Introducing M.Sc Medical Physics at GCRI

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The Gujarat Cancer & Research Institute, Ahmedabad is introducing M.Sc Medical Physics (Two Years) full time post graduate programme for the first time in Gujarat from June 2020. The course is affiliated to Gujarat University, Ahmedabad and recognized by Atomic Energy Regulatory Board (AERB), Mumbai.

Medical Physics is the application of physics to medicine. Ionizing radiation finds extensive applications in medicine, industry and research. With greater accent on radiation based diagnosis and treatment, there is a growing need of well-trained Medical Physicists in India and abroad. M.Sc in Medical Physics is a three years postgraduate course including one year compulsory internship. Its primary objective is to provide students a thorough background needed to pursue a career as Medical Physicist. Qualified candidates are eligible for RSO certification from AERB.

Medical Physicists are concerned with three areas of activity: clinical service and consultation, research and development and teaching.

Clinical Service and Consultation

Medical Physicists are heavily involved with responsibilities in areas of diagnosis and treatment, often with specific patients. In radiation oncology departments, one important example is the planning of radiation treatment for cancer patients, using either external radiation beam or internal radioactive sources. An indispensable service is the accurate measurement of the radiation output from radiation sources employed in cancer therapy. In the specialty of Nuclear Medicine, physicists collaborate with physicians in procedures utilizing radio-nuclides for delineating internal organs and determining important physiological variables, such as metabolic rates and blood flow. Other important services are rendered through investigation of equipment performance, organization of quality control in imaging systems, design of radiation installations, and control of radiation hazards. The Medical Physicist is called upon to contribute clinical and scientific advice and resources to solve the numerous and diverse physical problems that arise continually in many specialized medical areas.

Research and Development

Medical Physicists play a vital and often leading role on the medical research team. In cancer, they work primarily on issues involving radiation, such as the basic mechanisms of biological change after irradiation, the application of new high energy machine to patient treatment, and the development of new techniques for precise measurement of radiation. Significant computer developments continue in the area of dose calculation for patient treatment and video display of this treatment information. Particle irradiation is an area of active research with promising biological advantages over traditional photon treatment.

Medical Physicists are also involved in the development of new instrumentation and technology for use in diagnostic radiology. These include the use of magnetic and electro-optical storage devices for the manipulation of x-ray images, quantitative analysis of both static and dynamic images using digital computer techniques, radiation methods for the analysis of tissue characteristics and composition, and the exciting new areas of computerized tomography and magnetic resonance imaging for displaying detailed cross-sectional images of the anatomy. Medical Physicists are also engaged in research and development on imaging procedures utilizing infrared and ultrasound sources.

Teaching

Medical physicists have a central position between clinic, technology development and science. Totally novel medical applications of physics in medicine continue to emerge. Medical Physicists have the opportunity to contribute more, owing to specific and high-level scientific attitude, to the development of the cancer cures of the future. Often medical physicists have faculty appointments at universities and colleges, where they help to train future medical physicists, resident physicians, medical students, and technologists who operate the various types of equipment used to perform diagnosis and treatment. They also conduct courses in medical physics and radiotherapy technology for a variety of graduate and undergraduate students.

Infrastructure and Facilities

The Institute is having Seven Linear Accelerators (with photon and or electron beams), One Telecobalt Unit, Two HDR Brachytherapy Unit, One Simulator, One CT-Simulator, Three Treatment Planning Systems and Adequate dosimetry/monitoring instruments. Apart from the equipments, the Institute has all basic amenities required for teaching including seminar hall, classrooms, library and audio visual teaching aids useful in effective teaching. The library has more than 3810 books, 68 national and international journals, internet facilities and access to proquest medicine.

Intake Capacity

Ten students per year

Duration of Course

The duration of the course shall be on full time basis for a period of three years from the commencement of the academic term (two years of degree programme with one year compulsory internship). The internship should be carried out in Gujarat Cancer & Research Institute or its associated institutes or in any AERB recognized internship centers. The degree will be conferred by Gujarat University, Ahmedabad.

Eligibility for Admission

Candidates who have passed final year of B.Sc., Science stream of examination in first class with Physics as major subject by a recognized university within India and the candidates who are in their final year/semester also may apply, subject to the condition that they have to produce the course completion certificate with first class at the time of admission to the course.

Admission Criteria

Every year, announcement of the course will appear in Gujarati and English news papers as well as on the website of GCRI (www.cancerindia.org). Admission will be given based on the merit list with weightage of personal interview as well as marks in graduation degree.

Fee Structure

For Boys: Rs.13500/- and for Girls Rs.12000/- per semester per student. The other fee such as University Examination fee has to be paid separately as per Gujarat University Regulations. The hostel accommodation charges are to be paid separately as per Gujarat University norms.

Contact

Dr. Shashank Pandya, Course Director
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Information Brochure and Syllabus will be available on our website www.cancerindia.org from June 2020.