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*A Physicist has a solid understanding of fundamental laws, which in turn can be applied to a wide area of scientific and engineering fields. It is an exciting career that requires discipline and significant amount of work. It also requires development of mathematical, experimental, theoretical, and computational skills. As a result of the Physicist's solid and broad background, Physicists can apply to a wide range of job opportunities, including National Laboratories and Research Centers, Industry, and Academia.*

#### **A – GENERAL EDUCATION CORE – 42 HOURS**

*Students must fulfill the General Education Core requirements. The courses listed below satisfy both degree requirements and General Education core requirements.*

##### **Required**

##### **020 - Mathematics – 3 hours**

MATH 2413 Calculus I (or MATH 2487 Honors) three-hour lecture

##### **030 - Life and Physical Sciences – 6 hours**

PHYS 2425 Physics for Scientists and Engineers I three-hour lecture

PHYS 2426 Physics for Scientists and Engineers II three-hour lecture

##### **090 - Integrative and Experiential Learning – 6 hours**

CSCI 1380 Computer Science I

PHYS 2425 Physics for Scientists and Engineers I one-hour lab

PHYS 2426 Physics for Scientists and Engineers II one-hour lab

#### **B – MAJOR REQUIREMENTS – 72 HOURS (54 advanced minimum)**

##### **1 – Physics Core Courses – 39 hours (39 advanced)**

PHYS 3305 Classical Mechanics

PHYS 3303 Thermodynamics

PHYS 3304 Optics

PHYS 3402 Modern Physics

PHYS 3411 Math Methods in Physics I

PHYS 3412 Math Methods in Physics II

PHYS 4305 Statistical Mechanics

PHYS 3301 Electromagnetic Theory I

PHYS 3302 Electromagnetic Theory II

PHYS 4303 Quantum Mechanics I

PHYS 4304 Quantum Mechanics II

PHYS 4108 Seminar in Physics

*Choose one:*

PHYS 4101 Senior Laboratory Research (taken twice)

PHYS 4201 Advanced Physics Lab

##### **2 – Capstone Course – 3 hours (3 advanced)**

PHYS 4300 Undergraduate Research Project

##### **3 – Mathematics – 12 hours (3 advanced)**

MATH 2413 Calculus I (or MATH 2487 Honors) one-hour lecture

MATH 2414 Calculus II (or MATH 2488 Honors)

MATH 2415 Calculus III

MATH 3341 Differential Equations

##### **4 – Concentration – 18 hours (9 advanced minimum)**

*Choose one concentration:*

##### **a – Pure and Applied Physics – 18 hours (9 advanced)**

##### **i – Advanced Physics Electives – 9 hours (9 advanced)**

*Choose any advanced Physics courses.*

##### **iii – Approved Science Electives – 9 hours**

Science electives need to be accepted and approved to be suitable by the department chair of the physics department. Any courses with the prefix ASTR, BIOL, CSCI, CHEM, ELEE, ENGR, ENGT, ENST,

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ENVR, GEOG, GEOL, MARS, MATH, MECE, PHYS, or PSCI can be used for this requirement. PHYS 1401/1402 and PSCI 1421/1422 cannot be used to satisfy this requirement.

**b – Biophysics/Medical Physics – 18 hours (15 advanced)**

*Choose 18 hours from:*

BIOL 1406 General Biology I

PHYS 3315 Physics of Biological Systems

PHYS 4309 Nuclear and Particle Physics

PHYS 3306 Introduction to Biophysics

PHYS 3310 Radiation Biophysics

PHYS 3309 Introduction to Medical Imaging

PHYS 4312 Introductory Nuclear Engineering and Health Physics Concepts

PHYS 4315 Analysis of Biomolecules by Physical Methods

BENG 4320 and 4120 Molecular Bioengineering with Lab

Any of the above courses could be substituted with other advanced physics courses upon approval by the Department Chair.

**C – LANGUAGE COURSES\*\* – 6 HOURS**

Choose six hours of the same language other than English listed under the Second Language Proficiency Requirement policy.

\*\*Note: should the student fulfil the Second Language Proficiency requirements without credit-hours, then the 6 hours of Language Courses can be substituted by 6 hours of Free Electives.

**TOTAL CREDIT HOURS FOR GRADUATION – 120 HOURS**

**TOTAL ADVANCED HOURS (MINIMUM) – 54 HOURS**

**ADMISSION, PROGRESSION, AND GRADUATION REQUIREMENTS, if applicable:**

**Graduation requirements**

In addition to the graduation requirements listed in the UTRGV 2018-2019 Undergraduate Catalog, demonstration of proficiency in a language other than English is required at the undergraduate level equivalent to a minimum of six credit hours. Proficiency can be demonstrated by a college credit exam, a placement test approved through the UTRGV Department of Writing and Language Studies, and/or up to six credit hours of college-level language coursework.