

# PHYSICS

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Haughey Hall, Room 212  
(616) 471-3430  
physics-info@andrews.edu  
<http://www.andrews.edu/PHYS/>

## Faculty

Robert E. Kingman, *Chair*  
Gary W. Burdick  
Mickey D. Kutzner  
Margarita C. K. Mattingly  
S. Clark Rowland

## Emeriti

Bruce E. Lee

Physics describes the world in terms of matter and energy and relates the many facets of its phenomena in terms of fundamental law. Its scope includes systems that range in size from sub-nuclear to the entire cosmos. A major in physics supports and enhances professional careers in engineering, the life sciences, the physical sciences, and similar areas.

A major in biophysics prepares the graduate for advanced studies in medical and bioengineering fields. Both physics programs prepare the graduate for a career in secondary teaching.

## Undergraduate Programs

### BS: Physics—40

**Major Requirements:** PHYS241, 242, 271, 272, 377, 411, 430, 431, 477, 481, 495 plus an additional 12 credits numbered 300 and above.

**Cognate Courses:** MATH141, 142, 215, 240, 286; CHEM131, 132; and CPTR125 (FORTRAN) or CPTR151.

Physics majors desiring secondary-teaching certification should



**PHYS530** (2-3)  
**Topics in Teaching Physics**  
 Each time the course is offered, one of the following areas is discussed:

- Principles of physics and effective approaches for teaching them.
- The physics lab, its purposes, administrative and safety procedures, essential equipment, seminal experiments, data analysis, lab journal, and reports.

Repeatable to 6 credits.

**PHYS540** (2-3)  
**Topics in Physics**  
 Study of one of the traditional areas of graduate physics such as electromagnetic theory, analytical mechanics, solid state physics, astrophysics, mathematical physics, and theoretical physics. Students must complete assigned readings and problems. Satisfactory performance on a written or oral comprehensive exam required. Repeatable to 9 credits.

**PHYS648** (1-3)  
**Workshop**

**PHYS690** (1-3)  
**Independent Study/Research**  
 Independent problems of research in selected fields of physics. Open to qualified students who show ability and initiative. Repeatable to 6 credits. A minimum of 4 hours work per week expected for each credit earned. Prerequisite: Consent of department chair.

## RELIGION AND BIBLICAL LANGUAGES

Griggs Hall, Room 214  
 (616) 471-3177  
 Fax: (616) 471-6258  
 religion@andrews.edu  
<http://www.andrews.edu/RELG>

### Faculty

Keith E. Mattingly, *Chair*  
 Lael O. Caesar  
 Mark B. Regazzi  
 Glenn E. Russell  
 Ranko Stefanovic  
 Woodrow W. Whidden II

### Academic Programs

### Credits

## Programs

### BA: Theology

Choose from one of the following:

#### Pastoral Ministry Emphasis—68

RELB110, 115, 210, 214, 335, 406, 476; RELH316, 317; HIST404; RELP200 (Twice), 240, 331, 332, 333, 334, 441, 442; RELT100, 226, 250, 308, 340, 400; BIBL211, 212, 317, 321, 322, 409, 410, 427.

Competence in Greek equivalent to the level represented by BIBL212 is required.

**Required Cognates (9 credits):** HIST404; RELH316, 317. Minimum grades of C- must be earned in HIST404 and in all RELB, RELH, RELP, and RELT courses to apply to major requirements.

#### Youth Ministry Emphasis—74

RELB110, 115, 210, 214, 335, 406, 476; RELP200 (Twice), 240, 331, 332, 333, 334, 335, 441, 442; RELT100, 226, 250, 308, 340; BIBL211, 212, 321, 322, 409, 410.

Competence in Greek equivalent to the level represented by BIBL212 is required; choose three from ANTH200, BHSC220, FMST454, 456, PSYC204, 251, 252, 319, 454, SOCI120, 345, 415, 430