DEPARTMENT OF PHYSICS
SCHOOL OF MATHEMATICAL AND PHYSICAL SCIENCES
CENTRAL UNIVERSITY OF KERALA
(Established under the Central Universities Act 2009)
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Minutes of the Meeting: PG Board of Studies

29.07.2016

Members Present:

1. Professor K J Thomas (Chairman)
2. Professor P. Kolandaivel, Bharathiar University
3. Dr. Alok Sharan, Pondicherry University
4. Dr. Vincent Mathews
5. Vijay Shenoy, IISc, Bangalore (on Skype)

The meeting began at 11.00 AM on 29.07.2016 in the office of the Dean, SPS. The members of the board have discussed and deliberated on the content of the Programme Structure. After the deliberations, the Board of Studies has suggested some modifications to the existing syllabus. The modified programme structure is approved and enclosed herewith.

The programme structure with the modified syllabus will be in force for students admitted in 2016-17 academic year onwards.

Professor P. Kolandaivel

Dr. Alok Sharan

Dr. Vincent Mathew

Professor K J Thomas

PHY5032 Nuclear Instrumentation

Course Code	PHY5032	Semester	
Course Title	*Nuclear Instrumentation*		
Credits	3	Type	Elective

Course Outcome

This course provides a comprehensive coverage of various instrumentation and techniques followed in Accelerator based Nuclear Physics Research. Detailed description of world class experimental facilities like accelerators, mass spectrometers etc provide opportunities to the student to learn cutting edge technologies used in modern physics research. This course is a pre-Ph D course work in majority of the laboratories across the world. The hands -on training in Nuclear Physics Lab along with the course improves the practical skills of the students. Technologies discussed in this course are used in multi-disciplinary subjects.

Course Structure

Contents: (1) Detectors: Solid state detector. Gas detector. Ionization chamber. Proportional counter. (2) Interaction of radiation with matter. Gamma detectors. Scintillators. Electron multipliers and micro-channel plated. (3) Particle identification techniques. Signal processing and date acquisition systems. Signal amplifiers. CAMAC, SCA and multi-channel analyzer. (4) Recoil spectrometeres. Gas filled and vacuum spectrometers. Large array detector assemblies. (5) Accelerators: types and applications.

Suggested Books

1. G. F. Knoll, Radiation Detection and Measurements, Wiley (1979)
2. S. Tavernier, Experimental Techniques in Nuclear and Particle Physics, Springer (2010)