

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

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No: CIIT-Reg/Notif-767/11/1546

November 28, 2011

Notification

**Scheme of Studies for Master of Science in Physics**

It is hereby notified that Board of Advanced Studies and Research (BASAR) in its 13<sup>th</sup> meeting held on September 26, 2011 approved the following Scheme of Studies for Master of Science in Physics program w.e.f Fall 2011:

	<u>No. of Courses</u>	<u>Credit Hours</u>
<b>1. MS Course Work</b>		
1) Core Courses (List attached)	4	12
2) Elective Courses (List attached)	4	12
<b>Total Credit Hours of course work</b>		<b>24</b>
<b>2. MS Thesis</b>		<b>06</b>
<b>3. Total Credit Hours of the Program</b>		<b>30</b>

This issues with the approval of the Competent Authority.

  
Nadeem Uddin Qureshi  
Additional Registrar

Encl: (pages 04 in total including this page)

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## 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	Pre-requisites
PHY599	MS Research Thesis	6(0, 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	Introduction to Quantum Field Theory-I	3(3, 0)	
PHY514	Group Theory	3(3, 0)	
PHY515	Gravitation and Cosmology	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 & Technology	3(3, 0)	
PHY523	Introduction to Nanoscience & 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 & Devices	3(3, 0)	
PHY532	Physics of Lasers	3(3, 0)	

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Course Code	Course Title	Credits Hours	Pre-requisites
PHY534	Optical Communication Network: Design and Simulation	3(3, 0)	
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)	
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 & Molecular Physics	3(3, 0)	
PHY558	Laser Systems & 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 & Measurements	3(3, 0)	
PHY573	Principle, Method and Applications of Nuclear Tracks	3(3, 0)	
PHY574	Radiation Protection & 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	Geo Physics	3(3, 0)	
PHY602	Quantum Computation II	3(3, 0)	PHY501
PHY606	Quantum Chromo Dynamics	3(3, 0)	PHY510
PHY610	Integrated Optics	3(3, 0)	PHY531 OR 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

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Course Code	Course Title	Credits Hours	Pre-requisites
PHY618	Particle Physics II	3(3, 0)	PHY517
PHY620	Condensed Matter Theory	3(3, 0)	PHY504 OR PHY604
PHY621	Materials Science II	3(3, 0)	
PHY622	Modern Semiconductor structures	3(3, 0)	PHY504 OR PHY604 OR PHY531
PHY626	Thermal Transport Mechanism	3(3, 0)	PHY504 OR 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 & 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)	PHY531
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 PHY508 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 PHY508 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

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