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

PHY5018 Semiconductor Optoelectronics

Course Code	PHY5018	Semester	
Course Title	*Semiconductor Optoelectronics*		
Credits	3	Type	Elective

Course Outcome

The overall aim of this course is to give fundamental knowledge of various properties of semiconducting materials and optoelectronic devices in order to be able to understand present and future technologies for applications in optical communications, energy conversion etc. This course will also aim to improve the skill of students for the fabrication of various high efficient optoelectronics devices.

Course Structure

Contents: Semiconductor physics: Crystal structure, growth and properties of common semiconductors, superlattices, quantum wells, wires and dots. Strain and lattice mismatch. Bloch theorem and theory of band structure calculation of semiconductors. Band structure modifications. PN junction, diode equation. Photon emission and absorption. Excitons. Solar cells. Light emitting diodes and semiconductor lasers. Optoelectronic circuits. Recent advances in the field.

Suggested Books

1. Jasprit Singh, Electronic and Optoelectronic Properties of Semiconductor Structures, Cambridge (2007)
2. Adrian KItai, Principles of Solar Cells, LEDs and Diodes, Wiley (2011)
3. J. Piprek, Semiconductor Optoelectronic Devices, CBSPD (2004)