

# PHYSICS (PHYS)

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## PHYS 5351 - Bioelectromagnetism (4 Credits)

The fundamental theory of electric and magnetic fields is developed and applied to problems in biology and medicine. Examples in medical diagnostics and treatment are built upon rigorous application of Maxwell's equations and constitutive models of electromagnetic properties of biomaterials. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4351. Term offered: infrequent. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

## PHYS 5352 - Bioelectromagnetism NM (4 Credits)

This course is the non-majors' companion to PHYS 4351/5351 (taught simultaneously) using modeling approaches accessible to the general science student. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4352. Term offered: infrequent. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

## PHYS 5400 - Scientific Instrumentation (3 Credits)

Conceptual and practical knowledge needed to design scientific instruments, develop technical products, and use special laboratory procedures to research. Topics include materials, mechanisms, electronics, and optics. Cross-listed with PHYS 4400. Repeatable. Infrequently Offered. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

## PHYS 5401 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

## PHYS 5840 - Independent Study: PHYS (1-3 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Typically Offered: Fall, Spring, Summer.

## PHYS 5850 - Physics for Design and Innovation I (3 Credits)

A service-learning project using fundamental physical principles to design a prototype scientific instrument, technical device, or technical process for a real-world client. Includes instruction on project management, intellectual property, and market analysis. Cross-listed with PHYS 4850. Repeatable. Term offered: infrequent. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

## PHYS 5852 - Physics for Design and Innovation II (3 Credits)

A capstone project using fundamental physical principles to prototype a scientific instrument, technical device or technical process. The focus is on the student's own product idea. Includes online guided readings on the wider context of product development. Students should consult with instructor on necessary physics and mathematics preparation for the project. Prereq: PHYS 4850 or 5850. Cross-listed with PHYS 5852. Repeatable. Term offered: infrequent. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

## PHYS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

## PHYS 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently.

Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Typically Offered: Fall, Spring, Summer.

## PHYS 5950 - Master's Thesis (1-8 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

## PHYS 5960 - Master's Project (1-8 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

## PHYS 5980 - Advanced Physics Topics (1-3 Credits)

Covers a particular topic as announced in the 'Schedule Planner.' Note: May be taken more than once for credit in different topics. Note: this course assumes that students have completed PHYS 2811 or equivalent. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

## PHYS 6840 - Independent Study: PHYS (1-3 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.