AMRITA
Health Sciences Prospectus

MEDICINE * DENTISTRY * NURSING * PHARMACY * ALLIED HEALTH SCIENCES * RESEARCH

UNDERGRADUATE | POSTGRADUATE | DOCTORAL

More than a Degree – Amrita Health Sciences Offers a Career!
Welcome to

AMRITA Vishwa Vidyapeetham

AMRITA VISHWA Vidyapeetham is the river of knowledge with Her Holiness Sri Mata Amritanandamayi Devi as its fount. This river finds its course across five campuses, with 15 schools of excellence, offering more than 120 degree programs (Undergraduate, Postgraduate and Doctoral) with a strong contingent of 1500 faculty and 13,000 students. It is today a multi-disciplinary university in the real sense with path-breaking research in the areas of Engineering, Medicine, Management and Communication.

With the mission of offering value-based education in letter and spirit, the University 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 ambience that is most conducive to learning and nurturing youth who are intellectually competent and socially committed.

Our Mission

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.
Society is made up of individuals. The thoughts and actions of each individual influence the culture of that society. Instead of waiting for others to improve, we should try to improve ourselves. Once our attitude has changed, we will be able to perceive goodness throughout the world. If there is a positive change in us, it will also be reflected in others. It is only what we give that we can hope to get back.

—Sri Mata Amritanandamayi Devi
We, the AMRITA family, welcome you with open arms and open hearts to this great institution of Amma’s infinite compassion and love.

To become special or extraordinary is the dream of every ambitious student. But how does one become special? Is it only through academic excellence? Of course, that is part of it, but academic brilliance alone is not enough. The most important thing in building your life and future is your ability to focus on your inner self and to realize the inherent abilities there within.

When you graduate and enter the practical world of opportunities and challenges, you may find yourself among thousands of competent professionals. What will you have over them? It will be your ability to tap into your inner source and let flow the grace you find there into your work. The extent to which you will be able to do this will depend entirely on how open you are to the beautiful opportunities available at AMRITA.

May you ever remain open to Amma’s grace.

Ever in Amma,  
With Love and Prayers
Amrita Vishwa Vidyapeetham is a rapidly developing world-class university, offering under-graduate, post-graduate, and advanced doctoral research in wide ranging disciplines.

It is both young and immensely dynamic, with a unique holistic approach to produce leaders in all of its disciplines. We expect our students to be conscious of their duties to mankind and nature. To give rather than to grab would be the driving force of our students. We sincerely want the students to experience the joy of giving throughout their lives. In essence, they should have enough motivation to contribute whatever they can towards making this world a better place to live in.

A very hearty welcome to you to this sacred temple of learning and leadership, and we hope you can become part of this exciting venture.

Invoking Amma’s Grace on all of us.

We have witnessed a phenomenal growth in a short period of 15 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 AIMS 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 560 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.

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

Our Most Beloved Amma has rightly said, “It is in giving that we receive”. This helps us to define our mission in healthcare, education and research.
AIMS was founded on the highest principles with an emphasis on compassionate service, charity and excellence through education.

The blending of technical skills and compassion as the foundation of any education is the vision of our founder, Sri Mata Amritanandamayi, who naturally expresses these qualities in her everyday life. The nurturing of these values at the Amrita Vishwa Vidyapeetham Healthcare Campus is of the utmost priority. Students receive the finest technical education while the values of compassion and selfless service are highly stressed. Our faculty is dedicated to these sustaining values, which have been ingrained in the curriculum. A commitment to healthcare in its highest form is a lifelong commitment to Self and Humanity. AIMS’ commitment as a centre of excellence in healthcare training will well prepare you to contribute at the forefront of your chosen profession.

The management and faculty pledge its full support to you, our students, in preparing you to serve in a way that honours you, this institution and this great country that awaits your helpful hands and service.

May we all invoke the blessings of Amma to inspire us and guide us on the path as we continue this journey together.

Ron Gottsegen
Administrative Director
Amrita Institute of Medical Sciences

Dr. Prathapan Nair
Amrita School of Medicine

Prof. Moly, K.T.
Amrita College of Nursing

Dr. Narayanan Unni
Amrita School of Dentistry

Dr. Sabitha, M.
Amrita School of Pharmacy

Principals of Amrita Health Sciences Campus
PERSONALLY GUIDED BY SRI MATA AMRITANANDAMAYI DEVI

AMRITA was established by the renowned humanitarian leader, Sri Mata Amritanandamayi Devi, also affectionately known as Amma across the globe. Amma, who has dedicated her life for the upliftment of humanity through selfless service, is Chancellor of the University. She is accessible to one and all, and indeed, the management, faculty and staff, students and even their parents seek Amma’s personal attention and guidance on a regular basis. AMRITA continues to grow from strength to strength under Amma’s guidance.

OFFERS OPPORTUNITIES FOR HIGHER EDUCATION, PROMOTING MUCH NEEDED SCIENTIFIC RESEARCH

As a developing nation, India should offer sufficient opportunities for higher education to its youth. In addition, it is essential to promote scientific research, an area which our nation is not yet on par with developed nations. AMRITA has come to be known today as one of India’s leading research and teaching universities, thereby fulfilling these needs.

AMRITA provides quality education for a significant number of students. Programs are offered in engineering, arts, sciences, medicine and allied fields, ayurveda, biotechnology, management, journalism and social work, with research actively promoted in these areas. With a focus on India’s national development plans, areas of specialization, including medical informatics, computational engineering, cyber security, clinical research, head and neck oncology and nanosciences have been introduced. All of these areas are in need of skilled personnel.

FOSTERS DEVELOPMENT OF INDIVIDUALS, IMBIBING HIGHEST VALUES IN TUNE WITH THE CULTURAL ETHOS AND TRADITIONS OF INDIA.

Mata Amritanandamayi Math is the holding trust of Amrita Vishwa Vidyapeetham. The Math is recognized for its charitable activities initiated all over the country and throughout the world. The Math also manages over 50 higher secondary schools in several Indian states. The Math supports these educational institutions by fostering the development of individuals, who are imbued with the highest values, in tune with the cultural ethos and traditions of our country. More than 100 years ago, Swami Vivekananda remarked, “We want that education by which character is formed and strength of mind is increased.” At AMRITA, we are doing our part to make this happen.

AMRITA UNIVERSITY 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

As a young institution that is unburdened by history and full of bold ideas for the future, AMRITA has much to teach its older counterparts. Truly you are building a world-class university for the 21st century, and I am deeply impressed by the success you clearly already achieving.
— Dr. John B. Simpson
President, State University of New York, Buffalo

This entire institution has the blessing of Amma, who is like a living goddess. Amma is an extraordinary person, there is no question about that. Amma has done a lot. To organize an institution such as this one needs powers of an unusual kind.
— Dr. CNR Rao
Chair of the Scientific Advisory Council to the Prime Minister of India

AMRITA UNIVERSITY 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

When I look at what Amrita is, its mission, the hospitals, the various campuses, there is a close synergy between what Princeton wants to do and what AMRITA is doing. Our faculty will be interested in collaborative research with AMRITA for the possibility of working on a real life problem.
— Dr. Maria Klawe
Dean of Engineering and Applied Sciences, Princeton University

It is extraordinary what AMRITA has been able to accomplish in its short history. To have developed in the space of only 15 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 (SUNNY)

Mata Amritanandamayi with her simplicity and universal love has united people, built teams as well as institutions for serving society. AMRITA VISHWA VIDYAPEETHAM is the finest of her dream projects. It is a unique institution incorporating multi-disciplinary education targeting the overall development of one’s personality.
— Dr. G. Madhavan Nair
Former Chairman, Indian Space Research Organization
Former Secretary, Department of Space, Government of India.
Amita Institute of Medical Sciences and Research Centre was awarded the Best Hospital in the country in 2013 for “Betterment of Healthcare” by the Federation of Indian Chamber of Commerce and Industries (FICCI) based on an exhaustive review and presentation process. This is considered a National recognition for the medical services and its impact on the people of our country.

Amita Vishwa VidyaPeetham was placed in the top category by the Ministry of Human Resource Development’s Deemed University Review Committee. As such, it is considered as one among the ivy-league Indian Universities such as IISc, TIFR, NIMHANS and BITS.

Amita E-Learning Research Lab, a division of Amita University, has won the award for educational excellence in the field of educational technology at the Indo-Global Educational Summit and Expo. The summit had representatives of educational institutes from over 40 countries. The award was given in recognition to Amita’s effort in developing A-VIEW, an e-learning platform aimed at addressing the challenge of shortage of experienced teachers in the higher education sector in India. A-VIEW is deployed in more than 350 universities and 600 colleges across India.

The Amrita Institute of Medical Sciences is the only university teaching hospital in India with NABH accreditation.

--- ACCREDITED BY ---

Awards and Accreditations

Students Have Their Say

Vinit Joseph Gilvaz
2008 MBBS
What is the uniqueness of AMRITA?
The campus here provides the best atmosphere to learn away from the bustle of the city. In the study of medicine, more than our books, it is through our patients that we learn. Being one of the highest referral centers in South India, we have been lucky enough to have been exposed to a variety of cases not many institutes can boast of. While teaching us the fundamentals of medicine, we get first-hand experience in the latest techniques and facilities in the medical field.

Dr. Elizabeth Verghese
MBBS – 2008 Batch (Intern)
What has been your experience at AMRITA?
As I was born and brought up in Mumbai and hardly had any roots in Kerala, I thought it would be tremendously difficult to fit into a new environment and culture. But to my surprise, I was astonished that there was a wide array of students hailing from every corner of the globe and I easily found a niche here at Amrita. Amrita has inspired me to be a better person. In these five years of my life it has not only helped me to excel academically, but also in extra-curricular activities. The students here at AIMS are driven and intelligent, the Campus has a comfortable enthusiastic vibe and the facilities are ever expanding.

Akhil A. Sherif
2008 MBBS
Has studying at AMRITA changed your sense of values?
My experience has been life defining. I had many dreams and aspirations and Amrita gave me the environment, opportunities and the tools to move closer to those aspirations and become a well-rounded professional. It equipped me with the values that are essential to meet the demands of today’s society, as a human being and a doctor. It taught me not just the science of medicine but the art of healing.

Dr. Akhila
BDS Student (Intern)
What life lessons will you take away from your stay at AMRITA?
The vision of all the modern educational institutions of Amrita is to embrace the universal appeal of India’s great spiritual wisdom. As a student who completed graduation from this university, I feel that the personality of anyone who comes into these temples of learning will gain genuine balance between their actions and responsibilities. Amma is undertaking this great mission in the most appropriate way by setting an example herself and also through Amrita by teaching that the main purpose of education should be to impart a culture based on spiritual values. Various health awareness programs to benefit the poor and downtrodden, research works directed towards the uplift of the society as a whole - these are just a few amid the umpteen undertakings of this great institute.
Since its inception, Amrita Institute of Medical Sciences (AIMS) has grown from a 115 bed specialty hospital to a 1200 bed super-specialty tertiary care health centre with an attached medical college hospital. On the 17th of May 1998, AIMS was inaugurated by the then Prime Minister of India, Shri Atal Bihari Vajpayee, in the presence of Her Holiness, Sri Mata Amritanandamayi Devi. The Amrita Institute of Medical Sciences is the adjunct to the term “New Universalism” coined by the World Health Organization. This massive healthcare infrastructure with over 3,330,000 sq. ft. of built-up area spread over 125 acres of land supports a daily patient volume of about 3000 outpatients with 95 percent inpatient occupancy. Annual patient turnover touches an incredible figure of over 779,055 outpatients and nearly 47,577 inpatients. The service of the institution is nationally accredited by the National Assessment and Accreditation Council (NAAC) with “A” Grade. Other accreditations received by the hospital are International Organization for Standardization (ISO 9001-2008), National Accreditation Board for Testing and Calibration Laboratories (NABL) for laboratories and National Accreditation Board for Hospitals and Healthcare Providers (NABH).

With extensive facilities comprising 25 modern operating theatres, 220 equipped intensive-care beds, a fully computerized and networked Hospital Information System (HIS), a fully digital radiology department, NABL accredited clinical laboratories and a 24/7 telemedicine service, AIMS offers a total and comprehensive health solution comparable to the best hospitals in the world. The AIMS team comprises physicians, surgeons and other healthcare professionals of the highest caliber and experience. AIMS features one of the most advanced hospital computer networks in India. The network supports more than 2000 computers and has computerised nearly every aspect of patient care including all patient information, lab testing and radiological imaging. A PET (Positron Emitting Tomography) CT scanner, the first of its kind in the state of Kerala and which is extremely useful for early detection of cancer, has been installed in AIMS and was inaugurated in July 2009 by Dr. A. P. J. Abdul Kalam, former President of India.

The educational institutions of Amrita Vishwa Vidyapeetham, a University established under section 3 of UGC Act 1956, has at its Health Sciences Campus in Kochi, the Amrita School of Medicine, the Amrita Centre for Nanosciences, the Amrita School of Dentistry, the Amrita College of Nursing, and the Amrita School of Pharmacy, committed to being centres of excellence providing value-based medical education, where the highest human qualities of compassion, dedication, purity and service are instilled in the youth. Amrita School of Ayurveda is located at Amritapuri, in the district of Kollam. Amrita University 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.
### Departments (Broad Specialties)

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The Health Sciences Campus of Amrita 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. A tropical climate enhances a campus lifestyle that is comparatively informal.

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. Hot and cold water and laundry facilities are available in every hostel for use by the residents. Every student is provided with a personal code enabling him/her to maintain a credit account for telephone calls. However, the possession and use of mobile phones are strongly discouraged inside the campus.

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

Shops within the campus include a mini-supermart that sells confectioneries, fruits, stationery, toiletries etc. Tailoring facilities, hairdressers, photocopying and photo studio shops are within walking distances of the campus. The campus has a full fledged post office counter with Speed-Past facilities, round the clock STD/ISD telecom facilities, a bank with 24-hour ATM facilities, 24-hour taxi service, a 24-hour pharmacy, an ice-cream parlor, three cafeterias, a bookstall and optical shop.

Recreational facilities at AMRITA include basketball courts, football fields and an athletic track. All the hostels have their own gymnasiums and an outdoor volleyball court as well as indoor games like table tennis, chess and caroms.
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 libraries of AIMS that remain open until 12 midnight. The library currently has a collection of around 12,681 books, 980 CD-ROMs and multi-media materials. They also subscribe to or receive approximately 258 print journals.

Apart from access to certain important electronic journals like the "The New England Journal of Medicine", "Heart" by BMJ etc. the hospital is now subscribing to the following databases:

- **UpToDate** - an excellent tool for patient care which is based on Evidence based Medicine.
- **The Clinicalkey** - A database of more than 500 electronic journals and more than 800 electronic books in various specialties. It also gives complete drug information, practice guidelines, multimedia and CME.

Access to these databases are IP authenticated which means it can be accessed from any computer in the campus that has an internet connection.

A digital library has been established recently with collections of e-books, dissertations, presentations and images. The data are stored digitally and are made available to users through our intranet. There are 212 e-books in various specialities, 24 dissertations and 30 articles published by the faculty in various national and international journals. Internet access is available in the library and the hostels.

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Students at AMRITA are encouraged to join one of the many clubs functioning in the campus. The arts forms are well represented by music and drama societies that conduct regular intra-faculty competitions and inter-collegiate programs. There is a movie club that shows the latest in English, Hindi and Malayalam movies every Sunday in the air-conditioned Amriteshwari Hall. Those wanting to commune with nature can look forward to joining Green Friends, an initiative at AMRITA to promote the environment. 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.

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.

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 have been inaugurated in the campus by Prof. K. V. Thomas, Union Minister of State for Agriculture.

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.

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HEALTH SCIENCES

Undergraduate • Postgraduate • Doctoral Studies

» AMRITA SCHOOL OF MEDICINE
» AMRITA SCHOOL OF DENTISTRY
» AMRITA COLLEGE OF NURSING
» AMRITA SCHOOL OF PHARMACY
» AMRITA CENTRE FOR ALLIED HEALTH SCIENCES
» AMRITA CENTRE FOR NANOSCIENCES
## Under Graduate Programs
- Bachelor of Dental Surgery (BDS)
- Bachelor of Medicine & Bachelor of Surgery (MBBS)
- Bachelor of Pharmacy (BPharm)
- BSc. Nursing
- BSc. Emergency Medical Technology
- BSc. Medical Radiologic Technology (MRT)
- BSc. Optometry
- BSc. Respiratory Therapy (RT)
- BSc. Medical Laboratory Technology (MLT)
- Bachelor of Audiology & Speech Language Pathology (BASLPS)
- BSc. Anaesthesia Technology
- BSc. Cardiac Perfusion Technology (CPT)
- BSc. Cardio Vascular Technology (CVT)
- BSc. Diabetes Sciences
- BSc. Dialysis Therapy
- BSc. Echocardiography Technology
- BSc. Physician Assistant
- BSc. Optometry (Lateral Entry)
- Diploma in Dental Mechanics

## Post Graduate Programs

### MD Clinical
- Anaesthesia
- Dermatology
- Emergency Medicine
- General Medicine
- Geriatrics
- Nuclear Medicine
- OB&G
- Pediatrics
- Physical Medicine & Rehabilitation
- Psychiatry
- Pulmonary Medicine
- Radio Diagnosis
- Radiotherapy

### MS Clinical
- MS General Surgery
- MS ENT
- MS Ophthalmology
- MS Orthopaedics

### PG Diploma
- D. A. (Anaesthesia)
- DCH (Pediatrics)
- DCP (Clinical Pathology)
- DDVL (Dermatology)
- DO (Orthopaedics)
- DIO (Ear)
- DMRD (Radio Diagnosis)
- DMRT (Radiotherapy)
- DO (Ophthalmology)
- D. Ortho (Orthopedics)
- DPM (Psychiatry)
- DPMR (Physical Medicine & Rehabilitation)
- DTCD (Tuberculosis And Chest Diseases)
- PharmD (Post Baccalaureate)

## DM and MCh Programs
- Cardiac Anaesthesia
- Cardiology
- Critical Care Medicine
- Diabetology
- Endocrinology
- Head & Neck Surgery
- Head & Neck Surgical Oncology
- Neonatology
- Neuro Oncology
- Neurovascular Surgery
- Orthopaedics
- Paediatric Cardiology
- Paediatric Neurosurgery
- Paediatric Oncology
- Transfusion Medicine

## Fellowships
- Medical Laboratory Technology (MLT)
  - a. Biochemistry
  - b. Pathology
  - c. Microbiology
- MSc. Swallowing Disorders & Therapy
- MSc. Respiratory Therapy (RT)
- MSc. Neuro Electro Physiology
- MSc. Clinical Research
- MSc. Biostatistics
- MPhil (Hospital Administration)

## MSc Programs in Allied Health Sciences
- PG Diploma
- PG-Diploma in Medical Radiological Science (PGDMRS)
- Master of Hospital Administration
- Nanosciences
- Molecular Biology

## MDS
- Conservative Dentistry & Endodontics
- Periodontology
- Prostodontics & Crown & Bridge
- Oral & Maxillofacial Surgery
- Orthodontics
- Pedodontics & Preventive Dentistry
- Oral Pathology & Microbiology
- Public Health Dentistry
- Oral Medicine & Radiology

## PhD Programs
- Faculty of Dentistry
- Faculty of Medicine
- Faculty of Nanosciences
- Faculty of Nursing
- Faculty of Pharmacy

## MSc Nursing Programs
- Medical Surgical Nursing
- Paediatric Nursing
- Psychiatric Nursing
- Obstetric & Gynaecology Nursing
A commitment to the practice of medicine in its highest form is a lifelong commitment to humanity. Our resolve to be a Centre 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.
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 an 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 BSc, MSc, MD/MS/PG Diploma, DM/MCh, etc., as also as a five-and-a-half year program in Medicine, including a year of internship, culminating in the award of an MBBS 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 centres 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.

Incorporating state-of-the-art educational facilities that meet international standards, 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.

Preclinical Sciences

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.

DEGREE PROGRAM
MD 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 MSc MLT course and PhD 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.

OTHER PROGRAMS
• MD Biochemistry

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 PG students. The haematology laboratory consists of modern binocular and monocular compound microscopes. The large extension laboratory consists of modern binocular and monocular compound microscopes. The large extension laboratory possesses a number of excellent static and working models of human systems including a unique seven-foot tall wooden model. 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.

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.

DEGREE PROGRAM
• MD Community Medicine

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 Centre functioning under Analytical Toxicology.

DEGREE PROGRAM

+ MD 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.

+ MD Microbiology
+ MSc 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 AIMS. 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.

DEGREE PROGRAMS

+ BSc in Medical Laboratory Technology
+ MSc in Medical Laboratory Technology

In the first year the students rotate through the Biochemistry, Pathology and Microbiology laboratories. There are didactic lectures, regular practical and demonstration classes, but emphasis is on hands-on training in the respective fields. The second year is devoted to specialisation in any one of the laboratories (Biochemistry, Pathology or Microbiology). There are group discussions and seminars with an introduction to bio-statistics and research methodology. Most of the time is devoted to hands-on training in advanced laboratory techniques, including automated versions. Further there is a six month internship, where students do dissertation work in a field of interest. Throughout the whole course, students are in the clinical laboratories which also includes night duty.

Job Opportunities:

Clinical laboratories are always looking for qualified medical laboratory technologists. There are ample opportunities for a career in research laboratories also.

OTHER PROGRAMS

+ MD Pathology
+ Diploma in Clinical Pathology

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.

DEGREE PROGRAMS

+ BSc in Medical Laboratory Technology
+ MSc in Medical Laboratory Technology
Clinical Sciences

DEPARTMENT OF MEDICINE

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.

DEGREE PROGRAM

- MD General Medicine

CARDIOLOGY – ADULT & PAEDIATRIC

The Department comprises the adult and paediatric divisions for medical and surgical services. The 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.

OTHER PROGRAMS

- DM in Cardiology
- DM in Paediatric Cardiology

CENTRE FOR DIGITAL HEALTH

In an effort to impart state of the art healthcare education to learners at all levels, AIMS has established a Centre for Digital Health (CDH), which is a centre 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 AIMS 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.

Centre 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 Centre
- Clinical Practice Unit
- Virtual Reality Lab

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

ENDOCRINOLOGY AND DIABETOLOGY

The Endocrinology Department at AIMS 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.

OTHER PROGRAM

- DM Endocrinology
problem is compounded by the lack of adequate insurance coverage for the elderly. To meet this acute need of comprehensive geriatric assessment, AIMS 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.

DEGREE PROGRAM

MD 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 Centre. 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.

DEGREE PROGRAMS

Fellowship in Paediatric Oncology
Fellowship in Clinical Haematology
Fellowship in Transfusion Medicine
DM Medical Oncology

NEPHROLOGY

The Nephrology Department provides comprehensive
Amrita School of Medicine

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 AIMS Solid Organ Transplant Program.

DEGREE PROGRAM

- **BSc in Dialysis Therapy**
  The course is run by the Department of Nephrology, along with assistance from various other departments and specialties. During the course, 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.

Job opportunities:
This is a job-oriented technical training course. Dialysis therapists/technologists are very much in demand for employment, both in India and abroad.

OTHER PROGRAM

- **DM Nephrology**

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 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.

DEPARTMENT OF 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.

PROGRAMS

- **MS General Surgery**

CARDIO VASCULAR THORACIC SURGERY

The Adult Cardiac and Vascular Surgery Program at AIMS 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.

DEGREE PROGRAM

- **MSc in Cardio Perfusion Technology**
  The MSc 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.

Job Opportunities:
- Can work as a neurotechnologist in leading hospitals in India and abroad. There are opportunities for teaching and research in this field.

OTHER PROGRAM

- **DM Neurology**

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 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.

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Job Opportunities:
- Can work as a neurotechnologist in leading hospitals in India and abroad. There are opportunities for teaching and research in this field.

OTHER PROGRAM

- **DM Neurology**

GASTROINTESTINAL SURGERY

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

- Oncological surgery of the GI tract
- Pancreatice–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
- Retropertioneal 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, and intra–operative ultrasond and endoscopy.

PROGRAMS

- **MCh Gastrointestinal Surgery**
- **Post Doctoral Certificate Course in Vascular Surgery**
- **Post Doctoral Certificate Course In Hepatobiliary/Pancreatic 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.

AIMS 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 AIMS 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.

**DEGREE PROGRAM**
- MCh Head & Neck Surgery*
  *Subject to sanction by Ministry of Health, Govt. of India
- MSc Swallowing Disorders & Therapy

**FELLOWSHIP PROGRAM**
- Fellowship in Head & Neck Oncosurgery

**NEUROSURGERY**
Neurosurgery is the specialty 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 AIMS 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 Starz 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.

**DEGREE PROGRAMS**
- MCh Neurosurgery
- Fellowship/PDCC in Paediatric Neurosurgery
- Fellowship/PDCC in Neuro-Oncology
- Fellowship/PDCC 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.

**DEGREE PROGRAM**
- MCh Paediatric Surgery

**PLASTIC AND RECONSTRUCTIVE SURGERY**
(see Head and Neck Surgery, page 40)

**DEGREE PROGRAM**
- MCh Plastic Surgery

**VASCULAR SURGERY**
(see Gastrointestinal Surgery, page 39)

**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
Amrita School of MEDICINE

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

• General Dermatology
• Cosmetology
• Sexually transmissible diseases
• Leprosy

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.

PROGRAMS

• PG Diploma in Medical Radiological Physics

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

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

One year post doctoral certificate course after MD/DNB Anaesthesiology.

Two year fellowship program after MD/DNB Anaesthesiology.

MSc in Respiratory Therapy

BSc in Respiratory Therapy

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.

Job Opportunity:

Therapists are in demand in hospitals and hospital related organizations to provide direct patient care to those with acute and chronic respiratory problems. Diagnosis and management of adult respiratory disorders needing intensive care, pulmonary function testing, pulmonary rehabilitation, teaching and research opportunities are areas that offer opportunities to the respiratory therapists for professional growth and personal satisfaction.

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• Cosmetology
• Sexually transmissible diseases
• Leprosy

PROGRAMS

• Diploma in Dermatology, Venerology and Leprosy
• MD Dermatology

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PROGRAMS

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PROGRAMS

• PG Diploma in Medical Radiological Physics

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.

DEGREE PROGRAM

MSc in Biostatistics

Job Opportunity:
Successful candidates of this course may be required to work as Faculty/Statisticians and Research assistants and Officers in Medical Colleges, Research Institutions, Health Ministries and departments, pharmaceutical companies and universities.

CLINICAL RESEARCH

This is a specially designed program to provide theoretical and practical training in coordinating clinical trials and clinical research efforts. The one year diploma course will involve lecture components on key aspects on clinical research, namely, statistical design and analysis, ICH/GCP guidelines, study design, data management, pre-clinical drug development strategies and methodologies, ethical aspects, legal and regulatory aspects of clinical trials, and some exposure to allied health sciences such as pharmacology, biochemistry and physiology.

In addition to the lecture component, the unique aspect of this course is the direct involvement of the students with the ongoing clinical research programs and an opportunity to manage and coordinate an existing clinical trial research project(s) under the direct guidance of the Principal Investigator. Many clinical trials are going on at the Institute, most of which are sponsored by International Pharmaceutical concerns and agencies. All the students will therefore have ample opportunity to get directly trained in conducting and managing clinical trials. Each student will have to write a project report based on the knowledge, exposure and experience on the on-going clinical trials. They also have to make presentations in Seminars and Journal clubs on the topics which have been discussed in the classes.

The course also offers practical training in data entry and management and in the statistical analysis of data using the statistical softwares SAS and SPSS. In short, each student, soon after the successful completion of the course, will be ready to be absorbed as a clinical research coordinator/associate or project assistant in pharmaceutical companies/research institutions.

DEGREE PROGRAM

MSc in Clinical Research

Job Opportunities:
Successful candidates of this course may get opportunities to work as Clinical Research Associates/ Assistants/Co-ordinators/Project Managers in Pharmaceutical Research organizations, companies involved in Pharmaceuticals, Biotechnology and Medical devices, Teaching assistants in Academic Institutions giving courses in Clinical Research.

MOLECULAR MEDICINE

AIMS has established a world class, clinical and scientific research centre for Molecular Medicine. The Centre is pursuing basic and translational research of the highest quality building on the current research activities at AIMS together with existing infrastructure facilities, and is developing biomedical research as applicable to medical problems.

OSTOBRECTIONS 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.

PROGRAMS

• MD Obstetrics & Gynaecology
• Diploma in Obstetrics & Gynaecology

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 providing 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

PROGRAMS

• MS Orthopaedics
• Diploma in Orthopaedics
Physicians and surgeons at Amrita Institute of Medical Sciences (AIMS) 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 AIMS, 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 Simulads (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 silicone 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 pelvic organs.

Obstetric and gynaecologic mannequins mimic antenatal palpation of fetus with fetal heart sounds. CPR mannequins are optimal tools for basic and advanced life support skills training. Various clinical conditions and scenarios can be programmed on these simulads, and they will prove instrumental for evaluating the performance of skills, especially for Emergency Medicine PG students.

Simulads are for basic, advanced surgical skills and various non-invasive procedures. We can use these to conduct OSCE examinations with programmed 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:

i) General Medicine

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

PROGRAMS

- MS Otorhinolaryngology
- Diploma in 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 Centre
- Diagnostic Clinic
- General Paediatric inpatient services
- Vaccination
- Certified baby friendly hospital

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

PROGRAMS

- MD Paediatrics
- Diploma in Child Health

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 centre to serve the needs of patients are under active consideration. Twenty-one Physiotherapists and Occupational Therapists are available in the department.

PROGRAMS

- MD Physical Medicine & Rehabilitation
- Diploma in Physical Medicine & Rehabilitation

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.

PROGRAM

- MD Psychiatry
- DIPLOMA PROGRAM
- PG Diploma in Psychiatry

PULMONARY MEDICINE

The Centre for Pulmonary Medicine undertakes the prevention, early detection, diagnosis, and treatment of pulmonary diseases in children, adolescents, and adults. Comprehensive pulmonary medicine programs include specialised treatment of specific diseases such as asthma, chronic obstructive pulmonary diseases, sleep-disordered breathing, interstitial lung diseases, cystic fibrosis, occupational lung diseases, pulmonary rehabilitation, tuberculosis, lung cancers and dedicated smoking cessation program. Diagnostic
facilities include pulmonary function testing, exercise testing, allergy testing, diffusion studies, flexible video bronchoscopic investigation, BAL and endobronchial stenting, spiral and higher resolution CT imaging guided biopsies, ventilation perfusion scans for pulmonary embolism and thoracoscopic procedures.

**PROGRAMS**
- DM Pulmonary Medicine
- MD Respiratory Medicine
- Diploma in Tuberculosis & Chest Diseases

**RADIATION ONCOLOGY**
Radiation Oncology specializes in the medical use of ionizing radiation for the treatment of cancer and other medical conditions. The Department of Radiation Oncology at AIMS is of international standard and has the most technologically advanced clinical radiation therapy programs in the country. The department is equipped with 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**
- MD Radiotherapy
- Diploma in Medical Radiotherapy

**RADIODIAGNOSIS**
The Medical Imaging Centre is one of the finest international centres of its kind. New high performance equipment together with a hospital-wide, all digital imaging, archival and retrieval system establishes AIMS 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.

**DEGREE PROGRAM**
- BSc In Medical Radiologic Technology (BSc MRT)

BSc 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 specialties. 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.

**Job Opportunity:**
BSc (MRT) graduates may find employment as technologists in a radio-diagnosis/radiation oncology department, in hospitals, radiology clinics, medical colleges, or as specialists in computed tomography, mammography, MRI, cardiology, in medical clinics, colleges of veterinary medicine, scientific companies, or in education

**OTHER PROGRAMS**
- MD Radiodiagnosis
- Diploma in Medical Radiodiagnosis
NUCLEAR MEDICINE

The Department of Nuclear Medicine at AIMS is an established branch of medicine that uses radioisotopes for diagnostic imaging and therapy. Nuclear medicine imaging, or scintigraphy performed with a Gamma camera, provides physiological information as an adjunct to conventional imaging technology and is of tremendous diagnostic value to many specialties. The radioisotope tagging needed for these investigations is performed in the nuclear medicine pharmacy (Hot Lab). The following tests are performed using our state-of-the-art, dual head Gamma camera: MIBI stress/rest myocardial perfusion SPECT scan, MUGA scan, renal cortical scintigraphy, captopril renal scintigraphy, cerebral perfusion scintigraphy, RBC scintigraphy, liver spleen colloid scintigraphy, milk scan, oesophageal and gastric motility studies, hepatobiliary scintigraphy, whole body skeletal scintigraphy, gallium and iodine 131 scintographies. Radio iodine therapy is an important therapy modality in management of hyperthyroidism and thyroid carcinoma. Intraoperative parathyroid and sentinel node detection is also performed, using a cordless Gamma probe.

DEGREE PROGRAM

MD Nuclear Medicine

PET CT 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 a CT scan and fusing these two scans-PET CT scan, further enhance PET scan’s cancer detection capability.

This sophisticated and technologically advanced scan is performed on a PET CT scanner. A state-of-the-art PET 8 slice CT 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 CT scan helps to localize precisely to a particular organ (like lung tissue, lymph nodes, bones, etc.).

PET CT 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 CT scan also has immense potential in the Radiotherapy planning of a patient.

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

Apart from being primarily used to detect cancer, PET CT is also very helpful in the detection of surgically curable seizure (“fits”) focus in the temporal lobe of the brain. PET CT 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).

LABORATORY MEDICINE

Laboratory services at AIMS 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 wide 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 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 AIMS 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. Criss 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 Centre**
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 Centres in India.
CENTRE FOR ALLIED HEALTH SCIENCES

Physician Assistant specialists 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, examine and treat patients, order and interpret laboratory tests and X-rays and make diagnosis. They also treat minor injuries by suturing, splinting and casting. PAs record progress notes, instruct and counsel patients, and order to carryout therapy. Additional nonclinical positions are developing for physician assistants. Only those who are willing to dedicate themselves for patient care, which calls for hard and strenuous work, should opt for this course. The course is entirely hospital based.

The program involves the following departments:

- Cardiology
- Cardio Vascular and Thoracic Surgery
- Endocrinology
- ENT
- Gastroenterology
- General Medicine
- Geriatrics
- G.I. Surgery
- Head and Neck Surgery
- Nephrology
- Neurology
- Neurosurgery
- Oncology
- Urology

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.

SURGICAL ONCOLOGY

The Surgical Oncology Department includes surgeons trained in oncology surgery from all surgical subspecialties. The department offers a two-year fellowship in surgical oncology and gynaecology.

PODIATRIC SURGERY

The Podiatry Centre 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.

UROLOGY

The Centre 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 pediatric 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 its kind not only in the country but comparable to the best in the world.

DEGREE PROGRAM

**BSc Physician Assistant Program**

**Job opportunities:**

The Physician Assistants are well-recognized and highly sought-after members of the health care team. This is a job-oriented technical training course. Those who successfully complete the course may be absorbed in AIMS itself. There are very good opportunities in all leading hospitals in India and abroad.

**FELLOWSHIP PROGRAM**

**Fellowship In Surgical Oncology & Gynaecologic Oncology**

**Fellowship In Podiatric Surgery**

for Post Graduate students of surgery and gynaecology interested in pursuing a career in Oncology.

**Fellowship Program**

**MCh Urology**
ADMISSIONS INFO

for
Amrita School of Medicine
## Undergraduate Programs (Allied Health Sciences)

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration of the course</th>
<th>Eligibility Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BScAnaesthesia Technology</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>Bachelor of Audiology &amp; Speech Language Pathology (BASLP)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScCardiac Perfusion Technology (CPT)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScCardiovascular Technology (CVT)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScDiabetes Sciences</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScDialysis Therapy</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScEchocardiography Technology</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScOptometry</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScPhysician Assistant</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScRespiratory Therapy (RT)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Physics, Chemistry, Biology</td>
</tr>
<tr>
<td>BScOptometry Lateral Entry</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Optometry/Ophthalmic Assistant</td>
</tr>
<tr>
<td>BScMedical Laboratory Technology (MLT)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Optometry/Ophthalmic Assistant</td>
</tr>
<tr>
<td>BScMedical Radiologic Technology (MRT)</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Optometry/Ophthalmic Assistant</td>
</tr>
<tr>
<td>BScEmergency Medical Technology</td>
<td>3 years + 1 year internship</td>
<td>Pass in +2 with 50% marks in Optometry/Ophthalmic Assistant</td>
</tr>
</tbody>
</table>

## ADMISSIONS

### MBBS (Bachelor of Medicine and Bachelor of Surgery)

#### Eligibility for MBBS
1. Candidate should have completed 17 years but should not have completed 23 years of age by 31st December in the year of admission.
2. Pass in 12th standard in the first attempt.
3. Must have passed in the subjects of Physics, Chemistry, Biology / Biotechnology & English individually and have obtained a minimum of 60% marks in English and 60% marks in Physics, Chemistry and Biology / Biotechnology taken together, from any State Higher Secondary Board or equivalent. NRI’s 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.
4. Those who appear for the qualifying examination in March / April can also apply.

#### Admission Procedure*
Selection is based on the rank obtained in the common entrance test held at national level.

#### Degree Details

<table>
<thead>
<tr>
<th>Degree</th>
<th>Duration (in years)</th>
<th>Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBS</td>
<td>4½ plus 1 year internship</td>
<td>100</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

### Postgraduate Diploma Programs

#### Eligibility
Candidates must possess MBBS degree from a recognized medical college and should have obtained full registration from Medical Council of India or any of the State Medical Councils.

#### Admission Procedure*
Selection is based on the rank obtained in the common entrance test held at national level.

#### Degree Details

<table>
<thead>
<tr>
<th>Degree Details</th>
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</thead>
<tbody>
<tr>
<td>Degree Duration (in years)</td>
</tr>
<tr>
<td>Postgraduate Diploma</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

### MD (Doctor of Medicine) / MS (Master of Surgery)

#### Eligibility
a. Candidates must possess MBBS degree from a recognized medical college and should have obtained full registration from Medical Council of India or any of the State Medical Councils.
b. For MD/MS Clinical subjects, only those candidates who have not crossed the age of 30 years as on 31st December in the year of admission are eligible to apply. For MD/MS Non-clinical subjects, age limit not applicable.

#### Admission Procedure*
Selection is based on the rank obtained in the common entrance test held at national level.

#### Degree Details

<table>
<thead>
<tr>
<th>Degree Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Duration (in years)</td>
</tr>
<tr>
<td>MD/MS</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

**Two years for MBBS with Diploma in the concerned speciality.
DM (Doctor of Medicine) / MCh (Master of Chirugiae)

Eligibility

a. Candidates who will not cross the age of 35 years as on 31st December in the year of admission are eligible to apply.
b. A candidate, who holds MD / MS degree from a recognized Medical College included in the Schedules to the Indian Medical Council Act, 1956 and has obtained full registration for MD / MS 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 common entrance test held at national level.

Degree Details

<table>
<thead>
<tr>
<th>Degree</th>
<th>Duration (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM/MCh</td>
<td>3 years</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

MSc Courses - GROUP I (Basic Science)

<table>
<thead>
<tr>
<th>Course</th>
<th>No. of seats</th>
<th>Duration of the course</th>
<th>Eligibility Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc in Respiratory Therapy</td>
<td>2</td>
<td>2 years</td>
<td>BSc in Respiratory Therapy</td>
</tr>
<tr>
<td>MSc in Neuro Electro Physiology</td>
<td>2</td>
<td>3 years plus 6 months internship</td>
<td>BSc Physics</td>
</tr>
<tr>
<td>MSc in Medical Laboratory Technology (MSc MLT - Pathology/Biochemistry/Microbiology)</td>
<td>5</td>
<td>2 years plus 1 year internship</td>
<td>First Class in BSc MLT (4 years regular course)</td>
</tr>
<tr>
<td>MSc in Swallowing Disorders &amp; Therapy</td>
<td>4</td>
<td>2 years</td>
<td>BASLP</td>
</tr>
<tr>
<td>MSc in Clinical Research</td>
<td>10</td>
<td>2 years</td>
<td>MBBS, BDS, BAMS, BHMS, BPharm, BSc Biotechnology/Allied Health Sciences/Life Sciences/Nursing</td>
</tr>
</tbody>
</table>

MSc Course - GROUP IV

| MSc in Biostatistics | 5 | 2 years | Graduates in Statistics/Mathematics with papers in Statistics |

PG Diploma Course - GROUP V

| PG Diploma in Medical Radiological Physics | 8 | 2 years | MSc (Physics)/MSc Engineering with First Class or High Second Class |

DOCTORAL PROGRAMS

Doctoral programs have been initiated in different specialities both in pre-clinical, 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 PhD 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.
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.
The BDS course offered by Amrita School of Dentistry commenced in September 2003 and was inaugurated by Smt. Sushma Swaraj, the then Minister for Health and Family Welfare and parliamentary affairs of the Government of India. 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 centre, faculty offices, administrative offices, clinical treatment areas, small group discussion areas, a faculty practice, and a library. Sufficient area has been earmarked for future expansion to carry out research activities.

Sixty (60) students are enrolled for the BDS course in the School of Dentistry every year. The duration of the course is 4 years with 1 year rotating internship. The curriculum is in accordance with the regulations of the Dental Council of India.

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 Orthopedics, 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 of patients who have complex medical histories and may already be receiving treatment for a number of diseases. By serving this varied segment of the population, students come to understand the prevalence of certain diseases and oral health problems, comprehend the patterns of disease, and learn from the outcomes of selected therapies.

Expert and dedicated faculty members

Students at ASD work side-by-side with outstanding educators, clinicians, and researchers. The Amrita School of Dentistry is building a world-class faculty whose members pool their talents to support students in investigation and instruction. The students attend to patients commencing from the third academic year. The faculty offer close supervision and careful instruction, both in the classroom and in the clinic.

Patient care

Students treat patients primarily in the departmental clinics. They also work at the adjacent AIMS Hospital where they learn the role of dentistry within the hospital and within the framework of total health care while becoming knowledgeable in hospital protocols and procedures in the emergency room, operating room, recovery room, and laboratories. The students of Amrita School of Dentistry gain high-level clinical experience and exposure in a number of areas including diagnosis of oral diseases, preventive programs, oral and maxillofacial surgery, mandible reconstruction, and cancer patient care. This integrated learning experience prepares students for postgraduate study, research, and private practice. At every stage of the training process, a sense of professionalism is instilled in the student.

Mentoring program

Students are encouraged to seek professional guidance through a mentoring program with faculty. Faculty mentors offer individual recognition and encouragement, honest criticism, informal feedback, counselling, and they assist students with long-term career planning. The program helps to build lasting relationships with faculty members who serve as advisers, advocates, problem solvers, and most of all, partners in a student’s clinical and academic achievement.

Global relationships

The distinctly international character of the faculty and administration gives the school a worldwide perspective unmatched by other dental colleges in India. In addition, international partnerships connect the faculty and students with experts around the world for faculty-exchange programs and collaborative research activities. ASD is currently creating a network of international dental education and research institutions that will share information worldwide.
Post Graduate Program
Post Graduate Program (MDS) has 8 specialities. 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 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.

Dental Mechanics Course
A two year diploma course in Dental Mechanics has 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.
**BDS (Bachelor of Dental Surgery)**

**Eligibility**
1. Candidate should have completed 17 years but should not have completed 23 years of age by 31st December in the year of admission.
2. Pass in 12th standard in the first attempt.
3. Must have obtained a minimum of 60% marks in English and 60% marks in Physics, Chemistry and Biology taken together, from any State Higher Secondary Board or equivalent. NRI’s 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.
4. Those who appear for the qualifying examination in March/April 2011 can also apply.

**Admission Procedure**
Selection is based on the rank obtained in the common entrance test held at national level.

**Degree Details**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Duration (in years)</th>
<th>Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDS</td>
<td>4 years plus 1 year internship</td>
<td>60</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

**MDS (Post Graduate)**

**Eligibility**
Candidate, who holds BDS degree from a recognized Dental College and has obtained full registration from the Dental Council of India or any of the state Dental Councils.

**Admission Procedure**
Selection is based on the rank obtained in the common entrance test held at national level.

**Degree Details**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Duration (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDS</td>
<td>3 years</td>
</tr>
</tbody>
</table>

*Admission process will however be subject to the final verdict of the Honourable Supreme Court of India.

**Diploma in Dental Mechanics**

**Eligibility**
Must have passed 12th standard with a minimum of marks 50% in English and 50% in Physics, Chemistry and Biology taken together, 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma in Dental Mechanics</td>
<td>2 years</td>
</tr>
</tbody>
</table>

*Subject to change, to comply with the guidelines from UGC/DCI other competent authorities.
The Amrita College of Nursing is committed to excellence in nursing education, research and development of leadership skills and human values.
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 Science campus in an exclusive building, the Institute provides an ambiance, 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.

Sri Shatrughnan Sinha, the then Union Minister for Health and Family Welfare, inaugurated the College on 1st November 2002. The College of Nursing is recognized by the Kerala Nurses and Midwives Council and Indian Nursing Council.

**BSc Nursing Program**

The BSc Nursing program is a four-year degree program with one-year compulsory service at AIMS. An all-round academic and clinical experience is offered through classroom teaching, varied clinical experiences, conferences, health exhibitions, talks by eminent personalities and visits to various places to fulfill the requirement. The experienced and stable faculty (including 30 Postgraduates in various specialties) are a valuable asset to this Institution. The annual student intake is 75.

**POST BASIC Bsc IN NURSING**

The Post Basic BSc Nursing is a two year course to upgrade the Diploma/GNM Nurses to Degree Nurses to assume professional responsibilities and make independent decisions in nursing situations in various settings. They are also expected to assume the role of teacher, supervisor, manager in a clinical/public health setting.

**MSc Nursing Program**

Amrita College of Nursing is the first private college in Kerala to start the MSc Nursing program. The program was formally inaugurated on 5th May 2009 by the Registrar of Kerala Nurses and Midwives Council, Dr. (Mrs.) Kochuthressiamma Thomas. Currently, the program is offered in four broad specialties: Medical Surgical Nursing, Child Health Nursing, Mental Health Nursing and Obstetric and Gynaecologic Nursing with an annual intake of 36 students. The Medical Surgical Nursing specialty offers courses in subspecialty areas such as Cardio Vascular and Thoracic Nursing, Oncology Nursing, Neurosciences Nursing and Nephro-Urology Nursing. The aim of this program is to prepare nurses who can be nurse practitioner/specialists in the respective field.

Clinical experiences for the MSc Nursing Program in all the specialties are provided in the parent hospital, Amrita Institute of Medical Sciences. In addition to this, affiliation is taken from the National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore and Kusumagiri Mental Health Centre, Kakkanad, Kochi for Mental Health Nursing.

**Facilities**

The College of Nursing provides excellent library facilities, e-learning and all the required laboratory facilities.

**Pre-clinical Laboratory**

The college has a well-equipped pre-clinical lab. In this laboratory, students practice the nursing arts procedures before they start their actual practice in the clinical field. The laboratory is equipped with a chase doll, patient simulator, cardiopulmonary resuscitation mannequin and hand simulator in addition to the facilities in an ideal ward situation.

**Community Health Nursing Laboratory**

In this laboratory, the students practice the skills and techniques for family health care and public health activities. The laboratory is fully equipped with adequate sets of all the required items for the practice of home care in the community. Moreover, it has all the facilities for organizing various community health projects, camps, exhibitions and mass campaigns. The laboratory is unique as it provides for in-house preparation of various audio visual aids for information, education and communication (IEC) activities on health topics. It provides hands on experience to the students by simulating the family situations and helps students to develop competency for providing community health services.

**Maternity Nursing Laboratory**

This state-of-the-art laboratory facilitates the students to practice antenatal, intranatal and post-natal care before they go to the clinical setting. A mannequin to practice abdominal examination and delivery, episiotomy suture simulator, new born doll, instruments for different obstetric and gynaecologic procedures make it an apt setting to learn Maternity Nursing and Child Health Nursing.
Child Health Nursing Laboratory
This newly set up laboratory has a baby mannequin to practice various paediatric procedures. The models depicting the milestones of growth and development, the play materials for various age groups and the charts on the key aspects of paediatric nursing are the unique features of this laboratory.

Nutrition Laboratory
In the nutrition laboratory the students are taught to prepare diets for normal individuals, pregnant ladies and also for those affected with various disorders. They practice under the guidance of a qualified dietician. The laboratory is equipped with facilities for cooling, storage, preservation of food and demonstration of diet preparation based on the nutritional needs of the people. Different types of exhibits required to conduct various health education programs are also prepared by the students in this lab.

Computer Laboratory
The computer lab is equipped with an adequate number of computers with Internet facility to train the students in basic computer applications. The students are trained by expert computer professionals.

Audio Visual Laboratory
The Audio Visual Laboratory is equipped with high-tech educational media to support the teaching-learning activities of the nursing students. The collection in this regard includes television, overhead projectors, slide projectors, audio/video players, CD players, tape recorders, public address system, digital cameras, etc. In addition, this laboratory has excellent collections, models, charts, respiratory devices, positioning devices and other exhibits related to nursing arts. The audiovisual aids prepared by our nursing students in various academic subjects also decorate this laboratory. In short, the audiovisual laboratory makes the teaching-learning process simple and interesting.

All the classrooms are provided with LCD and intranet facility to facilitate the teaching learning process. Through intranet access all the students can access the power points and other ICT enabled learning materials prepared by different lecturers.

Language Lab
The practice of professional nursing within the country and abroad necessitates a good command over the English language for effective communication. Hence, we are in the process of setting up a language lab in the college.

Library
The Nursing College library has a wide range of textbooks and nursing journals, both Indian and foreign. At present, there are around 4,200 textbooks in our library. The library timing extends from 8.30 am till 12 midnight.

There is also a central library located in the Medical College. This central library has around 10,000 text books, 250 journals including foreign medical journals, which the nursing students also utilize for reference. The library offers Internet facilities and an excellent intranet “AMRITA UNIVERSITY MANAGEMENT SYSTEM (AUMS)” program for information on the latest advancements and accomplishments of the various disciplines in the hospital. The Library has access to the digital library of the State University of New York, Buffalo through which 341 online Nursing Journals can be accessed. The journal ‘MD Consult’ is also available through which text books (latest editions), journals, Health News, drugs etc. can be accessed.

Departments
Medical Surgical Nursing
Medical Surgical Nursing is the mainstay of the BSc Nursing Degree Program. In the second year, the students have an extensive exposure to patients with various medical and surgical disorders of various body systems. Beside the main subjects of medical and surgical nursing, subjects such as pharmacology, pathology and genetics, enhance the scientific knowledge of the students. As part of Surgical Nursing, the students will have the clinical experience in the preoperative unit, operation theatre and post-operative care settings. Specialists in General Medicine, General Surgery and other specialties take classes for the students along with the nursing specialists in Medical Surgical Nursing.
In the third year, the students learn critical care nursing concepts and advanced nursing care in various specialties like Cardiology and Cardiac Surgery, Neurology and Neurosurgery, Nephrology, Oncology, Eye and ENT and Plastic and Reconstructive Surgery. The students are provided with unique ICU experience in our multi-speciality ICUs (including Medical ICU, CVTS ICU, Neuro ICU, Ortho ICU, Plastic Surgery ICU, Dialysis Unit, Oncology and Eye and ENT Units). This experience equips the students with various skills required in critical care nursing based on a sound knowledge of the pathophysiology of various disorders. The students conduct seminars, symposiums, and group discussions, care studies, care analysis, case presentations and procedure demonstrations to enhance their knowledge and skills.

The faculty imparts in depth knowledge to the students by various innovative teaching methods. The nursing process approach is used to provide nursing care to patients with which the students assess the client's problems, formulate the nursing diagnoses and objectives, plan and implement nursing care, and evaluate the effectiveness of care.

Community Health Nursing

Community Health Nursing is the specialty preparing the students to meet the ever-changing challenges of society. It helps to develop competencies in the students for community oriented nursing practice through teamwork and intersectoral collaboration. The course orientates the students to the concept of positive health and successful living and focuses on the families in the community and population groups with health risks.

Experimental learning prepares the students to identify and solve health problems in the community through innovative and cost effective strategies of primary health care. The practical experience is provided in settings like the Amrita Community Health Training Centre (Njarakkal), Amrita Urban Health Center (Kalara), and in the adopted villages of Njarakkal Panchayat in collaboration with the Department of Community Medicine. This includes opportunities for participation in various National Health programs and an array of guided observation visits to various locations of public health importance.

This department regularly organizes household surveys, epidemiological investigations, health projects, mass campaigns, home visits, family health care programs, school health programs, special clinics, etc. in the adopted villages. The awareness campaigns, exhibitions, and health education activities organized in the villages train the students to effectively interact with the community on health topics. Thus, this department is acting as the campus-community link of the college.

Child Health Nursing

Child Health Nursing includes Child Health Medicine and Surgery and is placed in the third year of the program. The objective of the course is to prepare students to identify the normal growth and development of children and deviation from the normal. They are also prepared to give comprehensive nursing care to children suffering from various diseases. Special emphasis is given to embryology, genetics, neonatology, growth and development, behavioural and social problems, child psychology, paediatric medicine, surgery and nutrition. In addition to the nurse specialist in the subject, experts in the field of paediatrics medicine, paediatric surgery and child psychology deal with the subject. The students also have the privilege of familiarizing with the most sophisticated equipment and technology related to client care, especially in our Paediatric Cardiology, Paediatric Cardiac Surgery units, Paediatric Neurology, Neonatology, Gastroenterology and adolescent medicine.

Mental Health Nursing

Mental Health Nursing is in the third year of the BSc Nursing program. This course is designed for developing an understanding of modern concepts of mental health, mental illness, and principles of mental health nursing, and for making the student function effectively as a member of the interdisciplinary mental health team.

The mental health nursing department organizes programs aimed at enabling the students to identify the mental health needs and problems of their clients and to acquire skill in providing comprehensive health care to them, applying preventive, promotive, curative and rehabilitative aspects of mental health care and the principles of mental health nursing. This is achieved by the expert guidance of the psychiatric nursing faculty and other members of the mental health team like psychiatrists, clinical psychologists, psychiatric social workers etc.

The students receive clinical experience from mental health centres. Their clinical experience is enriched from observational visits to various facilities like psychiatric rehabilitation centres, residential care facilities, special schools for the mentally retarded, children with physical and psychological disabilities, de-addiction centres, orphanages and old age homes. The department also offers counselling services for students having psychological and adjustment problems.

Nursing Education and Administration

The BSc Nursing Program not only prepares the students to take care of the individuals in the hospital and community but also prepares them to be nurse managers and nurse educators. Nursing education and administration are subjects which focus on preparing students for these positions. Nursing education deals with philosophies, principles, and methods of teaching, the teaching-learning process, and curriculum development. The aim of this course is to equip the student with the basic skills in the art of teaching nursing. Hence, it includes supervised teaching practice. Experience in assisting the nurses in charge of the wards, and in the service education department, prepares the students to be prospective nurse managers.

Obstetrics and Gynaecologic Nursing

The aim of the department is to prepare the students with the knowledge, skill and attitude to function as midwives and provide comprehensive nursing care to antenatal, intranatal and postnatal mothers and newborn babies with due emphasis on high-risk clients. The students are also equipped to work with child-bearing families in their final year which gives them the opportunity to experience the essence of nursing at its best. Teaching and clinical experience are provided under the guidance of a specialist nurse and obstetrician. During this period, they complete perinatal care including conducting of deliveries.
**BSc Nursing**

**Eligibility**
Must have passed 12th standard in the first attempt and with a minimum of 50% in English and 60% in Physics, Chemistry and Biology taken together, from any State Higher Secondary Board or equivalent. NRI’s 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 in the year of admission. The candidates shall be medically fit.

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

**Degree Details**

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<th>Degree</th>
<th>Duration (in years)</th>
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<td>BSc Nursing</td>
<td>4</td>
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</table>

* Subject to change, to comply with the guidelines from UGC / INC / KNC / other competent authorities.

**MSc Nursing**

**Eligibility**
1. The candidate should be a Registered Nurse and Registered Midwife with any State Nursing Council.
2. The candidate should have passed BSc Nursing or BSc Hons. Nursing or Post Basic BSc 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 BSc Nursing or prior or after Post Basic BSc Nursing.

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

**Degree Details**

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<tr>
<td>MSc Nursing</td>
<td>2</td>
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</tbody>
</table>

* Subject to change, to comply with the guidelines from UGC / INC / KNC / other competent authorities.

**Post Basic BSc Nursing**

**Eligibility**
1. The candidate should not have completed 30 years of age on or before 31st December in the year of admission.
2. The minimum educational requirement shall be passing of:
   - Higher Secondary School Certificate Examination (12 years course)
   - Senior School Certificate Examination (10+2), Pre-Degree Examination (10+2)
   - An equivalent with 12 years schooling from a recognized Board or University and 55% marks in GNM.
   - Should have RN/RM registration under KNMC at the time of application.
3. Candidate shall be medically fit.

**Admission Procedure**
Selection is based on the marks obtained in the All India entrance test conducted by Amrita Vishwa Vidyapeetham.

**Degree Details**

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<tbody>
<tr>
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<td>2</td>
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</table>

*Subject to change, to comply with the guidelines from UGC / INC / KNC / other competent authorities.*
Established in 1997 as a Centre of Excellence in the field of Pharmaceutical Sciences, the School’s location in the Kochi campus makes it ideally situated to offer high quality infrastructure for training and research in Pharmaceutical Sciences.
Established in 1997 as a Centre of Excellence in the field of Pharmaceutical Sciences, the School’s location in the Kochi campus makes it ideally situated to offer high quality infrastructure for training and research in Pharmaceutical Sciences. The goal of the Amrita School of Pharmacy is not only to excel in the field of education, but also to conduct social and charitable outreach programs and thereby mould a new battalion of highly competent Pharmacy professionals.

The Amrita School of Pharmacy is housed in a self-contained, calm and quiet, four storied building with a built up area of about 90,000 sq. ft. It has 13 laboratories, a full fledged library and all other facilities for academic programs, at UG, PG and research levels. The School also has programs for phytoclinics to undertake research on isolation of molecules of herbal drugs as part of pharmacological studies, with phased clinical trials.

The School of Pharmacy offers the Bachelor in Pharmacy Degree (BPharm), Master of Pharmacy (MPharm) Pharm.D. (Doctor of Pharmacy) (Regular) Pharm.D (P.B), PhD (Doctor of Philosophy) programs, and other Clinical Pharmacy Services at the School and Hospital. Currently, the school functions with departments like Pharmacoeconomics, Pharmaceutical Chemistry, Pharmaceutical Analysis, Pharmaceutical Microbiology, Pharmacy Practice, Pharmacognosy and Pharmacology. The school also provides educational services in related areas of Computer Science, Mathematics, Statistics, Environmental Sciences and Psychology etc. for the students of the Pharmacy School.

The School gives due weightage to industrial, hospital, community, clinical and research aspects of pharmacy. It utilizes the wide variety of resources available at the various centres of the Amrita Institute of Medical Sciences and the University for providing theoretical and practical training and orientation to the students. The School gives equal importance to industrial pharmacy and research aspects of clinical pharmacy. The students are encouraged and motivated to take part in the charitable outreach work of Amrita Institute of Medical Sciences (AIMS).

Our vision is to be a centre of excellence ensuring high quality, value based education with an international focus and unwavering commitment to provide quality teaching and innovative research to students from all sections of society regardless of race, caste, religion or economic condition, paving the way for socio-economic development of the nation. The Amrita School of Pharmacy is recognized by the Pharmacy Council of India (PCI), All India Council for Technical Education (AICTE) and other statutory bodies and agencies. The School and the University are accredited by the National Assessment and Accreditation Council (NAAC) with ‘A’ grade.

Hospital Training Facilities
As a part of the AIMS Campus, the School of Pharmacy offers excellent training and residency facilities for students at all levels. The AIMS Hospital is a 1200 bedded multispecialty tertiary care teaching and referred hospital.

Clinical Pharmacy Services
Trained students of M.Pharm and Pharm.D Post Baccalaureate are posted in specialized wards of AIMS hospital for providing Clinical Pharmacy Services in the hospital. The specialized Clinical Pharmacy Services focus on the following:

1. For Healthcare Providers (Physicians, Nurses etc.)
   a) Active participation in ward rounds where unbiased up to date information regarding any aspect of drug including dosage adjustments on individual patient basis are provided on a timely basis.
   b) Patients medication history, including drug allergies, contraindications and Pharmacovigilence.
   c) Advice on choice of drugs and drug therapy related issues.
   d) Advice on manipulation, administration and other related issues.

2. For the Patients
   i) Drug Information
   ii) Patient counseling
   iii) Medication related problems
   iv) Medication Therapy management

v) The patients are explained about the disease conditions, importance of the prescribed medications, importance of compliance with medications and lifestyle modifications wherever required.

3. Pharmacovigilence activities
   With the help of other Health Care Providers Pharmacovigilence activities are carried out by the Clinical Pharmacy department in the hospital which monitors, evaluates and reports adverse drug reactions occurring during the treatment of patients in the hospital. The faculty and students identify, analyze and resolve various drug related issues including medication errors.

Patient Counselling
Amrita School of Pharmacy has developed a patient counselling centre for out patients in AIMS hospital. This centre is being managed by an assistant professor from the Department of Pharmacy Practice utilizing the services of the Post Graduate students. The patients are given information regarding their disease conditions, life style modifications if required, proper usage of medications and medical devices. The verbal counselling is supplemented by visual aids and printed handouts wherever needed. Alert cards are supplied for selected patients who have suffered from an adverse drug reaction or are on certain medications which require warning / cautions.

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Ward Rounds and Clinical Pharmacy Clerkships
The hospital provides sufficient opportunities for the clinical pharmacists to take part in the ward rounds and other clinical pharmacy activities including clerkships and residency.

Drug Information Services
Amrita School of Pharmacy has established a drug information centre attached to the department of Pharmacy Practice. This centre functions on all days. The students are given training in drug information routinely as part of their curriculum. The centre provides unbiased up to date information regarding the availability, dosage, drug interactions, adverse drug reactions, drug use in pregnancy and lactation or any other aspect of drug use.

Online Hospital Formulary
AIMS has developed a hospital formulary to promote rational drug use in the hospital, and the same is also available online which can be accessed through any computer workstation in the hospital. The hospital has a state-of-the-art network with more than 2000 computers.

Satellite Pharmacies
A total of 8 satellite pharmacies in various specialities helps to reduce the waiting time and improve the quality of service for the patients.

Ward Rounds and Clinical Pharmacy Clerkships
The hospital provides sufficient opportunities for the clinical pharmacists to take part in the ward rounds and other clinical pharmacy activities including clerkships and residency.
Drug Testing Laboratory
Amrita School of Pharmacy has an established Drug Testing Laboratory where the facilities are available for testing the raw material and market samples of various medicines. Soon it will be developed into an approved laboratory so that the public can also utilize the services.

Library Facilities
Besides the School library, a Central Library facility located in the Medical College and a departmental library in the School of Pharmacy serve the intellectual thirst of the students. The Pharmaceutical Sciences Library includes over 2200 books and about 30 journals.

Academic Programs
The School runs academic programs for the undergraduate level to the PhD level.

COURSE – I

**BPHARM**

The BPharm Degree Course follows a semester pattern. Selection is based on qualifying marks and interview conducted by Amrita Vishwa Vidyapeetham. BPharm Degree Course is a four-year program (8 semester) with two months practical training in industry and hospital. The BPharm degree is a versatile interdisciplinary program preparing graduates with a sound knowledge and understanding of the science, technology, and practice of pharmacy.

The course comprises the following major areas of study:

**Pharmaceutical Chemistry and Pharmaceutical Analysis (Chemistry of drugs)**

Pharmaceutical Chemistry enables the student to synthesize, purify and identify the medicinal agents and the Pharmaceutical analysis looks after the quality control and quality assurance aspects of medicines.

**Pharmaceutics**

The subject deals with the practical aspects of formulation, preparation and analysis of various pharmaceuticals and cosmetics.

A graduate shall be able to formulate, store, dispense, and analyse the prescription and/or manufacture the pharmaceuticals and cosmetics at the commercial level. It also helps the student acquire knowledge and skill to apply quality assurance principles, including legal and ethical aspects involving drugs, delivering a quality assured product as per the pharmacopoeia, WHO and ISO standards. Practical aspects of product detailing and marketing of pharmaceutical products are also taught.

**Pharmacology**

This helps the student gain knowledge and scientific information regarding pharmacology of drugs, practical aspects of pharmacological screening for various medicinal agents using the animal model for pharmacology calculations, biological standardisation, and in-vivo drug interactions and toxicity studies.

**Pharmacognosy**

The subject of Pharmacognosy deals with drugs of natural sources like herbal drug cultivation methods, bio-technological methods, formulation and production of pharmaceutical herbal products and their evaluation. The students will develop adequate skill to extract, purify, identify, and know the therapeutic value of herbal/crude/natural products.

**Pharmacy Practice**

The subject of Pharmacy Practice deals with Hospital, Clinical and Community Pharmacy. It provides understanding of the processes involved in providing primary healthcare, drug information and other clinical pharmacy service in different practice environments. This enables students to acquire knowledge of clinical studies for patient counseling, drug information, adverse drug reaction monitoring, toxicological studies, therapeutic drug monitoring and other similar aspects of Clinical Pharmacy.

Amrita School of Pharmacy is associated with various clinical trials of drugs and post marketing studies being carried out at our hospital. AIMS is identified by the National Pharmacovigilance Centre as its primary peripheral pharmacovigilance centre in the state of Kerala.
Amrita School of PHARMACY

COURSE – II

♦ PHARM.D (Regular)
♦ PHARM.D (Post Baccalaureate)

Doctor of Pharmacy is a hospital oriented globally accepted pharmacy program. We have started the program Pharm.D (Regular) and Pharm.D (P.B) in 2010.

Doctor of Pharmacy (Pharm.D) Regular course: This is a six year course after completion of the plus two with science stream. The course is approved by the Pharmacy Council of India and the intake is 30 students per annum.

The course is designed to make the students competent for patient medication therapy, management and improve patient outcomes. The students are their clinical knowledge and skills to manage patients with chronic or acute illness, collaborate other health care providers to provide cost effective care, formulation of drug related issues, evaluate patients and family members on the correct way to administer medication etc. The students undergo internship/residency during the final year (6th year) for one year in the hospital, specialty teaching hospital in the campus.

Doctor of Pharmacy (Pharm.D) Post Baccalaureate : This is a three year course after B.Pharm graduation. The course is approved by AICTE and PCI. The current annual intake of students is 10. There will be internship or residency for one year (in the final year) in the hospital. After completion of the course, the candidates work as a fully integrated member of the health care team and help maximize drug efficacy, minimize drug toxicity and promote cost effectiveness.

COURSE – III

♦ MPHARM – two years masters degree program in different specialties of pharmacy

MPHARM – Pharmacy Practice (Hospital and Clinical Pharmacy)
The aim of this course 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.

MPHARM – 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.

MPHARM – Pharmaceutical Chemistry
This course gives necessary orientation and practical training in handling the various quality control and quality assurance activities related to medicines and cosmetics and their ingredients.

Examination
There shall be one annual examination at the end of the first academic year called M.Pharm Part I examination. The Part II examination of the course shall consist of a dissertation in any one of the following areas:

MPharm - Pharmacy Practice
• Hospital Pharmacy
• Clinical Pharmacy
• Drug Store Management
• Community Pharmacy

MPharm - Pharmaceutics
• Advanced Drug Delivery System
• Advanced Industrial Pharmacy
• Biopharmaceutics and Pharmacokinetics

MPharm - Pharmaceutical Chemistry
• Advanced Organic Chemistry
• Advanced Medicinal Chemistry
• Advanced Phytotherapy

COURSE IV

♦ PhD IN PHARMACEUTICAL SCIENCES

Amrita School of Pharmacy offers PhD degree in various areas of drug research. Topics related to Pharmacy Practice, Pharmaceutics, 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 the PhD program.

The students have the option of pursuing their PhD as a three-year full-time program or a four-year part-time program, based on a Master’s Degree in Pharmaceutical Sciences or subjects like biological and health sciences related to various aspects of Pharmaceutical Sciences. The student shall carry out an individual research project and submit a thesis under the supervision of a senior scientist. Once the project is approved, the research scholar will defend his thesis in a public viva-voce examination.

NEW COURSES

The School is in the process of starting MPharm programs in Pharmacology (10 seats) subject to approval from concerned authorities.

Exam Paper:

• Paper 1. Modern Pharmaceutical Analytical Techniques
• Paper 2. Principles of Research
• Paper 3. Advanced Drug Delivery Systems
• Paper 4. Advanced Industrial Pharmacy
• Paper 5. Biopharmaceutics and Pharmacokinetics

Pharmaceutical Chemistry
• Paper 1. Modern Pharmaceutical Analytical Techniques
• Paper 2. Principles of Research
• Paper 3. Advanced Organic Chemistry
• Paper 4. Advanced Medicinal Chemistry
• Paper 5. Advanced Phytotherapy

Pharmacy Practice (Hospital and Clinical Pharmacy)
• Paper 1. Modern Pharmaceutical Analytical Techniques
• Paper 2. Principles of Research
• Paper 3. Hospital Pharmacy, Community Pharmacy and Drug Store Management.
### B.Pharm Course of Study

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<th>Semester 1</th>
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<tr>
<td>Dispensing Pharmacy – I*</td>
<td>Dispensing Pharmacy – II*</td>
<td>Physical Pharmacy – I*</td>
<td>Physical Pharmacy – II*</td>
<td>Biopharmaceutics and Pharmacokinetics</td>
<td>Pharmaceutical Jurisprudence</td>
<td>Formulation Technology</td>
<td>Industrial Pharmacy</td>
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<td>Principles of Hospital Pharmacy (Hospital Pharmacy – I)*</td>
<td>Drug Store Management (Hospital Pharmacy – II)*</td>
<td>Social and Community Pharmacy</td>
<td>Pharmaceutical Microbiology</td>
<td>General Pathophysiology</td>
<td>Pharmacy Practice – Concepts and Management</td>
<td>Pharmacotherapy – I</td>
<td>Pharmacotherapy – II</td>
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<td>Computer Application and Audio Visual Programs#</td>
<td>Mathematics and Biostatics#</td>
<td>Pharmacognosy – I*</td>
<td>Pharmacognosy – II*</td>
<td>Phytochemistry</td>
<td>Research in Pharmacy and Clinical Research Trials</td>
<td>Industrial Pharmacognosy</td>
<td>Clinical Pharmacy Practice</td>
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<td>Value Based Education and Environment Science#</td>
<td>Basic Concepts of Social Life and Psychology</td>
<td>Pharmaceutical Analysis – I</td>
<td>Pharmaceutical Analysis – V (Biochemistry)</td>
<td>Pharmaceutical Biotechnology</td>
<td>Pharmaceutical Analysis II*</td>
<td>Project#</td>
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* Practical Examination will be conducted for these subjects at the end of Semester 2, Semester 4, Semester 6, and Semester 8 respectively.
# Subjects for School level examination.
### BPharm | MPharm

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<th>Eligibility</th>
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<tr>
<td>Must have passed 12th standard with a minimum of 50% marks in English and 50% marks in Physics, Chemistry, Biology. In place of Biology, Maths or Biotechnology or Computer Science are also acceptable.</td>
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<tr>
<td>Candidates who have passed B.Pharm from an institution approved by the Pharmacy Council of India (PCI) with at least 50% marks for all the subjects of the B.Pharm course from second year to fourth year examinations shall be eligible for admission to the Master of Pharmacy (M.Pharm) Course. Preference is given to GATE/GPAT*** qualified candidates.</td>
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<td>Selection is based on the marks obtained in the qualifying examination and a personal interview.</td>
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<td>MPharm</td>
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<td>PhD</td>
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*Subject to change, to comply with the guidelines from UGC/PCI other competent authorities.  
**Sections are: 1) Pharmacy Practice, 2) Pharmaceutics, and 3) Pharmaceutical Chemistry.  
***Candidates with valid GPAT score card, once admitted to MPharm are eligible to receive monthly stipend as per AICTE norms.

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### Pharm D | Pharm D (PB)

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<th>Eligibility</th>
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| 1. Candidate should have completed 17 years but should not have completed 23 years of age by 31st December in the year of admission.  
2. A pass in any of the following examinations:  
a) 50% marks in 10+2 examinations with Physics and Chemistry as compulsory subjects along with Mathematics or Biology.  
b) A pass in DPharm course from an institution approved by the Pharmacy Council of India under section 12 of the Pharmacy Act  
c) Any other qualification approved by the Pharmacy Council of India as equivalent to any of the above examination  
| a) BPharm degree from an Institution approved by the Pharmacy Council of India (PCI),  
b) Not less than 50% of the maximum marks for all the subjects of the B. Pharm course from second year to fourth year examinations.  
c) Candidates with GATE / GPAT score preferred. |

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<td>Selection is based on the rank obtained in the All India entrance test conducted by Amrita Vishwa Vidyapeetham.</td>
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<td><strong>Degree</strong></td>
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<td>PharmD</td>
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<td>PharmD (PB)</td>
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*Subject to change, to comply with the guidelines from UGC/PCI other competent authorities.
Today the success of a hospital manager lies in multidisciplinary conceptual skill development and to protect medical profession and clients from unnecessary litigation, human resource development, quality management, risk management, environment conservation, marketing and product diversification, and logistic emergency management.
Master of Hospital Administration Program

The Master of Hospital Administration training program aims at preparing a candidate to assume the responsibilities of a hospital administrator/executive in a government or corporate or any other hospital.

This training program emphasizes developing knowledge components, skill and attitude pertaining to hospital managers, and helping the candidates in developing expertise in planning and managing different types of hospitals in our social setting.

The concept of professionalisation, development of specialized skills and leadership in hospital administration has further emphasized the need to rationalize the resource utilization and maximize output in the health sector. Therefore, the hospital administrator of the future needs to be well equipped to meet the challenges arising out of rising health care cost – procurement, utilization, maintenance and cost effective analysis of technology import.

Objective of the Program

As the health delivery system expands, and the pressure to provide services at reduced costs grows, the role of the administrator is expected to grow. Health administrators face the unique challenge due to the changing nature and increasing requirements of patient care services. They have to be good decision makers. An understanding of hospital operations, finance, information systems, human relationships and leadership skills is essential for a successful career in this field. The ultimate objective of this program is to carve out young professionals capable of solving complex problems facing the healthcare management scenario.

Why choose Healthcare Administration studies at AMRITA?

We offer both in depth theoretical knowledge as well as excellent practical job oriented exposure. In house campus facilities at the internationally acclaimed centre of excellence in healthcare, the Amrita Institute of Medical Sciences, provide a place for continuous learning where our on-site modules continuously supplement the theory courses spanning the entire program over four semesters. The Healthcare Campus includes the Schools of Medicine, Dentistry, Nursing, Pharmacy and Nanomedicine.

Eligibility for Admission

Graduation in any Discipline with minimum 50 % marks.

Degree Structure

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

Program contents


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 and part time / visiting expert faculty from healthcare and management domains. Aply supplementing this, during the four semesters of the MSc(Hospital Administration) program the practical training and orientation at Amrita Institute of Medical Sciences will prepare the student for a career that is not only exciting but vital to the lives of thousands of people. Students will be assigned to various departments. They will be using the inputs from various departmental resources like the Clinics, Human Resources (HR), Medical Records Documentation (MRD), Nursing, Materials and Purchase, Finance, Facilities and Maintenance, Research, Quality and Standards, HIS and the Library. Initially, they will learn each aspect and functioning of the departments. Later on, they will consolidate their efforts towards problem solving exercises as a component of knowledge implementation.

Students will study every aspect of the following in learning process:
OP and IP divisions of departments; role of medical and paramedical staff; interfacing medical and non-medical functionalities; role of equipments and instruments; procedures; deployment of IT; assessment of employees, performance standards, disease trends and disease statistics in the departments; prevention and health protection; promotion of community interface; precautions adopted for confidentiality, security and privacy; fees for different procedures and their comparison in the community. Cost factors, Inventory scheduling and activities, Role of employees in the community healthcare and checkup camps, role of a department in developing 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:

- Comprehensive study of the assigned department(s)
- Performance measurement and utilization review on: Utilization of space, Utilization of rooms, Utilization of beds, Utilization and output of nurses, Utilization and output of staff, Utilization of ward beds versus private rooms, OP patients that go to surgery, OP patients that becomes IP patients, Workload, Discharge procedures, Use of HIS in all services / procedures, Materials management, Customer service, Quality assessment, Patient satisfaction, Safety, Disaster Management, Compliance, Consent Issue, Interdepartmental Communication, Physical Plant, Upkeep, Risk Management, Outcomes, Conservation of Energy, Hospital Acquired Infections.

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 MSChA programme 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 doors for you, providing opportunities for advancement in your career as a health care professional. In the present day scenario hospitals and healthcare settings have become so complex, challenging and competitive. This requires professionally trained manpower. Therefore there are many career options whether you want to work in health care management, administration, research, insurance, public health, consulting, or another setting. It is estimated that anything not less than 25,000 trained manpower requirements exist in our country. Many healthcare service outlets abroad especially the Middle East, Europe and the West are looking for manpower from India.

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 health care suppliers, the organizations that give health care 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, health care supply and equipment manufacturers, health care provider and insurance companies, and biotechnology companies.

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 Indian systems, market research surveys and participating as delegate presenters and volunteers in national and international conferences in healthcare. These unique opportunities will bring out the innate talents of the students for proper communication, group dynamic behavior and inculcate values for selfless service.

Placement Training

All the students are imparted compulsory professional training in Life Skills and Aptitude for Campus Recruitment.
Progress in medical science has come through painstaking and systematic research. Major breakthroughs are achieved through years of focused research efforts primarily from academic medical institutions with vision and commitment in bio-medical research and development.
Development of biomedical nanosensors

The Centre is engaged in the development of novel nanoparticles, especially multifunctional nanoparticles that are non-toxic, used as carriers of conventional drugs to improve bioavailability. The Centre is also developing techniques for bio-functionalization to enable targeting of specific diseases through suitable biomarkers, nanopharmaceuticals for enhanced bioavailability, sustained release and targeted delivery to diseased organs. This includes drug encapsulation in biodegradable shells that are functionalized to specific target cells through suitable ligand-receptor interactions. Creating novel microformulations for conventional drugs are also an area of research to increase bioavailability.

Medical devices with improved biocompatibility and function using nanomaterials

A serious shortcoming of most devices is their limited lifetime either due to rejection by the immune system or poor biocompatibility or eventual mechanical failure. Nanomaterials provide great opportunities to improve the lifetime of devices and modulate their surface activity for better biological compatibility. Bone implants as well as cardiovascular implants are currently studied after appropriate nanosurface modifications to see how nanostructuring improves the mechanical and biological functions of the material.

Development of biomedical nanosensors

These include use of nanocantilevers, novel nanoparticle-based sensors using semiconductors, or novel sensing techniques such as surface plasmon resonance. The idea is the development of high throughput rapid sensing of multiple analytes for applications such as screening of infectious diseases.

Nanotoxicology – study of the toxic effects of nanomaterials

While nanomaterials have tremendous potential in a variety of applications in medicine, there is still inadequate understanding of the long-term effects of such materials on the human body, such as tumorigenicity, immune response, cytotoxicity, and inflammatory responses. Such studies are now being commenced at the Centre.

AMRITA CENTRE FOR NANOSCIENCES

Nanomedical Sciences is an explosive new field at the cutting edge of the medical sciences that offers extraordinary opportunities for novel diagnostic and therapeutic approaches. The field lies at the interface of nanotechnology and medical science, and the cross fertilization of the two fields is a current frontier of research that is now a major strategic initiative in India. The Amrita Centre for Nanosciences (ACNS) is an independent Centre under the Amrita University with both research and academic components. There are over 50 students currently doing MTech or PhD in Nanosciences or Nanomedical Sciences, and the Centre is the first Government of India established Centre for Nanotechnology in the Biomedical area. The Centre is engaged in pioneering work in the development of natural tissues and organs through tissue engineering using biodegradable scaffolds, within which cells are made to attach and proliferate in a controlled fashion. The Centre is also conducting research in cancer nanotechnology for the purposes of early detection and therapy of cancer, the development of biocompatible devices using nanomaterials and the development of biomedical nanosensors.

RESEARCH ACTIVITIES

The Amrita Centre for Nanosciences (ACNS) was established in May 2006 as one of the seven Nanotechnology Centres funded by the Government of India under the Nanoscience and Nanotechnology initiative and is the only one in the biomedical area. The Centre has state-of-the-art laboratories in nanoprocessing and nanocharacterization, cell culture lab, stem cell lab, cell sorting lab to conduct research at the interface between biotechnology and materials engineering. The following are some of the existing research efforts in place:

Regenerative Medicine using novel nanomaterials

Regeneration of tissues and organs is an exciting area of research and we are currently developing a nanostructured scaffold based approach for tissue regeneration. The work involves considerable in vitro cell culture studies including stem cell culture, to understand the cell-nanomaterial interactions and the nature of cell attachment and proliferation on nanostructured scaffolds.

Early diagnostics and treatment of diseases such as cancer through cancer nanotechnology

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Novel Nano Delivery Carrier for Systemic Control and Release of Parathyroid Hormone for Treatment of Bone Diseases

Parathyroid hormone (PTH) is an 84-amino acid polypeptide that has been clinically tested for several years for treating osteoporosis. Studies have shown that small amounts of PTH, if given daily, by injection, can lead to increases in bone formation. The major disadvantage of this treatment is the mode of drug delivery i.e. daily injection from several weeks to several months. The scope of this proposal is to identify a novel delivery method for either systemic or oral application that could result in the release and bioavailability of PTH 1-34 peptide in a sustained and prolonged manner.

Novel Biodegradable Thermo-Responsive Nano-Vehicles for Cancer Drug Delivery Applications

A bottleneck in the application of thermo-responsive polymers for in vivo drug release applications is the difficulty in controlling the temperature of these systems inside the body for optimal and efficient drug release. We propose to overcome this difficulty using novel nanoparticles that can produce heat under irradiation with radio-frequency waves. These nanoparticles such as gold or iron-oxide can be incorporated into the thermo-responsive polymeric particles by chemical means such that under irradiation with radio-frequency waves (RF) from an external source, the nanoparticles will heat-up, which in turn sensitizes the thermo-responsive polymer to release the embedded drug. As the nano-polymeric vehicle with metal nanoparticles can be targeted to the disease site and the RF field is highly penetrating to the tissue, greater specificity and control of the drug release will be possible in the proposed project.
Research at AMRITA

Preparation of Novel Biodegradable Chitin Scaffolds with Hydroxyapatite/ ZnO Nanoparticles for Wound Dressing Applications

The primary objective of this project is to develop such gels, scaffolds based on chitin with HAp/ ZnO nanoparticles for wound tissue engineering applications. Research into such natural scaffold-based nanodressings, wherein the scaffold is nanostructured and, in addition, hydroxypatite (HAp) and ZnO nanoparticles are incorporated into the scaffold for speeding healing and preventing inflammation and infection is focused on.

The following research laboratories have been established:

High Resolution Microscopy Laboratory

with state-of-the-art microscopes including 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.

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 Size with Zeta Potential Analyser for physico-chemical characterization of nanomaterials.

Mechanical Testing and X-ray Diffraction Laboratory

is equipped 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 nanomaterials and their composites, with Gel Permeation Chromatograph for the characterization.

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 teniosimeter and independent hoods for electrospinning are setup in the laboratory.

Polymer Processing Laboratory

for melt processing of polymers as well as nanocomposites using Minijet Haake mixing instrument and Minilab Haake moulding machine.

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.

Nanotoxicology Laboratory

equipped with a non-invasive, whole animal multispectral imaging system having fluorescence and X-ray imaging capabilities.

Nanomedicine Laboratory

having facilities for preparing varieties of polymeric and inorganic nanomedicines for targeted and non-targeted cancer therapy and diagnosis, malaria, inflammation, etc.

RNAi Laboratory

for developing targeted nanomedicine based gene silencing with all facilities for genomic studies.

A Central Facility

equipped with state-of-the-art Flow Cytometer with cell sorter, DNA Sequencer, Digital HPLC, Multimode Plate Reader and core facility for isolation and characterization of stem cells system having several sources including umbilical cord vein, umbilical cord blood, bone marrow, etc.

MASTER of TECHNOLOGY and PhD PROGRAMS

The Centre offers a full-fledged postgraduate degree course, Master of Technology in Nanomedical Sciences, at the School of Medicine. Students are also enrolled in the PhD program in Nanosciences. These are both pioneering programs to train young scientists in the area of nanomedicine, regenerative medicine using nanomaterials, and novel biomedical devices and sensors. Master’s level program leans strongly towards hands-on work and is not just a theory class degree. Students are trained in the nanotechnology labs of the centre, may partake in the centre’s research programs and are required to conduct thesis work in the nanosciences under the guidance of nanoscience faculty. The PhD program is largely thesis research based with a select core course requirement. Additionally, the program offers clinical exposure as well as one of the many operation theatres of the hospital to help develop an understanding of the medical applications of nanotechnology.

Job Opportunities:

On completion of the course the students can be expected to be immediately absorbed by several industries, such as pharmaceutical companies, biotechnology companies, research institutions in biotechnology, medicine and technology areas.

About the Faculty

All the members of the faculty associated with ACNS are PhD holders with several years of experience in active research, including in nanotechnology areas. There are currently 10 full time faculties in the Nanosciences department. All faculties have research experience at the post-doctoral level, abroad.

RESEARCH HIGHLIGHTS and RESEARCH INITIATIVES AT AIMS

Major initiatives in this field so far have occurred in developed countries. Developing countries have been at the mercy of major pharmaceutical industries and research centres overseas for the transfer of biomedical technology and therapeutic agents. Recognising this fact, AIMS has taken very bold steps to incubate a culture of research among the faculty and especially the student community. A major accomplishment was the confering of four out of five ICMM-studentship awards for the State of Kerala to the students of Amrita School of Medicine. ICMM studentship is an award given by the Indian Council of Medical Research to encourage deserving medical students to take up short duration research protocols - the objective being to incubate 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 Sust, 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.

AIMS 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 an characterisation of the cell lines.

AIMS 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. AIMS is also a preferred destination for involving in multi centred 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.

AIMS 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. Shanthikumar Nair, Dean of Research; Dr. Prem Nair, Medical Director, Amrita Institute of Medical Sciences; Dr. T.S. Ganesan, Chairman, Institute of Molecular Medicine and Associate Dean of Research;
Research at AMRITA

Dr. D. M. Vasudevan, distinguished Professor of Biochemistry, Dr. Moni Abraham, Chairman, Head and Neck department and Professor K. R. Sundaram, Dept. of Biostatistics work together to offer leadership to the research initiatives.

MOLECULAR MEDICINE

AIMS has established a world class, clinical and scientific research centre for Molecular Medicine. The Centre is pursuing basic and translational research of the highest quality building on the current research activities at AIMS together with existing infrastructure facilities, and is developing biomedical research applicable to medical problems. Scientific fields of research include:

- Molecular biology
- Bioinformatics
- Human genetics
- Immunology
- Hemopoesis and stem cells
- Cancer research
- Cell signalling

Background

With the commitment of AIMS’ faculty, senior clinicians, scientists and support from funding agencies and the pharmaceutical sector, it has been possible to establish nascent clinical and scientific research. Realising the importance of impressive scientific advances and their translation to improvement in clinical management, AIMS has made a commitment to establish a first class research facility. To achieve this goal in the context of the current global scenario, research needs to take into account the local clinical issues. The proliferation of patients with different unique diseases which are found only here in India and occur at high frequencies makes it strategically possible to do excellent research. Increasingly, research centres have been developed where molecular biology is intimately associated with clinical research and there is synergy between the two. The establishment of the department of Molecular Medicine provides clinicians and scientists with adequate infrastructure to conduct high quality research, and enables fundamental questions to clinical problems to be addressed in detail. Further, because of the expense of doing good quality scientific research, the establishment of such a centre allows pooling of resources and sharing of common facilities between different groups.

The medical science faculty at AIMS have come together to establish such an excellent center in in a short time. To have an international profile, research is important. The future training of doctors and nurses is going to be quite different given the advances that will be made in the next twenty years, and such a research centre will facilitate in their training. The entire society in the southern region of India stands to gain from the research centre. Also, the department can be developed into a referral centre for other research laboratories within India.

BIOMEDICAL RESEARCH CENTRE

An objective of the Centre for Molecular Medicine is to have a balance between scientists who are interested in basic research and scientists who are more clinically oriented. Basic scientists look at problems in a different way, thus enabling the development of new technologies to address problems that are relevant in clinical medicine. Clinically oriented scientists bring a different angle to investigate the problem primarily from the knowledge base of clinical issues. Working together, research scientists and clinical scientists can make a mark in research that will benefit humanity.

The core service is an important part of developing such a facility, particularly with respect to newer technologies which are important for doing modern molecular biology. This includes the general molecular techniques that will comprise sequencing, oligo-nucleotides, a micro-array facility, and other facilities required to run a modern laboratory, which is to be shared between groups. It will also include the development of a good animal house and the establishment of a facility where antibodies can be made. Proteomics is increasingly becoming an important tool and the Institute plans to set up a system to collaborate with another centre which has such a facility.

Organisation

Each research group has approximately five to eight staff to make it internationally competitive and to encourage the application of research grants from bodies for peer reviewed funding. The Institute also wishes to establish collaborative research with industry to support a certain amount of sponsored research, and to have a stream of funds which will enable the basic research to be carried out.

Areas of Research

Scientists from any field of biological research will be encouraged, but we especially plan to develop the following areas in the long term.

Human genetics will be a strong component because of the importance of genetics in understanding many common diseases to which patients are predisposed. A second area of interest is immunology, because of the relevance of immunology to not only infectious diseases, but also to autoimmune disorders and cancer. A good molecular biology focus will also be helpful in terms of relevance to different disciplines in medicine.

A strong focus on hemopoesis and stem cells would be very helpful in the future because much of the understanding of normal cell biology has come from development of research in hemopoetic systems. Although the focus should be predominantly in mammalian systems in the academic centre, it should not exclude lower organisms such as yeast which are simple to set up and powerful in terms of understanding mammalian biology.

Bioinformatics has become a very important discipline in modern biology, particularly with the completion of the human genome sequence. AIMS plan to invest in this area particularly with people who are from biological backgrounds collaborating with people with a strong background in software. Bioinformatics training helps to analyse the enormous amount of data already available in the public domain and help analyse research in the field such as microarray and proteomics.

DEPARTMENT OF BIOSTATISTICS

The content and character of the discipline of Biostatistics has undergone a radical change during the last few decades. Medical Council of India acknowledged the need to cultivate scientific and logical thoughts among the doctors, otherwise busy with their clinical and laboratory work. Biostatistics is recognized as the basic tool to achieve this. During the last three to four decades biological, scientific and medical sciences have shown remarkable advances and this has made decision making, particularly in the fields of health care and medical treatment, more and more complex and dependent on the ability of medical and biological scientists to base their decisions on a variety of carefully planned, executed, analysed and interpreted investigations like epidemiological studies, clinical trials, biological assays, laboratory experiments, operational research and hospital and community based registries. In this context, a medical person’s training, particularly that of a medical research worker, would be considered incomplete today without a reasonable acquaintance with the potentialities of applications of biostatistical techniques to enable them to plan their research studies with scientifically and statistically valid designs and to arrive at valid and meaningful conclusions applying appropriate statistical methods.

In order to foster the learning of the potentialities of biostatistical applications in health and medical care, among the medical researchers and students, it was felt essential to create an independent department of biostatistics as an integral part of the Amrita medical and research institution. The Department of Biostatistics was established at the Institute in December 2005. Faculty, scientists and students in the Institute will have direct access to this department for designing their research protocols, for consultation on the statistical analysis of their data using statistical softwares such as SPSS, SYSTAT and SAS and interpreting the results with scientific and statistical validity. The department participates in almost all the academic and research activities in the Institute strengthening the medical education and research at the Institute with respect to all the relevant areas.
Aims 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 2000 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.

The 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 30 Indian NGOs to receive formal UN affiliation in India.
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