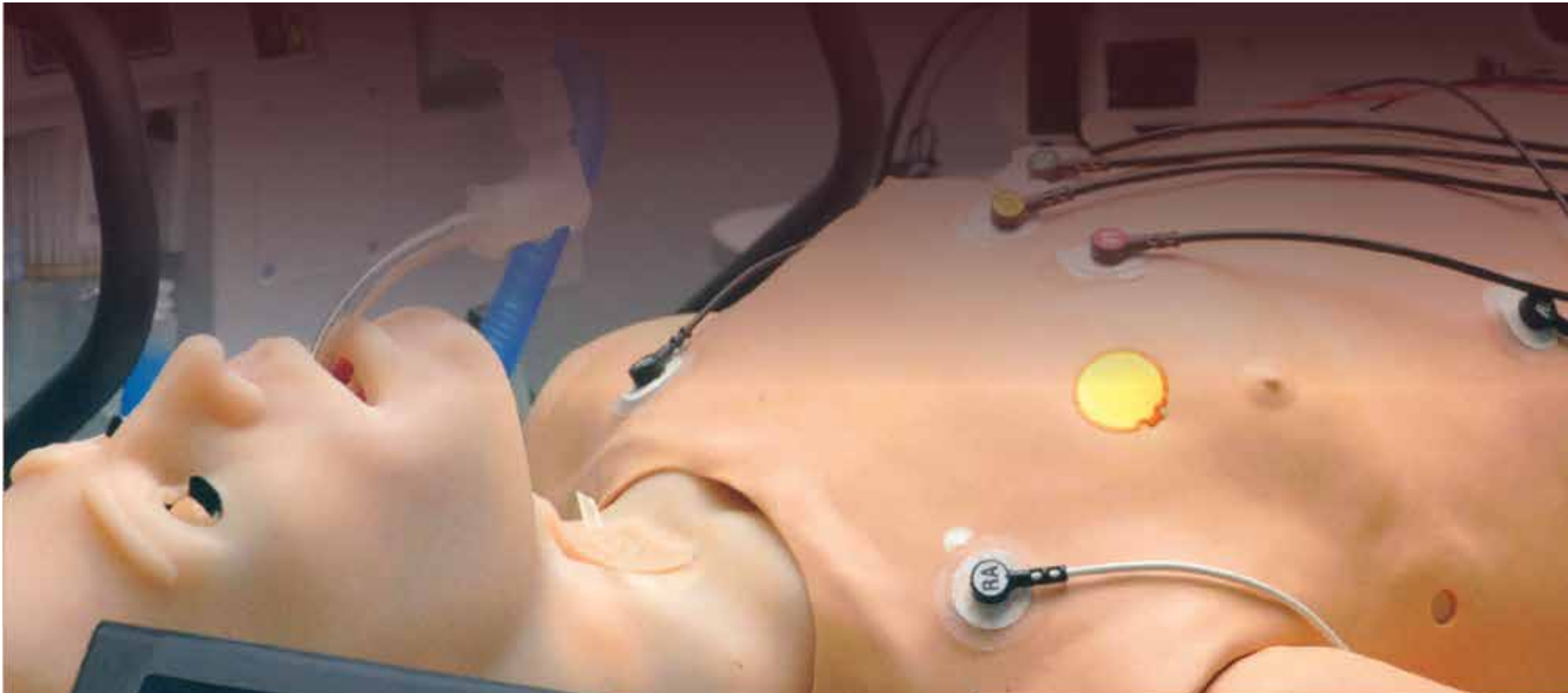
### 4. Paediatrics

- Baby mannequins for Paediatric IM, IV injections and neonatal baby care

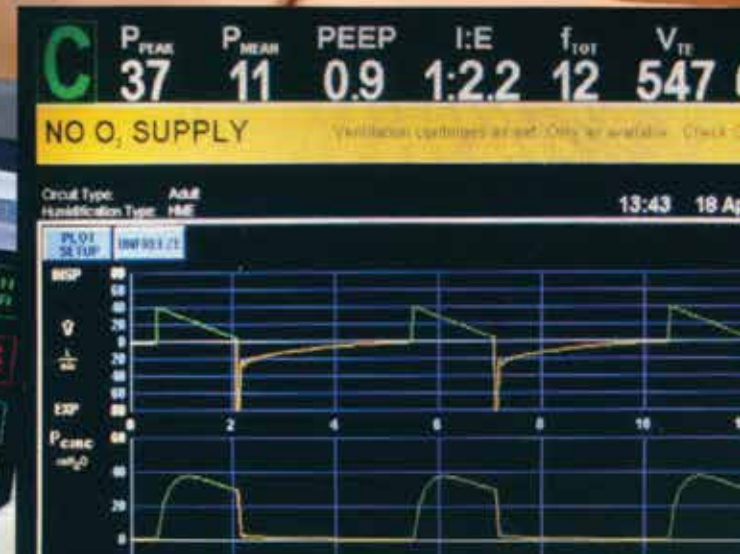
### 5. Orthopedic procedures

- Intra articular injections for shoulder and knee.
- Trauma mannequin for handling and differenttypes of bandage training.





SIMULATION-BASED MEDICAL EDUCATION (SBME)



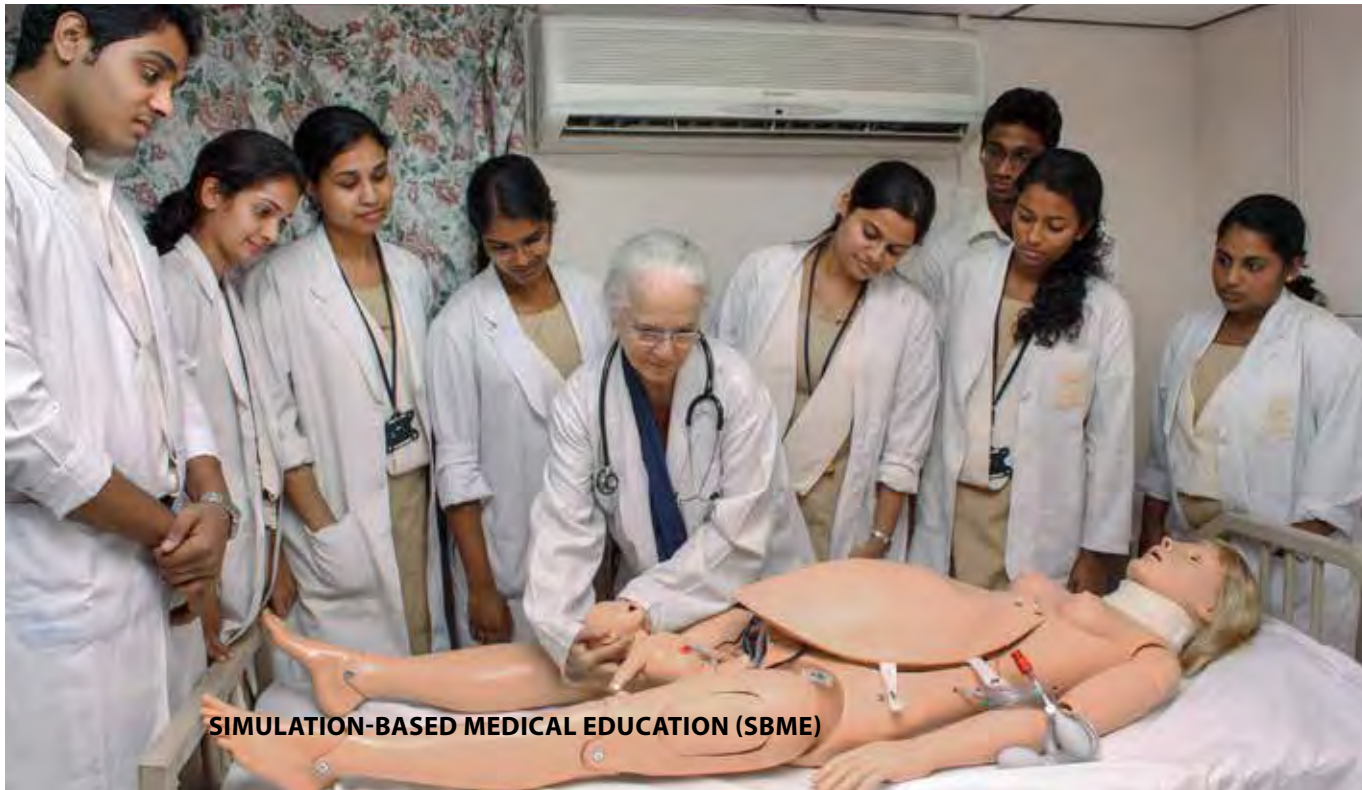
### 6. Emergency Medicine/Anaesthesia

- ICU set up with Adult CPR mannequins with monitors, provision for creating various cardiac conditions. For BCLS and ACLS training (with ventricular defibrillation facilities).
- Adult CPR - Recording mannequins for conducting examination and evaluation, for trainees.
- Mannequins for intubation, tracheostomy /cricothyrotomy trainings.
- Adult SMART- STAT- Interactive mannequin for creating different life-threatening scenarios, responding to the various treatment modalities for ACLS training; can be used as patient program for different critical conditions for conducting P.G. exam and evaluation.
- INFANT- PEDI- STAT- Mannequins for endotracheal intubation, CPR- different critical conditions can be simulated and can be recovered to normal conditions.

- Mannequin for spinal injection and LP- procedures.
- Mannequin for Central venous Catheterization.

#### ***Didactic Sessions and Training Offered***

- BCLS, ACLS- training in Adult and Newborn Simulaid.
- Basic Surgical skill training for U.G./P.G. students.
- Amrita basic clinical skills training certificate course.
- Laparoscopy training.
- Orthopaedic procedures: Intra articular injections and trauma care training.
- Video/Teleconferences.
- Video library of minimally invasive, Medical/Surgical-laparoscopic/ endoscopic/ procedures
- Real time transmission of live procedures from centers around the world.



**SPECIAL FEATURES**

Amrita Hospital Information System (AHIS) – In-house developed
Amrita University Management System (AUMS.) – In-house developed – Certified by CCHIT (Certification Commission for Health Information Technology)
Amrita School of Medicine in Avicenna Directory of Medicine(WHO)
Telemedicine connected with 51 national and 6 international centers and pan african countries, skill lab, medical illustration unit
WHO Recognized Poison Control Center
Cancer Registry – only private medical college in Kerala

**NEW PROGRAMS IN EMERGING AREAS**

D.M. Paediatric Cardiology (1st and only institution in India)
M.Ch. in Head and Neck Surgery (1st institution in India)
M.D. Nuclear Medicine (2nd in India – 1st in Pvt. Sector)
D.M. Pulmonary Medicine (2nd in India)
M.D. Geriatrics (3rd in India)
D.M. Cardiac Anaesthesia (5th in India)
M.D. Emergency Medicine (15th in India - total 19)
U.G. and P.G. – Allied Health Programs

**CENTRAL LIBRARY**

Year	2021	2022
Total Number of Books	16548	17191
Textbooks	16126	16728
Reference Books	14224	4836
Journals (National)	109	109
Journals (International)	170	170
Electronic Databases	18	20
CD/DVDs	2208	2461
Back Volumes of Journals	10256	10340
Thesis - 1569		
E-books - 5859 ; E-journals - 9795		
Facilities available – Internet browsing, scanning, computer print outs, photocopying, remote access to digital resources		
Computers - 47		
Average number of walk-ins per day - 130		

**INFRASTRUCTURE**

ITEM	STATUTORY MINIMUM REQUIREMENTS	IN POSITION
Lecture Halls	3	5
Hostels	80%	100%
Auditorium	1	2
Labs	6	11
Faculty (including U.G. & P.G. Programs)	208	322

**MEDICAL ALUMNI AT INTERNATIONAL SCHOOLS (2017-18)**

UK, Luton and Dunstable University Hospital, UK

Stanford University, California, US

King George Medical University

University of Silicon Andhra, California, US

University of Pittsburgh, US

University of Virginia, US

University of Adelaide, Australia

University of Antwerp`s, Belgium

Queen`s University Belfast, UK

University of California San Diego (UCSD)

University of Massachusetts, US

Rice University, Houston, Texas

Louisiana State University, US

University of Amsterdam

Vanderbilt University, Nashville, US

Sungkyunkwan University, Korea

Monash University, Australia

University of Birmingham, UK

Florida State University, US

University of Alabama, US

University of Heidelberg, Germany

George Washington University

Cambridge University, UK

University of Arizona, US

Oxford University, UK

Georgetown University, Washington D.C

Johns Hopkins University, Baltimore, Maryland, US

**EXPERIMENTAL ANIMAL FACILITY**

Area – Approx 75,000 sq ft.

Sheep Farm : 1.8 acres

Animals : rabbit, white rat and mice

Facilities : Lab animal MRI unit

Fully equipped animal histopathology lab

Double door autoclave

Lab animal anaesthesia machine

Non-invasive ECG tunnel for rodents

Lab animal ventilator

Homeothermic blanket

Lab animal handling equipments

Operating microscope

Biosafety cabinet

**RESEARCH PROJECTS FUNDED BY...**

ICMR Scholarship for U.G. students

Quit Tobacco International Grant

UNICEF – Infant and Young Child Nutrition

UNICEF – Dissemination Workshop

North Carolina Peers for Progress

ICMR – International colloquium on neglected tropical diseases

DST

## COLLABORATIONS

Graduate School of Medicine, MIE University, Japan – Student exchange program.

Anglia Ruskin University, United Kingdom – Faculty and student exchange program

Rosewell Park Cancer Institute, New York, USA – Head and Neck faculty exchange program.

Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA, Richard G. Azizkhan M.D. and Dept of Pediatric Surgery, AIMS.

Department of Pediatric Surgery, University of Toledo, United States of America and Dept of Pediatric Surgery, AIMS.

Lucille Packard Children's Hospital, Stanford University, Intensive Care, Research on postoperative outcomes

Children's Hospital, Boston, Harvard Medical School, Dr. Jane Newburger Fellowship exchange

Harvard School of Public Health, Dr. Richard Cash, Community Based Research, AIMS is an overseas location for MPH students

Children's Heartlink, Mr. John Cushing, Funding of training of nurses, infection control, short-term training and education

Addenbrooke's Hospital, Cambridge University Hospitals, Hills Road, Cambridge – Faculty exchange program in transplant Surgery

Mc Master University in Canada - Diabetes and Heart disease.

Birmingham University U.K - Overseas posting.

College of Medicine, University of Ilorin Teaching Hospital, Ilorin, Nigeria and Dept of Pediatric Surgery, AIMS.

Heilbronn University, Hochschule Heilbronn University of Applied Sciences, Heilbronn, Germany.

Kings College London, Institute of Psychiatry, Dr.Sophia on Psychiatry care imaging studies, Department of Psychiatry, AIMS

## BEST PRACTICES

Quality Assurance and Sustenance :  
Accreditations

Cancer Registry from 2004 onwards

Creation and Adoption of latest information  
technology

Constitution of Committees for welfare of  
faculty, students and staff

Regular and Emergency Medical Relief activities

Parent meetings and feed back collection

Online students services

Gurukula System and Senior Teachers as  
"Acharyas"

Yoga and Meditation Training, Daily evening  
Prayer

Medical Insurance for all faculty and staff

Unique teaching approaches like skill lab,  
mannequins and e-learning resources

## M.B.B.S. (Bachelor of Medicine and Bachelor of Surgery)

### Eligibility for M.B.B.S.

As per NEET U.G.-2023 norms

### Admission Procedure

Selection is based on the rank obtained in the National Eligibility cum Entrance Test (NEET) and counselling allotment by DGHS.

### Degree Details

Degree	Duration (in years)	Seats
M.B.B.S.	4½ plus 1 year internship	150

## M.D. (Doctor of Medicine) / M.S. (Master of Surgery)

### Eligibility

As per NEET P.G.-2023 norms

### Admission Procedure

Selection is based on the rank obtained in the National Eligibility cum Entrance Test (NEET) and counselling allotment by DGHS.

### Degree Details

Degree	Duration (in years)
M.D./M.S.	3 years

## D.M. (Doctor of Medicine) / M.Ch (Master of Chirurgiae)

### Eligibility

A candidate, who holds M.D. / M.S. degree from a recognized Medical College included in the Schedules to the Indian Medical Council Act, 1956 and has obtained full registration for M.D./ M.S. either from the Medical Council of India or any of the state Medical Councils.

### Admission Procedure

Selection is based on the rank obtained in the National Eligibility cum Entrance Test (NEET) and counselling allotment by DGHS.

### Degree Details

Degree	Duration (in years)
D.M./M.Ch.	3 years

## DOCTORAL PROGRAMS

Doctoral programs have been initiated in different specialities both in pre-clical, para-clinical and clinical departments as given below:

- Biochemistry
- Clinical Psychology
- Community Dentistry
- Cytogenetics
- Endocrinology
- Head and Neck
- Medical Administration
- Molecular Biology
- Neuro and Behavioral Sciences
- Oncology
- Pharmaceutical Sciences
- Physiology

It is envisaged that the Ph.D course will be for 3-5 years and selection of candidates will be done after rigorous interview and examination. Funding for candidates should be obtained through National fellowships which are given through the DBT, DST, ICMR. Students are encouraged to apply for this.

Progress in medical science has come through painstaking and systematic research. Major breakthroughs are achieved by years of focused research efforts primarily from academic medical institutions with vision and commitment in bio-medical research and development.



# AMRITA CENTER FOR ALLIED HEALTH SCIENCES

Amrita Center for Allied Health Sciences has a distinguished history of teaching Allied Health professionals the latest, most advanced medical and surgical practices. Amrita, in fact, has been training Allied Health professionals from throughout the country for more than 12 years.



FACULTY OF ALLIED HEALTH SCIENCES

The healthcare system in the country is unable to meet the needs of the population because of many factors, the most prominent one being the acute shortage of trained healthcare service providers. Availability of human resources at all levels of the healthcare system is integral in moving towards the larger goal of Universal Health Coverage for India. Allied health professionals include individuals involved with the delivery of health or related services, with expertise in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in interdisciplinary health teams including physicians, nurses and public health officials to promote, protect, treat and/or manage a person's physical, mental, social, emotional, environmental health and holistic well-being.

### **M.Sc. and B.Sc. Medical Laboratory Technology**

Medical Laboratory Technology is an Allied Health specialty concerned with the diagnosis, treatment and prevention of diseases through the use of clinical laboratory tests. Medical laboratory professionals have unlimited choices of practice settings. Hospitals, clinics, nursing homes, public health facilities, and commercial laboratories all have positions open right now for qualified laboratory professionals.

### **M.Sc. and B.Sc. Neuroelectrophysiology**

Neurotechnology is a fast developing field in medical science. It operates with the development of neurosciences, cellular engineering and signal processing. This course enables the neurotechnologist to perform and interpret electrophysiology procedures. The students will acquire skills to assess the patients and plan various electrodiagnostic procedures and implement them. The students will also get an opportunity for hands on training in Sleep studies, Autonomic function tests, Pre-surgical evaluation of epilepsy, EEG including Neonatal and long term monitoring etc. As neuro-technology is an integral part of neurology, the neuro-technologists are in great demand in hospitals in India and abroad.

### **M.Phil in Clinical Psychology**

Clinical psychology as one of the core disciplines in the area of mental health/illness has grown significantly in the last two decades. Mental health

problems are continuously on the rise owing to change in life style, habits and mounting stress in personal/occupational/social domains across various sections of the society. Clinical Psychologists apply knowledge and methods from all substantive fields of bio psychosocial sciences for promotion and maintenance of mental health of individuals.

The aim of this course is to prepare the trainee to function as a qualified professional Clinical Psychologist in the areas of mental and physical health by offering Diagnostic, Therapeutic, Rehabilitative, Administrative services, and to work towards promoting the well-being and quality-of-life of individuals.

### **M.Sc. Clinical Nutrition and Food Science**

Dieticians are the professional members of the healthcare team responsible for the nutritional care of individuals and groups. They function to assure quality nutritional care of individuals and groups at all stages of life span and in all conditions of health and disease. This program in clinical nutrition build on previously acquired knowledge of food, nutrition and biological sciences. Course instructions focus on theory and techniques of nutritional education, management and care and scientific principles upon which to plan nutritional therapy. A very prospective program is credited in Amrita that would enable the students to strive for professional competence, productivity and services to society.

### **M.Sc. and B.Sc. Respiratory Therapy**

Respiratory Therapy is a relatively new branch of Allied Health Sciences and a profession devoted to the scientific application of technology in order to assist in the diagnosis, treatment, management and care of patients with cardiopulmonary and associated disorders. Respiratory Therapists are important members of modern healthcare teams. The curriculum is developed to educate students to transform them to highly skilled Respiratory therapist. In addition they are also given orientation in Research and education.

### **B.Sc. Anaesthesia Technology**

Anaesthesia technologist is an Allied Healthcare professional who assists in administration and monitoring of anaesthesia and has an extensive



STUDENTS LAB  
ALLIED HEALTH SCIENCES

knowledge of anaesthesia techniques, instruments, supplies, and technology. Anaesthesia technologists are mainly employed by anaesthesia departments or operating theatre suites, but can be found in other areas of clinical practice including emergency departments, intensive care units (ICU) and day surgery clinics. Anaesthesia technologists work as a member of a multi-disciplinary team that includes doctors, nurses and support staffs. Amrita Institute of Medical Sciences has 28 operation theatres and 220 intensive care beds, with state-of-the-art equipment giving students exposure to the most modern techniques in critical care.

### **B.Sc. Cardiac Perfusion Technology**

Cardiovascular perfusion is the science of providing extracorporeal circulation in order to artificially support and temporarily replace a patient's respiratory and circulatory systems. Clinical Perfusionists are expert members of the cardiac surgical team, and provide life saving support of patients requiring extra corporeal circulation, including but not limited to major cardiothoracic, vascular and transplant surgeries, as well as support of the critically-ill patient. Cardiovascular Perfusionists are important members of the open-heart surgical team whose primary role is to support cardiopulmonary bypass using a heart-lung machine and other ancillary equipment. The primary aim of B.Sc. Cardiac Perfusion Technology is to academically and clinically prepare the cardiovascular perfusion student for professional practice.

### **M.Sc. and B.Sc. Cardiovascular Technology**

Current management of various cardiac disorders includes complex diagnostic and therapeutic procedures, which involve use of various equipments, computer hardware, tools, machines, and pharmacological agents. Handling of these equipments and tools as well as their regular maintenance requires advanced and focused knowledge of the scientific principles on which the tests and equipments function, as well as to have hands-on skill in using these equipments correctly and safely. The graduate program in Cardiovascular Technology consists of three years of clinical faculty supervised theoretic learning and practical hands-on training. This

enables the student to apply specialized occupational theory, skills and concepts.

### **M.Sc. and B.Sc. Diabetes Sciences**

As the number of people with diabetes increases, so does the need for diabetes-aware skilled healthcare providers. This course is intended to train Diabetes Educators who would assist doctors in their clinic in managing diabetic patients. Diabetic educators will be able to counsel patients about diet, initiate insulin therapy, provide psychological support etc; on an individual basis and also conduct group education sessions on Diabetes to patients and their relatives. They will also learn basics of Medical nutrition therapy, basic podiatric care and essential statistics which would enable them to give dietary advice, podiatric care and conduct clinical audits and data entry. This course will enable the successful candidate to be posted as an assistant to a Diabetologist in a clinic or hospital, specializing in Diabetes to assist the physician in clinical tasks and also participate in clinical management.

### **M.Sc. and B.Sc. Dialysis Therapy**

Three year graduate program with one year internship in Dialysis provides students with the opportunity to study the principles of dialysis, basic medical science of the kidney, fluid and electrolyte balance, hematologic aspects, infectious diseases, dialysis systems and equipment, vascular access to circulation, blood chemistries, complications of renal failure, psychosocial aspects and an overview of peritoneal dialysis and renal transplantation. The program seeks to prepare students to work under the supervision of highly skilled medical professionals. A dialysis technologist can set up, evaluate, operate, and troubleshoot dialysis machines, and this knowledge can be used to find work in quality control or other areas in dialysis machine manufacturing.

### **B.Sc. Echocardiography Technology**

Current management of various cardiac disorders includes complex diagnostic and therapeutic procedures, which involve use of various

equipment, computer hard ware, tools, machines, and pharmacological agents. An echocardiology technologist uses high frequency sound waves to create pictures of the human heart and identify possible medical problems. He/She is also known as a cardiovascular sono-grapher, uses ultrasound technology to create images of the human heart and measure its performance. Echo-cardiology technologist work with cardiologists to diagnose and treat problems associated with the heart and peripheral blood vessels.

### **M.Sc. and B.Sc. Emergency Medical Technology**

The concept of emergency medicine is relatively new to the Indian medical world while it has become the back bone of the healthcare system in most developed countries. Emergency medicine is a field of practice based on the knowledge and skills required for the prevention, diagnosis and management of the acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of undifferentiated physical and behavioural disorders. It is a speciality in which time is critical. As the number of trauma and natural disasters are increasing day by day, Emergency Medicine has become the need of the hour.

### **B.Sc. in Medical Radiological and Imaging Technology** **B.Sc. in Radiotherapy Technology**

This branch of Allied Health Science deals with the use of sophisticated technology in medical imaging and cancer treatment. It has various sub specialties such as Radiology, Radiotherapy and Nuclear Medicine. In Amrita Institute of Medical Sciences, Departments of Radiology and Radiation Oncology are jointly conducting B.Sc. MRT program since 2005. Very good job opportunities are being created in the field of Radiologic technology. A large number of hospitals have installed advanced imaging and therapeutic equipments and there will be an increased need of Radiologic technologists in the coming years in India and abroad. After the completion of the course candidates can work as: Radiological technologist, Radiotherapy technologist and Nuclear medicine technologist.

### **M.Sc. and Bachelor of Physician Associate (PA)**

Physician Associates are formally trained to provide diagnostic, therapeutic and preventive health care services in virtually all medical specialties, as delegated by a physician. Working as members of a health care team, they take medical histories, initial examination of the patients, order for laboratory tests and x-rays and assist the doctors for diagnosis and treatment. They also handle minor injuries by suturing, splinting and casting. This is a primary course for the post of Physician Associate. The scope of this course is tremendous in our country. Apart from working as PA, they get placements in medical software institutions, pharmaceutical industry and organizations developing and marketing sophisticated medical devices, medical tourism, and medical insurance. Besides, they will be appointed as coordinators for various clinical trials.

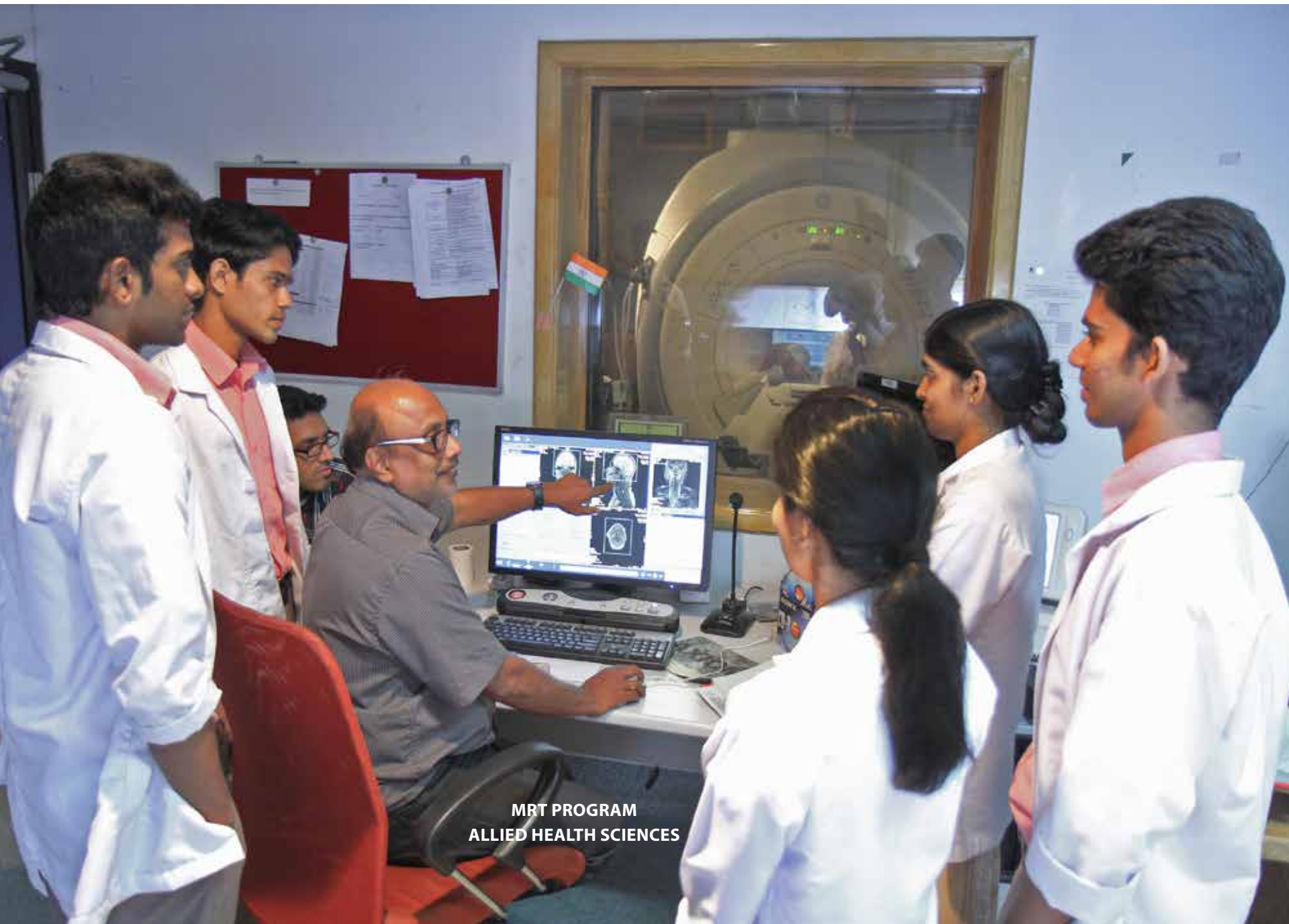
### **Bachelor of Optometry**

Optometry is a health care profession which deals with the examination, diagnosis, treatment and management of diseases and disorders of the visual system. It is a vision care science. One can also define it as the science of eye equipment (including lenses and spectacles) which is imbued with the idea of improving the vision of the human eye and remove all kinds of obstacles of sight which an individual may experience. The training will enable a student to become a competent person in providing service as an Optician, Optometrist, Refractionist and Ophthalmic Assistant to the community in urban, semi-urban and rural settings in private, semi-Governmental and Governmental sectors.

### **B.Sc. Operation Theatre Technology**

Operation Theatre Technology is a detailed technical occupation in the field of health science. These medical professionals are an important part of the operation unit team who work alongside with the surgeon, anesthesiologist and nurse in order to provide quality patient care throughout the surgery.

These technicians make sure that every single process in the operation theatre is as secure and flourishing as possible. Their prime duty is to take care of all the work and management of the operation theatre which comprise looking after all the surgical instruments, their sterilisation, preparation of



MRT PROGRAM  
ALLIED HEALTH SCIENCES

dressings table, operation theatre table, instrument table as well as anesthesia table. They also look after the drugs necessary for surgery, anesthetic gases, drapes and all the linen and their sterilisation. They bring together both sterile and non-sterile tools and at the same time regulate them to make sure that all are functioning appropriately.

### B.Sc. Intensive Care Technology

B.Sc. Intensive Care Technology program is greatly in demand. Services of an intensive care technologist are highly desired in every hospital and healthcare unit. Here in this course you will be learning all about intensive care given to the ICU patients. You learn monitoring the equipment, recording the data and providing these data to the physicians. You will be also learning providing first-aid to patients in the absence of suitable medical aid.

### Bachelor in Audiology and Speech Language Pathology

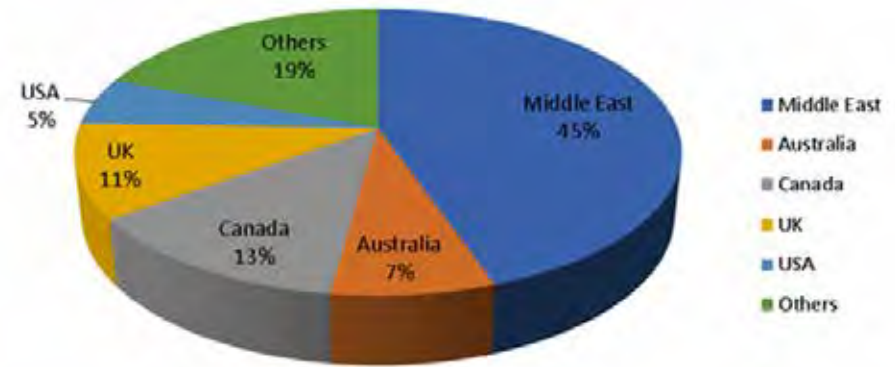
Audiology is a branch of science that deals with hearing and hearing related disorders. The Speech and Language Pathology course deals with the normal and abnormal aspects of voice, speech and language. Students of Speech Language Pathology are trained in differential diagnosis and management of voice, speech and language disorders. Job opportunities are available for audiologists and speech language pathologists, both in India and overseas.

Allied Health Science students, Ms. Sruthi and Ms. Megna Paulo won zonal prizes in All India Essay Writing Event 2014 organized by Shri Ram Chandra Mission in collaboration with the United Nations Information Center for India and Bhutan.

### Factors That Differentiate Our Allied Health Science Academics

- Emphasis on practical and clinical skill.
- Three Sessional examinations.
- Classes in Computer knowledge, communication skill, Quality and Accreditation.
- Clinical Skill simulation center.
- BLS training.
- Participation in medical camps, workshops, National and International Seminars and conferences.

### Distribution of Alumnis Working Abroad



### Innovations and Best Practices

- Cultural integration through value based education.
- Regular parent-teacher meetings and feedback collection.
- Yoga and Meditation training, daily evening prayer.
- Arts Festival and Sports Meet.



## UNDERGRADUATE PROGRAMS (Allied Health Sciences)

Program	Duration of the program	Eligibility Conditions
B.Sc. Anaesthesia Technology (AIT)	3 years + 1 year internship	Pass in +2 with 60% aggregate marks in Physics, Chemistry, Biology and English
B.Sc. Cardiac Perfusion Technology (CPT)		
B.Sc. Cardio Vascular Technology (CVT)		
B.Sc. Diabetes Sciences (DBS)		
B.Sc. Dialysis Therapy (DIT)		
B.Sc. Echocardiography Technology (ECT)		
B.Sc. Emergency Medical Technology (EMT)		
B.Sc. Neuro Electro Physiology (NEP)		
Bachelor of Optometry (OPT)		
Bachelor of Physician Associate (PA)		
B.Sc. Respiratory Therapy (RPT)		
B.Sc. Operation Theatre Technology (OTT)		
B.Sc. Intensive Care Technology (ICT)		
Bachelor of Audiology and Speech Language Pathology (B.A.S.L.P.)		
B.Sc. Medical Laboratory Technology (MLT)	4 years	
B.Sc. in Radiologic and Imaging Technology B.Sc. in Radiotherapy Technology	4 years	First class in +2 with 60% aggregate marks in Physics, Chemistry, Biology, English and 60% marks separately in Mathematics

**Admission Procedure:** Selection is based on the rank obtained in the Amrita Entrance Exam conducted by Amrita Vishwa Vidyapeetham.



POSTGRADUATE PROGRAMS (Allied Health Sciences)			
Program	No. of seats	Duration of the program	Eligibility Conditions
MHA Master of Hospital Administration	35	2 years	Any graduation from recognized university with minimum 50 % marks. Candidates with qualification in hospital-oriented subjects will be given preference
M.Phil in Clinical Psychology*	10	2 years	M.A./M.Sc. degree in Psychology from a university recognized by the U.G.C with a minimum of 55% marks in aggregate. SC/ST/ OBC category, candidates should have secured a minimum of 50% of marks in the aggregate Candidates with qualification in Clinical Psychology related subjects and internship experiences in the area of mental health will have an added advantage for admissions (as per RCI norms).
MPH Master of Public Health	25	2 years	M.B.B.S., B.D.S., M.Sc. Community Nursing, Masters in Clinical Pharmacy, Social Science, and Physiotherapy Bachelor Degree in AYUSH stream. Addl: Experience in health field related to public health is desirable and is an added advantage.
Executive MPH	25	2 years	Amrita Faculty of School of Medicine and School of Dentistry nominated by HODs. Graduates with minimum qualification of M.B.B.S./ B.D.S. regularly employed in a Govt/ Private Sector (work experience of 2 years).
Post Graduate Diploma in Medical Radiological Sciences (PGDMRS)*	8	2 years	M.Sc. Physics with minimum 60% of marks

**\*Admission Procedure:** MPhil Clinical Psychology and PGDMRS has Amrita Entrance Exam and thereafter personal interview. All other MSc courses are based on the marks obtained and personal Interview.

## M.Sc. PROGRAMS (Allied Health Sciences)

Program	No. of seats	Duration of the program	Eligibility Conditions
M.Sc. Medical Laboratory Technology (MLT) I. Biochemistry II. Pathology III. Microbiology	12	2 Years	Pass in B.Sc. MLT (4 Years regular course only)
M.Sc. Deglutology and Swallowing Disorders	6	2 Years	Bachelor of Audiology and Speech Language Pathology (B.A.S.L.P.)
M.Sc. Respiratory Therapy (specialization in Adult and Pediatric)	4	2 Years	B.Sc. Respiratory Therapy [3 years + one year Internship]
M.Sc. Clinical Nutrition and Food Science	10	2 Years	B.Sc. in: a) Food and Nutrition b) Human Nutrition c) Applied Nutrition d) Nutrition and Dietetics e) Home Science f) Clinical Nutrition and Dietetics g) Food Science and Quality control h) Food Service Management and Dietetics i) B.Sc. in Life Sciences-only Food Science degree j) B.Sc. Family and Community Science k) P.G. Diploma in Nutrition and Dietetics l) P.G. Diploma in Clinical Nutrition
M.Sc. Neuro Electro Physiology	4	2 Years	B.Sc. Neuro Electro Physiology [3 years + one year Internship]
M.Sc. Diabetes Sciences	4	2 Years	Pass in B.Sc. Diabetes Sciences [3 years + one year Internship]
M.Sc. Cardiovascular Technology	4	2 Years	Pass in B.Sc. Cardiovascular Technology [3 years + one year Internship]
M.Sc. Dialysis Therapy	4	2 Years	Pass in B.Sc. Dialysis Therapy [3 years + one year Internship]
M.Sc. Physician Associate (Medical Oncology)	4	2 Years	Pass in B.Sc. Physician Associate (General Medicine) [3 years + one year Internship]
M.Sc. Physician Associate (Cardiovascular and Thoracic Sciences)	4	2 Years	Pass in B.Sc. Physician Associate (CVT) [3 years + one year Internship]
M.Sc. Emergency Medical Technology	4	2 Years	Pass in B.Sc. Emergency Medical Technology [3 years + one year Internship]



# MASTER OF HOSPITAL ADMINISTRATION (M.H.A.)

Hospital Administrators not only have to be robustly trained in the art and science of health and hospital management, but they also have to possess the interpersonal skills and business savvy required to manage hospitals and healthcare organizations.

# Master of Hospital Administration Program

As healthcare management becomes increasingly challenging, there is a greater need for not only skillful doctors but also efficient Hospital Administrators. With increasing emphasis on quality of health care and patient satisfaction, there is a tremendous need for individuals with a professional qualification in Hospital Administration.

The healthcare campus of Amrita Vishwa Vidyapeetham at Kochi offers this much sought after postgraduate professional course in Hospital Administration. The program emphasises on developing knowledge, skill and attitude pertaining to budding Hospital Managers. It also helps the candidates in developing expertise in planning and managing different types of hospitals and we equip them with problem solving skills as well.

With medicine becoming more and more technology dependent, and equipment-intensive, the need for a system driven approach to practice hospital administration has now become very crucial. Rising healthcare cost, procurement, optimum utilisation, maintenance and providing financially sustainable and affordable healthcare to the people will be the challenge that any hospital administrator will have to face.

An administrator's prime role is to ensure that all these diverse systems work together seamlessly to provide quality healthcare to the patients. Delivery of efficient services without intimidating the patient is the hallmark of a good hospital administrator and we prepare them to meet this need and be well-equipped to meet future challenges.

As Hospital Administrator, the emphasis is on quality, efficiency and cost containment that requires 100% commitment to ensure quality in-patient care, lowering the length of stay, increasing resource utilisation and working with the clinical, paramedical, and support staff to co-ordinate all aspects of in-house care.

The success of a hospital manager lies in several things : from multidisciplinary conceptual skills required to develop, market and diversify services to protecting

medical profession and clients from unnecessary litigation and ensuring a rich team of professionals for quality healthcare.

Our M.H.A. program enables individuals to take on leadership roles by equipping them with training in: Public Health, Basic Medical Sciences, Hospital Planning and Organising, Human Resource Management, Hospital Operations Management, Quality Assurance, Material Management, Project Management, Financial Management, Marketing, Hospital Information System Hospital Policies, Practices, Acts and Committees, Research, etc.

Thus Amrita prepares a candidate to assume the responsibilities of Manager/Asst. Hospital Administrator/Administrator in a government, semi government, corporate or charitable hospital and to be successful healthcare professionals.

## **Amrita's SIX Core Competencies (ASCC) in Hospital Administration Includes:**

- Knowledge of the Hospital and Healthcare Management
- Leadership
- Professionalism
- Business Skills and Knowledge
- Communication and Relationship Management
- Value Based Education

## **Program contents**

- Principles of Healthcare Management
- Human Resources Management
- Managerial Communication
- Hospital Operations and Services
- Organisational Behaviour
- Culture Education and Ethical Practices
- Managerial and Healthcare Economics
- Hospital Planning and Design



- Medical Records Documentation
- Group Dynamics and Team Building
- IT for Management
- Hospital Supportive Services
- Marketing of Hospital Services
- Materials Management and Inventory Control
- Finance Management
- Costing and Management Accounting
- Research Methodology and Biostatistics
- Business Laws and Medico – Legal system
- Customer Relationship Management
- Public Relations
- Hospital Project appraisal and evaluation
- Enterprise and resource planning
- Nursing Administration
- Emergency Preparedness
- Medical Informatics and Telemedicine
- Community Medicine and Outreach
- Quality Assurance
- Medico-legal Systems
- Soft Skills
- Medical Insurance
- Consumer Behaviour
- Safety Engineering in Hospital

- Biomedical Waste Management
- Quantitative Techniques
- Case Studies Presentations
- Organisational / Hospital Visits
- Internship Projects
- Main Full Time Project
- Dissertation and Viva voce (Final Semester)

### **On-Site module and the systematic approach of teaching and assessment**

A blend of theoretical sessions, class room discussions, individual and group tasks led by full time faculty and experts from the industry provides our students with knowledge and skill sets. Aptly supplementing this, during the four semesters of the MHA program the practical training and orientation at Amrita Institute of Medical Sciences and Research Center prepares the student for a career that is not only exciting but vital to the lives of thousands of people.

### **Hands on Training in a University Teaching Hospital**

Students are assigned to various departments where they learn each aspect of departmental functioning and then consolidate their efforts towards problem solving exercises as a component of knowledge implementation.

#### **Key Areas include:**

Out Patient Services, Analysis of case mix and disease trends in the departments; In patient operations; Role of medical and paramedical staff; Coordination of medical and non-medical services; Equipments and instruments utilization and review; Deployment of IT services; Performance appraisal and assessment, Performance standards evaluation, Prevention and health protection; Promotion of community health programs; Patient privacy, confidentiality and security; Service cost and analysis, Inventory scheduling and activities, Community healthcare and checkup camps, department based promotion of medical tourism.

Students will be asked to rigorously read standards text books and journal articles related to a department to fully understand a department and its ancillary functions and share the content by making oral and power point presentations regularly on the problems that they observe and make recommendations.

### **Gradually the students will gain knowledge in the higher realms like:**

- Project Implementations
- Organising department(s)
- Operational Efficiency
- Workflow Analysis
- Performance Analysis
- Financial Feasibility
- Hospital Logistics
- Utilization reviews
- Workload Analysis
- HIS and EMR implementation
- Quality Assurance
- Disaster Management

At the end of the training process students will consolidate and also improvise skills exhibiting in the areas of Professionalism, Leadership and Decision making. In the final phase of their M.H.A. program they will focus their attention on Specific Full time Project with a mission to prove their caliber in problem solving, analysis and execution.

### **Jobs and Careers Waiting?**

Master of Hospital Administration degree will open up a variety of job opportunities. Core career avenues include: hospital operations, quality assurance in hospitals, hospital project management, general administration, research, insurance management, public health management, hospital consultancy, etc.

Commonly, you will work with healthcare providers. In this setting, you can expect to work in the ongoing management of a health care facility, most often in a hospital. Job will likely revolve around general administration, HR, business development, risk management, patient care and safety, facilities management, finance, inventory, marketing of services and strategic planning, depending on your area of choice, talents and the needs of the specific facility.

Alternately one can work with healthcare suppliers, the organizations that give healthcare facilities like supplies, equipment, and financial and insurance services that are necessary for a hospital. These include pharmaceutical companies, training organizations, consulting firms, firms doing market research, and analysis, healthcare supply and equipment manufacturers, healthcare provider and insurance companies, and biotechnology companies.

Not to mention the opportunities available in Middle East, Europe and the West, who are looking for trained hospital management professionals.

### **Outreach Learning Experience**

Students are also deployed on variety of outreach and community activities like organizing specialty medical camps, awareness sessions, visits to various other hospitals including that of ISM, market research surveys and participating as delegate presenters and organising in national and international conferences in healthcare. These unique opportunities will bring out the innate talents of the students for proper communication, group dynamic behaviour and inculcate values for selfless service.

### **Placement Training**

All the students are imparted compulsory professional training for Campus Recruitment.

### **Degree structure**

The Two year (four semesters) postgraduate degree program is designed to provide an equal split between theory and practice.

### **Eligibility for Admission**

Any graduation with minimum 60% marks from recognized university.

Candidates with qualification in hospital-oriented subjects will be given preference.



# MASTER OF PUBLIC HEALTH (M.P.H.)

Master of Public Health program at Amrita is designed to meet the healthcare needs of people. It is specially designed to develop leadership, communication and problem solving skills, positioned for true integration of public health science and practice.



# MASTER OF PUBLIC HEALTH (M.P.H.)

## OVERVIEW

Master of Public Health Program at Amrita Institute of Medical Sciences and Research Center, Cochin, Kerala, India is designed to meet the healthcare needs of people. This being a full-time program can be completed in two full years. This sincere venture of Amrita deemed university which started two years ago and we are committed to make this program of global standard. It is a 24 month full time program and has been designed to build an understanding, knowledge, skills and attitude for better public health practice and research. The standards and syllabus are at par with the renowned international and national universities. All students receive a sound education in the core six suites and practicums.

### Program Outline

The course consists of 6 core suites which are compulsory -

1. Epidemiology
2. Biostatistics
3. Public health biology
4. Environmental and occupational health
5. Social and Behavioral science
6. Health care, Health system management and Health Economics

### Practicum

- Three practicum at the end of each semester
- Capstone project in the fourth semester

In all classes which are mandatory, the emphasis is on the relevancy of information and skills to public health practice.

The most important one and the most advantageous and key area in the course is the Applied Learning Experience (ALE), a self-designed field study during the course. It lets students integrate what they have learned into a real-world public health problem in a community-based setting.

## Mission

Master of Public Health (MPH) program mission is the education and training of students within a course of study that promotes an understanding of the theoretical, scientific, and practical aspects of public health.

## The objectives of the Master of Public Health program are:

- To equip students to have an overall perspective on public health.
- To create good programme managers in public health.
- To inculcate interdisciplinary approach to problem solving skills in public health.
- To encourage interdisciplinary research in public health.
- To improve leadership skills in public health.
- To prepare students to tackle current and emerging global public health problems such as pandemic flu, AIDS, bioterrorism, obesity, diabetes, disparities in access to healthcare, and many other critical public health problems.
- To recognize and make the student understand that in today's world, a thorough and rigorous public health education must embrace multiple areas viz: biostatistics, environmental health, epidemiology, health services administration, social and behavioral sciences, biological sciences, ethics, information technology, health policy and law in health.
- To have an in depth field experience that serves as a capstone project that helps students integrates knowledge across courses.

## Career Opportunities for M.P.H. Graduates

Graduates of this program typically enter services as public health administrators, advisors, managers, researchers, practitioners, educators, and consultants in a wide variety of public health and NGO and international agencies. Many serve as health educators or health promotion specialists in business, industry, higher education, voluntary agencies, government, and private health care settings.

## Program Highlights

- Competency based
- Specially designed to develop leadership, communication and problem solving skills(ALE)

- Positioned for true integration of public health science and practice (ALE)
- Additional certifications as per the students' choices
- Includes 3 practicums and capstone project to give real experience before graduation
- Individualized Goals Analysis of each student

### Scheme of Exam

- Internal assessment
- Modular Examinations
- University examinations

### Certification Program

Two certification programs will be offered during the course and the decision on the subject for certification will be the prerogative of Amrita center for public health.

**Age :** The upper age limit was kept as 40 and for government sponsored candidates, it will be as per government norms.

### Eligibility Criteria (see table on the right)

The Eligibility criteria for the course are as follows:

Medical / Dental / Nursing / AYUSH / Pharmacy / Physiotherapy / Biomedical engineering / Allied sciences / Veterinary Sciences / Life Sciences / Statistics / Biostatistics / Demography / Population sciences / Nutrition/ Sociology / Psychology / Anthropology / Social work / Agriculture

Demonstrated work experience in a healthcare-related field is highly desirable.

### Duration of the program

This course is designed to be a two years full time program which includes dissertation

### Special Features of the program:

In order to ensure hands on experience, we provide opportunities for two practicums of which one will be group work and another will be individual field activity. This will enable the students to have a real time experience in the field of Public Health.

Total Seats	Duration	Conditions of Eligibility for Admission to the Program
<b>25</b>	<b>2 Years</b>	<p><b>For Indian Students :</b></p> <ul style="list-style-type: none"> <li>a) M.B.B.S.</li> <li>b) B.D.S.</li> <li>c) B.Sc Nursing</li> <li>d) M.Sc Nursing</li> <li>e) Graduates from Pharmacy Science</li> <li>f) Graduate from Physiotherapy</li> <li>g) B.Sc Allied Health Sciences</li> <li>h) Graduate in Bio Medical Engineering</li> <li>i) Pharm. D</li> <li>j) B.Sc Social science</li> <li>k) Bachelor Degree in AYUSH stream from a recognized University.</li> </ul> <p>The minimum percentage for eligibility to the course is 50%</p> <p>Additional : Experience in health field related to public health is desirable and is an added advantage.</p> <p><b>For International Students:</b></p> <p>Should have reasonable score for TOFEL and GRE</p> <p>Should be governed by Amrita Vishwa Vidyapeetham norms for international admissions.</p>

We also provide an opportunity for students to do Internship with potential employers for a month in Government organizations and also reputed NGOs as per the interest of the students.



**PUBLIC AWARENESS SESSION**

## Admission Procedure

Selection is based on the Marks obtained in the qualifying examination and Personal Interview and group discussion.

### a. Indian Candidates:

The submission of application is online through Amrita website. Prospective candidates will be evaluated on the basis of educational qualifications, professional experience relevant to the field of public health, group discussion and interview. There will be ONE seat each reserved for Kerala Government, Government of India and NGO sponsored candidate.

### b. International Candidates:

Selection will be based on educational qualifications, professional experience, assessments made by the sponsoring organizations and a telephonic interview. International candidates have to provide certification for proficiency in English if required at the time of selection. They should also have the certificate of equivalence from national board. The international students should have reasonable score for TOFEL and GRE and also would be governed by Amrita Vishwa Vidyapeetham norms for international admissions.

### c. Hostel / Accommodation:

The students are required to make their own arrangements for accommodation and transport. If hostel rooms are available only, they will be provided with accommodation and the charges will be as per norms qualifications, professional experience relevant to the field of public health, group discussion and interview. There will be ONE seat each reserved for Kerala Government, Government of India and NGO sponsored candidate.

**Age:** The upper age limit is 45 years and for government sponsored candidates, it will be as per government norms.

## Executive M.P.H. for Medical Graduates: Concept note

The executive Masters in Public Health (M.P.H.) course is a strategy driven course formulated with the aim of creating leaders with cutting edge skills in research and public health.

- 1) **Purpose of the program:** To equip participants to gain public health expertise in their corresponding specialties and to establish leadership in research.
- 2) **Eligibility criteria:** Graduates with minimum qualification of M.B.B.S./B.D.S. regularly employed in a Govt/Private Sector (work experience of 2 years).
- 3) **No of seats:** 25
- 4) **Selection Procedure:** The selection will be based on Interview
- 5) **Proposed program fee:** Rs 1.5 lakhs per year plus administrative fees as applicable
- 6) **Duration of the program:** 2 years
- 7) **Program Details:** Total duration of the program is 2 years with a total of 100 credits. There will be regular classes held weekly on fixed days. On other days, assignments and field activities will be conducted.
- 8) **Teaching methods:** Didactic sessions, seminars, Journal clubs and Assignments
- 9) **Program outline:**
  - Consists of 4 core suites and 1 Add on suite
  - Core suite 1-Basic epidemiology
  - Core suite 2-Applied Biostatistics
  - Core suite 3- Nutrition, Environment, Occupational Health and Population Science
  - Core suite 4- Health Policy and Health system research
  - Core suite 5- Add on Suite (To select any one topic of interest): Different options for electives will be provided during the two year course. It will be available in the pattern of workshops, CMEs etc. on topics of public health importance such as social and behavioural sciences, health economics, epidemiology etc. The candidate can select any one topic of interest.
- 10) **Academic credits:** There will be a total of 100 credits with, 60 credits for the 5 suites and 40 credits for dissertation which needs to be published in a PubMed or Scopus indexed journal.



### Core Suites

- I. Basic epidemiology includes principles of epidemiology, quantitative epidemiology, epidemiology of infectious and non-infectious diseases. Various research methodologies such as descriptive studies, case control studies, randomized controlled trials etc. Qualitative epidemiological studies and critical analysis of published epidemiological studies design and execution of surveys with public health importance will be dealt with.
- II. Applied biostatistics and demography includes methods in biostatistics and research methodology, advanced bio-statistics and advanced special topics, analysis concepts and methods in infectious disease and non-infectious disease, statistical methods and SPSS applications. Also includes vital statistics and demography.
- III. Nutrition, environment, occupational health and population science includes environmental and occupational epidemiology and environmental health and human ecology, pollution and waste

management, environmental safety, medical entomology and principles and relevance of industrial and occupational health, hospital and health care management.

IV. Health Care, Health System Management and Health Economics includes health planning, policy making and analysis, implementation, monitoring and evaluation, health system analysis, operational research.

Add on Suite (To select any one topic of interest)

V. Cross cutting topics in public health practice inclusive of project management, evidence informed decision making, health economics, public health nutrition , quality assurance.

**Age :** The upper age limit was kept as 40 and for government sponsored candidates, it will be as per government norms.

### **The Eligibility criteria for the program are as follows:**

Medical / Dental / Nursing / AYUSH / Pharmacy / Physiotherapy / Biomedical engineering / Allied sciences / Veterinary Sciences / Life Sciences / Statistics / Biostatistics / Demography / Population sciences / Nutrition/Sociology / Psychology / Anthropology / Social work / Agriculture

**Demonstrated work experience in a healthcare-related field is highly desirable.**

### **Duration of the program:**

This course is designed to be a two years full time program which includes dissertation

### **Special features of the program:**

In order to ensure hands on experience, we provide opportunities for two practicums of which one will be group work and another will be individual field activity. This will enable the students to have a real time experience in the field of Public Health.

We also provide an opportunity for students to do Internship with potential employers for a month in Government organizations and also reputed NGOs as per the interest of the students.

# Post Graduate Diploma in Medical Radiological Sciences (PGDMRS)

## OVERVIEW

Medical physics is a profession that combines principles of physics and engineering with those of biology and medicine to provide better diagnosis and treatment of human disease while ensuring the safety of the public, patients and those caring for them.

### Scope :

Most medical physicists are employed at universities and hospitals with a smaller number in research institutes, government health agencies, and industrial organizations. A few are self-employed, usually as consultants. Frequently, the hospital in which a medical physicist works is associated with a medical school, and the physicist is a member of the academic staff.

P.G.D.M.R.S. is a professional course at the Post Graduate level that prepares the students for clinical practice as a medical physicist. The

P.G.D.M.R.S. program offers students course work and practical clinical training in Medical Radiological physics as it is applied to the diagnosis and treatment of human diseases. Required course work provides theoretical and practical training in radiation dosimetry, radiation biology, radiation therapy, imaging, and health physics. Graduates of this Post Graduate Medical Physics program typically go on to successful clinical and academic careers where they contribute to all specialty areas of medical physics.

### Eligibility Criteria

M.Sc. Physics with minimum 60% of Marks

### Number of Seats

Eight (8)

### Duration

Course work and Practical: 12 months (First Year)

Internship and Project and Dissertation: additional 12 months  
(Second Year)

### Admission Procedure

Selection is based on the Marks obtained in the Entrance Examination, qualifying examination and personal interview conducted by the Department.



LINEAR ACCELERATOR



# AMRITA SCHOOL OF DENTISTRY

The Dental School seeks to provide top quality, affordable, comprehensive education in oral and craniofacial care. The School ensures that students undergo an integrated educational experience that combines extensive clinical practice with rigorous course work.



# PRINCIPAL

## Amrita School of Dentistry



**Prof. Balagopal Varma R., BDS, MDS, MRACDS (PAED)**  
**PRINCIPAL, HEAD OF DEPARTMENT, SCHOOL OF DENTISTRY**

**Prof. Balagopal Varma R** completed B.D.S. and M.D.S. in Pedodontics and Preventive Dentistry from College of Dental Surgery, Manipal. He was later inducted as a Member of Royal Australasian College of Dental Surgeons in special field stream of Paediatric Dentistry (MRACDS (PAED)). He has many scientific publications and presentations to his credit. Prof. Varma is member of Board of studies at various Universities in India and an examiner for M.D.S. and B.D.S. at various universities in India. He has contributed to 3 text books. He was awarded the best scientific paper award in specialty of Pedodontics at 57th National IDA conference. He has received the "STAR PEDODONTIST" award in 2015. He was the Organizing Secretary of 38th ISPPD National Conference in 2016.



## PRINCIPAL'S MESSAGE

Amrita School of Dentistry amalgamates dental education with value-based education. This is what makes our Dental School different from other institutions. In a very short span Amrita School of Dentistry was listed among the top dental institutions in the country. Our institution has been very active in research and publications. The culture of research is inculcated during the undergraduate training program onwards. Many PhD Scholars are being accepted in various Departments for the doctoral study. A Fellowship program in Maxillofacial Prosthodontics was also started from last year.

Students are also exposed to inter disciplinary patient care. The Comprehensive Clinic system introduced for Under Graduate training provides a student centric and patient friendly clinical environment. Amrita School of Dentistry is one among the few Dental Institutes in the country to introduce this novel training system. The Head and Neck Department and Department of Sleep Medicine are world class training centers in which dental professional are members of health care providing team. We have M.D.S. training program in all the dental specialties.





**W**e are a full-fledged establishment with all mandatory requirements as per DCI norms and are indeed proud to say that we are the First Dental School in Kerala to start MDS in all 9 specialties.

Our broad education program and our success have shown that our students are better educated and wiser today. The investment we make in our students is certainly an investment for our future, allowing our graduates to continue to be leaders in dental care, not just in our country but also on a global platform.

The B.D.S. course offered by Amrita School of Dentistry commenced in September 2003. It is housed in a self-contained four-storey building, having a built-up area of 154,000 sq. ft., and is one of the biggest dental colleges in Asia. The building includes pre-clinical dental laboratories, lecture halls, a conference center, faculty offices, administrative offices, clinical treatment areas, small group discussion areas, a faculty practice, and a library. Sixty (60) students are enrolled for the B.D.S. course in the School of Dentistry every year. The duration of the course is 4 years with 1 year compulsory rotating internship. The curriculum is in accordance with the regulations of the Dental Council of India. Student:Mentor ratio is 8:1.

An integrated approach combining extensive clinical practice with rigorous course work promotes better understanding of dentistry and its relationship to overall health. High quality training facilities are available in Head and Neck Surgery and Plastic and Reconstructive Surgery apart from regular classes in all specialties in dentistry such as Orthodontics and Dentofacial Orthopaedics, Prosthodontics and Crown and Bridge, Conservative Dentistry and Endodontics, Paediatric and Preventive Dentistry, Oral Medicine and Radiology, Periodontics, Oral and Maxillofacial Surgery, Oral Pathology and Microbiology, and Public Health Dentistry. The students are exposed to maxillofacial prosthetic rehabilitation carried out in the Department of Prosthodontics. A great deal of emphasis is placed on community oriented dental outreach programs. ASD extends the knowledge of oral health by encouraging and assisting faculty in the pursuit of innovative research. In ASD, we give equal importance to cultural education. The School also stimulates and encourages the qualities of ethics, human values, and character that marks the true oral health professional.

## **A Diverse Patient Population**

The Amrita School of Dentistry attracts a diverse patient population. Students have the opportunity to acquire a full range of clinical experiences, both within the dental school and the community, including treatment of emergency cases, medically compromised cases, and physically and mentally challenged patients. Students become adept at attending to the special needs patients who have complex medical histories and may already be receiving treatment for a number of diseases.

## **Post Graduate Program**

Post Graduate Program (M.D.S.) has been functioning in nine specialities (Oral and Maxillofacial Surgery, Prosthodontics and Crown and Bridge, Conservative Dentistry and Endodontics, Periodontics, Orthodontics and Dentofacial Orthopedics, Oral Medicine and Radiology, Oral Pathology and Microbiology, Pedodontics and Preventive Dentistry, Public Health Dentistry). This is a three year course. The students admitted in Prosthodontics are given special training in Maxillofacial prosthesis and the Oral and Maxillofacial Surgery post graduates are provided training in the Head and Neck Surgery department also. Head and Neck Surgery is a multidisciplinary initiative to provide comprehensive treatment for the patient suffering from all major problems arising in the head and neck region such as congenital or acquired craniomaxillofacial deformity, otolaryngological disorders and cancer involving the head and neck region. The Department of Head and Neck Surgery is organized as a team, supported by the most modern diagnostic and treatment infrastructure. This is the first of its kind clinical service, which brings under one umbrella a multidisciplinary team of specialists in the fields of head and neck surgery, plastic surgery, maxillofacial surgery, neurosurgery and otorhinolaryngology for the management of complex ailments of the head and neck region. This distinguishes Amrita from other post graduate dental institutions. Department of Orthodontics and Dentofacial Orthopedics is an integral part of Sleep Medicine at Amrita Hospital.

## **Dental Mechanics Course**

A two year diploma course in Dental Mechanics commenced during the academic year 2010-11 with 10 admissions. Amrita School of Dentistry is the

first institution in the private sector in Kerala to commence such a course with the approval of the Dental Council of India.

### Fellowship In Maxillofacial Prosthodontics

Amrita School of Dentistry is starting a one year Fellowship program in Maxillofacial Prosthodontics starting January 2022. This is in collaboration with University of California Los Angeles and the Head and Neck Oncology, Amrita, Hospital.

### Outreach - Dental Health Camps

As a part of Societal and Community Development program, Amrita School of Dentistry conducts free Dental Health Camps for the rural society and school children. In the Dental Health Camp conducted from January 2022 to December 2022, more than 3517 people were examined and screened for oral diseases from 44 camps. A total of 9000 school children were screened from schools in Ernakulam district within this period. Amrita School of Dentistry has a tribal center at Amrita Kripa Charitable Hospital, Kalpetta, Waynad which provides basic dental treatment for the tribal population three days a month. A free denture treatment camp was organised in which 70 complete dentures were provided to elderly tribals free of cost. The treatment for disabled children is also carried out on a regular basis in the Departments of Pedodontics and Public Health Dentistry.

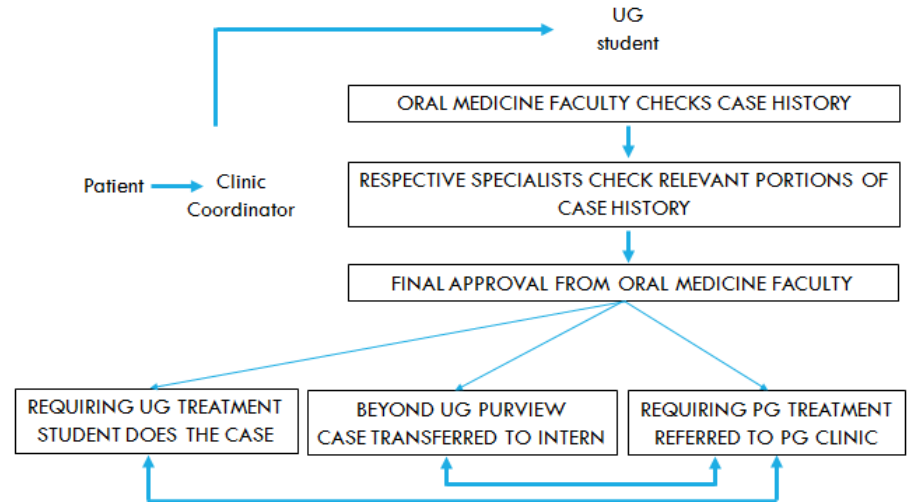
### Research

Research is an integral component of dental education. Considering this, much emphasis is given for research right from the undergraduate level. The School has initiated a number of substantive developments to support the research endeavor and to demonstrate our commitment to support research in the faculty. All departments of Dental school have collaborative research programs with Department of Nanosciences. A unique "Mentored short research" program is offered to all UG students during their second or third year. Students are mentored by faculty to complete short research project and get their study published before course completion.

### Comprehensive Dental Clinic

Amrita School of Dentistry is one of the very few dental colleges in the country to introduce the Comprehensive Dental Clinic system, an outcome-based education concept for undergraduate training. This system

## PATIENT WORK FLOW – IN THE COMPREHENSIVE CLINIC



was introduced in September 2018 and is one of the biggest advancements in the history of the Dental School.

### **Aim**

To achieve a dual benefit of holistic training for students and better patient satisfaction.

### **Objectives**

1. Comprehensive clinical model gives emphasis to boost confidence among dental students in treatment planning and treatment delivery.

2. Provide “patient centered care” and better patient satisfaction as they received complete dental care under one roof in contrast to the traditional system of multiple referrals.

3. Effective “patient-doctor communication” by training dental students to handle patients, improve their listening skills, ability to explain treatment procedures, handle patient emotions and to demonstrate empathy towards patients.

### **Functioning Of Comprehensive Dental Care Teaching Clinic**

The existing speciality-based system was modified by the creation of 5 multispecialty state-of-the-art fully equipped comprehensive undergraduate dental clinics. Each comprehensive clinic is managed by an administrative head and a clinical coordinator. Faculty from all nine speciality departments are posted as consultants in each clinic. Clinical undergraduate students (III-year BDS, Final year BDS and house-surgeons) in the beginning of their academic year are allotted to one of the five clinics. The students complete their remaining training period in the same clinic. Clinical and teaching schedules are rotated in a way that the students have alternate days of theory and clinical postings.

The clinical undergraduate students in each comprehensive clinic are allotted working stations (dental chairs) which he/she is expected to use during the entire duration of the course. Patients are assigned to one of the five comprehensive clinics and are then

allotted to one student by the clinical coordinator. The student is expected to record a detailed case history and complete indicated treatments for the undergraduate levels. This is then evaluated by the respective consultants posted in the clinics. Procedures requiring specialist treatment are directed to the post-graduate clinics for advanced dental procedures. It is expected that the patients during their follow-up or revisits report to the same comprehensive clinics and get treated by the same student. There is comprehensive evaluation of patient by all specialists at the point of care. These provide more patient centric care, improved learning outcomes, better clinical skills and practice ready graduates. Students are also offered courses outside the curriculum such as value-based Education, Soft Skills and Gender Sensitization.



### IMPACT FACTOR OF SOME OF THE JOURNAL PUBLICATIONS OF OUR FACULTY

SL NO	JOURNAL NAME	IMPACT FACTOR	NO. OF PUBLICATIONS
1	Material Science and Engineering C	8.4	4
2	Biomaterial Science	7.5	2
3	Accountability in Research	2.62	2
4	Asian Pacific Journal for Cancer Prevention	2.5	1
5	Community Dentistry and Oral Epidemiology	3.38	1
6	Current HIV research	1.34	1
7	Dental Research Journal (Isfahan)	1.29	1
8	Dental Traumatology	3.3	1
9	Indian Journal of Pediatric Dentistry	0.275	2
10	International Dental Journal	2.512	1
11	International Journal of Clinical Pediatric Dentistry	1	5
12	International Journal of Medical and Health Sciences	2.475	1
13	International Journal of Oral and Maxillofacial Surgery	2.789	6
14	International Journal of Pediatric Dentistry	3.455	1
15	International Journal of Public Health	3.38	1
16	IOSR Journal of Dental and Medical Sciences	5.16	4
17	Journal of Clinical and Pediatric Dentistry	1	1
18	Journal of Indian Prosthodontic Society	0.814	3
19	Journal of International Oral Health	0.67	2
20	Journal of Oral and Maxillofacial Surgery, Medicine and Pathology	0.44	1
21	Journal of Oral Implantology	1.7	1
22	Journal of Periodontology	6.24	3
23	New York State Dental Journal	0	1

SL NO	JOURNAL NAME	IMPACT FACTOR	NO. OF PUBLICATIONS
24	American Journal of Dentistry	1.3	1
25	BMJ Case Reports	0.3	3
26	Caries Research	4	2
27	Contemporary Clinical Dentistry	1.5	7
28	Journal of Contemporary Dental Practice	0.9	5
29	Contemporary Pediatric Dentistry	0	2
30	European Archives of Paediatric Dentistry	2.15	1
31	International Journal of Prosthodontics	0.12	1
32	International Endodontic Journal	5.26	1
33	International Journal of Applied Dental Sciences	2.5	1
34	International Journal of Dental and Health Sciences	2.5	1
35	Journal of Head Neck Physicians Surgery	3.14	1
36	Journal of Clinical Experimental Dentistry	1.7	1
37	Journal of Cleft Lip Palate and Craniofacial Anomalies	1.4	1
38	Journal of Dental Research	4.9	1
39	Journal of Dental Science and Research	0.22	1
40	Journal of Family Medicine and Primary Care	3	1
41	Journal of Oral and Maxillofacial Pathology	1.2	1
42	Journal of Oral Biology and Craniofacial research	2.4	10
43	Journal of Pharmacological and Bio Applied Sciences	1.1	1
44	Journal of Prosthetic Dentistry	2.2	2
45	Journal Pediatric Dentistry	1.8	1
46	Methods and Protocols	1.8	2
47	Oral Radiology	1.4	2

## PUBLICATIONS BY DEPARTMENT

DEPARTMENT	NATIONAL PUBS	INTERNATIONAL PUBS
Oral and Maxillofacial Surgery	12	24
Oral Medicine and Radiology	82	42
Paediatric and Preventative Dentistry	40	55
Orthodontics and Dentofacial Orthopaedics	31	54
Periodontics	55	48
Conservative and Endodontics	42	34
Oral and Maxillofacial Pathology and Microbiology	49	21
Prosthodontics and Crown and Bridge	59	55
Public Health Dentistry	52	58

## INNOVATIONS AND BEST PRACTICES

The only center in South India to start Fellowship programme in Maxillofacial Prosthodontics with International Collaboration.

Undergraduate clinical training through Comprehensive Dental Clinics.

Department of Prosthodontics is one of the only few centers in India to use Silicone Prosthesis in patients with maxillofacial affliction

Collaboration with other departments like Nano Sciences, Head and Neck Surgery, etc., for P.G. Research

Fish and Bowl method of learning for U.G.'s

Cultural education

Tele Dentistry which facilitates exchange of ideas with other institutes.

Students and Parents can access their periodic progress (Marks and attendance) through "Amrita Vidya" (Academic Management Suite)

**B.D.S. (BACHELOR OF DENTAL SURGERY)****Eligibility**

As per NEET U.G.-2023 norms

**Admission Procedure**

Selection is based on the rank obtained in the National Eligibility cum Entrance Test (NEET) and counselling allotment by DGHS.

**Degree Details**

Degree	Duration (in years)	Seats
B.D.S.	4 years plus 1 year internship	60

**BEYOND CLASSROOM TRAINING  
CDE/CONFERENCES/WORKSHOPS**

Trauma to teeth and its management
Current Concepts in Post-Endodontic Restorations
Smile India Smile – Ceramex Duo Restorative
10th Midterm Conference and 2nd P.G. Convention Of Caesok
2nd Intercollegiate Tele-Clinical Society Meeting with Sri Ramachandra Dental College
Lasers In Dentistry
Clinical Considerations For Composite Restorations
Predictable Success With Metal – Free Ceramics
Lightspeed Instrumentation System and Simplifill Obturation
Tips And Tricks In Aesthetic Dentistry

**DENTAL LIBRARY**

Year	Books	Titles	Journals	E-Journals
2023	3963	2786	31	451



**M.D.S (POST GRADUATE)****Eligibility**

As per NEET P.G.-2023 norms

**Admission Procedure**

Selection is based on the rank obtained in the National Eligibility cum Entrance Test (NEET) and counselling allotment by DGHS.

**Degree Details**

<b>Degree</b>	<b>Duration (in years)</b>
M.D.S.	3 years

**DIPLOMA IN DENTAL MECHANICS****Eligibility**

Pass in +2 with 55% aggregate marks in Physics, Chemistry, Biology and English from any State Higher Secondary Board or equivalent. Candidate should have completed 17 years but should not have completed 23 years of age by 31st December in the year of admission.

**Admission Procedure\***

Selection is based on the marks obtained in the qualifying examination and a personal interview.

**Course Details**


<b>Course</b>	<b>Duration (in years)</b>
Diploma in Dental Mechanics	2 years

\*Subject to change, to comply with the guidelines from U.G.C./DCI other competent authorities.



# AMRITA COLLEGE OF NURSING

The Amrita College of Nursing is committed to excellence in nursing education, research and development of leadership skills and human values. The Institute provides an ambience comprising state-of-the-art infrastructure, unparalleled technical expertise, diligent faculty, and above all, the instilling of values based on the rich Indian tradition and ancient culture.



# PRINCIPAL

## Amrita College of Nursing



**Dr. K. T. Moly, M.Sc. Nursing (Cardiothoracic) Ph.D.**  
**PRINCIPAL, AMRITA COLLEGE OF NURSING**

**Prof. (Dr.) K.T. Moly** is an excellent teacher and administrator with work ethics. Her persistent hard work, dedication and passion for teaching nursing with a constant struggle to improve the quality under Amma's guidance have contributed to the development of the college since inception.

Completed B.Sc. Nursing from Govt. College of Nursing, Thiruvananthapuram in 1980 with First Rank from University of Kerala and M.Sc. Nursing (Cardio Thoracic) from LT College of Nursing, SNDT Women's University, Mumbai in 1985. Obtained doctorate degree from Amrita Vishwa Vidyapeetham in the area of Bariatric Surgery. She has a long track of diverse experience in the field of Nursing (nearly four decades) in multiple settings in Kerala (Private, Government and Deemed University) and abroad. Prof. Moly is a recipient of best teacher award from Ministry of Health, Sultanate of Oman in 1997. Has been a teacher for JPHNTC, GNM, B.Sc. and M.Sc. Nursing program in various sectors.

She is the first person appointed for setting up Amrita College of Nursing and is currently working here as Principal. Author of a text book 'Professional Nursing – Questions Authentically Answered' published by CBS and has many publications to her credit. She is an adhoc Inspector for council inspections too.



## PRINCIPAL'S MESSAGE

Nursing is an extremely demanding profession especially during this pandemic where the graduates need leadership, stress management and a passion for caring others. The Indian Nursing Council has revised the B.Sc. Nursing syllabus distributed in eight semesters to ensure the development of ten essential competencies for the future nurse which include patient centered care, professionalism, teaching and leadership, team work and collaboration etc.

Our college remains unique in the fact that in spite of the on and off breaks created by the pandemic in the continuity of the clinical experience of students, the student requirements for the outgoing batch could be completed before the second convocation of the university due to the teamwork and hard work of faculty, students and managerial staff. Above all, Amma's grace showered on us.

I am sure we would be able to withstand any pressures of mankind like Omicron under the guidance of our beloved Amma with her education for life, vision and wisdom.





The Amrita College of Nursing is committed to excellence in nursing education, research and development of leadership skills and human values. Situated within the Health Sciences campus in an exclusive building, the College provides an ambience comprising state-of-the-art infrastructure, unparalleled technical expertise, diligent faculty, and above all, the instilling of values based on the rich Indian tradition and ancient culture. The College is recognized by Kerala Nurses' and Midwives' Council and Indian Nursing Council and is a center for observation visit by students and faculty in and outside the state. It is the first college to start M.Sc. Nursing in the self-financing sector in Kerala in 2009.

### VISION

To be a global center of excellence in providing quality nursing education rooted in values, research and in preparing professionals to lead safe, dynamic nursing practice for human welfare through clinical partnerships.

### MISSION

Amrita College of Nursing is committed to:

- Provide nursing education programs to prepare professionals capable of providing safe, comprehensive and compassionate nursing care in an ever changing health care environment.
- Prepare value oriented advanced practice nurses, educators and administrators (capacity building).
- Enhance research that improves quality of life of individuals, families, and also has an impact on nursing practice.
- Integrate nursing education, research and practice for human welfare through clinical partnerships.

### AIM

To prepare professionals capable of providing leadership built on humanistic values, scientific knowledge and collaboration in the realm of nursing at various levels in a wide variety of settings.

### OBJECTIVES

- To prepare nurses competent in providing safe, comprehensive and compassionate care in a wide variety of settings.
- To prepare nurses to take leadership in the health care team for preventive, promotive, curative and restorative health care.
- To prioritize the comfort and wellbeing of the people under care.
- To demonstrate skills in teaching, management and nursing research appropriate to the level of course.
- To ensure the growth of the profession and humanity through clinical partnerships.

### COURSES OFFERED

#### B.Sc. Nursing

A 4-year (8 semesters) full time degree program with an annual intake of 100 students. The program encompasses foundational, core and elective courses. An all-round academic and clinical experience is offered through classroom teaching, varied clinical experiences in the hospital and community, conferences, health exhibitions, talks by eminent persons and visits to various places. The experienced and stable faculty (40 post graduates in various specialties) are a valuable asset to this Institution.

#### M.Sc. Nursing

The program is offered in four broad specialties (Medical Surgical Nursing, Obstetric and Gynaecological Nursing, Child Health Nursing and Mental Health Nursing) with an annual intake of 36 students.

The sub-specialties offered under Medical-Surgical Nursing include Cardio Vascular and Thoracic Nursing, Oncology Nursing, Neurosciences Nursing and Nephro-Urology Nursing.

## Ph.D. Nursing under Faculty of Medical Sciences

Commencement on 20/02/2023.

Ph.D. in Nursing is a research focussed doctoral degree that focusses on high quality, scientific research that advances the quality of health care and the nursing profession as well. The degree can be obtained as a full time or part time programme.

The function of Nurse scholars is to: Assume leadership roles in complex health care and education systems, develop a theoretical and empirical base for effective nursing practice in both current and emerging health care systems, conduct nursing research and participate in developing health care policies.

In Amrita, the focus is on compassion driven research as envisioned by Amma, Sri Mata Amritanandamayi Devi, the Chancellor, Amrita Vishwa Vidyapeetham (Deemed to be University). The highly experienced medical and nursing faculty, the high-tech environment of the multi-disciplinary hospital with almost all new medical departments, the department of health sciences research headed by Dr. D. M. Vasudevan are the unique features of Amrita that facilitate the Ph.D. programme in Nursing. Interdisciplinary and Multi-centric studies are always encouraged. Dissemination of the results of research is given its due importance to keep the public or the beneficiaries well informed and utilise the finding.

### FACULTY

#### Faculty with Ph.D. – 5

- Prof. (Dr.) K. T. Moly
- Prof.( Dr.) Anila K.P.
- Prof. (Dr.) Sunil M.
- Lt. Col. Prof. (Dr.) Ajee K. L.
- Prof. (Dr.) Kirti Lino

There are 10 faculty members pursuing Ph.D.

## INC SYLLABUS (REVISED) FROM 2022 - SUBJECTS

### I Semester

1. Communicative English
2. Applied Anatomy
3. Applied Physiology
4. Applied Sociology
5. Applied Psychology
6. Nursing Foundations I

### II Semester

7. Applied Biochemistry
8. Applied Nutrition and Dietetics
9. Nursing Foundations II
10. Health / Nursing Informatics and Technology

### III Semester

11. Applied Microbiology/ and Infection control including Safety.
12. Pharmacology I
13. Pathology I
14. Adult Health Nursing I with integrated pathophysiology

### IV Semester

15. Pharmacology II
16. Pathology II and Genetics
17. Adult Health Nursing II with integrated pathophysiology including Geriatrics
18. Professionalism, Professional values & Ethics including bioethics

### V Semester

19. Child Health Nursing I
20. Mental Health Nursing I
21. Community Health Nursing I  
(including Environmental Science and Epidemiology)
22. Educational Technology / Nursing Education
23. Introduction to Forensic Nursing and Indian Laws

**VI Semester**

24. Child Health Nursing II
25. Mental Health Nursing II
26. Nursing Management and Leadership
27. Midwifery/Obstetrics and Gynaecology I

**VII Semester**

28. Community Health Nursing II
29. Nursing Research and Statistics
30. Midwifery/Obstetrics and Gynaecology II

**VIII Semester**

Internship  
(Intensive Practicum / Residency Posting)

**FACILITIES**

The College of Nursing provides excellent library facilities, e-learning and all the required laboratory facilities including mannequins, simulators, etc. The laboratories are as follows:

- Pre-clinical Lab
- Advanced Nursing Lab
- Community Health Nursing Lab
- Maternity Nursing Lab
- Child Health Nursing Lab
- Nutrition Lab
- Computer Lab
- Audio Visual Lab
- Language Lab
- In addition, faculty and students get experience in the central Simulation Lab in the campus with 100 mannequins.

All the classrooms are provided with LCD and intranet facilities to facilitate the teaching learning process. Through intranet, all the students can access the Power Points and other ICT enabled learning materials prepared by faculty.

**STUDENT EXCHANGE PROGRAM**

Students from Lee Kong Chian School of Medicine, Singapore had collaborative internship in the department of Community Health Nursing for the last 3 years.

**LIBRARY**

The Nursing College library has a wide range of textbooks and nursing journals, both Indian and Foreign. There is a total of 7000 books and 20 online databases like CINAHL Complete, Clinical Key, Delnet, Dynamed, Nursing Reference Center Plus, Ovid, Oxford, Proquest, Sage, Scopus, Springer, UpToDate, Wiley. Also, the library has 1775 online nursing journals and 73 online textbooks.



## STUDENT CENTRIC METHODS

### Experiential learning

- More than 100 areas in the parent and affiliated hospitals
- Rural, urban and tribal community

### Participative learning

- Return demonstrations
- Nutrition practical
- Role play
- Patient education

### Problem solving learning

- Integrated Clinical Experience
- OSCE/OSPEs
- Group projects

### Project based learning

- Small group research projects
- Field projects



## CAPACITY DEVELOPMENT AND SKILL ENHANCEMENT INITIATIVES

<b>1. Soft skills</b>	Personality development, Team work
<b>2. Language and communication skills</b>	Communication and interpersonal skills
<b>3. Life skills</b> <ul style="list-style-type: none"> <li>• Yoga</li> <li>• Physical fitness</li> <li>• Health and hygiene</li> </ul>	<b>Sessions by experts</b> <ul style="list-style-type: none"> <li>• Integrated Amrita Meditation</li> <li>• Yearly Medical Check up</li> <li>• Awareness sessions on: <ul style="list-style-type: none"> <li><i>Prevention of needle stick injuries, HAI, menstrual hygiene, chicken pox, measles, food poisoning etc.</i></li> </ul> </li> <li>• Mental Health</li> </ul>
<b>4. Awareness of trends in technology</b>	Classes and postings on: HBOT, cyber knife etc.



## BEST PRACTICES

- Practice in a unique clinical environment
- Structured cultural education
- Faculty student projects / UG publications
- Internal Quality Assurance Cell for quality control
- Student exchange programme
- Extended class committee
- Student Clubs
- Examinations and results in time
- Individual Teacher evaluation



## FACTORS THAT DIFFERENTIATE OUR ACADEMICS

## OVERALL

- Location
- Only Institution with UG seats 100 Kerala Campus
- Centre for observation visit

## CURRICULUM

- Enriched curriculum
- Value added courses
- Structured cultural education

TEACHING  
LEARNING &  
EVALUATION

- Firm support for slow learners
- Experiential learning in the multidisciplinary parent hospital and tribal experience
- Examinations conducted in time

RESEARCH &  
EXTENSION

- UG students get one publication funded by the institution.
- Doctoral facility for faculty

## INFRASTRUCTURE

- Training in Central Simulation Lab
- Self Contained Campus

STUDENT  
SUPPORT

- Better student teacher interaction as one batch is divided into two
- Institutional scholarship.
- Regular parent teacher interaction
- Access to Chancellor

GOVERNANCE &  
LEADERSHIP

- Decentralization through departments
- Strong IQAC

## BEST PRACTICES

- Integrated Clinical Experience
- A culture of research

## A L U M N I



"My experience at Amrita College of Nursing changed my life for the better. I was able to utilise what I learned and apply it to my work in becoming a RN in USA. I learned life lessons and gained lifetime friends. I stay in contact with teachers who helped to shape the nurse in me. Thank you Amrita College of Nursing."

**Ms. Shaliya Shajan**  
B.Sc. Nursing, 12<sup>th</sup> batch (2013-2017)  
RN, USA



"Life at Amrita College of Nursing was a turning point in my career. The college provided us with good clinical and teaching experiences. I appreciate all the efforts of the staff at Amrita and am thankful for all the opportunities which I received."

**Ms. Sheenu Roy**  
B.Sc. Nursing, 13<sup>th</sup> Batch (2014-2018)  
RN, Oxford University Hospitals

## B.Sc. NURSING

### Eligibility

- Must have passed 12th standard in the first attempt, with a minimum of 60% in English and 60% in Physics, Chemistry and Biology taken together, from any State Higher Secondary Board or equivalent.
- NRIs and Persons of Indian Origin (PIO) who qualify from foreign universities will have to produce an equivalence certificate from the Association of Indian Universities, New Delhi.
- Candidate should have completed 17 years but should not have completed 23 years of age by 31st December of the year in which admission is sought.
- The candidate shall be medically fit.

### Admission Procedure\*

Selection is based on the rank obtained in the Amrita Entrance Exam-AEEL.

Entrance Test Pattern shall comprise of:

- a) Physics - 25 questions
- b) Chemistry – 25 questions
- c) Biology – 25 questions
- d) English – 5 questions

Minimum qualifying marks for entrance test shall be 50% marks.

### Degree Details

Degree	Duration (in years)	Seats
B.Sc. Nursing	4 years (8 semesters)	100

\*Subject to change, to comply with the guidelines from U.G.C. / INC / KNMC / other competent authorities

## M.Sc. NURSING

### Eligibility

1. The candidate should be a Registered Nurse and Registered Midwife of any State Nursing Council.
2. The candidate should have passed B.Sc. Nursing or B.Sc. Hons. Nursing or Post Basic B.Sc. Nursing with minimum of 55% aggregate marks from an Institution recognised by the INDIAN NURSING COUNCIL.
3. Candidates should be medically fit.
4. Minimum 1 Year of work experience after basic B.Sc. Nursing or prior or after Post Basic B.Sc. Nursing.
5. NRIs and Persons of Indian Origin (PIO) who qualify from Foreign Universities as well as International students will have to produce an equivalence certificate from Indian Nursing Council.

### Admission Procedure\*

Selection is based on the rank obtained in the All India entrance examination conducted by Amrita Vishwa Vidyapeetham.

### Degree Details

Degree	Duration (in years)	Seats
M.Sc. Nursing	2 years	Total 36
a) Medical Surgical Nursing	2 years	17
b) Child Health Nursing		9
c) Mental Health Nursing		5
d) Obstetrics & Gynaecological Nursing		5

\* Subject to change, to comply with the guidelines from U.G.C. / INC / KNMC / other competent authorities.  
Note: Experience acquired after registration in the State Nursing Council only will be counted.

## Ph.D. NURSING (under the Faculty of Medical Sciences)

### Eligibility

1. MSc Nursing degree from a recognised college/University with minimum of 60% marks.
2. Registration from any state Nursing council.
3. Equivalency certificate from INC in the case of candidates qualified from Abroad

### Selection\*

Admission is based on All India Entrance Examination conducted by Amrita Vishwa Vidyapeetham and subsequent Interview.

### Degree Details

Degree	Duration (in years)
Ph.D. in Nursing	Full time: max.of 6 years Part time: max. of 8 years

\* Subject to change, to comply with the guidelines from U.G.C. / INC / KNMC / other competent authorities.

Note: Experience acquired after registration in the State Nursing Council only will be counted.

# AMRITA SCHOOL OF PHARMACY

The School of Pharmacy strives not only to provide quality education in pharmaceutical sciences but also to establish itself in research and serves as an ideal platform for the overall development of highly competent pharmacy professionals.





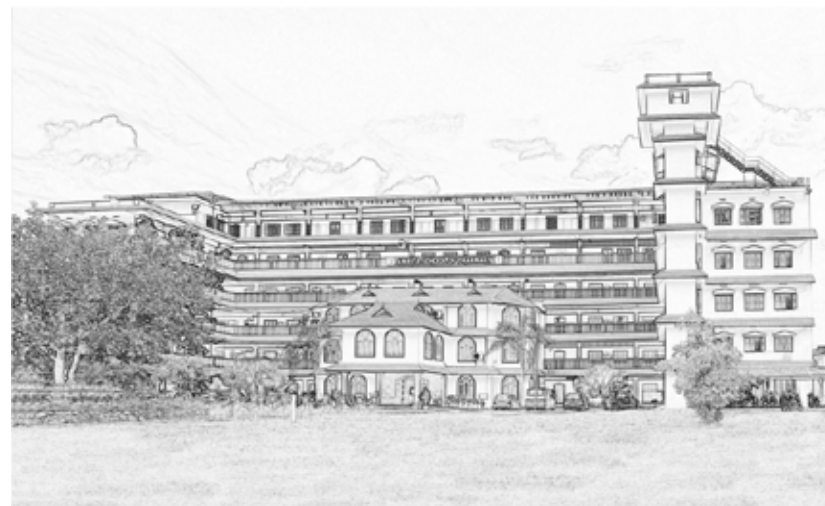
# PRINCIPAL

## Amrita School of Pharmacy



**Dr. Sabitha M., Ph.D**  
**PRINCIPAL, AMRITA SCHOOL OF PHARMACY**

**Dr. Sabitha M.** joined Amrita School of Pharmacy in March 2000. She completed her Bachelor's Degree in Pharmacy from St. John's Pharmacy college, Bangalore University and her Master's Degree in Pharmaceutics from the Department of Pharmaceutical Sciences, Doctor Hari Singh Gour Vishwavidyalaya, Sagar (formerly known as Saugor University, SAGAR) of Madhya Pradesh which is a pioneer institution in Pharmaceutical education. She completed her Ph.D in Pharmaceutical Sciences from Amrita Vishwa Vidyapeetham in 2012. Her doctoral dissertation was titled "Chitin Nanogels as an Effective Nanocarrier for the Treatment of Melanoma via the Transdermal Route". She has more than 22 years of teaching and almost 12 years of research experience. She has completed many research projects funded by government agencies like Dept. of Science and Technology, Science Engineering Research Board and Coconut Development Board and has several publications in high impact international journals.



## PRINCIPAL'S MESSAGE

**P**harmacy is a noble profession since the services ultimately reach the suffering humanity, either directly or indirectly. Pharmacy professionals deal with the life saving, pain relieving, problem solving substances – 'The Drugs'!

A drug during its long journey from the lab until it is administered to the patient, passes through the hands of a pharmacy professional at various stages like discovery, synthesis or isolation and purification, testing for advantageous pharmacological effects and absence of toxicological effects, formulation development, manufacturing and testing of drugs and ultimately medication management in the hospital.

We at Amrita, inspired by our Chancellor Amma, try hard to mould the budding professionals competent in knowledge and skills, powered with values, so that they can be better humans and best professionals for tomorrow.

**A**mrita School of Pharmacy, an integral component of AVVP, is the first to start functioning among the schools under Health Sciences campus. Located in the vibrant city of Kochi, Amrita School of Pharmacy offers training for one of the most sought after professions. The School's commitment to excellence in healthcare is in line with the overall objective of the Kochi - based Health Sciences campus of AVVP.

The School of Pharmacy strives not only to provide quality education in pharmaceutical sciences but also to establish itself in research and serves as an ideal platform for the overall development of highly competent pharmacy professionals. The School maintains an exemplary clinical practice and conducts community outreach programs that address the needs of Kochiites and the society at large.

Amrita School of Pharmacy is housed in a self contained, calm and quiet five storied building with a built up area about 90,000 sq.ft. It has

17 laboratories, a full fledged library and all other facilities for academic programs at U.G.,P.G. and research levels.

**Programs offered:**

- B.Pharm (4 years – 8 semesters)
- M.Pharm (2 years – 4 semesters)
- Pharmacy Practice
- Pharmaceutics
- Pharmaceutical Chemistry
- Pharmacology
- Doctor of Pharmacy (Pharm.D)
  1. Pharm.D Regular (6 years)
  2. Pharm.D Post Baccalaureate (3 years)
- Ph.D in Pharmaceutical Sciences



GOVT. OF INDIA

**12<sup>th</sup> BEST | 2021**  
**PHARMACY**  
**COLLEGE IN INDIA**

Year	Institute ID	Name	City	State	Score	Rank
2019	IR-P-U-0436	Amrita School of Pharmacy	Kochi	Kerala	56.43	15
2020	IR-P-U-0436	Amrita School of Pharmacy	Kochi	Kerala	56.82	15
2021	IR-P-U-0436	Amrita School of Pharmacy	Kochi	Kerala	61.21	12



**STUDENTS LAB  
PHARMACY**

## ACADEMIC PROGRAMS

### UNDERGRADUATE

#### B.Pharm

Bachelor of Pharmacy (B. Pharm) is an undergraduate academic degree to learn and acquire adequate knowledge, necessary skills to practice the profession of pharmacy. The programme is a versatile interdisciplinary programme preparing graduates with a sound knowledge and understanding of the science, technology and practice of pharmacy. The core subjects include Pharmaceutical Chemistry and Pharmaceutical Analysis (Chemistry of Drugs), Pharmaceutics, Pharmacology, Pharmacognosy and Pharmacy Practice.

### POSTGRADUATE

#### Pharm. D

Doctor of Pharmacy is a clinically oriented globally accepted pharmacy program. This is a six-year program after completion of the plus two with science stream. The program is designed to make the students competent as per the global demand in management of patient medication therapy and improve patient outcomes. The students undergo one year internship/residency during the final year (6th year) in the various major departments of the specialty teaching hospital in the campus.

#### Pharm. D (PB)

This is a three year program after B.Pharm graduation. This program also has 2 phases like Pharm.D (Regular) wherein the students have theory and practical classes in the first two years and undergo internship in the various departments in the hospital during III Year (Phase 2).

#### M.Pharm

M.Pharm is offered in 4 specializations. It is a 2 years (4 semesters) Masters Program after B.Pharm.

### PHARMACEUTICS

This program helps the students to become experts in formulation development assessment of bioavailability and other technical aspects of drugs and cosmetics and help them to become competent professionals to work in the various units of the pharmaceutical industry.

### PHARMACEUTICAL CHEMISTRY

This program gives necessary orientation and practical training in design, synthesis and characterization of medicinal compounds.

### PHARMACOLOGY

This program aims to produce competent pharmacologists with necessary training to enable them to contribute to the different stages of drug development process including drug designing, preclinical and clinical development.

### PHARMACY PRACTICE

The aim of this program is to equip the pharmacy professional with the required skills, attitudes and knowledge to become a practicing clinical pharmacist and mould him as an efficient member of the health care team.

#### Ph.D in Pharmaceutical Sciences

Amrita School of Pharmacy offers Ph.D degree in various areas of drug Research. Topics related to Pharmacy Practice, Pharmacology, Pharmaceutical Chemistry, Herbal drugs, Quality Control, Biotechnology, Nanotechnology, Pharmaceutical Management and other aspects of Pharmaceutical Sciences are some of the special areas of interest of Ph.D Program.

RESEARCH @ ASP Being part of Amrita Vishwa Vidyapeetham, a research-intensive university, ASP encourages research right from UG level. It provides a conducive research environment with access to advanced facilities and optimum support for research.



STUDENTS LAB



DIGITAL LIBRARY



## MAJOR FACILITIES

### RESEARCH FACILITY

Cutting edge translational research and technology development of Nanopharmaceuticals in collaboration with ASNSMM (Amrita School of Nano Sciences and Molecular Medicine which serves as the central research facility of the campus

### PILOT PLANT

Development of oral solid dosage form such as tablets, capsules and extended release pellets, phase contrast microscope. Pilot scale development and quality control of oral solid, liquid and semi solid dosage forms such as tablets, capsules, extended-release pellets, solutions, ointments, and creams. A separate QC lab consists of testing equipment for pharmaceutical formulations.

### CELL CULTURE LAB

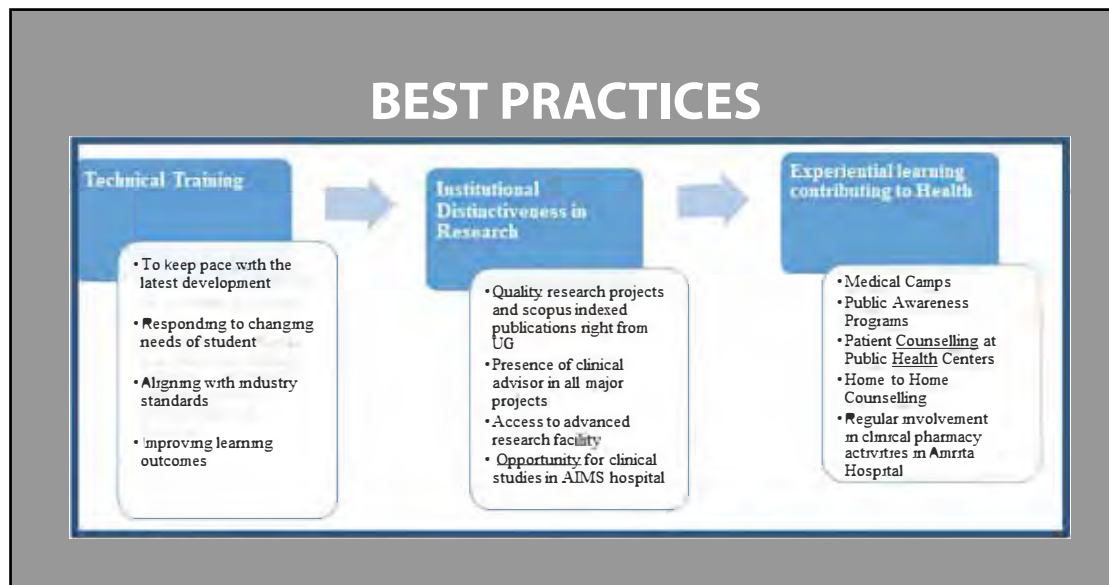
Biosafety cabinet for cell culture, hot air oven, autoclave phase contrast microscope, fluorescent microscope, CO<sub>2</sub> incubators for establishment and maintenance of cell lines (cancerous and normal cell lines), in vitro cytotoxicity assay for screening of anticancer compounds (natural and synthetic) apoptosis assays etc.

### INSTRUMENTATION LAB

Fourier transform infrared (FT/IR spectrophotometer), high performance liquid chromatography (HPLC), UV-visible spectrophotometer, spectrofluorimeter, ELISA reader, flame photometer, biovia discovery studio software for insilico drug design studies for analytical method development and validation, therapeutic drug monitoring, bioavailability profiling, drug release studies, drug polymer interactions etc.

### P.G. RESEARCH LABS

Our school houses advanced research labs for Pharmaceutics, Pharmaceutical Chemistry and Pharmacology to carry out cutting edge research in the field of pharmaceutical sciences.



MAJOR FACILITIES



MINI ROTARY TABLET PRESS

## MAJOR FACILITIES





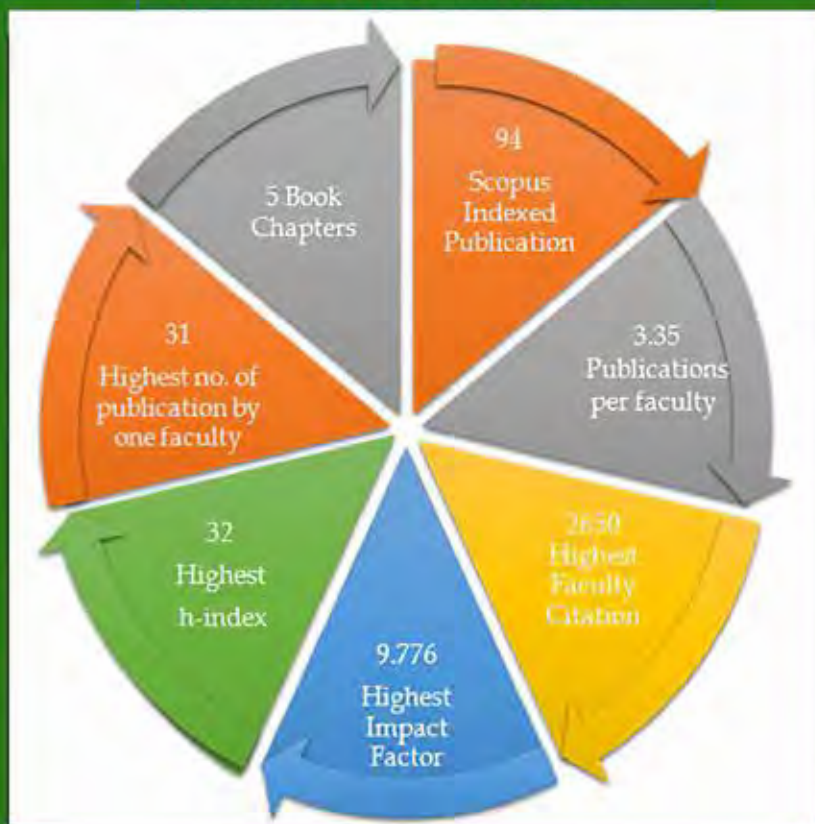
## LIBRARY FACILITIES



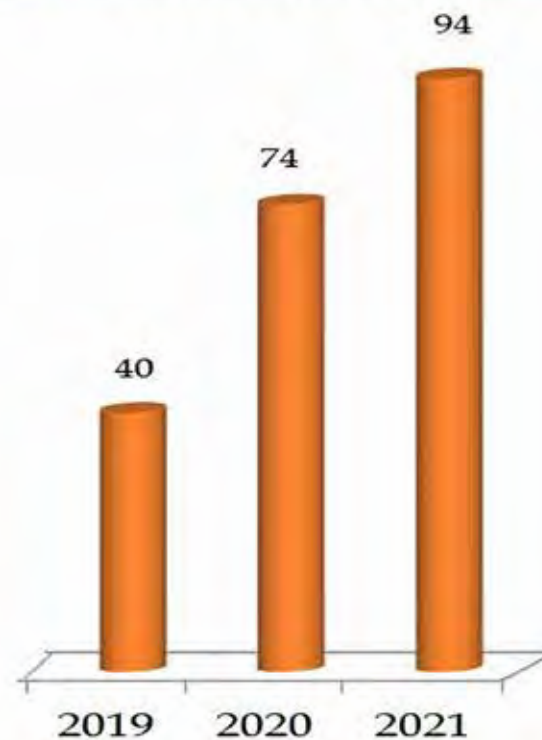
## RESEARCH

*Research output in last three years at a glance*

Research Publications 2021



Scopus Indexed Publications



## ANIMAL HOUSE

The animal house facilities for the health sciences campus located close to the Pharmacy School is approved by CPCSEA for both animal breeding and experimentation in small animals as well as experimentation in large animals. The facilities like animal MRI, nude mice facility, histopathology lab, animal cathlab etc. make it an outstanding preclinical research facility for the campus.



ANIMAL MRI



ANIMAL CATHLAB



NUDE MICE FACILITY



SURGERY TABLE

## EXCELLENT CLINICAL TRAINING

The PharmD 5th year and interns are trained and involved in various Clinical Pharmacy Services like medication reconciliation, prescription auditing, discharge patient counselling, counterchecking of High Risk drugs, Look Alike Sound Alike (LASA) agents as well as chemotherapeutic agents which are directed towards proper Management of Medication (MoM) as per the NABH guidelines. They are posted in almost 25 clinical departments in which the above activities are routinely performed. They are also involved in ADR reporting, chemo dilution, Antimicrobial Stewardship Programme, Anticoagulation management, etc. Amrita is a Regional Training Center under the Pharmacovigilance Programme of India (PvPI) and the Department of Pharmacy Practice is actively involved with it and has initiated many activities for improving awareness and reporting of ADRs.



BIOLOGICAL SAFETY CABINET

PLACEMENT

*Our Major Employers*



**B.PHARM AND B.PHARM LATERAL ENTRY**

No of seats	Duration	Eligibility	Selection
60	4 years (8 semesters)	Pass in plus two or equivalent with 50% marks in Physics, Chemistry and Biology. In place of Biology, Biotechnology/Computer Science or Maths are also eligible.	Selection would be based on the performance in the eligibility exam (12th/Diploma result) and entrance exam conducted by Amrita Vishwa Vidyapeetham.
6	3 years (6 semesters)	Pass in Diploma in Pharmacy (D.Pharm)	

**PHARM.D**

30	6 years (Five years of studies plus one year internship or residency)	Pass in plus two or equivalent with 50% marks in Physics, Chemistry and Biology. In place of Biology, Biotechnology or Computer Science or Maths are also eligible.	Selection would be based on the performance in the eligibility exam (12th) and entrance exam conducted by Amrita Vishwa Vidyapeetham.
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**M.PHARM**

10 seats each in Pharmaceutics, Pharmacology, Pharmaceutical Chemistry, Pharmacy Practice.	2 years (4 semesters)	I) B.Pharm degree from institutions with PCI's approval  II) Not less than 50% for all the subjects of B.Pharm from second year onwards  III) GPAT score preferred for M.Pharm admission	Selection of candidates is on the basis of their B.Pharm marks and personal interview.
<b>PHARM.D (PB)</b>			
10 seats	3 year (2 year of studies plus one year internship or residency)		



# AMRITA SCHOOL OF NANOSCIENCES AND MOLECULAR MEDICINE

Amrita School of Nanosciences and Molecular Medicine (ASNSMM), India's first Nano Bio Center, is an academic research institution offering advanced courses and conducting cutting-edge translational research in the areas of Molecular Medicine, Nanobiotechnology, Nanoelectronics, Nanoengineering and Energy Sciences. It also serves as the medical research wing of Amrita Institute of Medical Sciences.

# AMRITA SCHOOL OF NANOSCIENCES AND MOLECULAR MEDICINE

**R**ecent advances in Nanosciences, Nanotechnology and Molecular Medicine have created an explosion of potential applications in the field of medical sciences and engineering, including new medicines and diagnostic systems, energy and electronics. Amrita School of Nanosciences and Molecular Medicine (ASNSMM) is at the forefront in many of these areas. In the biomedical applications of nanotechnology, ASNSMM is one of the top institutes in India because of its close integration with Amrita super-specialty hospital and its strong emphasis on clinical applications. In recognition to this, the Ministry of Science and Technology, Government of India has designated the center as a Thematic Unit of Excellence in Medical Nanobiotechnology. In the energy area, ASNSMM is the only center in India that is fully integrated with manufacturing capability of different types of solar modules along with R&D in storage integrated solar modules. The energy division is recognized by the Ministry of New and Renewable Energy (MNRE), Government of India. ASNSMM is also equipped with a 6000 sq. ft. clean room state-of-the-art Good Manufacturing Practice (GMP) facility for pilot scale processing of nanotechnology products which could have significant value for process optimization. This facility is currently involved in developing modalities for early detection and treatment of cancer. With its state-of-the-art facilities in both biomedical and energy areas and 25 research laboratories, ASNSMM is a pioneer research center in India offering a comprehensive R&D environment. The center offers Master of Technology (M.Tech) and Master of Science (M.Sc) programs in Molecular Medicine, Nanobiotechnology and Nanoelectronics and Nanoengineering, and it is one among the only two centers in India to offer an M.Tech program in Molecular Medicine. We are the first in the country to offer an undergraduate program (B.Sc. Honors) in Molecular Medicine.

The unique aspect of the B.Sc. Honors program is that after three years of B.Sc., interested students can continue to the fourth honors year, and get

the opportunity to gain substantial research experience. In addition, they will take some cutting-edge specialized courses in the fourth year. Totally adhering to the National Education Policy, a student graduating from the 4-year B.Sc. honors program will qualify to be admitted to the 5-year PhD program in Molecular Medicine, with all the exit options kept open. The 5-year PhD will train the student in all the state-of-the-art technologies and research methodologies in the field as well as the opportunity to interact with clinical and industrial partners and international groups. Admission to the 5-year PhD program will require a 7.0 cumulative grade point average, however the admission to the M.Sc and M.Tech program in Molecular Medicine can also be considered without the PhD. Scholarships will be available for the PhD program for students above 8.5 CGPA, as part of this program.

In total there are over 200 students currently doing B.Sc., M.Sc., M.Tech and about 45 Ph.D. students in various advanced research and product development areas. All Ph.D. students and qualified Master students are supported in their research through grants and fellowships. B.Sc., M.Sc., M.Tech and Ph.D. students have a thesis requirement and all students therefore get extensive experience in hands-on research, experience in advanced equipment and research methodology. In the biomedical area, some of the leading focus areas of research are in the development of natural tissues and organs through tissue engineering using biodegradable scaffolds, design and development of drug delivery systems for cancer, wound healing, neuro-degenerative diseases, pain management and infectious diseases and the development of new imaging and diagnostic tools using nanotechnology. In the energy area, quantum dot-based dye sensitized solar cells are under investigation, as also is the development of advanced long-life batteries and pseudo-capacitors, nanoscale electronic device fabrication and solar integrated storage technologies. In a short span of 15 years, the center has secured over 150 crores of funding, more than 650 research publications with an average impact factor 4, graduated more than 400 PG students in these advanced disciplines who are in various important positions around the globe, and has awarded 57 PhDs to research scholars.





PHYSICAL VAPOR DEPOSITION FACILITY

**Some of the advanced state-of-the-art research laboratories that have been established are:**

- High Resolution Microscopy Laboratory with HRTEM with STEM capability, a high resolution Scanning Electron Microscope and Atomic Force Microscope and a Fluorescence microscope. Recent additions to the lab include the new generation Spectral Confocal Laser Scanning Microscope, FE-SEM, Micro-CT and scanning confocal Raman microscope.
- MALDI-TOFF Mass Spectrometer Laboratory for identification of proteins.
- A class 10,000 cell culture facility with multiple stations and equipped with an advanced patch clamp fluorescence cell manipulator and injector microscope for mechanistic studies
- Proteomics Laboratory with a Luminex BioPlex 200 system for identification of a range of proteins of proteins
- A 7 Tesla Animal MRI Imaging Laboratory for in-vivo biodistribution studies
- Nanochemistry Laboratory for wet chemical processing of various types of nanomaterials such as inorganic, metallic and polymeric nanoparticles.
- Nanocharacterization Laboratory with FTIR, UV-VIS Spectrophotometer, Spectrofluorimeter, Thermal Analysis Systems (DSC, TGA/DTA) and Particle Sizer with Zeta Potential Analyser for physico-chemical characterization of nanomaterials.
- Mechanical Testing and X-ray Diffraction Laboratory with a servohydraulic mechanical testing system for mechanical characterization of samples and a powder x-ray diffractometer for studying the crystallinity of samples.
- Polymer Chemistry Laboratory for processing of polymeric nanobiomaterials, hydrogels, bandages and their composites for drug delivery, hemostasis, tissue engineering and wound healing.
- Nanofiber Preparation Laboratory with multiple systems lined up for electrospinning polymeric solutions onto stationary, rotating as well as translating targets and setup for fabricating three dimensional scaffolds. Viscosity, contact angle and surface tensiometer and independent hoods for electrospinning are setup in the laboratory.
- A Physico-Chemical Characterization Laboratory with FTIR, DSC, UV Vis, tensile and gel tester, DLS system and TG-DTA
- Tissue Nanoengineering Laboratory with several equipments for molecular biology studies including PCR, RT-PCR, Western Blotting apparatus, Chemi-doc system, Microplate Reader, Gel doc system, Multimode Plate Reader, etc.
- Drug Delivery Laboratory equipped with facilities for carrying out preparation of nano drug delivery vehicles for hydrophobic and hydrophilic drugs using biocompatible, biodegradable polymers and an HPLC system for quantitative determination of drug entrapment and release.
- Nanomedicine Laboratory having facilities for preparing varieties of polymeric and inorganic nanomedicines for targeted and non-targeted cancer therapy and diagnosis, malaria, inflammation, etc.
- 3D-Bioprinting Lab equipped with a state-of-the-art bioprinter, Envision TEC 3D bioplotter and a sophisticated cell culture facility which focuses on developing 3D tissues, organoids, and disease models from 3D CAD models/patient CT data using stem/progenitor/primary cells in combination with various biomaterials.
- Bioinformatics and Computational Biology Laboratory is equipped with high performance work stations and scientific software for understanding molecular mechanism of protein-drug interactions, drug design and discovery.
- RNAi Laboratory for developing targeted nanomedicine based gene silencing with all facilities for genomic studies.
- The laboratory for neuronal drug delivery systems works on projects focused on developing new strategies to deliver therapeutic payloads to the nervous system, for potential benefits in chronic pain conditions, neuritis and neuropathy.
- Microbiology laboratory having facilities for in vitro and in vivo (in *Drosophila melanogaster*, mice, rat etc) antibacterial and antifungal activity assays.
- Molecular Biology Laboratory has facilities for conventional PCR, Real-time PCR and sequencing for determining the genetic and environmental risk factors associated with diseases such as Multiple sclerosis, Ankylosing spondylitis and for molecular epidemiological studies to determine the prevalent infectious agents and their drug resistance patterns, etc.

- Laboratory of Reproductive and Developmental Biology involved in investigations of cellular and genetic mechanisms underlying development as well as abnormalities including malignancies of reproductive organs.
- A Central Facility equipped with a range of freezers, HPLCs, centrifuges, lyophilizers, DNA Sequencer, Digital HPLC, Multimode Plate Reader and core facility for isolation and characterization of stem cells from various sources including umbilical cord vein, umbilical cord blood and bone marrow.
- A FACS Laboratory with state-of-the-art Flow Cytometer with cell sorter for diagnostics and stem cell characterization and isolation.
- The Central Lab Animal Facility was catering the needs of P.G. and U.G. Scholars, Doctoral and Post Doctoral scholars, Scientists and Faculty members who are involved with animal research. It facilitates all the in- vivo experiments in educational research. The lab is well equipped with state of the art equipments for laboratory animals as well as large animals. Histopathology analysis facility is also attached with Animal lab.

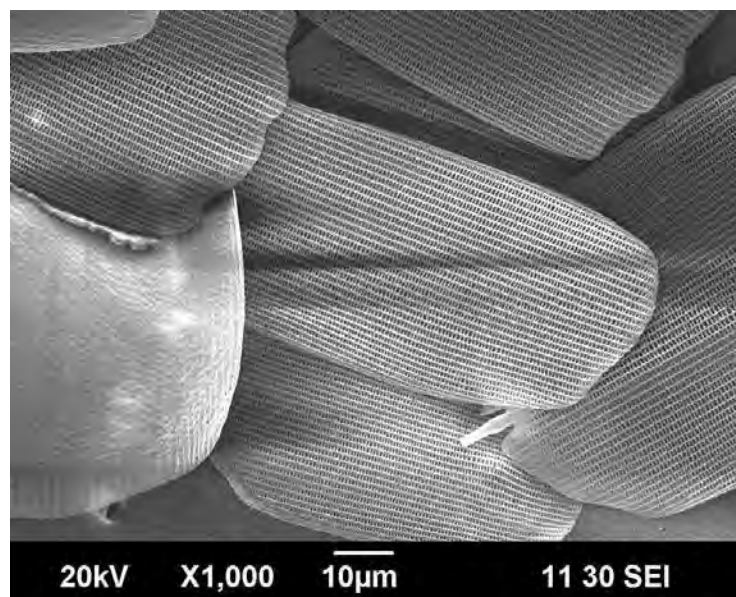
**In the Technology and Energy areas, additional advanced state-of-the-art laboratories include:**

- Thin Film deposition Laboratory with physical vapor deposition systems, Spray pyrolysis deposition system associated module robotics for inorganic films and Climate Controlled Electrospinning deposition to include organic films.
- XPS Laboratory for surface analysis of materials
- Pseudo-Capacitor Laboratory with Glove Box and characterization facilities
- Solid State Battery Laboratory for processing and characterization of Li ion based solid state batteries
- Nano Carbon Laboratory with CVD for graphene and carbon nanotube processing
- A Core facility with Solar simulator, Electrochemical scanning microscope, battery tester, Ball Milling Machine and Spectroscopic Ellipsometer
- A GLP (Good laboratory Practices) Facility

- GLP is an advanced high accuracy analytical facility equipped with HPLC, Protein characterization systems, Protein Micro-array etc.
- A GMP Facility (Good Manufacturing Practise) ISO Class1000, 10000 and 100000 clean rooms, separate facility for manufacturing of biomedical devices and Nano-oncology therapeutics, Isolators for handling and preparation of cytotoxic drugs, GC 5000 Gamma irradiator for sterilization of finished products

**Job Opportunities:**

ASNSMM has a full-fledged placement cell that assists students in developing competencies and employability skills in order to become part of top-tier companies. On completion of the course, the students can be expected to be immediately absorbed by several industries such as pharmaceutical companies, biotechnology companies, nanotechnology companies, research institutions in biotechnology, medicine and technology areas. Many of our alumni from early batches are currently working as scientists in various premier institutions in and out of the country.



**BUTTERFLY WING @1000X MAGNIFICATION**



Good Manufacturing Practice (GMP) lab which is a clean room facility with advanced equipment that is being used to manufacture biomedical devices and nano medicines.

## About the Faculty

All the members of the faculty associated with ACNS are Ph.D holders with several years of post-doctoral experience in active research from around the world, with training in Physics, Chemistry, Materials Science, Nanotechnology, Molecular Medicine, Biochemistry and Genetics. There are currently 20 full time faculties in ASNSMM.

## Awards and Recognitions Received by the Center

- The Director, **Professor Shantikumar V Nair** is a 2014 recipient of the Professor C N R Rao Bangalore India Nanosciences Award for Excellence in Research in Nanotechnology, MRSI (Materials Research Society of India) Gold Medal (2011) and listed in the top 2% scientists in the world in the polymeric biomaterials field. A leading figure in the area of Nanomedicine, nanotechnology, material sciences and engineering, he is among the top ten material science scientists (ranked number 8th) in India, as featured by Research.com.
- **Professor Manzoor Koyakutty** is a recipient of the Marie Curie Award for research in Cancer Nanotechnology. He is now a Fellow of National Academy of Sciences.
- **Professor R Jayakumar** is a recipient of MRSI (Materials Research Society of India) Gold Medal. He was also recognized as the most cited scientist from 2014 to 2018 by Clarivate Analytics (Web of Science) and listed him in the top 2% scientists in the world in the polymeric biomaterials field.
- **Professor Deepthy Menon** is a recipient of the DST BOYSCAST Fellowship from the Government of India for research in Characterization and Toxicity of Nanomaterials
- **Professor Raja Biswas** is the recipient of the DBT Ramalingaswamy Fellowship in 2009
- **Associate Professor Manitha Nair**, is a recipient of the India Young Biotechnologist Award for her research in tissue engineering of Bone
- **Associate Professor Dhamodharan Santhanagopalan** is the recipient of the DST Ramanujan Fellowship in 2016
- **Professor Gopi Mohan** is the recipient of the ICMR Senior Biomedical Scientist Award in 2016
- **Associate Professor Sahadev Shankarappa** is the recipient of the DBT Ramalingaswamy Fellowship in 2013
- **Assistant Professor Dr Binulal Nelson Sathy** is Ramalingaswami re-entry fellowship recipient in 2017

## Outstanding Faculties Team



### Dr. Shantikumar Nair

Professor Nair is the Dean of Nanosciences and Pharmacy of Amrita Vishwa Vidyapeetham and also the Director of Amrita School of Nanosciences and Molecular Medicine (ASNSMM). He heads initiatives in the applications of Nanotechnology

to medicine and Energy areas. Prof. Nair has played the most essential part of leading ASNSMM right from its inception 15 years ago as India's first Nano-Bio Center to its phenomenal rise into an internationally recognized premium research center in the country focused on conducting cutting-edge translational research. His research areas of interest include Nanomedicine, tissue engineering, surface modification of materials and use of nanomaterials in photovoltaics, Nanoelectronic devices, super capacitors and batteries



### Dr. Manzoor Koyakutty

Dr. Manzoor Koyakutty is a Professor at the ASNSMM, specializing in the area of Cancer nanomedicine and Immunotherapeutics.



### Dr. Jayakumar Rangasamy

Dr. Jayakumar Rangasamy is a Professor at the ASNSMM, specializing in the area of Polymeric Nanobiomaterials for drug delivery, hemostasis, tissue engineering and wound healing applications.

**Dr. Deepthy Menon**

Dr. Deepthy Menon is a Professor at the ASNSMM, Amrita Vishwa Vidyapeetham, specializing in the area of cancer diagnosis and therapy, surface modification of implants, drug delivery and tissue engineering applications.

**Dr. Manitha Nair**

Dr. Manitha B. Nair is an Associate Professor at ASNSMM, specializing in the area of tissue engineering and regenerative medicine.

**Dr. Krishnakumar Menon**

Dr. Krishnakumar Menon is a Professor at the ASNSMM, specializing in the area of Clinical proteomics and Translational Research.

**Dr. Dhamodaran Santhanagopalan**

Dr. Dhamodaran Santhanagopalan is an Associate Professor at the ASNSMM, specializing in the area of energy storage technologies including, Li-, Na- and Mg-ion batteries, all-solid-state batteries, and supercapacitors.

**Dr. Gopi Mohan**

Dr. C. Gopi Mohan is a Professor at the ASNSMM, specializing in the area of Bioinformatics and Computational Biology.

**Dr. Lalitha Biswas**

Dr. Lalitha Biswas is an Associate Professor at the ASNSMM, specializing in the area of molecular biology diagnostic such as histocompatibility and immuno-genetics, gene testing, pharmacogenomics, cancer genetics and molecular basis of infectious diseases.

**Dr. Raja Biswas**

Dr. Raja Biswas is a Professor at the ASNSMM, Specializing in the area of Microbial Genetics and Infectious Diseases.

**Dr. Bindu Paul**

Dr. Bindhu Paul is an Associate Professor at the ASNSMM, specializing in the area of development biology, origin of adulthood diseases and germline stem cell biology.

**Dr. Sahadev A. Shankarappa**

Dr. Sahadev A Shankarappa is an Associate Professor at the ASNSMM, specializing in the area of neuronal drug delivery.

**Dr. Binulal Nelson Sathy**

Dr. Binulal Nelson Sathy is an Assistant Professor at the ASNSMM, specializing in the area of translational aspects of stem cell products and cell-derived matrices for tissue engineering and regenerative medicine.

**Dr. Senthilkumar Baskar**

Dr. Senthilkumar Baskar is currently the Assistant Professor at Amrita School of Nanosciences and Molecular Medicine. He has several years of postdoctoral research expertise in the area of energy storage devices.

**Research Highlights and Research Initiatives at Amrita Institute of Medical Sciences**

ASNSMM serves as the premiere research wing of Amrita Vishwa Vidyapeetham, conducting multidisciplinary research in medical and energy areas

**Publications**

ASNSMM has more than 650 high impact research publications with an average impact factor of 4 and 21,000 citations.

**Patents**

The Center has 31 patents granted, among which 14 are international patents, 71 patents published and more than 80 filed patents in National and International level.

**Products**

A few products such as Amrita ABSORF, Gliocure Wafer for Brain Tumor Treatment, Photo-activated Injectable Nanoparticle Gel for Brain Tumor Treatment, Nano-Textile Small Diameter Vascular Graft, Polymeric Nanoyarns, Nanotextured Coronary Stents, Mandibular Augmentation Bone Graft and A Prognostic Kit for CNS Leukemia Prediction in B-ALL Patients are in the pipeline. 3D-Printed product studies are also ongoing.

**Medical Research Highlights – Joint Ventures of ASNSMM with Amrita Institute of Medical Sciences (AIMS)**

Amrita is one of the largest advanced clinical and research facilities in India with a 1450 bed super-specialty hospital and a 400 bed General Hospital along with a full spectrum of diagnostic labs and a Molecular Biology Lab. Amrita has Centers for Excellence in most major super-specialties.

Developing countries have been at the mercy of major pharmaceutical industries and research centers overseas for the transfer of biomedical technology and therapeutic agents. Recognising this fact, Amrita has taken very bold steps to inculcate a culture of research among the faculty and especially the student community. Amrita has initiated a pancreatic registry

and a cancer registry with participation from hospitals all over India. Amrita has a strong clinical research program with both investigator initiated research and clinical trials. Paediatric cardiology with the support of ICMR is a leading epidemiological research Center in congenital heart defects. Amrita is also internationally famous for its Infection Control Program led by Dr Sanjeev Singh which has won accolades all over the world as a model program. Medical students are also active in research. A major accomplishment was the conferring of four out of five ICMR-studentship awards for the State of Kerala to the students of Amrita School of Medicine. ICMR studentship is an award given by the Indian Council of Medical Research to encourage deserving medical college students to take up short-duration research protocols - the objective being to inculcate a culture of research right from the undergraduate years.

The present areas of advanced clinical research at AIMS include: Molecular Biology, Molecular Medicine, Nano Medicine, Inborn Disorders of Metabolism, Bio-degradable Stent, Heart Muscle Disease, Tumour Immunology, Electrical Disorders of the Heart, Non Contact Mapping and RF Ablation studies, Atrial Fibrillation – Genesis and Management, Vulnerable Plaque Recognition and Management, Studies on Tropical Pancreatitis and Hepatitis B.

A sequencer and real-time PCR and thermal cyclers have been made available to enable provision of diagnostic genetics for common inherited diseases and also to aid in research. These will also be used for microbiological and HLA-related research in addition to population genetics. Expression of relevant genes in tumours will be evaluated by real-time PCR. A homograft bank with a cryopreservation facility will also be provided for better management of cardiovascular diseases.

Amrita will maintain cell lines, which will enhance the research activities in cell biology, molecular cytogenetics, immunology, biochemistry, molecular biology, mycoplasma and virus diagnostics. Particular emphasis will be placed on a program of extensive quality and identity control and on characterisation of the cell lines.

Amrita has been awarded with research protocols by funding agencies such as Department of Biotechnology (GOI), Department of Science and

Technology (GOI), Indian Council of Medical Research, and State Department of Science, Technology and Environment. Amrita is also a preferred destination for involving in multi centered international clinical studies. In the faculty of medical sciences, doctoral-level research facilities are available in certain areas of basic medical sciences and epidemiology. Given the competitive nature of research, our library provides ready access to current high-impact journals in all areas of biology and medicine with network computers. This will also be valuable for scientists and medical students in training.

Amrita has a Scientific Review Committee, an Institutional Ethics Committee and also an Institutional Animal Ethics Committee to critically review the research proposals. These committees have been constituted meeting statutory requirements.

Dr. Shantikumar Nair, Dean of Research and Dr. Prem Nair, Medical Director, Amrita Institute of Medical Sciences offer leadership to the research initiatives.

### **What inspired us about Nanotechnology/Nanomaterials in Medicine and Energy?**

- Nanomaterials can repair tissues that otherwise cannot regenerate
- Nanomaterials can improve the potency of stem cells
- Nanomaterials can be used to treat diseases that are otherwise not treatable with conventional medicines (such as drug resistant diseases)
- Nanomaterials can improve the efficiency of energy conversion and storage

### **Over the years we have set up state-of-the-art Centers**

- The entire Amrita School of Nanosciences and Molecular Medicine has a square footage of 55,000 square feet.
- Medical Bio Nanotechnology Center, Kochi
- Nano Solar – Center for New Materials for Energy Storage
- Nano Solar – Center for Solar Devices and Products – Integration of solar conversion and storage



**Academic Accomplishments:**

- 75 current PhD research scholars with 57 PhDs awarded so far.
- Over 650 high impact journal publications with a medium impact of about 4.
- Seven innovative academic programs that were first in the country.
  1. M.Tech in Nanobiotechnology
  2. M.Tech in Molecular Medicine
  3. M.Tech in Nanoelectronics and Nanoengineering
  4. M.Sc. in Nanobiotechnology
  5. M.Sc. in Molecular Medicine
  6. M.Sc. in Nanoelectronics and Nanoengineering
  7. B.Sc. (Hons) in Molecular Medicine
- All postgraduate students have been publishing at least one journal paper before completion

**Overview of M.Tech Programs****M.TECH IN NANOBIO TECHNOLOGY**

The two-year M.Tech program on Nanobiotechnology, is designed for students to explore in-depth, the processing of nanomaterials suitable for biomaterial applications and the development of drug delivery systems, tissue engineered devices, and diagnostic tools for diseases detection. Applications include new implant technologies, regenerative engineering, new nanomedicines to combat cancer and drug resistance, targeted medicines for treatment with reduced side effects and diagnostic technologies such as applications of nano-enhanced laser diagnostics and therapies for cancer screening.

<b>Semester I</b>	
<b>Fundamental Core:</b>	Statistical Data Analysis Cell Biology
<b>Subject Core:</b>	Science and Properties of Nanomaterials Nanomaterials Synthesis Cell Culture and Animal Lab Immunology
<b>Lab:</b>	Statistical Data Analysis Cell Culture Lab and Animal Lab Nanomaterials Lab-I
<b>Semester II</b>	
<b>Fundamental Core:</b>	Pharmacokinetics and Pharmacodynamics Bioinformatics and Structure based Drug Design Regenerative Medicine
<b>Subject Core:</b>	Characterization of Nanomaterials Polymeric Nanomaterials Nanomedicine and Nanotoxicology Drug Delivery Systems
<b>Lab:</b>	Bioinformatics and Structure based Drug Design Nanomaterials Lab-II
<b>Semester III</b>	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Nanosystems in Medical Diagnostics Scaffolds in Tissue Regeneration
<b>Dissertation</b>	
<b>Semester IV</b>	
<b>Dissertation</b>	

### M.TECH IN NANOELECTRONICS AND NANOENGINEERING

Today, the engineering and continuously decreasing size scales has evolved to a new industrially applicable field of Nanoelectronics and Nanoengineering, that utilizes the advantages of nanoscale to substantially enhance functionality and reduce cost. A two-year M.Tech program in Nanoelectronics and Nanoengineering is mainly focused on the integration of electronics with engineering at the nanoscale to fabricate hi-tech products and processes which includes super capacitors, high-power batteries, advanced sensing technologies, efficient solar cells, miniaturized chip systems for high-speed computing, optoelectronic devices and smart systems. There are foundation courses in electronics, physics, chemistry and materials science, followed by subject core courses dealing with Nanoelectronics and Nanoengineering including, nanomaterials processing and characterization, device fabrication, computational techniques and machine learning, VLSI design, practical exposure to semiconductor industry relevant software packages apart from the 3 core lab courses. The program is focused to enable every individual to gain expertise in Nanoelectronics and Nanoengineering to cater the futuristic needs of Indian Industry. Each student will have a thesis requirement involving one year of hands-on independent research

Semester I	
<b>Fundamental Core:</b>	Statistical Data Analysis
<b>Subject Core:</b>	Quantum Science Solid State Phenomena at Nanoscale Chemical Synthesis of Nanomaterials Modern Concepts in Materials Science
<b>Lab:</b>	Statistical Data Analysis Optoelectronics Lab
Semester II	
<b>Subject Core:</b>	Computational Methods for Condensed Matter Nano- Opto- and Bio-electronic Devices Characterization of Nanomaterials Emerging Nano-manufacturing Technologies Nano Engineering for Energy Conversion and Storage
<b>Lab:</b>	Computational Methods for Condensed Matter Nanoelectronics and Nanofabrication Lab NanoEnergy Devices Lab
Semester III	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Introduction to Machine Learning VLSI Technology and Design
<b>Dissertation</b>	
Semester IV	
<b>Dissertation</b>	

**M.TECH IN MOLECULAR MEDICINE**

The two-year program focuses on identification of molecular markers in diagnostics and therapy at the molecular level. This program trains students in the basic and applied aspects of molecular medicine and prepares a new generation of young scientists in cutting-edge, interdisciplinary research at the interface of basic medical science and clinical research. The program involves hands-on research in cell culture and experimental techniques for biomarker discovery, such as, Mass Spectroscopy, Fluorescence assisted cell marker analysis and cell sorting, gene sequencing and proteomics.

<b>Semester I</b>	
<b>Fundamental Core:</b>	Cell Biology Basics in Human Physiology and Pathology Clinical Biochemistry and Proteomics Statistical Data Analysis
<b>Subject Core:</b>	Immunology Molecular Biology
<b>Lab:</b>	Statistical Data Analysis Biochemistry Lab Molecular Biology Lab Cell Culture and Animal Lab
<b>Semester II</b>	
<b>Subject Core:</b>	Molecular Basis of Diseases Genetic Engineering Molecular Diagnostics Pharmacokinetics and Pharmacodynamics Bioinformatics and Structure based Drug Design Clinical Microbiology
<b>Lab:</b>	Bioinformatics and Structure based Drug Design
<b>Semester III</b>	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Stem Cell Biology and Therapy
<b>Dissertation</b>	
<b>Semester IV</b>	
<b>Dissertation</b>	

## Overview of M.Sc. and B.Sc. Programs

### M.SC. IN NANOBIO TECHNOLOGY

The M.Sc. Nanobiotechnology is a course designed for bachelors students to understand in depth the science behind “nano” and to explore in depth the application of nanosciences in the biomedical area. Such applications include new implant technologies, regenerative medicine, new nanomedicines to combat cancer and drug resistance, targeted medicines for treatment with reduced side effects, diagnostic technologies using nanomaterials etc. To gain strength in this new area the course covers in-depth nanomaterials and their properties, synthesis of nanomaterials, molecular and cell biology, computational biology and medical core courses such as immunology and physiology. The program also offers laboratory exposure on nanomaterial synthesis, characterization of nanomaterials as well as in cell culture, animal experiments. The highlight of this program is a full one-year intensive research experience whereby the student completes a thesis in an topic in nanomedicine, diagnosis, drug delivery, tissue engineering and regenerative medicine.

Semester I	
<b>Fundamental Core:</b>	Statistical Data Analysis Immunology Cell Biology Basics in Human Physiology and Pathology
<b>Subject Core:</b>	Science and Properties of Nanomaterials Nanomaterials Synthesis
<b>Lab:</b>	Statistical Data Analysis Cell Culture and Animal Lab Nanomaterials Lab-I
Semester II	
<b>Fundamental Core:</b>	Pharmacokinetics and Pharmacodynamics Bioinformatics and Structure based Drug Design Regenerative Medicine Biofactors in Tissue Regeneration
<b>Subject Core:</b>	Characterization of Nanomaterials Polymeric Nanomaterials Nanomedicine and Nanotoxicology Drug Delivery Systems
<b>Lab:</b>	Bioinformatics and Structure based Drug Design Nanomaterials Lab-II
Semester III	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Nanosystems in Medical Diagnostics Scaffolds in Tissue Regeneration
<b>Dissertation</b>	
Semester IV	
<b>Dissertation</b>	

**M.SC. IN NANOELECTRONICS AND NANOENGINEERING**

The two-year M.Sc. program in Nanoelectronics and Nanoengineering focuses on fundamentals of materials science, semiconductor devices and their fabrication, advanced materials for Nanoelectronics and Nanophotonics, bioelectronics, energy devices, VLSI design and computational materials design. It included foundation courses in electronics, physics, chemistry and materials science, followed by subject core courses dealing with Nanoelectronics and Nanoengineering including, nanomaterials processing and characterization, device fabrication, computational techniques and machine learning, VLSI design. In addition to this the course offers practical exposure to semiconductor industry relevant software packages and three core lab courses. The program aims to equip young graduates with expertise in nanoelectronics and nanoengineering to cater the futuristic needs of Indian industry. Each student is given almost one year of hands-on independent research, leading to a thesis for the successful completion of the program.

<b>Semester I</b>	
<b>Fundamental Core:</b>	Statistical Data Analysis
<b>Subject Core:</b>	Quantum Science Solid State Phenomena at Nanoscale Chemical Synthesis of Nanomaterials Modern Concepts in Materials Science Nanophotonics
<b>Lab:</b>	Statistical Data Analysis Optoelectronics Lab
<b>Semester II</b>	
<b>Subject Core:</b>	Computational Methods for Condensed Matter Nano- Opto- and Bio-electronic Devices Characterization of Nanomaterials Emerging Nano-manufacturing Technologies Nano Engineering for Energy Conversion and Storage Digital Electronics
<b>Lab:</b>	Computational Methods for Condensed Matter Nanoelectronics and Nanofabrication Lab NanoEnergy Devices Lab
<b>Semester III</b>	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Introduction to Machine Learning VLSI Technology and Design Nano Carbon and Nanocomposites
<b>Dissertation</b>	
<b>Semester IV</b>	
<b>Dissertation</b>	

### M.SC. IN MOLECULAR MEDICINE

The two-year M.Sc. program covers the use of molecular understanding in discovery research in disease prevention, drug development, diagnosis and therapy. Molecular medicine is the study of molecular and cellular phenomena in biological systems, molecular aspects of human diseases, the human body's response to diseases, heterogeneity of response and personalized medicine, stem cells, immune response and genetic determinants. One of the unique strengths of this course is its emphasis on an interdisciplinary approach whereby medical sciences, molecular and biomedical aspects of biology is addressed. All students will be required to conduct a one-year thesis research that provides hands-on experience in molecular biology techniques, cell culture, biochemical techniques and genetic analysis.

Semester I	
<b>Fundamental Core:</b>	Cell Biology Basics in Human Physiology and Pathology Clinical Biochemistry and Proteomics Statistical Data Analysis
<b>Subject Core:</b>	Immunology Molecular Biology
<b>Lab:</b>	Statistical Data Analysis Biochemistry Lab Molecular Biology Lab Cell Culture and Animal Lab
Semester II	
<b>Subject Core:</b>	Molecular Basis of Diseases Genetic Engineering Molecular Diagnostics Pharmacokinetics and Pharmacodynamics Bioinformatics and Structure based Drug Design Clinical Microbiology Genetics Neurobiology: Chemical and Architectural Organization of Brain
<b>Lab:</b>	Bioinformatics and Structure based Drug Design
Semester III	
<b>Fundamental Core:</b>	Ethics in Research and Research Methodology
<b>Subject Core:</b>	Stem Cell Biology and Therapy Organoid Culture & Its Applications In Medicine
<b>Dissertation</b>	
Semester IV	
<b>Dissertation</b>	

**B.SC. (HONS) IN MOLECULAR MEDICINE**

B.Sc. (Hons) Molecular Medicine is designed to provide a comprehensive and thorough understanding about the basic principles that constitute the research and development that make up the modern medicine. This would include both theoretical and practical training using state-of-the-art technology that is involved in molecular basis of homeostasis and diseases. One of the unique strengths of this course is its interdisciplinary approach whereby different areas of medical sciences were harnessed towards realization into development of therapeutics and diagnostics.

The Honors program provides a unique opportunity for the young inquisitive minds to ponder over the different aspects of medical sciences they learned in theory by performing hands on research. This is performed at our state-of-the-art facility by experienced internationally trained faculty to equip them to address different aspects of medical sciences.

The unique aspect of the Honors program is that the students get the opportunity to gain substantial research experience in their fourth honors year. In addition, they will take some cutting-edge specialized courses in the honors year. Secondly, the students are given the opportunity to design their own program with a significant number of elective courses that allow them to tailor the program as per their interest while taking some mandatory core courses which are essential to their basic understanding and specialization.

**Core Courses**

English I	Microbiology Practicals
Chemistry-1	Developmental Biology Lab
Biostatistics	IPRa
Bio Physics & Bio Energetics	Computer Programming
Cell Biology 1	Biosafety & Bioethics
Bio Physics Practicals	Molecular Biology Practicals
Chemistry Lab-1	Cultural Education
English II	Life Skills
Metabolism of Carbohydrates & Lipids	Stem Cell Biology
Chemistry-2	Nano Sciences in Biology
Biochemistry Lab-2	Cell Culture Lab
Cell Biology Practicals	Molecular Methods Lab
Chemistry Lab-2	Research Methodology
Immunology Practicals	Machine Learning in Molecular Medicine
Microbiology	Cancer Biology
Developmental Biology	Fundamentals of Pharmacology
Bio Techniques Practicals	Basic Pathology
	Antimicrobial Agents

**Elective Courses**

Biochemistry-1	Cell Biology- 2
Introductory Medical Physiology	Immunology
Computational Skills	Molecular Biology
Protein Structure & Function	Genetics
Biotechniques	Bioinformatics
Molecular Methods	Regenerative Medicine
Microbial Diseases & Vaccine Technology	Fundamentals of Tissue Engineering
Immunotherapy	Personalized Medicine
Vaccine Technology	Proteome & Proteomics
Amrita Values Programme	Gene Editing Technology
Career Competency-I	Cell Therapy
Ethics In Research & Research Methodology	Microbiome
Stem Cell Biology	Career Competency-II







Confocal Microscopy Facility







Animal House Facility -  
Cath Lab



X-Ray Photoelectron Spectroscopy Facility





Animal Magnetic Resonance Imaging Facility

# NANOTEXTILE TISSUE ENGINEERING

Bundling of 2D nanofibrous mats into 1D yarns enhances mechanical properties & enables post processing using textile techniques to form functional implants



## Nanotextile Applications



# NANOTEXTILE TUBULAR CONDUITS AS VASCULAR IMPLANTS



Implantation in pig carotid



As vascular grafts



- Developed mechanically compliant, suturable, leak proof nanotextile tubular conduits from polymeric yarns by weaving.

- Vascular grafts remained patent in pig carotid for 1 month

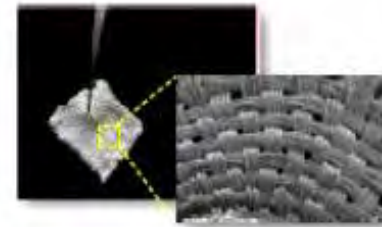
- Small diameter, flexible, woven conduit could embolize rabbit femoral artery



Implantation in rabbit femoral artery



As an embolization device



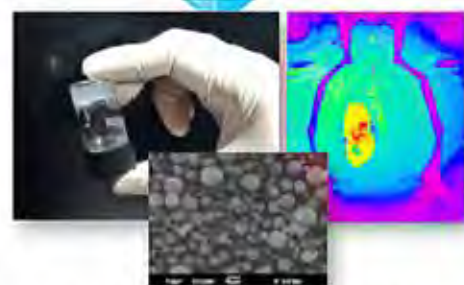
Drug loaded nanotextile implant







Carmustine loaded nano-brain-implant for the treatment of Glioblastoma

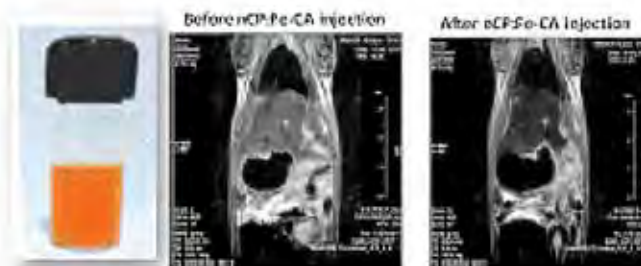


Injectable nanoparticle gel for localized chemotherapy against brain cancer

**MR CONTRAST ENABLED 3D SCAFFOLD MONITORING BONE REGENERATION**

Cell infiltration in the 3D scaffold      Matrix deposition in the 3D scaffold

Contrast change in MR traceable scaffold showing bone regeneration and scaffold degradation



nCP:Fe-CA nano-contrast agent for imaging




Photo-drug loaded nanoparticle gel for PDT for treating Glioma

### 3D-BIOPRINTING FOR REGENERATIVE MEDICINE AND DRUG TESTING

3D-Bioprinting: A potential solution

Laboratory-engineered human tissues & organs, organoids & disease models and drug-delivery devices could greatly advance current regenerative medicine and drug testing approaches




- Living Tissues & Organs
- Organoids & Disease models
- Drug delivery devices

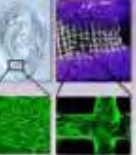
#### Bioprinting Tissues and Organoids

Anatomically accurate transplants & organoids

3D-digital information




Bioprinted Tissue Constructs

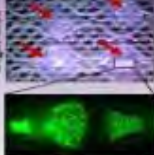


Patient specific disease models

Prostate Cancer Cells



Bioprinted Tumor Organoids



### NANOYARN REINFORCED COMPOSITE MATRIX BONE SCAFFOLD

A mechanically stable and porous nanoyarn reinforced scaffold was developed for bone tissue engineering applications



Porous scaffold



Implantation (Rat Femur)



Sham

After 4 months

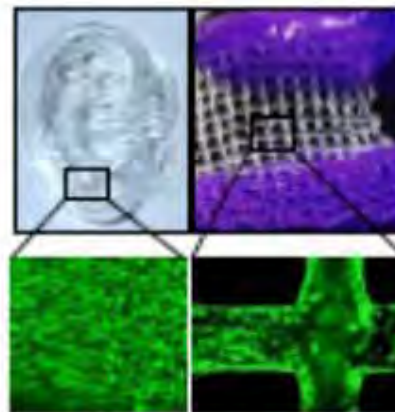


Scaffold

The scaffold showed enhanced bone formation in critical sized segmental defect in rat model



3D Printed Scaffolds



Bioprinted Tissue Constructs

# Amrita Hospital Information Systems

**A**mrita features one of the most advanced hospital computer networks in India, the Amrita Hospital Information Systems (AHIS). The hospital has computerised nearly every aspect of patient care, including all patient information, lab testing and radiological imaging. The hospital network supports more than 3000 computers and additional devices like printers, scanners, and other peripherals. Although the software was originally designed for use at the Amrita Institute of Medical Sciences, it has now become popular in other leading hospitals throughout India due to its ease of use and integration.

Amrita HIS allows a holistic approach within and across clinical segments, delivering solutions with the innovation and synergy necessary to help move forward in today's changing healthcare environment. Amrita HIS is probably the only Healthcare Solution available in the world which has been built largely based on Open Source technologies. The solution developed by Amrita Technologies addresses all the needs of the healthcare domain and provides a fully indigenous implementation, adopting best-of-the-breed technologies and design techniques. AHIS has been developed using Extreme Programming Methodologies backed by a vibrant and large community of Domain Experts. It is a fully integrated, highly configurable, platform independent Enterprise Information System which allows for scalability and performance, while at the same time ensuring to meet all the needs of a Healthcare Institution and much more. The system not only helps in daily patient care management, but also provides the foundation to foster research and development. AHIS is aided by user-friendly reports and ergonomic user-interface, and thereby ensuring maximum user efficiency.

The main focus area is on the integration of clinical applications with the financial and administrative applications.

The system allows for centralised access to all organisational and patient data through one single web interface for any authorised user. It manages all patient information from patient registration to discharge. It has many sub-modules which are very tightly and seamlessly integrated that cover the hospital transactions related to the patients.



## Humanitarian Activities



**T**he Mata Amritanandamayi Math (MAM) is a registered Public Charitable Trust dedicated to serving humanity without distinction of nationality, caste, race or religion. The Math's international headquarters, located at Amritapuri, (Kollam), Kerala, India, provides a global presence through its numerous philanthropic activities and institutions, which reflect Amma's message of love and compassion.

The United Nations (UN) announced the distinguished award of Special UN Consultative Status to Mata Amritanandamayi Math with the Economic and Social Council (ECOSOC) of the UN. After a thorough review of Mata Amritanandamayi Math's work and results for the past 15 years, including Amrita Institute of Medical Sciences (AIMS), Amrita University, and all other major efforts, the United Nations' 19 member nation committee within the ECOSOC Committee, voted unanimously to grant Special Consultative Status. The major ECOSOC body of 50 member nations affirmed this decision on July 21, 2005. The Math is among 726 Indian NGOs to receive formal UN affiliation in India as of 2018.



## ADMISSIONS CONTACT INFO:

### Medical/ Dental/ Nursing/Allied Health Sciences Admission and Enquiries:

The Manager – Admissions

Amrita Health Sciences Campus, Kochi

Amrita Vishwa Vidyapeetham

AIMS Ponekkara P.O, Kochi, Pin : 682041

phone: 0484-2858167 | 0484-2858166 | 0484-2858349

0484-2858383 | 0484- 2858153 | 0484-2856147

email: ugadmissions@aims.amrita.edu (for UG enquiries)

pgadmissions@aims.amrita.edu (for PG enquiries)

website: <https://amrita.edu/admissions>

### Pharmacy Admission and Enquiries:

Admission Co-ordinator

Amrita School of Pharmacy

Amrita Vishwa Vidyapeetham,

AIMS Ponekkara P.O, Kochi, Pin : 682041

phone: 0484-2857903 | 0484-2857904

email: [pharmaprincipal@aims.amrita.edu](mailto:pharmaprincipal@aims.amrita.edu)

[pharmacycollege@aims.amrita.edu](mailto:pharmacycollege@aims.amrita.edu)

website: [www.amrita.edu/healthsciences](http://www.amrita.edu/healthsciences)

### Amrita School of Nanosciences Admission and Enquiries:

Amrita Institute of Medical Scienc-

es, Amrita Vishwa Vidyapeetham

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