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,
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 2017-2018 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.