

## **Physical Education (PED)**

**Associate Professor Dunnigan**

**Associate Professor Hood**

**Associate Professor Meyer**

**Assistant Professor Kindt**

**Instructor I. Brown**

**Instructor Frazier**

**Adjunct Instructor Gill**

A student majoring in physical education chooses one emphasis from the following: fitness management, exercise science, or teacher education.

A physical education major prepares the student for such professional experiences as managing fitness settings, personal fitness training, teaching physical education, athletic training, and post-graduate, professional study. The physical education teacher must pursue an additional teaching major. The fitness manager will have the practical experience and coursework to facilitate success with the certifying examination of the National Strength and Coaching Association. The exercise scientist completes many of the requirements for acceptance into post-graduate, pre-professional allied health settings, to include settings which specialize in athletic training.

### **Requirements for the Physical Education Major:**

1. Complete the following core courses: Physical Education 106, 201, 221, 345, 346, and 352.
2. Complete the cognate Biology 101.
3. Complete at least one emphasis chosen from the following:
  - a. Fitness Management:
    - 1) Physical Education 117, 118, 209, 233, 234, 425.
    - 2) Cognates: Accounting 103; Biology 215 (or 216 or 325); Business 205 (or Mass Communication/English 113), 212 (or 315), 215 (or Social Science 217 or Biology 295), 242, 251, 341; Sociology 109 (or Psychology 117); and one course selected from Business 324, Mass Communication 320, Speech Communication 216.
  - b. Exercise Science
    - 1) Physical Education 209, 321, 355, 425, 448.
    - 2) Cognates: Biology 315 (or 317 or 331 or 412), 325, 336; Business 215 (or Social Science 217 or Biology 295); Chemistry 125 or equivalent; Physics 107 or equivalent; Psychology 255 (or 256 or 416).
    - 3) Internships in sports medicine/therapeutic settings. Complete a or b.

- a. Those seeking athlete training certification will complete at least 480 hours in the Doane College Athletic Training setting.
- b. Those not seeking athlete training certification will complete at least 240 hours of department-approved, health-related activities in internship settings.
- c. Students who are seeking certification for public school teaching in Physical Education (K-12) complete the following courses in addition to the Physical Education core and cognate requirements listed in #1 and #2:
  - 1) Four terms of Physical Education 101.
  - 2) Physical Education 228, 233, 234, 355, 457, 458, 459.
  - 3) Cognates Biology 215 (or 216 or 325).
  - 4) One additional teaching major.
  - 5) All requirements listed under the catalog section Secondary Education.

### **Requirements for the Coaching Endorsement:**

1. Physical Education 106, 221, 345 (or 346).
2. A minimum of four of the following courses: Physical Education 308, 309, 310, 311, 312, 314.
3. A teaching major.

### **101 Physical Activity Course (1)**

A course offering choices from a list of physical activities. The student will actively participate in such activities as net and racquet sports, golf, aerobic activities, weight training, aquatics, creative movement, jazz dance, kick-boxing, and outdoor leisure pursuits.

### **104 Theory of Lifetime Fitness (1)**

A half-semester course providing students an understanding of concepts for living a healthful lifestyle. The student will demonstrate an understanding of concepts regarding nutrition, the design of physical fitness routines, and underlying principles of physical fitness.

### **106 Cardiopulmonary Resuscitation, First Aid, and First Responder (2)**

A course providing instruction in basic cardiopulmonary resuscitation, first aid, and first responder concepts and skills. Upon successful completion, students qualify for a "completion card" in basic CPR and first aid, using the guidelines of the National Safety Council. In addition, students receive more in-depth instruction in preparation for the associated certifying examination, also using the guidelines of the National Safety Council.

### **117 Organization and Administration I (2)**

A study of career opportunities and of practical problems of instructional organizations, supervision, financial and departmental organization of

physical education and athletic programs, as well as public and private recreation programs.

**118 Organization and Administration II (3)**

Studies which include the historical, philosophical, sociological, psychological, and administrative factors which form the basis for the construction of physical education, recreation, and athletic programs in school and communities.

**201 Issues of Health and Safety (3)**

A general view of personal health and safety concerns. Student will acquire an understanding of the process for selection, planning, teaching and the evaluation of comprehensive school health education programs. This includes demonstrating an awareness of objectives of a comprehensive school health program and applying the knowledge of personal and community health care and physical education activities to school health education programs. Personal health issues to be presented include disease prevention, drug/substance abuse, and emotional/mental health.

**209 Nutrition (3)**

An introduction to basic principles of human nutrition with emphasis on nutrients, food sources, and function of nutrients within the human body. Nutritional requirements throughout the lifespan are addressed, as well as the impact of cultural, psychological, and personal health factors on an individual's nutritional status. Upon completion of the course, students will know how to assess nutritional status and provide preventive and therapeutic dietary teaching based on an individual's nutritional needs and developmental, cultural, psychological, and physiological dimensions. *Offered spring term.*

**221 Fundamentals in Athletic Training (2)**

The study and application of appropriate procedures in the prevention and care of injuries generally associated with normal physical activity in secondary school (7-12) physical education programs, as well as those associated with injury related to sports participation.

**228 Movement and Rhythmics for Young Children (2)**

A study of the elementary principles of rhythmical movement and methods of developing and assessing elementary (K-6) school-aged children's motor rhythmic performance.

**233 Personal Performance Competencies I (1)**

Provides experiences which will allow the student to demonstrate competency in specified motor skills, including aquatics for adults and secondary school (7-12) aged children.

**234 Personal Performance Competencies II (1)**

Provides experiences which will allow the student to demonstrate competency in specified motor skills, including gymnastics for adults and secondary school (7-12) aged children.

**290, 390, 490 Directed Study (1-3) (1-3) (1-3)**

An opportunity for supervised, independent study of a particular topic based on the interest of the student and the ability and approval of the faculty.

**308 Coaching Basketball (2)**

An examination of methods of coaching offensive and defensive styles of play as well as rule interpretations, considerations for athletes' psychological characteristics and needs, and equipment needed in secondary school interscholastic basketball programs.

**309 Coaching Volleyball (2)**

An examination of methods of coaching offensive and defensive styles of play as well as rule interpretations, consideration for athletes' psychological characteristics and needs, and equipment needed in secondary school interscholastic volleyball programs.

**310 Coaching Track and Field (2)**

An examination of theory and methodology of coaching all of the standard track and field events, including considerations for athletes' psychological characteristics and needs, and the planning and conducting of track meets.

**311 Coaching Football and Wrestling (2)**

An examination of methods of coaching offensive and defensive styles of playing football and all basic techniques of wrestling as well as scouting, rule interpretations, considerations for athletes' psychological characteristics and needs, and equipment needed in secondary school interscholastic football and wrestling programs.

**312 Coaching Tennis and Golf (2)**

An examination of methods of coaching as well as rule interpretations, considerations for athletes' psychological characteristics and needs, and equipment needed in secondary school interscholastic tennis and golf programs. *Offered alternate years.*

**314 Coaching Baseball and Softball (2)**

An examination of methods of coaching as well as rule interpretations, considerations for athletes' psychological characteristics and needs, and equipment needed in secondary school interscholastic baseball and softball programs. *Offered alternate years.*

**321 Techniques for Orthopedic Evaluation (3)**

A course that allows the student to develop the ability to apply concepts and principles used to perform a thorough orthopedic evaluation on injured athletes. Emphasis is placed on assessment techniques and involves practical experience as well as classroom lecture. *Prerequisite: Physical Education 221, Biology 215, 216 or taken concurrently.*

**345 Exercise Physiology (4)**

Serves to nurture an understanding of the physiology of exercise and of nutrition pertaining to physical/athletic activity of secondary school (7-12) aged children and adults. Students will also demonstrate an ability

to apply theory of appropriate procedures in the physical training and conditioning for competition and general fitness. *Spreadsheet competency recommended.*

**346 Kinesiology/Applied Biomechanics (3)**

Provides information for the potential coach, physical educator, therapist, and/or sport/fitness manager. Course concepts will involve those factors which identify limitations to human locomotor and non-locomotor movement. The student will understand gross skeletal/musculature anatomy, neuromuscular concepts, and physical laws of motion as they apply to human movement. The student will be able to apply theory of acquisition of motor skills and will be able to assess common musculoskeletal disorders as well as identify the etiology and therapeutic exercise for such conditions. *Offered spring term.*

**352 Perceptual Motor Development and Movement Experiences for Young Children (3)**

The fundamental study of growth and perceptual motor development in young children. Special emphasis is placed on components of perceptual motor efficiency and the application of appropriate physical education activities for perceptual motor development. Included are the theories and practices for evaluating perceptual motor development with practical application of perceptual motor tests.

**355 Adaptive Physical Education (3)**

A course designed to provide students with an understanding of the causes and pathology of prevalent disabilities which influence motor performance of elementary (K-6) school-aged students. Students will also be able to develop curriculum which is specific to the delivery of adapted physical education instruction. *Prerequisite: Physical Education 352.*

**421 Physical Education Internship (0-12)**

This course is designed to offer a structured professional experience in sport/fitness management settings. The nature and location of this experience is arranged in cooperation with the Director of Career Development and must be approved by the physical Education Coordinator. A maximum of nine credits may be applied to graduation requirements. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**425 Fitness Management (3)**

A capstone course which focuses on the standards for the certifying examinations of the National Strength and Conditioning Association and on managing fitness settings. The student will demonstrate an ability to evaluate diets and construct appropriate eating plans, assess cardiorespiratory fitness and construct appropriate aerobic training regimens, assess body composition and understanding the considerations of human body fat distribution, and understanding the concepts of

strength training and construct appropriate resistance training regiments.  
*Prerequisite: Physical Education 345, 346, or permission.*

**448 Therapeutic Modalities/Exercise (3)**

A presentation of the physiological rationale for appropriate and effective use of modalities and therapeutic exercise in the rehabilitation on athletic injuries. Students will design and implement rehabilitation programs based on the individual athlete, applicable modalities, and related sport participation. *Prerequisite: Physical Education 221 or permission.*

**450 Structuring Movement Activities for Elementary-Aged Children (2)**

A course offered to those who are not seeking Teaching Certification in physical education. Course work includes strategies for teaching games, movement activities for skill acquisition, and health/wellness measures appropriate for elementary-aged children (K-8) in school and recreational settings.

**457 Techniques of Teaching Physical Education I (7-12) (4)**

A course including competencies in various teaching models for the normal as well as the atypical child, and interpretation of a variety of testing and measurement devices appropriate for any selected objective. The primary emphasis is on secondary school (7-12) physical education programs. *Prerequisite: Physical Education 233 or 234, or permission. Spreadsheet competency recommended.*

**458 Techniques of Teaching Physical Education II (K-6) (4)**

A course providing information and techniques related to planning, developing, implementing and administering a curriculum for elementary school, physical education programs including strategies in various teaching models for the normal and atypical child (K-6). *Prerequisite: Physical Education 233 (or 234), 352, 355 or permission.*

**459 Techniques of Teaching Physical Education III (K-12) (4)**

A course providing a review and an opportunity to implement the various teaching concepts provided in Physical Education 457 and 458 in preparation for the experiences of the professional semester. It also includes materials which deal more specifically with the administrative and organizational issues of classroom work. *Prerequisite: Enrolled in professional term, or permission.*

**Activities**

- 108 Doane Dance Team (0-1) (Pass/Fail)
- 151 Intercollegiate Football (0-1) (Pass/Fail)
- 152 Intercollegiate Track and Field (0-1) (Pass/Fail)
- 153 Intercollegiate Basketball (0-1) (Pass/Fail)
- 154 Intercollegiate Baseball (0-1) (Pass/Fail)
- 155 Intercollegiate Cross Country (0-1) (Pass/Fail)
- 158 Intercollegiate Golf (0-1) (Pass/Fail)
- 159 Intercollegiate Volleyball (0-1) (Pass/Fail)

- 162 Intercollegiate Tennis (0-1) (Pass/Fail)
- 163 Intercollegiate Softball (0-1) (Pass/Fail)
- 165 Intercollegiate Soccer (0-1) (Pass/Fail)

## **Physical Science (PHS)**

**Professor Wentworth**

### **Requirements for the Physical Science Major:**

Complete 1, 2 or 3.

1. General Physical Science:
  - a. Chemistry 125, 126, Physics 107, 108 (or 201, 202), Mathematics 105, 125 (or equivalent), 235.
  - b. Geology 103, Mathematics 236.
  - c. One additional four-credit course in chemistry, one additional three- or four-credit course in physics.
  - d. An additional three courses at the 300-400 level chosen from the above fields.
2. Physical Science major with a Health Science emphasis:
  - a. Complete physical science courses in 1-A listed under the General Physical Science major.
  - b. Biology 101, 106, 215 (or 216 or 252), Chemistry 205, 206.
  - c. Three additional three- or four-credit courses from chemistry and/or physics, two of which must be at the 300-400 level.
3. Students seeking certification for public school teaching of physical science must complete the following:
  - a. Eighteen credits of physics and 15 credits of earth science or chemistry, OR 18 credits of chemistry and 15 credits of earth science or physics. (The chemistry courses include 125, 126, 205, 303. The physics courses include 107, 108, 314. Other chemistry and physics courses will be taken to meet the required number of credits.) The earth science courses include Astronomy 103, Geology 103, 107. Either Astronomy 103L or Geology 107L will be taken concurrently with the corresponding three-credit course (Astronomy 103 or Geology 107).
  - b. Twelve credits of earth science, chemistry, or physics (excluding the two areas selected in item a). The physics courses will include 107, 108, and 314. The geology courses will include Geology 103.
  - c. A minimum of six credits in biology, including Biology 101.
  - d. Natural Science 322, 324, 326, 327.
  - e. All requirements listed under the catalog section Secondary Education.

**105 Principles of Physical Science (4)**

A survey of topics selected from physics and chemistry designed for the non-science major. Some of the physics topics to be studied include the nature of light and color, electrical phenomena, heat and energy, as well as other topics necessary for understanding much of the phenomena associated with everyday life. Chemistry topics include describing the nature of matter at a macroscopic level and at an atomic level. Social issues with a scientific or technological component are discussed. All topics are developed through laboratory exercises. **Does not apply to any science major.**

**421 Physical Science Internship (0-12)**

On-the-job experience in physical science. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**Physics (PHY)**

Professor Wentworth

Associate Professor Plano Clark

Physics is concerned with basic questions about the structure and behavior of the physical universe: The description and causes of motion, the nature of energy and energy changes in systems, the interactions between particles, the relationship between the macroscopic behavior of a system and its microscopic parts. It is both a foundation for understanding other sciences, such as astronomy, chemistry and biology, and a source of practical knowledge used by the engineering disciplines which promote technological advances.

Physics is often divided into subfields according to the type of system being studied: elementary particle physics, nuclear physics, atomic and molecular physics, and condensed matter physics. However, all of these subfields share common principles understood by all physicists.

Three groups of students are served by the Physics program: students needing a science course for the Doane Plan, science and preprofessional students in disciplines other than physics, and students majoring in physics. There are common goals for all of these students, although the level of achievement will differ between the groups. The common goals are to:

- Develop a student's ability to make observations about the physical world.
- Develop a student's ability to construct and test hypotheses about these observations.
- Give students experience in quantitative problem solving in a physical context.

- Help students become familiar with the fundamental laws of behavior for our universe as understood by contemporary science.

### **Requirements for the Physics Major:**

Complete 1 or 2.

1. Students not seeking secondary education certification in physics must complete the following:
  - a. A minimum of 39 credits in physics with a cumulative grade point average of 2.00 or above.
  - b. Physics 107, 201, 202.
  - c. Physics 225 within two semesters of completing item “b” above.
  - d. Physics 301 (or 324), 302, 306, 314, 435 (or 4 credits of 47).
  - e. Four additional credits in physics at the 300-400 level.
  - f. The senior project sequence: 395, 495, 496.
  - g. Cognates Chemistry 125, Information Science and Technology 145, Mathematics 235, 236, 237, 238, 329.
2. Students seeking secondary education certification in physics must complete the following:
  - a. A minimum of 28 credits in physics with a cumulative grade point average of 2.80 or above.
  - b. Physics 107, 201, 202.
  - c. Physics 225 within two semesters of completing “b” above.
  - d. Physics 301 (or 324), 302, 303, 314.
  - e. Cognates Astronomy 103, 103L (or Geology 103), Biology 101, Chemistry 15, Information Science and Technology 145, Mathematics 235, 236, 237, 238, Natural Science 322, 324, 326, 327.
  - f. One additional teaching major or subject endorsement.
  - g. All requirements listed under the catalog section Secondary Education.

### **Requirements for the Physics Minor:**

1. Complete a minimum of 20 credits in physics as follows:
  - a. Physics 107, 108 (or 201, 202).
  - b. A minimum of at least 12 additional credits in physics at the 300-400 level.
2. Complete the cognates Mathematics 235, 236.

### **Requirements for the Physics Subject Endorsement:**

1. A minimum of 24 credits in physics.
2. Physics 107, 201, 202.
3. Physics 314.
4. At least eight additional credits in physics at the 300 or 400 level.

5. Cognates Biology 101; Chemistry 125; Geology 101 (or 103; or Astronomy 103 and 103L); Natural Science 322, 324, 326, 327.
6. A teaching major.
7. All requirements listed under the category section Secondary Education.

### 107-108 Introductory Physics (4) (4)

A course designed to meet the needs of the preprofessional student and the science major as well as providing an introduction to physics for all students. Topics covered include mechanics, optics, thermodynamics, sound, electricity and magnetism, electronics, and selected areas of modern physics. Lecture and laboratory. *Prerequisite: Mathematics 107 or 108 (or equivalent).*

### 201-202 General Physics (4) (4)

A calculus-based introduction to physics. Topics include mechanics, optics, thermodynamics, sound electricity and magnetism, electronics, and selected areas of modern physics. Lecture and laboratory. *Prerequisite: Physics 107 or permission; Mathematics 235, 236 (may be taken concurrently). Physics 201 offered spring; Physics 202 offered fall.*

### 205 Calculus Topics in General Physics (2)

A course surveying calculus-related topics selected from the areas of mechanics, wave phenomena, thermodynamics, electricity, and magnetism and optics. An introduction to numerical techniques for the solution of problems will also be given. *Prerequisites: Physics 107, Math 235. May be taken concurrently with Physics 108 and Math 236. Offered spring term.*

### 225 Sophomore Exam (0)

A departmentally administered examination covering topics from the entire introductory physics sequence: Physics 107, 108, 205. The examination provides an opportunity for students to review and integrate the knowledge gained in the introductory sequence. It demonstrates long-term mastery of topics. **Generally taken fall semester of the sophomore year. Physics majors must pass the exam with a minimum score of 50% (the examination may be repeated).** *Prerequisite: Physics 107, 108, 205. (Pass/Fail)*

### 290, 390, 490 Directed Study (1-3) (1-3) (1-3)

An opportunity for supervised, independent stud of a particular topic based on the interest of the student and the availability and approval of the faculty.

### 301 Analog Electronics (4)

A study of AC and DC circuits and solid state devices. Elements of network analysis appropriate for AC and DC circuits is introduced. Basic building blocks of modern circuits is studied including diodes,

transistors, operational amplifiers, and other integrate circuits. Topics are developed through extensive laboratory experience. *Prerequisite: Physics 107, 108 (or 201, 202). Offered alternate years.*

### 302 Electricity and Magnetism (4)

A study of the interaction of charged particles with electric and magnetic fields. The topics which are studied include fields due to stationary charges or steady currents, basic dielectric properties of materials, the vector potential, Faraday's law, the motion of charged particles in fields, basic magnetic properties of materials, Maxwell's equations, and an introduction to electromagnetic waves. Completing the course allows the student to describe important definitions and relationships for each topic studied, describe the experimental observations that suggest or support the descriptions, make predictions using classical electromagnetic theory in each of the areas studied, and use analytical and numerical techniques to aid in the solution of problems posed by electromagnetic theory. *Prerequisite: Physics 107, 108 (or 201, 202); Mathematics 235, 236, 237, 238, or permission. Offered alternate years.*

### 306 Mechanics (4)

A study of the classical mechanics of a particle, systems of particles, and rigid bodies. The course includes study of particle dynamics, central force problems, Lagrangian and Hamiltonian formulations of mechanics, and the description of rigid body motion. Experimental work in selected areas is performed. Completing the course allows the student to describe important definitions and relationships in each area studied, discuss the importance of classical mechanics to contemporary physics and engineering, work problems in each of the areas studied, and design and carry out experiments testing descriptions and relationships in selected areas. *Prerequisite: Physics 107, 108 (or 201, 202); Mathematics 235, 236, 237, 238, or permission. Offered alternate years.*

### 308 Heat and Thermodynamics (4)

A study of temperature, heat and work, the laws of thermodynamics, entropy, the Carnot cycle, and introduction to statistical mechanics. Experimental work in selected areas is performed. Completing the course allows the student to describe important definitions and relationships for each of the topics covered, discuss experimental evidence for each relationship or law, design and carry out experiments in selected areas, and do calculations involving theoretical relationships studied. *Prerequisite: 107, 108 (04 201, 202); Mathematics 235, 236, 237, 238, or permission. Offered alternate years.*

### 312 Optics (4)

A survey of geometric and physical optics. The course includes study of the nature of light, production and measurement of light, lenses, mirrors, lens systems, aberration theory, interference phenomena, optical interferometry, and diffraction phenomena. Experimental work in selected areas is performed. Completing the course allows the

student to design simple optical systems, recognize limitations due to aberrations, analyze a variety of interference and diffraction phenomena using appropriate analytical and numerical techniques, and design and perform experiments in selected areas. *Prerequisite: Physics 107, 108 (or 201,202); Mathematics 235, 236, 237, 238, or permission. Offered alternate years.*

#### 314 Modern Physics (4)

An introduction to fundamental principles of physics used in describing molecules, atoms and nuclei. The course includes study of special relativity, introductory quantum mechanics, and applications of these theories. Experimental work in selected areas is performed. Completing the course allows the student to describe important definitions and relationships in each of the areas studied, understand historically important experiments which suggested each of the major theories, and perform calculations which apply the major theories discussed. *Prerequisite: Physics 107, 108 (or 201, 202); Mathematics 235, 236. Offered alternate years.*

#### 318 Statics (4)

Statics is a study of forces and movements of forces on rigid bodies in equilibrium, and is a fundamental course for all engineering students. The course includes a detailed examination of the forces and movements acting on various structures from both an experimental and theoretical standpoint. Computer-modeling packages will be used to provide students with a working knowledge of important tools for problem solving and drafting software to help visualize the projects. Both analytical and numerical solutions will be developed and used to enhance the students' problem-solving skills. Upon successful completion of the course, students will have produced a free-body diagram of an object, analyzed free-body diagrams and solved force problems using vector algebra, determined the loads (forces) on elements of a structure (e.g., a bridge) and how those loads are transmitted to other elements of the structure, demonstrated facility in numerical problem solving, and demonstrated the ability to gather and analyze data in selected areas of the topics covered. *Prerequisite: Physics 107 or 201. Offered alternate fall terms.*

#### 324 Digital Electronics (4)

An introduction to digital logic devices, microcontrollers (programming and operation), analog-to-digital and digital-to-analog converters, and basic input/output methods. Emphasis is given to controlling a process using these devices. Completing the course allows the student to identify and develop digital solutions to selected real work data acquisition and control problems. *Prerequisite: Physics 107, 108. (Cross-referenced with Information Science and Technology 324.) Offered alternate fall terms.*

**395 Physics Research 1 (1)**

All physics majors complete a research project that encourages them to integrate knowledge from previous coursework. The chosen project is designed to promote understanding of basic research methods by their application. In this course, students become familiar with possible areas of research in the department, practice methods of doing a literature review, and learn about the expectations for the senior project. Students will choose a research topic, write a research proposal, and complete a literature search. Upon completion of this course, students will be able to discuss the steps required to plan a research project, will have produced a literature search summarized in a bibliography, and will have written a research proposal. *Prerequisite: Physics Major and junior standing. Offered spring term.*

**421 Physics Internship (0-12)**

On-the-job experience in physics. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**435 Mathematical Methods for Physics (4)**

A course designed to integrate mathematics into a coherent foundation for problem solving for upper-level physics and engineering course. Topics include Laplace and Fourier transformations, Fourier series, vector operators, ordinary and partial differential equations, and orthogonal functions. Emphasis is given to the solution (analytical and numerical) of problems from both physics and engineering. Completion of the course allows the student to define important aspects of each mathematical topic, to describe the relevance of each topic to physics and engineering problems, and to work both formal and physics/engineering problems involving each topic. *Prerequisite: Physics 107, 108; Mathematics 235, 236, 237, 238. (Cross-referenced with Mathematics 435.)*

**495 Physics Research II (1)**

This course is a continuation of physics 395. Students perform the required experimental and/or theoretical research for their senior project. Upon completion of this course, students will have produced an organized record of the required experimental and/or theoretical research for their senior project. *Prerequisite: Physics 395. Offered fall term.*

**496 Senior Seminar (1)**

This course completes the three semester sequence for developing, conducting, and reporting the senior project. In this capstone course, students write the senior thesis and create an oral presentation about the research project. Students are encouraged to present the research at an off-campus meeting. Upon completion of this course, students will have gained experience in producing a scientific paper and presenting their research in a public forum. *Prerequisite: Physics 495.*

## Political Science (PSI)

### Assistant Professor Hill

Political science studies the use of authority and influence within legal, political, human and governmental contexts. It is designed to 1) prepare students to become effective citizens who contribute to and participate in democratic processes, 2) provide the knowledge and develop the intellectual skills which allow students to successfully enter and complete law school and graduate school, and 3) provide the knowledge and develop the talents of students for future leadership roles. Political science graduates generally pursue careers in law, government, politics, management, teaching and leadership positions.

### Requirements for the Political Science Major:

Complete 1 or 2.

1. Students not seeking certification for public school teaching of political science must complete the following:
  - a. A total of 30 credits in political science including Political Science 101, 105, 496 and either Political Science 214 or 337.
  - b. A maximum of three political science internship credits under Political Science 421 and three internship credits under Political Science 425 may be counted toward the major in political science.
  - c. Political Science 426 may not be counted toward the major in political science.
2. Students seeking certification for public school teaching in political science must complete the following:
  - a. A total of 30 credits in political science including Political Science 101, 105, 496 and either Political Science 214 or Political Science 337.
  - b. A maximum of three political science internship credits under Political Science 421 and three internship credits under Political Science 425 may be counted toward the major in political science.
  - c. Political Science 426 may not be counted toward the major in political science.
  - d. One additional teaching major.
  - e. Cognates: a total of six or more credits chosen from one or more of the areas of history, economics, sociology, and psychology.
  - f. Social Science 322, 323, 324, 325.
  - g. All requirements listed under the catalog section Secondary Education.

**Requirements for the Political Science Minor:**

Complete 18 credits in political science, including Political Science 101, 105 and either Political Science 214 or Political Science 337. Political science internship credit may not be counted toward the minor.

**101 American Politics (3)**

An analysis of American political institutions and behavior.

**105 World Politics (3)**

An examination of political systems beyond American borders. Topics include a comparison of various political systems and may also include elementary international relations and/or American foreign policy. Upon completion, students will demonstrate an understanding of the alternatives that exist to American democracy and the advantages and disadvantages of alternate systems.

**213 Political Attitudes and Behavior (3)**

A study of public opinion, political participation, voting behavior, candidate selection, political party organization, media coverage of politics, and campaigns. Upon completion, students will demonstrate an understanding of the attitudes and behaviors of the American electorate and the basics of public opinion polling. *Offered alternate fall terms.*

**234 International Politics (3)**

The dynamics of the international state system with emphasis on the problem of war and the maintenance of peace. Includes the role of international law, nationalism, balance of power, dominance of power, and international organization. *Offered alternate years.*

**234 Legislative and Executive Behavior (3)**

Policy-making processes and behavior at the national and state levels. Includes the presidency, Congress, and bureaucratic politics. *Offered alternate years.*

**243 Contemporary Political Issues (3)**

A course in policy analysis. Includes selected policy issues facing government. *Offered alternate years.*

**290, 390, 490 Directed Study (1-3) (1-3) (1-3)**

An opportunity for supervised, independent study of a particular topic based on the interest of the student and the availability and approval of the faculty.

**306 U.S. Interwar Years (3)**

Provides an in-depth examination of political, social and cultural history, from the 1920s to the early 1940s. Students who successfully complete this course will demonstrate knowledge of the background to the economic collapse of the Great Depression, the rise of Franklin D. Roosevelt's "New Deal," and the beginnings of the Second World War. Students also will gain a deeper understanding of U.S. diversity, from region to race, from rural to urban, and from liberal to conservative

strains of political thought. (*Cross-referenced with History 306.*) *Offered alternative fall terms.*

**308 Public Finance (3)**

Introduces the basic concepts used to describe and measure government decision-making as it pertains to economics. This course examines the effects of fiscal policy on its resources, incomes, prices, and employment. Students successfully completing this course will be able to: 1) understand the characteristics, functions and interactions of public and private institutions; 2) explain fundamental economic theory and terminology as it relates to public finance; 3) apply economic theory to current policy problems; and 4) analyze and apply economic data to the study of a public policy problem. *Prerequisite: Economics 203. (Cross-referenced with Economics 308.) Offered alternate spring terms.*

**313 Political Parties and Interest Groups (3)**

A study of how political parties and interest groups link citizens to government. Upon completion, students will demonstrate an understanding of the mechanics of parties and interest groups and the role each has in a democratic society. *Offered alternate fall terms.*

**323 State and Local Politics (3)**

An analysis of political processes and behavior in state, metropolitan, and local governments. *Offered alternate years.*

**328 Constitutional Law (3)**

A study of the constitution through an analysis of Supreme Court decisions. Includes distribution of powers, the commerce clause, intergovernmental relations, state powers, and substantive due process. *Offered alternate years.*

**329 The U.S. Revolutionary Era (3)**

An examination of the U.S. colonial revolution and early national period. Students who successfully complete this course will demonstrate knowledge of the social, cultural and political history of Great Britain's North American colonies on the eve of the Revolution; the military course of the Revolutionary War; the formation of the U.S. Constitution; and selected topics in early national politics and culture. Students will also gain a deeper understanding of social diversity, from Native Americans, African-Americans, women and the common soldier to well-known leaders such as Benjamin Franklin, Thomas Jefferson, Alexander Hamilton, and George Washington. *Cross-referenced with History 329. Offered alternate spring terms.*

**332 Current Legal Issues (3)**

An analysis of recent Supreme Court decisions on the subject of constitutional rights and liberties. Includes litigation under the selected amendments to the constitution. *Offered alternate years.*

**337 Political Thought (3)**

Analysis of the most prominent political writers from Plato to the

present. Compares the ideas of those men with recent studies of political behavior. *Offered alternate years.*

**338 Modern Russia (3)**

Russia from 1855 and the Great Reforms of Tsar Alexander II through the Bolshevik Revolution, the Stalin period, the decline and fall of the USSR, and the troubled emergence of the “New Russia” and the other post-Soviet successor states. As a result of this course, students will gain an understanding of Western and non-Western heritages in terms of their origins, development, values, and distinctive qualities. Students will also gain an understanding of the nature of social, political, economic, and psychological forces and how they affect us. *(Cross-referenced with History 338.)*

**342 The United States and the Middle East (3)**

A focus on the history of the Islamic Middle East and the relationship between the United States and the broader Middle East from the 18th century to the present, through an examination of selected countries, including Egypt, Iran, Iraq, Israel and Palestine. Students who successfully complete the course will demonstrate knowledge of the rise of Islam in the Arabian Peninsula; the history of the Ottoman Empire and the mandate system; U.S. foreign policy in the Middle East; the Gulf Wars; and the Middle East and the media. Students also will gain a deeper understanding of the development and values of Western and non-Western cultures and the interrelations between people, systems, and social forces. *(Cross-referenced with History 342.) Offered alternate spring terms.*

**353 Modern World History (3)**

An examination of modern political and social developments in six societies (Russia, China, India, Brazil, South Africa, and Japan). Change in these societies will be studied against the background of 20<sup>th</sup>-century global change in Europe, Africa, the United States, Latin America, and the Asia. As a result of this course, students will gain an understanding of Western and non-Western heritages in terms of their origins, development, values, and distinctive qualities. Students will also gain an understanding of the nature of social, political, economic, and psychological forces and how they affect us. *(Cross-referenced with History 353.) Offered alternate spring terms.*

**421 Governmental Internship (0-12)**

An internship in a governmental agency designed to provide experience with public management skills. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**425 Encountering Washington: Internship (9)**

An individualized internship experience in our nation’s capital organized through the Washington Internship Institute. Students will live in Washington, working for their employers 32 hours a week. Students will gain hands-on experience in a real-world setting, while doing substantive

work in a field that interests them. Upon completion, students will demonstrate an understanding of their field, generally (but not necessarily) including a political context. *Prerequisites: Acceptance into Encountering Washington program, as determined by the program's director at Doane and the faculty of WII. Co-requisite: Enrollment in Political Science 426 and 427.*

**426 Encountering Washington: Experiential Learning Seminar (3)**

A seminar designed to get students to think critically about their Washington internships, the organizations at which they are placed, and their jobs within those organizations. All students participating in the Encountering Washington program are required to take this seminar. Seminar will be taught by faculty at the Washington Internship Institute, by contract with Doane College. Upon completion, students will demonstrate an understanding of experimental learning theory and the relationship between their specific internship and their daily lives. *Prerequisite: Acceptance into Encountering Washington program, as determined by the program's director at Doane and the faculty of WII. Co-requisite: Enrollment in Political Science 425 and 427.*

**427 Encountering Washington: Policy Seminar (3)**

Students have a choice of policy-related classes to take while in Washington, though specific choices vary depending on the current offerings at the Washington Internship Institute. Recent course offerings have included Modern American Society, Inside Washington, and Foreign Policy. All seminars incorporate discovery of the city as much as possible into the curriculum. Upon completion, students will demonstrate an understanding of the substance of the material in their particular course. *Prerequisites: Acceptance into Encountering Washington program, as determined by the program's director at Doane and the faculty of WII. Co-requisite: Enrollment in Political Science 425 and 426.*

**496 Seminar (3)**

A major research project in political science culminating in the presentation of a research paper. *Prerequisite: Senior major in political science.*

## **Psychology (PSY)**

**Professor R. Peters**

**Assistant Professor Lambert**

**Assistant Professor Pauwels**

The psychology major consists of a wide range of theoretical and applied courses that are beneficial for students who are interested in obtaining a broad understanding of human behavior. Through two emphases, general psychology and mental health, the major prepares students for careers in a variety of human service settings. Both the general and mental health

emphases consist of courses which give students a strong background in the discipline. In addition, the mental health emphasis includes a course which introduces students to the field of counseling. The mental health emphasis also requires students to participate in internships, which involve working in applied settings in the human service field.

### **Requirements for the Psychology Major:**

Complete 1 or 2.

1. General Psychology major:
  - a. Thirty-five credits in psychology, including Psychology 117, 245, 252, 255 (or 256), 314 (or 342), 336, 365, 416, 445 and 496.
  - b. Cognate Social Science 217.
2. Psychology major with a Mental Health emphasis:
  - a. Thirty-five credits in psychology, including Psychology 117, 234, 245, 252, 255 (or 256), 336 (or 365), 305 (or 416), 355, 396, 496, and six credits of Psychology 421.
  - b. Cognate Social Science 217.
  - c. A maximum of eight internship credits may be counted toward the major with the approval of faculty in the discipline.

### **Requirements for the Psychology Minor:**

Complete a minimum of 18 credits in Psychology, including Psychology 117, 255 (or 256), and 336 (or 365). Students choosing a minor in psychology should consult with the psychology faculty to select appropriate courses.

#### **117 Introduction to Psychology (3)**

An introduction to the systematic study of individual people and what they do. Fundamentals of behavior, learning, conditioning, growth, cognitive processes, perception, emotion, personality, and psychopathology are among the issues studied.

#### **219 Addiction (3)**

A basic survey of chemical and non-chemical addictions. Upon completion of the course, students are knowledgeable with regard to the various types of addictions, theories of causation, and methods of prevention and control. *Prerequisite: Psychology 117 or permission.*

#### **225 Introduction to Human Services (3)**

A course designed to enable the student to utilize a framework to understand the dynamic interaction of society, institutions, social welfare programs and the social work profession in the process of human need fulfillment. Specific topics covered include social work philosophy, values, skills areas of practice, careers and history. *Prerequisite: Sociology 109 or Psychology 117. (Cross-referenced with Sociology 225.) Offered alternate years.*

**234 Introduction to Counseling Theories and Techniques (3)**

A course primarily for individuals who plan to use listening and attending skills in helping professions, such as mental health counseling, human services, criminal justice, teaching, and health fields. This course is introductory in nature and includes consideration of theoretical approaches and in-class practice of skills used in counseling. *Prerequisite: Psychology 117, declared major or minor in education or psychology or declared major in sociology with criminal justice emphasis, or permission.*

**245 Career Planning for Psychology Majors (1)**

A course for psychology majors and prospective majors. As a result of the course, students will increase their awareness of their own career-related interests, values, and skills. They will increase their knowledge about a variety of career possibilities for psychology majors, including information about how to prepare for entrance into these career fields. Finally, students will increase confidence in their abilities to make appropriate career decisions.

**252 Psychological Research (4)**

An introduction to research methodology, with an emphasis on the experimental approach. Students who successfully complete this course will be able to explain how studies are designed through the manipulation of independent variables, measurement of dependent variables, and control of extraneous variables. In addition, the class as a whole will design and conduct an original study during the course of the semester. *Prerequisite: Psychology 117 and Social Science 217. Offered spring term.*

**255 Child and Adolescent Development (3)**

A study of human development from the prenatal period through adolescence. Cognitive, emotional, and social development are considered. *Prerequisite: Psychology 117 or Education 211, or permission.*

**256 Adult Development (3)**

A study of human development from young adulthood through old age. Cognitive, emotional and social development are considered. *Prerequisite: Psychology 117 or Education 211, or permission. Offered alternate fall terms.*

**271, 371, 471 Selected Topics (1-3) (1-3) (1-3)**

An investigation of topics not offered in other courses, selected by the instructor on the basis of student interest. *Prerequisites: for 271, one course in psychology; for 371, two courses in psychology; for 471, three courses in psychology.*

**298, 398, 498 Honors in Psychology (1-3) (1-3) (1-3)**

Students who have demonstrated outstanding academic performance in the discipline are offered opportunities for enrichment, such as: reading projects, teaching and tutorial assistance in courses, research and writing. **Students may complete two courses at each level.**

**305 Principles of Behavior Modification (3)**

A study of basic principles and theories underlying behavior modification as well as the use of behavior modification in applied settings. Special attention is given to ethical issues and common misconceptions associated with the area. *Prerequisite: Psychology 117.*

**310 Human Sexuality (3)**

A study of biological, psychological, social, cultural and ethical aspects of human sexuality. *Prerequisite: Psychology 117 or permission.*

**314 Physiological Psychology (3)**

The study of the neurological and hormonal bases of human behavior. *Prerequisite: Psychology 117. Offered alternate fall terms.*

**336 Social Psychology (3)**

Studies in the relationships between individual and social spheres with attention to such issues as conformity, persuasion, self-justification, aggression, prejudice, and attention. *Prerequisite: Psychology 117 (or Sociology 109), and sophomore standing. (Cross-referenced with Sociology 336.)*

**342 Psychology of Learning and Memory (3)**

An overview of basic concepts, theoretical issues, and research findings involving the psychology of learning and memory. Areas of study include classical and operant conditioning, cognitive learning, memory, and thinking. Certain information processing models are also examined. *Prerequisite: Psychology 117. Offered alternate fall terms.*

**355 Applied Psychology and Sociology (1)**

An integrative proseminar with special attention given to the relationship between theory and practice. Readings, discussion, and written assignments are used to develop an understanding of a field agency in which students are completing an internship. Students will enroll concurrently in Psychology 421 Psychology Internship, or Sociology 421 Sociology Internship, for three credits. Students who complete this course will be able to articulate ways in which psychological and sociological theories apply in field settings. *Prerequisite: Psychology 117 or Sociology 109, Psychology 234, one additional course in psychology or sociology, or permission. Co-requisite: Psychology 421 or Sociology 421. (Cross-referenced with Sociology 355.) Offered spring term.*

**365 Psychology of Personality (3)**

A study of human individuality from various theoretical and empirical orientations. *Prerequisite: Psychology 117 and sophomore standing, or permission.*

**396 Pre-seminar (1)**

Students will begin working on their senior research project under the supervision of the instructor. Upon completion of the course, students will have conducted a literature review on a topic of their choice and will have identified possible hypotheses to be tested in their research. The study will be completed the following semester in Psychology 496

Seminar: Issues in Psychology. *Prerequisite: Psychology 252. Offered spring term.*

**416 Abnormal Psychology (3)**

Inquiry into abnormal behavior, its categories, causes, and treatments. *Prerequisite: Two courses in psychology and junior standings, or permission.*

**421 Psychology Internship (0-12)**

On-the-job experience in human services. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**445 History of Psychology (3)**

Study of historical events, dominant figures, and systems of thought in modern psychology. *Prerequisite: Three courses in psychology or permission. Offered alternate fall terms.*

**496 Seminar: Issues in Psychology (3)**

An in-depth investigation of a psychological phenomenon. Students who successfully complete this course will be able to design and conduct studies dealing with human behavior, as well as write up the results of their research in a manner consistent with the American Psychological Association Publication Manual. *Prerequisite: Psychology 252 and 396.*

## **Public Administration (PAD)**

### **Assistant Professor Hill**

The public administration major is designed to prepare students for personnel and management positions in public agencies.

### **Requirements for the Public Administration Major:**

1. Complete the following five courses: Business 212, 242; Economics 203; Political Science 101, 234.
2. Complete Public Administration 493.
3. Complete five courses chosen from the following: Business 215 (or Social Science 217), 312, 315, 341, 410, 418; Economics 204.
4. Complete a field examination during the senior year.

**421 Public Administration Internship (0-12)**

On-the-job experience in public administration. *Prerequisite: Cooperative Education 205 or permission. (Pass/Fail)*

**493 Public Administration Seminar (4-12)**

A seminar for people who desire administrative careers in government. Students are placed in federal, state, or local agencies to work on specific research and administrative tasks. The course also involves periodic seminar meetings to discuss work experiences, present papers, and develop a term project. *Prerequisite: Senior public administration major or permission.*