

**SILLIMAN UNIVERSITY  
PHYSICS DEPARTMENT  
DUMAGUETE CITY**

**MASTER OF SCIENCE IN PHYSICS CURRICULUM**

Minimum Group Requirements:

Basic Subjects	9 units
Major Subjects	15 units
Cognates	6 units
Thesis	6 units
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Total: 36 units	

Basic Subjects (9 units)

Physics 291- Research Principles and Problems	3
Physics 221- Classical Mechanics	3
Physics 261- Quantum Mechanics	3

Major Subjects (15 units minimum)

Physics 232- Electromagnetism	6
Physics 241- Optics	6
Physics 251- Modern Physics	6
Physics 225- Heat and Statistical Mechanics	3

Cognates (6 units minimum)

Physics 211- Mathematical and Computer Physics	3
Physics 223- Vibration and Sound	3
Physics 215- Experimental Physics	1
Physics 216- Seminar in Instrumentation	1
Physics 292- Seminar on Current Developments in Physics Teaching	1

Thesis

Physics 300- Masteral Thesis	6
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## **Course Description**

### **Physics 291- Research Principles and Problems (3 units)**

Principles and methodology of research and physics and physics teaching research problems.

### **Physics 221- Classical Mechanics (3 units)**

Dynamics of particles and systems, central forces, gravitation, mechanics of rigid bodies and fluids, Lagrangian and Hamiltonian mechanics.

### **Physics 261- Quantum Mechanics (3 units)**

Wave mechanics, uncertainty principle, state functions, Schroedinger wave equation, particle in a box, application to the hydrogen atom.

### **Physics 232- Electromagnetism (6 units)**

Electrical charges and fields, forces, energy, potential, capacitance, current, circuits, Maxwell's equations, electronics. 4 lec, 2 lab units

### **Physics 241- Optics (6 units)**

Geometrical, physical, and quantum optics, optical instruments; optoelectronics. 4 lec, 2 lab units

### **Physics 251- Modern Physics (6 units)**

Special theory of relativity, quantum theory of radiation, wave properties of matter, atomic physics, nuclear physics, radiation and health physics, elementary particles, relativistic cosmology. 4 lec, 2 lab units

### **Physics 225- Heat and Statistical Mechanics (3 units)**

Kinetic theory, thermodynamic quantities, laws of thermodynamics, statistical mechanics.

### **Physics 211- Mathematical and Computer Physics (3 units)**

Elements of vector analysis and computer assisted learning in Physics (lec and lab)

### **Physics 223- Vibration and Sound (3 units)**

Free, damped, and forced oscillations; vibrating strings; plane, spherical and acoustical waves; ultrasonics. 2 lec, 1 lab unit

### **Physics 215- Experimental Physics (1 unit)**

Principles, methods, techniques, and instrumentation of experimental physics; design of experimental investigation.

### **Physics 216- Seminar in Instrumentation (1 unit)**

Design and construction of apparatus.

### **Physics 225- Heat and Statistical Mechanics (3 units)**

Kinetic theory, thermodynamic quantities, laws of thermodynamics, statistical mechanics. 2 lec, 1 lab unit

### **Physics 300- Masteral Thesis (6 units)**

Masteral thesis on theoretical or experimental physics or on physics education/teaching.