public sector. Requires the student's development of his/her own management perspective as applied to case studies from governments internationally. *Spring*

PLSC425 S Alt ? (3
(merges PLSC304, PLSC306)
The Policy-Making Process
An investigation of the activities essential to public policy formulation and administration as well as the variables affecting the process. *Fall*

PLSC470 Alt ? (3)
(merges PLSC476, 487)
Political Thought
A study of the great political ideas from antiquity to modern times including such thinkers as Plato, Aristotle, Jesus, Cicero, Augustine, Aquinas, Machiavelli, Calvin, Hobbes, Locke, Rousseau, and Havel. Examines concepts such as the nature of justice, purpose of politics, best form of government, natural rights, class struggle, and civic obligation. May be applied to the history major. *Fall*

PLSC488 Alt ? (3)
International Relations
A systematic analysis of select nation-states in the modern era, with particular consideration given to the geographic, cultural, religious, social, and economic factors that contribute to shaping each nation's politics. *Spring*

PLSC495 (1-3)
Independent Study/Readings/Research
Individually directed study, readings, or research under the guidance of the instructor. Repeatable in a different area for up to 4 credits. Limited to students with majors in political economy or social studies or a minor in Political Science. Registration by permission of instructor. *Fall, Spring*

PLSC590 (1)
Independent Readings
Individual readings in a specified area under the guidance of an instructor. Repeatable to 3 credits. *Fall, Spring*

PHILOSOPHY

PHIL224 (3)
(was GCAS224)
Introduction to Philosophy
A study of the efforts of philosophy to provide answers to major human problems.

PHIL320 (1-3)
(was GCAS320)
Critical Thinking
Designed to encourage independent thinking and to teach skills (including formal and informal logic) necessary for problem solving as well as understanding and evaluating the ideas and claims of others.

INTER-DISCIPLINARY STUDIES

Academic Programs	Credits
BS: Environmental Sciences	
MA: Interdisciplinary Studies	
Communication	37-45
MS: Interdisciplinary Studies	
Mathematics and Physical Sciences	32-40

An increasing number of careers demand that students have integrated, advanced skills and expertise in more than one field of study. Careers in education, leadership, management, and religion require a holistic grasp on philosophical, ethical, and pedagogical interrelationships. The interdisciplinary programs provide a framework where faculty and students can engage in scholarly pursuits which require such interrelationships.

Undergraduate Programs

BS: Environmental Sciences

(616) 471-3240
FAX: (616) 471-6911
woody@andrews.edu

Faculty
Dennis W. Woodland, Biology, *Coordinator*
A. Josef Greig, Philosophy and Religion
James L. Hayward, Biology
Gary G. Land, History
Duane C. McBride, Sociology
G. William Mutch, Chemistry
Timothy G. Standish, Biology
David A. Steen, Biology
Kristopher P. Zygowiec, Geography

The discipline of environmental science deals with the relationships between humans and natural systems. This degree develops an understanding of the relationship between humans and natural systems, expertise in problem solving and communication skills, environmental management skills, testing and planning abilities, and a strong foundation for advanced study in various professional and basic research fields. It promotes "hands on" as well as basic and theoretical training.

Requirements in seven areas:
Physical/Natural Sciences and Math: BIOL165, 166, 208, 348; CHEM131, 132, 231, 232, 241, 242, 340; IDSC401, 402; MATH165, 182.
Religion: RELT100, RELB210, RELT348, RELP400.
Language/Communication: ENGL115, 215, 306; COMM104.
Arts/Humanities: HIST117, 118; IDSC211, 340; PLSC100, 425.
Computer Tools: INFS110 (or pass of competency test)
Social Sciences: ANTH124, ARTH220 or ENGL255; BHSC100, 235; SOCI470; ECON225 or 226.
PE/Wellness: HLED130; Two activity courses.

An internship is required, lasting a minimum of 3 months. Students are encouraged to select other electives with the help of their adviser according to their career interests.

Graduate Programs

The College of Arts and Sciences (in cooperation with other schools) offers graduate programs leading to the Master of Arts: Interdisciplinary Studies (Communication), and Master of Science: Interdisciplinary Studies (Mathematics and Physical Sciences).

ENROLLMENT AND GRADUATION PROCEDURES FOR MASTER OF ARTS/SCIENCE IN INTERDISCIPLINARY STUDIES

Students planning to enroll in the Master of Arts or Master of Science: Interdisciplinary Studies program should note the following procedures:

1. At the time of application for admission, Master of Arts: Interdisciplinary Studies (Communication) students must submit a statement of objectives for seeking the degree and a proposal as to how disciplines will be integrated to meet the student's goals. Master of Science (Mathematics and Physical Science) students must specify the two areas of emphasis proposed.
2. A supervising committee (chair and two graduate faculty members representing appropriate disciplines) is appointed by the area coordinator in consultation with the Graduate Program Coordinator to advise the student in developing his/her program. This committee also supervises the student's program and guides his/her research.
3. The committee and the student develop a plan of study. Deficiencies, prerequisites, and research and/or language tools are considered as well as transfer credits, residency, comprehensives, and a culminating project. All course work and procedures are to be consistent with the student's defined and approved purpose and the general requirements for the MA or MS as defined in this bulletin.
4. The plan of study must be submitted to the Graduate Program Coordinator via the area coordinator before registration. Any changes in the plan of study must be approved by the supervising committee, the area coordinator, and the Graduate Program Coordinator.
5. A project must be submitted to a student's committee at least two months prior to graduation. The area coordinator recommends final project approval after the consent of the committee has been obtained.
6. Advancement to degree candidacy is recommended by the area coordinator by means of the usual forms and according to the requirements outlined on p. 38.
7. Graduation Procedures and Degree Conferral**.** See p. 19 for further details.

GENERAL ADMISSION REQUIREMENTS
1. Availability of faculty and facilities, as determined by Area Coordinator, for the intended program.
2. Completion of a baccalaureate degree in one of the areas selected for graduate study.

MA in Interdisciplinary Studies—Communication

Janice Y. Watson, *Area Coordinator*
Nethery Hall, Room 024
(616) 471-3160
commdept@andrews.edu
http://www.andrews.edu/COMM/

The Master of Arts: Interdisciplinary Studies—Communication is designed for students who wish to develop advanced-level communication skills in combination with knowledge or skills in another area or areas.

Some of the areas of study that may be combined with communication in preparation for specific careers are religion, marketing, curriculum and instruction, consumer science, behavioral science, history and political science, health care, English, and the arts.

SPECIFIC ADMISSION REQUIREMENTS
In addition to the admission requirements outlined for the Master of Arts on p. 34 and general interdisciplinary requirements noted above, the following apply:
1. The student must have a minimum of 12 semester credits in communication and adequate prerequisites for the other area or areas of study. Deficiencies must be made up at the beginning of a student's program and such courses are in addition to the regular graduate-degree course work. Students must complete at least 6 undergraduate credits in communication before registering for graduate course work in communication.
2. The student must have sufficient command of the English language to succeed in the proposed program. This requires a minimum *TOEFL* score of 600 average with no section score lower than 60 and a minimum 5.5 score on the *TWE* (Test of Written English) or a minimum *MELAB* average score of 90 with no section lower than 88. No test score may be older than one year.
3. A supervising committee is appointed before students register for their second quarter in the program. This committee determines individual requirements for completion.

MA DEGREE REQUIREMENTS
1. Comply with the standards outlined in the Graduate Degree Academic Information section of the bulletin.
2. Complete a curriculum consisting of a minimum of 35 credits of course work (see below) approved by the supervising committee.
3. Pass a comprehensive examination over the areas selected for the degree.

Communication Core—12
COMM515, 520 or an approved research class, 590, 651, 652
Two projects—4-6
Selected from COMM589, 599, 695. Students consult with their adviser and with their committee to determine what combination of the above is most suited to their degree goals.
Additional Communication Courses—9-12
Selected with the approval of the supervising committee.
Additional Courses in Other Area(s)—12-15
Selected with the approval of the other department(s) and the student's supervising committee.
Total MA degree credits required—37-45

MS in Interdisciplinary Studies—Mathematics and Physical Sciences

Robert E. Kingman, Coordinator
Haughey Hall, Room 212
(616) 471-3431
physics-info@andrews.edu
http://www.andrews.edu/PHYS/

The Master of Science in Interdisciplinary Studies—Mathematics and Physical Sciences is designed for students who wish to acquire a breadth of knowledge which cannot be achieved within any of the disciplines of chemistry, mathematics, or physics. Such a degree may be useful for junior-high or secondary teachers who teach several science subjects, but who do not desire the traditional MAT; for those who wish to develop their skills in the areas of overlap in these disciplines; for those who wish to study the relationships that exist among the disciplines; and for those who wish further preparation for careers in industry or government.

SPECIFIC ADMISSION REQUIREMENTS
Students admitted into the Master of Science: Interdisciplinary Studies—Mathematics and Physical Sciences program must hold a baccalaureate degree with a major in one of the above areas with a cumulative GPA of at least 2.60 (4.00 system) and have earned credit in the following prerequisite basic science courses: CHEM131, 132; CPTR125 (FORTRAN) or CPTR151; MATH141, 142, 286; PHYS241, 242, 271, 272. A student may be admitted with deficiencies in the above courses, but this exception requires the student to take additional credits beyond the minimum 32 credits required.

MS DEGREE REQUIREMENTS
1. Comply with all standards as given in the *Graduate Degree Academic Information* section of the bulletin.
2. Complete a curriculum consisting of 32-40 credits of course work (see below) approved by their supervising committee.
3. Pass a comprehensive examination over the two areas of science (Mathematics, Physics, Chemistry) selected for the degree.

Core Courses—15
MATH405(3), CHEM431, 432 (6) *and* CHEM441, 442 (2) or PHYS411(2.5) *and* PHYS430 (2.5) *and* PHYS481 (3), IDSC526 (2), IDSC698 (1-3) may be repeated up to 6 credits, IDSC575 (1), undergraduate prerequisites* (0-8), and other courses recommended by the student's committee.

**Total MS degree credits required—32-40*

- The student must include at least 12 credits in each of the two disciplines selected for the degree.
- A student must complete a minimum of 16 credits in courses numbered 500 and above.

**Up to 8 credits selected from among the prerequisite basic science courses listed in the specific admission requirements are added to the minimum of 32 credits for the degree.*

Courses

(Credits)

See inside front cover for symbol code.

Details of departmental course offerings and course descriptions may be obtained from the department(s) involved. A list of enrollment and graduation procedures is available at the offices of the area coordinators and the Graduate Program Coordinator for the College of Arts and Sciences.

GENERAL AND INTERDISCIPLINARY STUDIES

IDSC200 **(3)**
Christ in Music and Art
An investigation of religious themes in art and music inspired by the life of Christ. Also discussed are the Christian and the aesthetic experience, as well as principles for understanding and evaluating art and music from the Christian perspective. Not applicable toward a major or minor in Music or Art.

IDSC211 **$ (3)**
Creativity and the Arts
Explores the creative process as it relates to theory and practice and to selected works of literature, music, and the visual arts. Includes approaches to the reading and critical analysis of verbal, visual, and aural texts. Explores the relationship between creativity and Christian values. Emphasis on group projects. Includes a lab.

IDSC237 **(3)**
The Individual, State, and Marketplace
Politics and economics examined through classic and contemporary sources and Christian and ideological perspectives. What is the good life? What is the purpose of politics, and the best form of government? What are the implications for efficiency and equity of economic systems? Should government be responsible for the well-being of the individual and the economy?

IDSC250 **(1)**
Career and Life Planning
Techniques of career and life planning. Topics such as the relationship between religious commitment and career choice, decision-making techniques, and individualized exploration of specific career areas are considered. Helps the student choose a career and develop skills for decision making throughout life.

IDSC280, 380 **(.5-1)**
Cooperative Education in____(subject area)
Supervised work experience with a cooperating industry, agency, or institution. The student is supervised by his/her department. At least 175 hours of work required per credit. Repeatable twice. Graded S/U. Prerequisites: Sophomore standing or above and permission of the department chair. Students must apply and be accepted one semester in advance of their planned cooperative education experiences.

IDSC294, 394 (3-12)
Off-Campus Study in _____
For details, see adviser.

IDSC296 (0)
Student Missionary/Taskforce Experience

IDSC298 (variable)
PLA: (Special Topic)
PLA (Prior Learning Assessment) is a process which validates learning experiences that have occurred outside traditional college/university academic programs. A portfolio of evidence for demonstrating experience and competency justifies and determines the amount of credit granted. Repeatable with different topics.

IDSC310 (3)
Introduction to Western Arts
The stylistic character and cultural climate of the important epochs of Western civilization; the relationship of painting, sculpture, architecture, and music. Discussion periods and lectures illustrated with colored slides, film strips, and recordings.

IDSC321, 322 $ (3,3)
Scientific Inquiry I, II
Concepts from physics, chemistry, and biology organized in a sequence involving lab experimentation in the scientific method. Topics include philosophical issues of origins and cosmology, ethical issues, and the environment. Risk vs. Benefit analysis is used in addressing modern technologies. Prerequisites: MATH165, INSF110 or equivalent.

IDSC340 (3)
Environmental Policy
A survey of historic and current environmental issues, pending and existing legislation on the state and federal level, federal land management offices and their differing missions, and competing and non-competing demands from bio-diversity to water usage. Prerequisites: BIOL208 or consent of the instructor.

IDSC401, 402 (1,1)
Environmental Science Seminar
Discussion and presentations dealing with current or historic topics in environmental science.

IDSC440 (1-4)
Topics: _____
Designed to meet the needs of students with various interests in environmental science. Repeatable in different areas.

IDSC495 (1-3)
Independent Study/Readings
Directed study or readings under the guidance of an instructor. Repeatable. Registration is by permission of the dean in consultation with an instructor.

IDSC498 (variable)
PLA (Special Topic)
PLA (Prior Learning Assessment) is a process which validates learning experiences that have occurred outside traditional college/university academic programs. A portfolio of evidence for demonstrating experience and competency justifies and determines the amount of credit granted. Repeatable with different topics.

IDSC499 (.5)
PLA Portfolio Development
The development of a portfolio of evidence to present for Prior Learning Assessment.

IDSC526 (2)
Christian Faith and the Sciences
Discussion of science and epistemology in the context of Christian faith, scientific model building, the church-science interface, and ethical considerations. An interdisciplinary course recommended for all graduate students in the sciences.

IDSC550 ? (1-3)
Certification Seminar
A web-based seminar providing an orientation to a topic associated with graduate certification, including an introduction to the most important sources, an overview of salient issues and problems, an inventory of baseline competencies, and a survey of professional opportunities.

IDSC575 (1)
Mathematics and Science Seminar
Current research topics in mathematics and physical sciences. Attendance at 12 hours of research presentations, a paper, and a presentation of a current research topic.

IDSC640 (1-3)
Topics: _____

IDSC640 (1-3)
Topics: Professional Seminar
A web-based seminar providing an orientation to the topic making up the certificate concentration, including an introduction to the most important sources of information about the topic; an overview of salient issues and problems related to the topic; an orientation to communities of researchers and professionals working on the topic; an inventory of baseline competencies of persons professing expertise on the topic; and a survey of opportunities for professional involvement
related to the concentration.

IDSC640 (2)
Topics: Ethics in Development
An ethical framework for the understanding of social transformation. Ethical paradigms are explored, as well as historical examples of how development interventions have generated social change. Focus on contemporary approaches to development, revolution and liberation.

IDSC650 (0)
Project Continuation

IDSC660 (0)
Thesis Continuation

IDSC680 (2)
Field Practicum

IDSC680 (2)
Field Practicum
Students integrate interdisciplinary course content and theory into practice during a (300-hour) field practicum coordinated with each student's research project and/or concentration (e.g., Food Security) that is the concluding requirement for the concentration. 260 hours may be done with the student's primary employer, but all students must complete one week (40 hours) in an external organization. Students must submit a practicum proposal indicating approval from a sponsoring organization and learning objectives. Upon completion, the student submits a practicum portfolio. Prerequisite: 2 courses in concentration.

IDSC689 (1-3)
Seminar
Projects, reports and discussions on various subjects corresponding to faculty specialization. Repeatable with different subject matter. Needed to accommodate new topics under different concentrations.

IDSC690 (1-3)
Independent Study
Individualized reading or research in a specified area under the guidance of an instructor. Repeatable to 6 credits.

IDSC698 (1-3)
Project

IDSC698-1 (1)
Project I
A project typically carried out by the Master's degree candidates by means of which the student's ability to synthesize and summarize knowledge pertaining to a given empirical domain is demonstrated. A typical end product might be an "agency profile" or a "fact sheet" about a certain process or problem.

IDSC698-2 (2)
Project II
A research project typically carried out by a Master's degree candidate in which the student's mastery of the research process is demonstrated. A typical end product might be a community assessment study, a program evaluation study, a best practice bench marking study, or a problem-solving study. Such projects are normally carried out in lieu of a Master's thesis.

IDSC699 (4)
Master Thesis