# COMSATS Institute of Information Technology
## Registrar Office, Principal Seat, Islamabad

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No: CIIT-Reg/Notif-660/12/984 July 3, 2012

**NOTIFICATION**

**Scheme of Studies of Master of Science (MS) in Physics**

It is hereby notified that the Academic Council in its 13th meeting held on June 04, 2012 approved the following scheme of studies of Master of Science (MS) in Physics program w.e.f Fall 2012 at CIIT system:

| | Min No. of courses | Min No. of credit hours |
|---|---|---|
| **1. MS course work** | | |
| i. Core courses (List Attached) | 4 | 12 |
| ii. Elective courses (List Attached) | 4 | 12 |
| **Total credit hours of course work** | | **24** |
| **2. MS Thesis** | | **06** |
| **3. Total credit hours of the program** | | **30** |

**Note:**

**All Rules and Regulations approved by BASAR from time to time shall be applicable**

This issues with approval of the Competent Authority.

**Nadeem Uddin Qureshi**
**Additional Registrar**

**Encl: (4 pages in total including this page)**

**Distribution:**

1. Dean Faculty of Science, CIIT.
2. Chairman, Department of Physics, CIIT.
3. Incharge, CIIT Islamabad Campus
4. Incharge Academics, CIIT Campuses.
5. All HoDs Department of Physics, CIIT, Campuses.
6. Controller of Examinations, CIIT.
7. Incharge Examinations, CIIT Campuses.

**CC:**

1. PS to Rector
2. PA to Registrar

**List of core courses**

| Course Code | Course Title | Credits Hours | Pre-requisites |
|---|---|---|---|
| PHY503 | Mathematical and Computational Methods in Physics | 3(3, 0) | |
| PHY565 | Graduate Laboratory | 3(3, 0) | |
| PHY604 | Advanced Quantum Physics | 3(3, 0) | |
| PHY609 | Advanced Electromagnetic Fields and Waves | 3(3, 0) | |

**Thesis**

| Course Code | Course Title | Credits Hours |
|---|---|---|
| PHY800 | Thesis | 6 |

**List of elective courses**

| Course Code | Course Title | Credits Hours | Pre-requisites |
|---|---|---|---|
| PHY501 | Quantum Computation I | 3(3, 0) | |
| PHY505 | Electrodynamics | 3(3, 0) | |
| PHY506 | Applied Quantum Mechanics | 3(3, 0) | |
| PHY507 | Statistical Mechanics | 3(3, 0) | |
| PHY510 | Quantum Field Theory I | 3(3, 0) | |
| PHY514 | Group Theory | 3(3, 0) | |
| PHY516 | Standard Model (SWG) | 3(3, 0) | |
| PHY517 | Particle Physics I | 3(3, 0) | |
| PHY520 | Materials Science I | 3(3, 0) | |
| PHY522 | Vacuum Science and Technology | 3(3, 0) | |
| PHY523 | Introduction to Nanoscience and Technology | 3(3, 0) | |
| PHY524 | Surface Physics | 3(3, 0) | |
| PHY525 | Non-Conventional Energy Resources | 3(3, 0) | |
| PHY526 | Conducting Polymers | 3(3, 0) | |
| PHY527 | Quantum Optics I | 3(3, 0) | |
| PHY530 | Solid State Electronic Devices | 3(3, 0) | |
| PHY531 | Physics of Semiconductors and Devices | 3(3, 0) | |
| PHY532 | Physics of Lasers | 3(3, 0) | |
| PHY534 | Optical Communication Network: Design and Simulation | 3(3, 0) | |

Inducted.

| | | | |
|---|---|---|---|
| PHY535 | Electronic Materials Processing | 3(3, 0) | |
| PHY537 | Microsystems Technology | 3(3, 0) | |
| PHY538 | Optics Laboratory | 3(3, 0) | |
| PHY540 | Plasma Physics I | 3(3, 0) | |
| PHY541 | Plasma Physics II | 3(3, 0) | PHY540 |
| PHY542 | Semiconductor Power Devices | 3(3, 0) | |
| PHY550 | Physics of Magnetism | 3(3, 0) | |
| PHY551 | Physics of Microfabrication Technology | 3(3, 0) | |
| PHY555 | Fundamentals of Optical Fibers and Optical Signal Processing | 3(3, 0) | |
| PHY556 | Optical Fiber Devices and Sensors | 3(3, 0) | |
| PHY557 | Atomic and Molecular Physics | 3(3, 0) | |
| PHY558 | Laser Systems and Engineering | 3(3, 0) | |
| PHY559 | Applied Photonics | 3(3, 0) | |
| PHY560 | Errors and Data Analysis | 3(3, 0) | |
| PHY561 | Material Processing with Laser | 3(3, 0) | |
| PHY570 | Nuclear Physics | 3(3, 0) | |
| PHY572 | Radiation Detection and Measurements | 3(3, 0) | |
| PHY573 | Principle, Method and Applications of Nuclear Tracks | 3(3, 0) | |
| PHY574 | Radiation Protection and Health Physics | 3(3, 0) | |
| PHY575 | Environmental Radiation Dosimetry | 3(3, 0) | |
| PHY576 | Radiation Laboratory | 3(3, 0) | |
| PHY580 | Environmental Physics | 3(3, 0) | |
| PHY581 | Heavy Ion Physics | 3(3, 0) | |
| PHY582 | Medical Physics | 3(3, 0) | |
| PHY583 | Geophysics | 3(3, 0) | |
| PHY584 | Nanophotonics | 3(3, 0) | |
| PHY585 | Statistical Methods in Experimental Physics | 3(3, 0) | |
| PHY602 | Quantum Computation II | 3(3, 0) | PHY501 |
| PHY606 | Quantum Chromodynamics | 3(3, 0) | PHY510 |
| PHY610 | Integrated Optics | 3(3, 0) | PHY532 |
| PHY611 | Quantum Field Theory II | 3(3, 0) | PHY510 |
| PHY612 | Advanced Statistical Mechanics | 3(3, 0) | |
| PHY617 | Gravitation and Cosmology | 3(3, 0) | PHY514 |
| PHY618 | Particle Physics II | 3(3, 0) | PHY517 |

Amended.

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|---|---|---|---|
| PHY620 | Condensed Matter Theory | 3(3, 0) | PHY604 |
| PHY621 | Materials Science II | 3(3, 0) | PHY520 |
| PHY622 | Modern Semiconductor Structures | 3(3, 0) | PHY604 OR PHY531 |
| PHY626 | Thermal Transport Mechanism | 3(3, 0) | PHY604 |
| PHY628 | Quantum Optics II | 3(3, 0) | PHY527 |
| PHY640 | Advances in Thin Film Technology | 3(3, 0) | PHY520 |
| PHY650 | Advanced Topics in Magnetism | 3(3, 0) | PHY550 |
| PHY662 | Ultrashort Lasers and Optics | 3(3, 0) | PHY532 |
| PHY663 | Fourier Optics | 3(3, 0) | PHY503 OR Basic course on electromagnetic theory or Equivalent |
| PHY664 | Nonlinear Optics | 3(3, 0) | PHY503 OR Basic course on electromagnetic theory or Equivalent |
| PHY665 | Photonic Mesoscopic Systems | 3(3, 0) | PHY604 or PHY532 |
| PHY666 | Low Temperature Plasma | 3(3, 0) | PHY540 |
| PHY705 | Finite Temperature and Density Field Theory for High Energy | 3(3, 0) | PHY510 |
| PHY706 | Particle Collisions | 3(3, 0) | PHY517OR PHY604 OR PHY570 |
| PHY707 | Physics of Early Universe | 3(3, 0) | PHY617 |
| PHY708 | Neutrino Physics | 3(3, 0) | PHY517 |
| PHY709 | Supersymmetry | 3(3, 0) | PHY510 OR PHY517 |
| PHY710 | Kinematics of Nuclear Reactions of High Energies | 3(3, 0) | PHY517 OR PHY604 OR PHY570 |
| PHY719 | Quark Gluon Plasma | 3(3, 0) | PHY510 OR PHY517 |
| PHY720 | Special Topics in Quantum Optics I | 3(3, 0) | PHY527 |
| PHY721 | Special Topics in Quantum Optics II | 3(3, 0) | PHY527 |