



## CENTRAL UNIVERSITY OF PUNJAB

(Established vid Act No. 25(2009) of Parliament)

**Centre for Physical Sciences**

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Date:17/06/2016

### Minutes of the Curriculum Development Committee Meeting of Centre for Physical Sciences held on 17.06.2016

After the two detailed successive discussions of all the faculties of Centre for Physical Sciences (CPS) on 19<sup>th</sup> April, Tuesday and 27<sup>th</sup> May, Friday; regarding the M.Sc. & Ph. D. course structure and contents, the 2<sup>nd</sup> Curriculum Development Committee (CDC) meeting was held on 17.06.2016 (Friday) at 3:00 P.M. in CoC office of CPS. The updated course structure and contents of M.Sc Physics & Ph. D. Physics have been decided to implement from the coming academic session. The following members were present in the meeting:

1. Dr. Rupesh S. Deven, Associate Professor & CoC (Chairperson)
2. Dr. Ashok Kumar, Assistant Professor (Convener)
3. Dr. S. K. Mahapatra, Associate Professor (Member)
4. Dr. A. L. Sharma, Assistant Professor (Member)
5. Dr. Kamlesh Yadav, Assistant Professor (Member)

Following agendas were discussed and resolved in the meeting:

#### **Item No. 16: 2:1**

#### **Updation of the course structure and contents of M. Sc. Physics and Ph. D. Physics.**

After the detailed discussion with all the members, it was decided to update the course structure and contents of M. Sc. Physics keeping in the view of the syllabus of UGC-NET examination of Physical Sciences. Committee has decided to teach core/compulsory/compulsory-foundation courses in the first three semester of M.Sc. Physics only apart from two interdisciplinary 2 credit courses, and the departmental elective or specialized course will be taught in 4<sup>th</sup> semester. Similarly, the contents of Ph. D. Physics syllabus has been updated and additional specialized courses are commenced as per the expertise available at the Centre. Total credits of M.Sc. Physics course is now increased to

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97 from 96 than that of the previous syllabus. The total credits of Ph. D. Physics course will remain 20 as in previously approved syllabus.

**Item No. 16: 2:2**

**Modification of the course structure of M.Sc. Physics semester-I.**

The total credits of 1<sup>st</sup> semester has been changed to 26 from 24 in previous course structure. Committee found that in the 1<sup>st</sup> semester, laboratory courses were in less proportion as compared to core theory courses. Therefore, the "Modern Physics Laboratory", which was departmental elective course in 2<sup>nd</sup> semester (old syllabus) has been moved to 1<sup>st</sup> semester under the code PHY:506 as a compulsory/core course. The 2 credit "Research Methodology-General" (PHY:401) course has been shifted to semester-II. Furthermore, committee decided that CPS will run one 2 credit interdisciplinary course "Physics in Everyday Life" (PHY:401) in first semester and the second interdisciplinary course will be run in second semester. The course PHY:503, "Quantum Mechanics", has been renamed to "Quantum Mechanics-I" and the course PHY:505 "Electronic Circuit Laboratory" has been renamed to "Electronics Laboratory".

**Item No. 16: 2:3**

**Modification of the course structure of M.Sc. Physics semester-II.**

The total credits of 2<sup>nd</sup> semester has been modified to 23 from 24 in previous course structure. "Advanced Quantum Mechanics" which was departmental elective course in 3<sup>rd</sup> semester (old syllabus) has been made core course in 2<sup>nd</sup> semester under the code PHY:506 and title "Quantum Mechanics-II". The Statistical Mechanics (PHY:506) course has been shifted to 3<sup>rd</sup> semester. "Research Methodology" (PHY:402) has been added as a foundation course in semester-II. PHY:511, "Nanostructure Materials laboratory", which was departmental elective lab has been decided to shift as a specialized laboratory in 4<sup>th</sup> semester. In addition, interdisciplinary elective course PHY:405, "Introduction to Nanotechnology" has been added in the course structure. The interdisciplinary course "Humanities for Science Students", which was 2 credit elective in previous syllabus has been made 1 non-credit (NC) course which will be assessed for satisfactory/non-satisfactory performance of students and will not include in the total percentage in the M. Sc. detailed marks list.

**Item No. 16: 2:4**

**Modification of the course structure of M.Sc. Physics semester-III.**

The total credits of 3<sup>rd</sup> semester has been changed to 26 from 24 in previous course structure. The PHY:601, "Statistical Mechanics", has been added from 2<sup>nd</sup> semester. The 2 credit "Seminar" as a foundation course has been adopted from 4<sup>th</sup> semester. The elective course, "Advanced Quantum Mechanics", has been shifted as core course in 2<sup>nd</sup> semester.

PHY:605, "Fundamentals of Density Functional Theory" which was an elective course with "Advanced Quantum Mechanics" in 3<sup>rd</sup> semester has been dropped, while some of its contents are introduced in "Quantum Mechanics-II" in 2<sup>nd</sup> semester and "Fundamentals of Materials Physics" in 4<sup>th</sup> semester.

**Item No. 16: 2:5**

**Specialization in 4<sup>th</sup> semester of M.Sc. Physics.**

After the detailed discussion among the members of committee, it was found that minimum of two faculty is required to run a specialization in M.Sc. Physics. At present, CPS has two faculty member specialized in experimental condensed matter physics, one is specialized in experimental materials science, one has specialization in theoretical/computational materials science and one is specialized in nuclear techniques. The specific research area of all the faculty member's coincide with materials study. Therefore, committee has decided to run one specialization under title "*Materials Physics*" in 4<sup>th</sup> semester. In future, more physics based specializations such as *Materials Science, Theoretical Physics, Nuclear Physics, and Solid State Physics* will be introduced on the availability of the faculty in respective areas.

**Item No. 16: 2:6**

**Change in the course structure of M.Sc. Physics semester-IV.**

The total credits of 4<sup>th</sup> semester has been changed to 22 from 24 in previous course structure. PHY:406, "Research Methodology-Research Techniques" has been renamed as "Characterization Techniques". Two specialized courses namely "Fundamentals of Materials Physics" and "Functional Materials and Devices" has been included in the course structure. These courses were designed using the contents of previous courses such as "Introduction to Nanophysics", "Advanced Condensed Matter Physics", "Modern Functional Materials" etc. In addition specialized laboratory namely "Nanomaterials laboratory" has been included in which the experiments were adopted from the "Nanostructured Materials Laboratory" course in 2<sup>nd</sup> semester of previous syllabus.

**Item No. 16: 2:7**

**Disseration in M.Sc. Physics semester-IV.**

Committee has noted that the 200 marks assigned to 8 credit dissertation are excluded from the total marks of the student. Committee found that these marks should be counted in the marks statement (i.e. detailed marks certificate (DMC)) of the students and not to mention result as Satisfactory/non-satisfactory. Committee feels that, a criteria should be formed in the university guidelines of M.Sc. (Physics) dissertation, to include dissertation marks in DMC. Furthermore, committee members feel that, the M.Sc. level dissertation is equivalent to two practical labs (8 credit) in one semester, which is one of the ways to train and prepare students for the future research. We can not expect a very high level research from

them. Therefore, the committee is of opinion that M.Sc. level dissertations may be evaluated internally, which definitely helps to avoid unnecessarily delay in the results. Expertise may be availed from other Centres of the CUP, which will cost effectively as well.

**Item No. 16: 2:8**


**Reference style in Physics dissertation need to modify.**

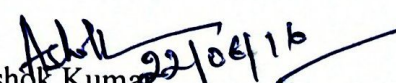
Committee found that the reference style and its citation in the text, introduced by university may be more suitable for other Centres of CUP, but it is not at all suitable for the Physics research. Imposing that reference style for the Physical Sciences is indirect misguidance for the students. Therefore, committee recommend that reference style for CPS should be according to their leading research journals such as Physical Review Letter, Applied Physics Letters, Physical Review B and J. Applied Physics etc. Committee request university authorities to allow us using reference style accordingly.

**Item No. 16: 2:9**

**Modification of Ph. D. course structure.**

It was decided by the committee that 16 credits will have compulsory courses and remaining 4 credit will be an elective type depending on the research specialization of the concerned faculty. In addition an elective course namely "*Density Functional Theory and Applications*" under the code PHY:707 has been included in the elective course list.

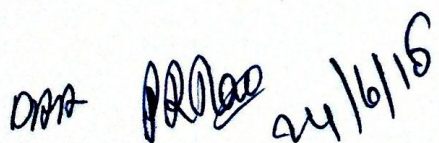
  
Dr. Rupes S. Deven  
Associate Prof. & CoC  
(Chairperson)

  
Dr. Ashok Kumar  
Assistant Professor  
(Convener)

*on leave*  
Dr. S K Mahapatra  
Associate Prof.  
(Member)

*on leave*  
Dr. A. L Sharma  
Assistant Professor  
(Member)

*on leave*  
Dr. Kamlesh Yadav  
Assistant Professor  
(Member)

  
24/6/16