

PHYSICS DEPARTMENT

8th November 2012

Enclosed please find minutes of the DFB held on 27th Sept. 2012 and continued on 1st October 2012 in which course structure for the first year level basic science course were discussed.

DFB convergeton having a 3 credit structure 3-0-0 for the first year level basic science course and a laboratory course with 2 credit (0-0-4). The attached documents give the course structure of the basic science course titled "Electromagnetic waves and Quantum mechanics"

Encl. a/a

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Dean (Academics)


(K. Thyagarajan)
Head of Department

Electromagnetic waves and Quantum mechanics

Electromagnetic Theory (16 Lectures and 3 Problem solving sessions): Electric and magnetic field vectors in a medium, Susceptibility and Conductivity, Maxwell's equations, Boundary conditions, EM wave equation, Plane wave solutions, Poynting vector and intensity of the EM wave, Wave packet, Phase and Group velocities, Polarization of the EM waves, Reflection and refraction of EM waves at a dielectric interface, Brewster angle, Total internal reflection, EM waves in a conducting medium and plasma.

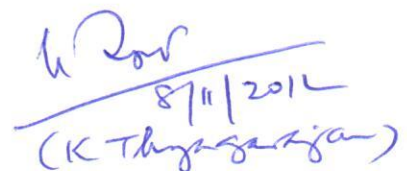
Quantum Mechanics (19 Lectures and 4 Problem solving sessions): Wave-particle duality, de-Broglie waves, Quantum mechanical operators, Schroedinger equation, Stationary states, Bound states, Free-particle solution, 1D infinite square well, Expectation values and uncertainty relations, Finite square well potential, Quantum mechanical tunneling and α -decay, Kronig-Penny model and emergence of bands.



(Prof. Ajit Kumar)

Convener,

Common Physics Course Committee



8/11/2012
(K Thyagarajan)

Department of Physics Minutes of the DFB

Department Faculty Board meeting held on 27 September 2012 was attended by Prof. K. Thyagarajan, Prof. H. C. Gupta, Prof. B. P. Pal, Prof. B. D. Gupta, Prof. D. K. Pandya, Prof. G. B. Reddy, Prof. Neeraj Khare, Prof. Arun Kumar, Prof. Ajit Kumar, Prof. V. Ravishankar, Prof. V. K. Mehta, Prof. Anurag Sharma, Prof. V. K. Tripathi, Prof. Sujeet Chaudhary, Prof. Pankaj Srivastava, Prof. R. K. Soni, Prof. M. R. Shenoy, Prof. D. Vankar, Prof. Kedar Khare, Dr. J. P. Singh, Dr. Santanu Ghosh, Dr. P. Senthilkumaran, Dr. P. K. Muduli, Dr. Rajendra Singh, Dr. R. K. Varshney, Dr. Anurita Mishra, Dr. Varsha Banerjee and Dr. A. K. Shukla.

The meeting started with the Head of the Department (HoD) sharing some good news about the faculty achievements.

1. The DFB nominated Dr. Santanu Ghosh to be our department representative in the institute level Committee on Faculty Affairs.
2. In response to the proposal sought by the UG curriculum implementation committee, DFB converged on having a credit structure of 3-0-0 for the first year level basic science core course. Out of the 42 lectures in a semester, 36 lectures will be devoted for the theory and 6 classes for problem solving by the same teacher in the regular teaching hours. The laboratory course will be of 2 credits (0-0-4).

3. To strengthen the interaction/tutorial aspect in the course of 3-0-0 credit structure, apart from the 6 problem solving classes following extra elements were proposed by the committee. (a) uploading online, all the tutorial sheets before the start of the classes, (b) uploading online, the solutions of some typical problems from the tutorial sheets, (c) solutions of some marked questions to be submitted by students and evaluated by TAs and (d) creating on-line FAQ interactive system with the help of TAs/teachers, where queries are answered periodically.

4. The Curriculum development committee of the department presented a syllabus for the basic science core course which was circulated to all faculty members prior to the meeting. As per the document the proposed syllabus is framed to inspire students by exposing them to the marvels of Physics and to trigger the students' enthusiasm and imagination. Introduction of new concepts in a simple way was attempted, for average students to follow the course well. The syllabus consisted of three parts viz., (1) Relativistic Mechanics, (2) Foundations of Quantum Physics and (3) Statistical Physics. Members of the Board deliberated on the proposed syllabus and suggested topics in Electromagnetic theory for inclusion and modifications to the proposed syllabus. Finally it was decided to reformulate the syllabus taking into account the inputs from the members of the Board. A new committee led by Prof. Ajit Kumar, Prof. V. K. Tripathi, Prof. K. Neeraj Khare, Dr. Kedar Khare, Dr. Santanu Ghosh and Dr. Sankalpa Ghosh was entrusted with this exercise. This new committee was requested to present the syllabus in the DFB on 01 October 2012.

5. The DFB was adjourned till Monday, 01 October 2012, to take up this and the remaining agenda for discussion.

The adjourned meeting of the DFB continued on 01 October 2012, Monday at 5.00PM was attended by Prof. K. Thyagarajan, Prof. B. D. Gupta, Prof. D. K. Pandya, Prof. Neeraj Khare, Prof. Arun Kumar, Prof. Joby Joseph, Prof. V. Ravishankar, Prof. Ajit Kumar, Prof. B. R. Mehta, Prof. Anurag Sharma, Prof. V. K. Tripathi, Prof. Sujeet Chaudhary, Prof. Pankaj Srivastava, Prof. G. B. Reddy, Prof. M. R. Shenoy, Prof. V. D. Vankar, Dr. Amartya Sengupta, Dr. Kedar Khare, Dr. Sankalpa Ghosh, Dr. P. Senthilkumaran, Dr. Rajendra Singh, Dr. R. K. Varshney, Dr. H. K. Malik, Dr. Varsha Banerjee, and Dr. A. K. Shukla

The adjourned DFB meeting started with the Head of the Department (HoD) sharing some good news about the faculty achievements.

6. HoD introduced the newly joined faculty member Dr. Amartya Sengupta to the DFB. DFB welcomed him to the Department.

7. The new committee to make the syllabus for the basic science core course for first year presented the syllabus to the DFB and some changes were suggested by the members. The new approved syllabus will be circulated to all faculty members shortly. A title of "Introduction to Electromagnetic waves and Quantum mechanics" was suggested.

8. Regarding the basket of courses to be floated to B.Tech programmes by our department, DFB has requested the committee headed by Prof. D. K. Pandya to propose the titles with broad contents and get feedback from various departments.

9. For the B.Tech-Engineering Physics programme the DFB proposed a reduction in the number of student intake to a maximum of 40 and a minimum of 30, in line with the original proposal at the start of this programme. This reduction is suggested keeping in mind the space constraint and to put more emphasis on research. The name of the programme is to remain unchanged.

10. On the issue of delegation of administrative and financial powers in projects managed by IRD unit, the HoD requested the faculty members to go through the email earlier sent in this regard and to provide feedback.

The meeting ended with a vote of thanks to the Chair.

P. Senthilkumaran
Dr. P. Senthilkumaran 10-10-2012
Secretary - DFB

Prof. K. Thyagarajan
Chairman - DFB