

# Study plan

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Course	Required	7	17	50%
	Elective	3	9	24%
Thesis		-	10	26%
Total		-	38	100%

Year	Level	Course Code	Course Title	Required or Elective	Credit Hours	Type of requirements
Year 1	Level 1	PHYS 600	Experimental Measurements and Data Analysis	Required	3	Program
		PHYS 613	Mathematical Physics	Required	3	Program
		PHYS 614	Advanced Analytical Mechanics	Required	2	Program
	Level 2	PHYS 615	Electromagnetism Theory (1)	Required	3	Program
		PHYS 616	Advanced Quantum Mechanics (1)	Required	3	Program
		PHYS 617	Statistical Mechanics	Required	2	Program
Year 2	Level 3	PHYS xxx *	Elective course 1	Elective	3	Program
		PHYS xxx *	Elective course 2	Elective	3	Program
	Level 4	PHYS xxx *	Elective course 3	Elective	3	Program
		PHYS 699	Thesis	Required	10	College
		PHYS 695	seminar	Required	1	
Year 3		PHYS 699	Thesis	Required		
		PHYS 699	Thesis	Required		

## Required Courses

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 600	Experimental Measurements and Data Analysis	1	2	
PHYS 613	Mathematical Physics	3	-	
PHYS 614	Advanced Analytical Mechanics	2	-	
PHYS 615	Electromagnetism Theory (1)	3	-	PHYS 613
PHYS 616	Advanced Quantum Mechanics (1)	3	-	PHYS 614
PHYS 617	Statistical Mechanics	2	-	PHYS 613
PHYS 695	Seminar	1	-	
PHYS 699	Thesis	10	-	

## Elective Courses for each research field

### 1. Theoretical physics

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 623	General Relativity	3	-	-
PHYS 624	The Quantum Theory of Scattering	3	-	-
PHYS 625	Atomic and Molecular Physics	3	-	-
PHYS 626	Electromagnetism Theory (2)	3	-	PHYS 615
PHYS 627	Advanced Quantum Mechanics (2)	3	-	PHYS 616
PHYS 628	Aspects of Symmetry	3		
PHYS 629	Quantum Field Theory	3		

### 2. Nuclear Physics

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 630	Advanced Nuclear Reactions	3	-	-
PHYS 631	Advanced Nuclear Physics	3	-	PHYS 615
PHYS 632	Instrumentation and Methods of Experimental Nuclear Physics	1	3	PHYS 600
PHYS 633	Nuclear Power			
PHYS 634	Elementary Particles	3	-	PHYS 616
PHYS 635	Radiobiology	3		
PHYS 636	Introduction to Accelerators Physics	3		

### 3. Solid state physics

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 640	Solid State Theory and Optical Properties	3	-	-
PHYS 641	Diffraction and Structural Analysis	2	-	-
PHYS 642	Characteristics of Insulators	2	-	Department approval
PHYS 643	Defects in Solids	2	-	-
PHYS 644	Fabrication and Characterization of Polymers	3	-	-
PHYS 645	Condensed Matter Physics	3	-	-
PHYS 646	Growth and Imperfection in Materials	3		

### 4. Laser physics.

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 650	Laser Fundamentals and Applications	3	-	-
PHYS 651	Atomic Spectroscopy Fundamentals & Applications	3	-	-
PHYS 652	Molecular Spectroscopy Fundamentals & Applications	3	-	-
PHYS 653	Modern Optics and Applications	1	2	-
PHYS 654	Laser Spectroscopy and Applications	3	-	-
PHY 655	Experimental System and Laboratory Work	3		
PHYS 656	Advanced Spectroscopic Measurements	3		

### 5. Semiconductor physics and electronics.

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 660	Physics of Semiconductors	3	-	-
PHYS 661	Electrical Conduction in Semiconductors	3	-	-
PHYS 662	Physics of Semiconductor Devices	1	2	-
PHYS 663	Electronic Circuits	3	-	-
PHYS 664	Polymer Semiconductor Devices	1	2	-
PHYS 665	Optoelectronics	3	-	-
PHYS 666	Microwaves Physics	3		
PHYS 667	Physics of Superconductors	3		

PHYS 668	Physics of Thin Films	3		
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## 6. Radiation Biophysics physics.

Course Number	Course name	Credit hours		Pre-requisites course
		Theory	Practical work	
PHYS 670	Introduction to Biophysics	3	-	
PHYS 671	Biophysics Techniques	2	1	
PHYS 672	Neurophysics	3	-	
PHYS 673	Medical Physics and its Instrumentation	2	1	
PHYS 674	Radiation Dosimetry and Protection	1	1	
PHYS 675	Introduction to Biostatistics	3		
PHYS 676	Radiotherapy	3		

To access the Course specifications please click on the Link below

<https://drive.google.com/drive/folders/1eF5H-sLyYM44shdbHFy8jlp1CkZkJabT?usp=sharing>