

# Physics Courses: Summer 2024

## **PHYS110001**

### **Structure of the Universe I**

**Auner, Alexander**

**Summer 2024**

An introductory course directed at non-science majors. Physical principles are developed and applied to our space and astrophysical environment. Topics include structure and evolution of the solar system, physics of the sun and planets, space discoveries, creation and structure of stars and galaxies, relativity and cosmology, extraterrestrial life, and astronomical concepts.

**Credits:** 3

**Room and Schedule:** WThF 10:00AM-12:10PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205001**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Summer 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 MWTh 01:00PM-03:00PM; May 29 - June 26; No Class on June 19th in observation of Juneteenth.

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS210001**

**Introduction to Physics I (Calculus)**

**Auner, Alexander**

**Summer 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** MTuTh 04:00PM-07:30PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS210002**

**Introduction to Physics I (Calculus)**

**Song, Boxi**

**Summer 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** TuTh 10:00AM-10:50AM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210004**

### **Introduction to Physics I (Calculus)**

**Song, Boxi**

**Summer 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** TuTh 12:00 Noon-12:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210005**

### **Introduction to Physics I (Calculus)**

**Song, Boxi**

**Summer 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** TuTh 11:00AM-11:50AM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210101**

### **Introduction to Physics II (Calculus)**

**Engelbrecht, Christian A**

**Summer 2024**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4

**Room and Schedule:** MTuTh 04:00PM-07:30PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210102**

### **Introduction to Physics II (Calculus)**

**Dept;**Song, Boxi

**Summer 2024**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4

**Room and Schedule:** TuTh 10:00AM-10:50AM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS210103**

#### **Introduction to Physics II (Calculus)**

**Dept;**Song, Boxi

**Summer 2024**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4

**Room and Schedule:** TuTh 11:00AM-11:50AM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS210104**

#### **Introduction to Physics II (Calculus)**

**Dept;**Song, Boxi

**Summer 2024**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4

**Room and Schedule:** TuTh 12:00 Noon-12:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS500001**

### **Readings and Research in Physics**

**Auner, Alexander**

**Summer 2024**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS991101****Doctoral Continuation****Chen, Xiao****Summer 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** By Arrangement**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall, Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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## Physics Courses: Fall 2024

**PHYS110001****Structure of the Universe I****Opeil, Cyril P, SJ****Fall 2024**

An introductory course directed at non-science majors. Physical principles are developed and applied to our space and astrophysical environment. Topics include structure and evolution of the solar system, physics of the sun and planets, space discoveries, creation and structure of stars and galaxies, relativity and cosmology, extraterrestrial life, and astronomical concepts.

**Credits:** 3**Room and Schedule:** 245 Beacon Street Room 107 MWF 12:00 Noon-12:50PM**Satisfies Core Requirement:** Natural Science**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall



**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS150001**

#### **Foundations of Physics I**

**Kempa, Krzysztof**

**Fall 2024**

Recommended laboratory (optional): PHYS2050-2051.. First semester of a two-semester algebra-based introductory physics course sequence, primarily for non-science majors, that covers the basic principles of physics. Emphasis is placed on problem-solving to demonstrate the implications of these principles, and to develop analytical skills. This course is similar to PHYS2100 in pace and content but with less emphasis on mathematical technique. First semester covers classical mechanics, including Newton's laws, energy, rotational motion, fluids, thermal physics, oscillations, waves, and gravitation.

**Credits:** 3

**Room and Schedule:** Higgins Hall 310 TuTh 01:30PM-02:45PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS205001**

#### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 M 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205002**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 M 12:00 Noon-02:00PM; This lab section is not offered in Fall 2024.

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205003**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 M 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205004**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 M 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205005**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205006****Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205007****Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205008**

**Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205009**

## **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 05:30PM-07:30PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205010**

### **Introductory Physics Laboratory I**

**Chandra, Malavika**

**Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 05:30PM-07:30PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205011****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 W 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205012****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 W 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205013****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 W 02:00PM-04:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205014****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 W 02:00PM-04:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205015****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 W 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205016****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 W 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205017****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205018****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 Th 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205019****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 03:00PM-05:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205020****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 Th 03:00PM-05:00PM; This lab section is not offered in Fall 2024.**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205021****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205022****Introductory Physics Laboratory I****Chandra, Malavika****Fall 2024**

A laboratory course that provides an opportunity to perform experiments on topics in mechanics and acoustics. This lab is intended for students in PHYS2100-2101 or PHYS2200-2201.

**Credits:** 1**Room and Schedule:** Higgins 255 Th 05:30PM-07:30PM; Higgins Hall 255 Th 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS210001****Introduction to Physics I (Calculus)****Gallaba, G M Dinuka H****Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4**Room and Schedule:** Higgins Hall 300 MWF 09:00AM-09:50AM**Satisfies Core Requirement:** Natural Science**Prerequisites:** MATH1100 required. May be taken concurrently.**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall, Periodically in the Summer**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS210002****Introduction to Physics I (Calculus)****Gallaba, G M Dinuka H****Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** Higgins Hall 300 MWF 01:00PM-01:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210003**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 M 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210004**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 M 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210005**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 M 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210006**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 275 Tu 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None



**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210007**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 Tu 03:00PM-03:50PM; Higgins Hall 263 Tu 3:00PM-3:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210008**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 W 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210009**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 W 02:00PM-02:50PM; Not offered in Fall 2024

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210010**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 W 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210011**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 275 Th 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210012**

### **Introduction to Physics I (Calculus)**

**Dept**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics include classical mechanics, including Newton's laws, energy, rotational motion, hydrostatics and fluid dynamics, oscillations, waves, and gravitation.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 F 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1100 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Periodically in the Summer

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS220001**

### **Introductory Physics I (Calculus)**

**Auner, Alexander**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics for those majoring in the physical sciences. Students utilize analytical reasoning combined with mathematical formalism to fully explore the development, consequences and limitations of the classical principles of physics; similar to PHYS2100 in pace and content but at a greater depth appropriate for physical science majors. Class size is limited to promote classroom discussion. Topics cover classical mechanics, including Newton's laws, energy, rotational motion, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** 245 Beacon Street Room 107 MWF 09:00AM-09:50AM; Higgins Hall 263 Th 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1102 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS220002**

### **Introductory Physics I (Calculus)**

**Tountcheva, Veneta**

**Fall 2024**

PHYS2050 is the laboratory course to supplement the lecture course material. First semester of a two-semester calculus-based introduction to physics for those majoring in the physical sciences. Students utilize analytical reasoning combined with mathematical formalism to fully explore the development, consequences and limitations of the classical principles of physics; similar to PHYS2100 in pace and content but at a greater depth appropriate for physical science majors. Class size is limited to promote classroom discussion. Topics cover classical mechanics, including Newton's laws, energy, rotational motion, oscillations, waves, and gravitation.

**Credits:** 4

**Room and Schedule:** 245 Beacon Street Room 107 Th 04:00PM-04:50PM; Higgins Hall 300 MWF 12:00 Noon-12:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1102 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS310001**

### **Vibrations and Waves**

**Broido, David**

**Fall 2024**

This course is an introduction to the phenomena of vibrations and waves that span most of the areas in physics. The basic subject matter includes the following: mechanical vibrations and waves, free and forced vibrations and resonances, coupled oscillations and normal modes, vibration of continuous systems, propagation of mechanical and electromagnetic waves, phase and group velocity, interference and diffraction. The course also covers the basic concepts in first and second order differential equations, matrices, eigenvalues and eigenvectors and Fourier series.

**Credits:** 4

**Room and Schedule:** Experiment instructions given Mondays at 4PM. Sign up required for two-hr slot to perform experiments.; Higgins Hall 225 TuTh 12:00 Noon-01:15PM; Higgins Hall 250 M 04:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS410001**

### **Classical Mechanics**

**Naughton, Michael J**

**Fall 2024**

This course studies classical mechanics at the intermediate level and develops analytical skills for later physics courses. It includes: single particle dynamics and oscillations; conservative forces and conservation laws; gravitation and central force motion; Lagrangian and Hamiltonian dynamics; system of particles and rigid body dynamics.

**Credits:** 4

**Room and Schedule:** Higgins Hall 260 F 03:00PM-03:50PM; Higgins Hall 260 TuTh 12:00 Noon-01:15PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS440001**

### **Quantum Physics I**

**Chen, Xiao**

**Fall 2024**

First of a two-semester sequence providing a comprehensive treatment of the principles and applications of non-relativistic quantum mechanics. This semester focuses on basic principles. Topics covered include: historical development of quantum mechanics; the uncertainty principle; the Schrodinger equation and its solution for simple one-dimensional potentials, including constant potentials and the harmonic oscillator; formal presentation of the postulates of quantum mechanics using Dirac notation; commutation relations; basic scattering theory; formulation of Schrodinger equation in three-dimensions, central potentials, orbital angular momentum, and the hydrogen atom; spin angular momentum and the addition of angular momenta.

**Credits:** 3

**Room and Schedule:** Higgins Hall 263 MWF 01:00PM-01:50PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS454501**

### **Condensed Matter Physics**

**Ma, Qiong**

**Fall 2024**

Condensed matter physics concerns all aspects of the physics of "condensed" materials, that is, solids, liquids, gels, and plasma. It is the science behind many technologically-relevant applied and integrated science and engineering fields. This course primarily covers the solid state, starting with crystal lattices and their vibrations (phonons), and descriptions of crystalline metals, semiconductors, insulators, and superconductors. It covers in some detail the electrical, magnetic, optical, and thermal properties of materials, and introduces the student to noncrystalline solids and so-called "soft condensed matter."

**Credits:** 3

**Room and Schedule:** Higgins Hall 260 MWF 02:00PM-02:50PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None



**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS460001**

**Statistical Mechanics and Thermodynamics**

**Tafti, Fazel**

**Fall 2024**

The results of classical thermodynamics are deduced from a statistical basis, including the concepts of temperature and entropy, and the three laws of thermodynamics. Applications to ideal and real gases. Basic elements of statistical mechanics, including the canonical ensemble, partition function, equipartition theorem and Maxwell velocity distribution. Simple application of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac Statistic.

**Credits:** 4

**Room and Schedule:** Higgins Hall 260 W 03:00PM-03:50PM; Higgins Hall 275 TuTh 10:30AM-11:45AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS470001**

**Survey of Applied Physics**

**Auner, Alexander**

**Fall 2024**

Introduces students to applications of physics to various current problems. Possible modules include topics in biophysics, environmental engineering, materials science, device and sensor development, quantum information and computing, and financial modeling. The course will include guest lectures from faculty in physics and other disciplines on interdisciplinary research with a significant physics component.

**Credits:** 3

**Room and Schedule:** Higgins Hall 260 TuTh 01:30PM-02:45PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Annually

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS500001**

### **Readings and Research in Physics**

**Kempa, Krzysztof**

**Fall 2024**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS500002**

## **Readings and Research in Physics**

**Tafti, Fazel**

**Fall 2024**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS500003**

## **Readings and Research in Physics**

**Burch, Kenneth S**

**Fall 2024**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS500004****Readings and Research in Physics****Graf, Michael J****Fall 2024**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS700001****Physics Colloquium****Carter, Jane E****Fall 2024**

This is a weekly discussion of current topics in physics. No academic credit. No fee.

**Credits:** 0**Room and Schedule:** Higgins Hall 310 W 04:00PM-06:50PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS771101**

## **Classical Mechanics**

**Herczynski, Andrzej**

**Fall 2024**

Kinematics and dynamics, variational principles, Lagrangian and Hamiltonian formulations, canonical transformations, Hamilton-Jacobi theory, small oscillations, rigid body motion, relativistic mechanics.

**Credits:** 3

**Room and Schedule:** Higgins Hall 260 MWF 11:00AM-11:50AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

---

## **PHYS772201**

**Statistical Physics II**

**Flebus, Benedetta**

**Fall 2024**

Fluctuation-dissipation theorem, Kubo formalism, electron gas, of phase transitions and critical phenomena, Landau theory of phase transitions, critical exponents, scaling and an introduction to renormalization group methods.

**Credits:** 3

**Room and Schedule:** Higgins Hall 260 MWF 10:00AM-10:50AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS774101****Quantum Mechanics I****Ran, Ying****Fall 2024**

Introduction includes elements of the linear algebra in Dirac notation. Topics include postulates of quantum theory, simple problems in one dimension, classical limit, harmonic oscillator, Heisenberg uncertainty relations, systems with N-degree of freedom, symmetries, rotational invariance and angular momentum, hydrogen atom, and an introduction to spin. Also included is the path integration formulation of quantum theory.

**Credits:** 3**Room and Schedule:** Higgins Hall 263 MW 09:00AM-10:50AM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Graduate**Comments:** None**Status:** Offered**PHYS783501****Mathematical Physics I****Engelbrecht, Jan****Fall 2024**

Matrix algebra, linear vector spaces, orthogonal functions and expansions, boundary value problems, introduction to Green's functions, complex variable theory, and applications.

**Credits:** 3**Room and Schedule:** Higgins Hall 263 TuTh 10:30AM-11:45AM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS790002****Advanced Problem Solving in Physics****Bakshi, Pradip M****Fall 2024**

Problem solving related to concepts in graduate level introductory courses, including quantum and classical mechanics, statistical physics and electricity and magnetism.

**Credits:** 1**Room and Schedule:** Higgins Hall 235 F 02:00PM-04:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Annually**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS876101****Solid State Physics I****Zhou, Brian B****Fall 2024**

Introduction to the basic concepts of the quantum theory of solids. Drude and Sommerfeld theory, crystal structure and bonding, theory of crystal diffraction, and the reciprocal lattice, Bloch theorem and electronic band structure, nearly free electron approximation and tight binding method, metals, semiconductors and insulators, dynamics of crystal lattice, phonons in metals, semiclassical theory of electrical and thermal transport, introduction to magnetism and superconductivity.

**Credits:** 3**Room and Schedule:** Higgins Hall 263 TuTh 09:00AM-10:15AM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS877001**

**Special and General Relativity**

**Engelbrecht, Jan**

**Fall 2024**

This course explores the geometric nature of fundamental classical physics. We aim to strike a balance between physical observations and mathematical sophistication. Topics covered will include how the spacetime coordinates of Special Relativity reveal that electromagnetic fields are not vectors but rather components of a 2-form. In General Relativity we cover the non-uniqueness of solutions to Einsteins vacuum field equations, which include amongst others the Schwarzschild and Kerr metrics whose geodesics generalize Newtonian gravitational orbits. We also cover non-vacuum solutions such as FLRW metrics of the co-moving coordinates of big-bang cosmology and their relationships with astronomical observations.

**Credits:** 3

**Room and Schedule:** Higgins Hall 265 MWF 01:00PM-01:50PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** null

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS991101**

**Doctoral Continuation**

**Kempa, Krzysztof;Naughton, Michael J**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement



**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## **PHYS991102**

### **Doctoral Continuation**

**Tafti, Fazel**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## **PHYS991103**

### **Doctoral Continuation**

**Burch, Kenneth S**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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#### **PHYS991104**

##### **Doctoral Continuation**

**Zeljko, Ilija**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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#### **PHYS991105**

##### **Doctoral Continuation**

**Zhou, Brian B**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** By Arrangement**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991106****Doctoral Continuation****Flebus, Benedetta****Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** By Arrangement**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991107****Doctoral Continuation**

**Chen, Xiao**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS991108**

**Doctoral Continuation**

**Ma, Qiong**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS991109**

## **Doctoral Continuation**

**Engelbrecht, Jan**

**Fall 2024**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## Physics Courses: Spring 2025

**PHYS110101**

**Structure of the Universe II**

**Opeil, Cyril P, SJ**

**Spring 2025**

An introductory course directed at non-science majors. Physical principles are developed and applied to our space and astrophysical environment. Topics include structure and evolution of the solar system, physics of the sun and planets, space discoveries, creation and structure of stars and galaxies, relativity and cosmology, extraterrestrial life, and astronomical concepts.

**Credits:** 3

**Room and Schedule:** 245 Beacon Street Room 107 MWF 12:00 Noon-12:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS150101**

**Foundations of Physics II**

**Naughton, Michael J**

**Spring 2025**

Recommended laboratory (optional): PHYS2050-2051.. Second semester of the two-semester algebra-based introductory physics course sequence primarily for non-science majors. This course is similar to PHYS2101 in pace and content but with less emphasis on mathematical technique. Topics to be covered are fundamentals of electrostatics, simple electrical circuits, magnetism, electromagnetism, electromagnetic oscillations and waves, physical optics, and, if time allows, basic concepts and applications of special relativity and quantum physics.

**Credits:** 3

**Room and Schedule:** Higgins Hall 300 TuTh 01:30PM-02:45PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205101**

**Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 M 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205102**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 M 12:00 Noon-02:00PM;Not offered Spring 2025

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205103**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 M 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205104**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 M 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205105**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 12:00 Noon-02:00PM



**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205106**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205107**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205108**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 03:00PM-05:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205109**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

### **Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 Tu 05:30PM-07:30PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS205110**

#### **Introductory Physics Laboratory II**

**Chandra, Malavika**

### **Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 Tu 05:30PM-07:30PM;Not offered Spring 2025

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS205111**

#### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 W 12:00 Noon-02:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205112**

**Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 W 12:00 Noon-02:00PM;Not offered Spring 2025

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205113**

## **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 253 W 02:00PM-04:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS205114**

### **Introductory Physics Laboratory II**

**Chandra, Malavika**

**Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1

**Room and Schedule:** Higgins Hall 255 W 02:00PM-04:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS205115****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 W 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205116****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 W 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205117****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205118****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 Th 12:00 Noon-02:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205119****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 03:00PM-05:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205120****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 Th 03:00PM-05:00PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205121****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 253 Th 05:30PM-07:30PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS205122****Introductory Physics Laboratory II****Chandra, Malavika****Spring 2025**

A laboratory course that provides an opportunity to perform experiments on topics in electricity and magnetism and physical optics. This lab is intended for students in PHYS2200-2201 or PHYS2100-2101.

**Credits:** 1**Room and Schedule:** Higgins Hall 255 Th 05:30PM-07:30PM;Not offered Spring 2025**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS210101****Introduction to Physics II (Calculus)****Gallaba, G M Dinuka H****Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4**Room and Schedule:** Higgins Hall 300 MWF 09:00AM-09:50AM**Satisfies Core Requirement:** Natural Science**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS210102****Introduction to Physics II (Calculus)****Gallaba, G M Dinuka H****Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 4

**Room and Schedule:** Higgins Hall 300 MWF 01:00PM-01:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210103**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 M 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210104**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 M 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210105**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 M 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210106**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 275 Tu 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210107**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 Tu 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210108**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 W 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210109**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 263 W 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210110**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 265 W 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210111**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**



PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 280 Th 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS210112**

### **Introduction to Physics II (Calculus)**

**Dept**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics primarily for biology majors and premedical students. The development and application of classical physical principles are covered, and students are introduced to more advanced mathematical techniques to extend these applications. Emphasis is placed on problem-solving to better understand the implications of these principles, as well as to develop analytical skills. Topics are electrostatics, electrical circuits, magnetism, electromagnetism and electromagnetic waves, topics in physical optics, and basic concepts of special relativity and quantum physics.

**Credits:** 0

**Room and Schedule:** Higgins Hall 275 F 02:00PM-02:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** PHYS2100 or MATH1101 required. May be taken concurrently

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS220101**

### **Introductory Physics II (Calculus)**

**Auner, Alexander**

**Spring 2025**

PHYS2051 is the laboratory course to supplement the lecture course material. Second semester of a calculus-based introduction to physics for those majoring in the physical sciences. Students utilize analytical reasoning combined with mathematical formalism to fully explore the development, consequences and limitations of the classical principles of physics. Class size is limited to promote classroom discussion. Topics include fundamentals of electrostatics, simple electrical circuits, magnetism, electromagnetism and electromagnetic oscillations and waves, and selected topics in physical optics. PHYS2200 is a prerequisite for this course.

**Credits:** 4

**Room and Schedule:** Higgins Hall 225 MWF 09:00AM-09:50AM; Higgins Hall 225 Th 03:00PM-03:50PM

**Satisfies Core Requirement:** Natural Science

**Prerequisites:** MATH1103 required. May be taken concurrently.

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS330001**

### **Introduction to Modern Physics**

**Flebus, Benedetta**

**Spring 2025**

This course is a transition between introductory and advanced physics courses for science majors. The basic subject matter includes the two principal physical theories of the twentieth century--relativity and quantum mechanics. Included are the following: the Lorentz transformation, kinematic consequences of relativity, origin of the quantum theory, one-dimensional quantum mechanics, quantum mechanics of a particle in three dimensions, applications to the hydrogen atom and to more complex atoms, molecules, crystals, metals, and semiconductors.

**Credits:** 4

**Room and Schedule:** Experiment instructions Mon 4-4:50PM. Weekly sign up required for 2 hr slot to perform experiments.;Higgins Hall 250 M 04:00PM-04:50PM;Higgins Hall 265 TuTh 12:00 Noon-01:15PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS350001**

### **Advanced Independent Research**

**Tafti, Fazel**

**Spring 2025**

This course is reserved for Physics majors selected as Scholars of the College. Content, requirements, and credits by arrangement with the Chairperson.

**Credits:** 6

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS420001****Electricity and Magnetism****Zhou, Brian B****Spring 2025**

To provide students with the background in electricity and magnetism necessary to deal with experimental problems in electromagnetism. Part 1 will present the mathematical foundations for the entire treatment of electromagnetism. Part 2 deals with Coulomb's law and the electrostatics based on this law. Part 3 addresses stationary currents and magnetostatics. Part 4 deals with induction and quasi-stationary phenomena, self- and mutual-induction. Part 5 presents a treatment of Maxwell equations and the consequences of these equations, e.g., energy and momentum conservation, Plane waves, reflection, and refraction. Time permitting, we will discuss radiation from moving charges.

**Credits:** 3**Room and Schedule:** Higgins Hall 265 MWF 12:00 Noon-12:50PM**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Spring**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS435001****Experiments in Physics I****Ma, Qiong****Spring 2025**

The course includes experiments in optics, solid state physics, nuclear physics, spectroscopy, x-ray, and electron diffraction. Students will carry out independent projects aimed at acquiring a sound understanding of both the physical principles involved in each subject area and of the principles and problems of modern experimental physics.

**Credits:** 3**Room and Schedule:** Higgins Hall 310 TuTh 01:30PM-02:45PM**Satisfies Core Requirement:** None**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS440101**

### **Quantum Physics II**

**Chen, Xiao**

**Spring 2025**

Second semester of the PHYS4407-4408 sequence, focusing on applications. Topics covered include: treatment of the many-particle systems, including effects of spin and symmetry of the wave function; many-electron atoms and the periodic table; basic elements of quantum statistics; approximation techniques, including non-degenerate and degenerate perturbation theory and the variational principle; time-dependent perturbation theory and the interaction of electromagnetic radiation with matter.

**Credits:** 3

**Room and Schedule:** Higgins Hall 263 MWF 01:00PM-01:50PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS450001**

### **Applied Mathematics for Physical Scientists**

**Zeljko, Ilija**

**Spring 2025**

This course provides in-depth coverage of the essential advanced mathematical tools of linear algebra, vector spaces, ordinary differential equations, complex functions, and as time permits, more advanced topics such as Laplace Transform methods, non-linear systems, and numerical modeling. Applications to physical systems will be emphasized throughout the course.

**Credits:** 4

**Room and Schedule:** Higgins Hall 275 F 03:00PM-03:50PM; Higgins Hall 275 TuTh 01:30PM-02:45PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Annually

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS495001**

**Physics Capstone**

**Dept**

**Spring 2025**

This is a required senior-level course for Applied Physics majors. Students will complete and report on results from an independent research or internship project carried out with supervision by a Department of Physics faculty member, possibly in collaboration with an external advisor. Requires authorization by the faculty supervisor.

**Credits:** 3

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** Permission of Department

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Annually

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS495002****Physics Capstone****Dept****Spring 2025**

This is a required senior-level course for Applied Physics majors. Students will complete and report on results from an independent research or internship project carried out with supervision by a Department of Physics faculty member, possibly in collaboration with an external advisor. Requires authorization by the faculty supervisor.

**Credits:** 3**Room and Schedule:** By Arrangement**Satisfies Core Requirement:** None**Prerequisites:** Permission of Department**Corequisites:** None**Cross-listed with:** None**Frequency:** Annually**Student Level:** Undergraduate**Comments:** None**Status:** Offered

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**PHYS495003****Physics Capstone****Dept****Spring 2025**

This is a required senior-level course for Applied Physics majors. Students will complete and report on results from an independent research or internship project carried out with supervision by a Department of Physics faculty member, possibly in collaboration with an external advisor. Requires authorization by the faculty supervisor.

**Credits:** 3**Room and Schedule:** By Arrangement**Satisfies Core Requirement:** None**Prerequisites:** Permission of Department**Corequisites:** None**Cross-listed with:** None**Frequency:** Annually**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS495101**

**Senior Thesis**

**Ma, Qiong**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS495102**

**Senior Thesis**

**Naughton, Michael J**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None



**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS495103**

**Senior Thesis**

**Zeljko, Ilija**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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### **PHYS495104**

**Senior Thesis**

**Tafti, Fazel**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS495106**

### **Senior Thesis**

**Burch, Kenneth S**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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## **PHYS495107**

### **Senior Thesis**

**Zhou, Brian B**

**Spring 2025**

A semester-long project in the course of which a student carries out an investigation and research of an original nature or formulates a mature synthesis of a topic in physics. The results are presented as a written thesis, which the student will defend in an oral examination. This course is highly recommended for majors considering graduate study in physics.

**Credits:** 3

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

---

## **PHYS500001**

### **Readings and Research in Physics**

**Dept**

**Spring 2025**

Credits by arrangement Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson.

**Credits:** 3

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

---

## **PHYS500101**

### **Readings and Research in Physics II**

**Tafti, Fazel**

**Spring 2025**

Credits by arrangement. Individual programs of study and research for advanced physics majors under the direction of a physics faculty member. Requirements are with the approval of the Chairperson. This should be chosen if student has completed PHYS5000.

**Credits:** 3

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** Permission of Department

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Periodically

**Student Level:** Undergraduate

**Comments:** None

**Status:** Offered

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**PHYS552001**

**Biophysics**

**Auner, Alexander**

**Spring 2025**

Biophysics uses calculus and models, typical of the various disciplines of physics, to understand and solve problems in biology. This course will survey the major scales of biophysics problems including, but not limited to molecular-level diffusion and machines, cell-level fluorescence microscopy, tissue-level forces and fabrication, and systems-level bioelectronics (brain circuitry).

**Credits:** 3

**Room and Schedule:** Higgins Hall 265 TuTh 10:30AM-11:45AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Periodically

**Student Level:** Both

**Comments:** None

**Status:** Offered

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**PHYS700001**

**Physics Colloquium**

**Carter, Jane E**

**Spring 2025**

This is a weekly discussion of current topics in physics. No academic credit. No fee.

**Credits:** 0

**Room and Schedule:** Higgins Hall 310 W 04:00PM-06:00PM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS770801**

**Physics Graduate Seminar II**

**Dept**

**Spring 2025**

A discussion of topics in physics from the current literature.

**Credits:** 1

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS772101**

**Statistical Physics I**

**Broido, David**

**Spring 2025**

Fundamental principles of classical and quantum statistics; kinetic theory; statistical basis of thermodynamics; ideal classical, Bose and Fermi systems; selected applications.

**Credits:** 3

**Room and Schedule:** Higgins Hall 263 TuTh 10:30AM-11:45AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

---

**PHYS773201****Electromagnetic Theory I**

**Herczynski, Andrzej**

**Spring 2025**

Topics include Maxwell equations in vacuum and media, potentials and gauges, energy and momentum conservation, wave propagation, waveguides, radiating systems, scattering, diffraction, metamedia, and photonic crystals.

**Credits:** 3

**Room and Schedule:** Higgins Hall 260 MWF 11:00AM-11:50AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

---

**PHYS774201****Quantum Mechanics II**

**Kempa, Krzysztof**

## **Spring 2025**

Equations of motion for operators, perturbation theory, interaction of radiation with matter, identical particles, scattering theory, second quantization, relativistic equations.

**Credits:** 3

**Room and Schedule:** Higgins Hall 225 MWF 10:00AM-10:50AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## **PHYS876201**

### **Solid State Physics II**

**Ran, Ying**

## **Spring 2025**

Advanced studies of the physics of solids. Elementary excitations, symmetry and symmetry-breaking, electron-electron and electron-phonon interactions, Hartree-Fock and random phase approximations, scattering theory, dielectric functions, screening, sum rules, optical properties, Landau Fermi liquid theory, disorder and localization, quantum Hall effect, quantum magnetism, superconductivity, and superfluidity.

**Credits:** 3

**Room and Schedule:** Higgins Hall 275 TuTh 09:00AM-10:15AM

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## **PHYS991101**

## **Doctoral Continuation**

**Dept**

**Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** By Arrangement

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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## **PHYS991102**

### **Doctoral Continuation**

**Chen, Xiao**

**Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall,Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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**PHYS991103****Doctoral Continuation****Burch, Kenneth S****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991104****Doctoral Continuation****Tafti, Fazel****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991105****Doctoral Continuation****Zhou, Brian B****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991106****Doctoral Continuation****Flebus, Benedetta****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991107****Doctoral Continuation****Naughton, Michael J****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991108****Doctoral Continuation****Broido, David****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991109****Doctoral Continuation****Ma, Qiong****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991110****Doctoral Continuation****Engelbrecht, Jan****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991111****Doctoral Continuation****Wang, Ziqiang****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991112****Doctoral Continuation****Ran, Ying****Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1**Room and Schedule:** BY ARRANGEMENT**Satisfies Core Requirement:** None**Prerequisites:** None**Corequisites:** None**Cross-listed with:** None**Frequency:** Every Fall,Every Spring**Student Level:** Graduate**Comments:** None**Status:** Offered

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**PHYS991113**

**Doctoral Continuation**

**Zeljko, Ilija**

**Spring 2025**

All students who have been admitted to candidacy for the Ph.D. degree are required to register and pay the fee for doctoral continuation during each semester of their candidacy. Doctoral Continuation requires a commitment of at least 20 hours per week working on the dissertation

**Credits:** 1

**Room and Schedule:** BY ARRANGEMENT

**Satisfies Core Requirement:** None

**Prerequisites:** None

**Corequisites:** None

**Cross-listed with:** None

**Frequency:** Every Fall, Every Spring

**Student Level:** Graduate

**Comments:** None

**Status:** Offered

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