Academic Notes

APRIL 29, 2002 **AN 2001-2002**

SPECIAL NOTICES

ACADEMIC NOTES PUBLICATION SCHEDULE FOR SPRING 2002

Below is the circulation schedule for the hard copy of *Academic Notes* through May 6, 2001. An asterisk (*) indicates a curricular issue. **All submissions for inclusion in *Academic Notes* are due in the Office of Academic Affairs no later than 10:00 a.m. on the Wednesday[a] prior to the distribution of *Academic Notes* on the following Monday, *along with an E-Mail or a diskette with the same information in Microsoft Word format. Failure to submit a diskette containing this information will delay publication*.** An electronic version of *Academic Notes* is available using Acrobat Reader via the ISU Web Page at – http://web.indstate/edu/acadnotes/ –.

Deadline for Items	Issue Date
May 1	May 6

**** Please call Tiffany Trass at extension 3662 with any questions pertaining to the submission of information on a diskette or through e-mail.***

ACADEMIC NOTES PUBLICATION SCHEDULE FOR SUMMER 2002

Deadline for Items	Issue Date
May 15*	May 20*
June 5	June 10
June 19*	June 24*
July 10	July 15
July 24*	July 29*
August 7	August 12

FACULTY GOVERNMENT

FACULTY SENATE EXECUTIVE COMMITTEE

The Faculty Senate Executive Committee will meet at 3:15 p.m. on Tuesday, April 30, 2002, in Hulman Memorial Student Union (HMSU), Room 227.

AGENDA

I. Administrative Report
II. Chair Report
III. Fifteen Minute Open Discussion
IV. Approval of the Minutes
V. SAC Recommendations
   a. Financial Aid Fund Deployment
   b. Class Attendance Policy
VI. Summer Meeting Dates
VII. Seating of Alternates
VIII. Old Business
IX. New Business

FACULTY SENATE STANDING COMMITTEES

CURRICULUM AND ACADEMIC AFFAIRS COMMITTEE

The Curriculum and Academic Affairs Committee will meet at 2:00 p.m. on Thursday, May 2, 2002, in Family & Consumer Sciences, Room 110.

UNDERGRADUATE CURRICULUM PROPOSALS

COURSE REVISIONS FOR GENERAL EDUCATION CONSIDERATION

COLLEGE OF ARTS & SCIENCES: English

ENG 219 **Introduction to Creative Writing**—3 hours. A workshop course for beginning writers that provides practice in writing fiction, creative nonfiction, poetry, and drama, with attention to both the creative process in general and particular techniques and models of each genre. *[GE89: C3]*

Change description to:

ENG 219 **Introduction to Creative Writing—3 hours**. A workshop course for beginning writers that provides practice in writing fiction, creative nonfiction, poetry, and drama, with attention to both the creative process in general and particular techniques and models of each genre. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies –*

Literature and Life (see English 239.)]

ENG 231 **Introduction to Fiction—3 hours**. Representative short stories and novels from several historical periods and countries, with emphasis on appreciating and understanding prose fiction. *[GE89: C3]*

Change description to:

ENG 231 **Introduction to Fiction—3 hours**. Representative short stories and novels from several historical periods and countries, with emphasis on appreciating and understanding prose fiction. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 239.)]*

ENG 335 **Science Fiction—3 hours**. Study of science fiction as part of the literary mainstream, as a category of popular literature, and as a vehicle for exploring interrelationships between science and literature, with some attention to contemporary materials. *[GE89: C3]*

Change title and description to:

ENG 335 **Science Fiction as Social Criticism—3 hours**. Study of science fiction as part of the literary mainstream, as a category of popular literature, and as a vehicle for exploring interrelationships between science and literature, with some attention to contemporary materials. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 338)]*

ENG 336 **Popular Literature in Mass Media**—3 hours. Critical analysis of popular forms of literature disseminated through mass media--print, film, television, radio--and interrelations of formal, mass, and oral cultures. *[GE89: C3]*

Change description to:

ENG 336 **Popular Literature in Mass Media**—3 hours. Critical analysis of popular forms of literature disseminated through mass media--print, film, television, radio--and interrelations of formal, mass, and oral cultures. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 338)]*

ENG 341 **Literature of the American West**--3 hours. Critical exploration and analysis of significant literature of the western United States from 1540-present. *[GE89: C2,D1]*

Change description to:

ENG 341 **Literature of the American West**--3 hours. Critical exploration and analysis of significant literature of the western United States from 1540-present. *[GE89: C2,D1; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 338)]*

ENG 349 **Women Writers of the United States**--3 hours. An exploration of fiction, poetry, and prose written by women in the United States. Emphasis on establishing a multicultural tradition of United States women's literature, as well as on studying texts within their particular literary, cultural, and historical contexts. *[GE89: C3]*

Change description to:

ENG 349 **Women Writers of the United States**--3 hours. An exploration of fiction, poetry, and prose written by women in the United States. Emphasis on establishing a multicultural tradition of United States women's literature, as well as on studying texts within their particular literary, cultural, and historical contexts. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 338)]*

ENG 359 **Women Writers of Great Britain**--3 hours. Fiction, poetry, drama, and prose written by women in Great Britain, with emphasis on studying texts within their particular literary, cultural, and historical contexts. *[GE89: C3]*

Change description to:

ENG 359 **Women Writers of Great Britain**--3 hours. Fiction, poetry, drama, and prose written by women in Great Britain, with emphasis on studying texts within their particular literary, cultural, and historical contexts. *[GE89: C3; GE2000: Literary, Artistic, and Philosophical Studies – Literature and Life (see English 338)]*

COURSE REACTIVATIONS

SCHOOL OF EDUCATION: Communication Disorders and Special Education

SPED 499E **Supervised Teaching – Learning Disabled – 1-9 hours.** Prerequisite: TEP-II.

GRADUATE CURRICULUM PROPOSALS

COURSE REVISIONS

SCHOOL OF EDUCATION: Curriculum, Instruction, & Media Technology

CIMT 660 **Secondary School Curriculum--3 hours**. An introductory course in curriculum which includes the foundations and meaning of curriculum, principles and patterns of curriculum, forms and ways of organizing curriculum, development of curriculum for special groups, forces and processes in curriculum change, current criticisms of curriculum, and curriculum for the future school.

Change title and description to:

CIMT 660 **Curriculum Fundamentals--3 hours**. An introductory course in curriculum which includes the foundations and meaning of curriculum, principles and patterns of curriculum, forms and ways of organizing curriculum, development of curriculum for special groups, forces and processes in curriculum change, and current criticisms of curriculum.

SCHOOL OF TECHNOLOGY: Manufacturing and Construction Technology

MCT 699 **Master Thesis – 6 hours.** By arrangement with chairperson of student's thesis

committee.

Change credit hours to:

MCT 699 **Master Thesis – 1-6 hours.** By arrangement with chairperson of student's thesis committee.

GRADUATE PROGRAM REVISIONS

COLLEGE OF ARTS & SCIENCES: Life Sciences
M.S. Life Sciences, M.S. Science Education, M.S. Ph.D. Life Sciences

Executive Summary:

We propose to merge the M.S. in Science Education with other graduate degree programs in Life Sciences. This follows naturally from the approved merger of the Center for Science Education with the Department of Life Sciences that was approved this year.

Rationale:

The decision to merge the Department of Science Education with the Department of Life Sciences is based upon the recommendation of four consultants brought in by the Dean of the College of Arts & Sciences. This merger makes sense because both departments use cooperative and collaborative resources, and both master's degree programs will have more flexible resources to meet incoming student needs. All programs will report to the same CIP code. This requested change does not create any new funding needs other than new staffing already approved by the Provost. See the attached PAR document for more detailed information.

CURRENT CATALOG COPY

SCIENCE EDUCATION

Dr. Stanley S. Shimer, Acting Chairperson
Department Office: Room 191, Science Building

The Department of Science Education provides graduate students with professional science education courses which are directly related to science teaching at all grade levels. Although the courses offered by the department are oriented toward people interested in the teaching of science, these offerings will help persons interested in careers in commerce, industry, or communication to develop a perspective on and an understanding of the current philosophy of science and science teaching.

Staff members of the department are the academic advisors for graduate students pursuing master's degrees in science education. These curricular patterns enable students to develop a broad, general, interdisciplinary background in science and utilize existing courses and faculties of the various science departments in the University.

FACILITIES AND SERVICES

The Department of Science Education is housed with the other science departments in a modern science building. The department's facilities include a lecture room, a laboratory, a materials center, and several offices. Within these quarters are stored equipment and supplies needed for conventional as well as innovative science learning and science teaching experiences. Photography laboratories, used jointly by the department and the other science departments, are located in the Science Building.

The Cunningham Memorial Library contains an extensive collection of professional science education texts and periodicals. The department maintains its own collection of science textbooks and science curricula.

Approximately 15 miles from the main campus is the University's Field Campus. This site, encompassing 93 acres of reclaimed strip-mined land, is used extensively by the department for environmental education studies. The area is comprised of water (27 acres), grasslands, and large stands of secondary forest growth. Thus, a variety of habitats are available for study. Buildings on this property include a small, well-equipped laboratory in a large storage building, and an efficient pavilion suitable for large-group meetings.

DEGREES

Master of Arts
Master of Science

The master's degree programs in science education are designed to provide to the individual student:

1. a broad understanding of all areas of science;

2. further in-depth training in a specific area of science;

3. an opportunity to become involved in the processes of science;

4. experiences in the pedagogies of those sciences which are directly related to the interests and professional goals of the student;

5. a perspective which enables the student to evaluate the importance of various science topics and select for inclusion in the curriculum only those topics which most efficiently and effectively contribute to his or her educational objectives; and

6. an avenue to complete the course work requirements for the Indiana Professional Instructional License with teaching areas in science. See licensure regulations in the School of Education section of this *Catalog*.

The ultimate goal of these programs is to develop students with a science background and a knowledge of the pedagogies of science so that they may be prepared:

1. for more advanced study in science education, chemistry, geography/geology, life sciences, and/or

physics;

2. for research in the teaching of science and the sciences;

3. for additional work resulting in supervisory and/or administrative positions dealing with the teaching of science; and/or

4. for positions which deal with the applied aspects of science teaching.

ADMISSION TO THE PROGRAM

A student who is interested in enrolling in one of the above degree programs must meet all admission requirements as stated in the general regulations of the School of Graduate Studies. The student must be accepted into a degree program before admission procedures are complete.

A student should contact the Chairperson of the Department before beginning any course work to consider licensure possibilities and to establish a tentative graduate program.

CURRICULA

Master of Arts (for teacher licensure 33 semester hours minimum)
Master of Science (for teacher licensure 32 semester hours minimum)

Research: Candidates for the M.S. degree must complete one research course in the department of the primary science teaching area (1-3 semester hours) and one research course in the teaching of science (1-3 semester hours). Candidates for the M.A. degree must complete 6 hours of 699 in an area approved by the faculty advisor.

Major: A minimum of 18 hours of science credit as approved by the departmental advisor, who will plan each individual program in consultation with the student. Particular attention will be given to teacher licensure requirements, to courses dealing with the teaching of science, and to the strengths and weaknesses in the student's science background.

Professional Education: 3 hours from Curriculum, Instruction, and Media Technology 660 or 662; 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611.

Electives: 0-3 semester hours of directed electives for completion of the required minimum semester hours for M.S. degree.

Culminating Experiences: Candidates for the M.A. degree must complete 699--6 hrs. Students enrolled on the M.S. degree program must perform satisfactorily on a written or oral comprehensive examination in the teaching of science and in one or more science content fields or complete satisfactorily a comprehensive practicum in the teaching and/or administration of school science programs. Graduate faculty representing science education and the appropriate science content field(s) serve as the master's candidates' comprehensive examination committee.

This program is designed for individuals who have completed a teacher preparation program; it does not

lead to an initial teaching license.

In general, one-half of the course work in this program must be in courses numbered 600 or above.

COURSES (SCED)

524 Special Problems in the Preparation and Utilization of Film and Tape Media--1-3 hours. Media experiences designed using the background, needs, and interests of the students as points of departure. Opportunities to experience sophisticated techniques will be provided. Prerequisite: 423 or Physics 423 or consent of instructor.

560 The Science Curriculum (K-12)--2-3 hours. The history, the various philosophies, science curricular patterns, curriculum construction, curricular trends, and selected new science curricula. Prior completion of the science methods course recommended.

561 The Supervision of Science (K-12)--2-3 hours. Special emphasis on the supervisory aspects of science teaching. Guidelines relating to science facilities, new curricula, equipment, and supplies are investigated. Prior completion of the science methods course recommended.

595 Environmental Sciences--1-6 hours. Experiences from ecology and the associated sciences which are used to develop the content, background, and activities that teachers could use to present these concepts in a natural laboratory setting.

623 Fundamentals of Light and Its Applications to Photography--1-3 hours. A lecture/laboratory course emphasizing fundamental optical principles of photography such as reflection, absorption, refraction, polarization, color, interference, and photochemical effects.

673 Topics in Science Education--1-6 hours. Topics not usually presented in traditional science education courses. Topic titles, prerequisites, credit, course outline, and content will be arranged by the faculty member(s) involved. A maximum of 6 semester hours may be counted toward the master's degree.

675 Seminar and Readings in Science Education--0-2 hours. A survey of selected current problems and research being conducted in science education. Individual class members are expected to prepare papers and/or participate in discussions of contemporary topics in science and/or science education.

680 Problems and Research in the Teaching of Science--1-3 hours. Selected topics designed for the individual who wishes to carry out special projects in the area of science education.

685 Advanced Methods Seminar in the Teaching of Science--2-3 hours. Experiences in the pedagogies of science instruction for teachers. This course is designed for students who have a special interest in the teaching of science and/or require special instruction pertaining to one or more specific science curriculum projects.

687 Practicum in Advanced Techniques and Media in the Teaching of Science--3 hours. An opportunity to design, prepare, evaluate, and possibly distribute materials which relate to the teaching of science concepts. This course is designed for advanced students specializing in the teaching of science.

688 Practicum in Curriculum Construction in Science--1-3 hours. An opportunity to design, prepare, teach, evaluate, and possibly distribute a curriculum related unit in science. This course is designed for advanced students specializing in the teaching of science.

697 The Teaching of Science in Colleges and Universities--1-3 hours. A wide variety of experiences which would be pertinent for students planning careers in college or university teaching. This course may be taken more than once, but no more than 3 hours of credit may be earned.

699 Master's Thesis in Science Education--6 hours. Registration for this course is dependent on the approval of the student's academic advisor and his/her committee.

NOTE: Courses in the 500 series are open to undergraduate students as *400 series. Graduate students are required to do additional work of a research nature. A course taken at the 400 level may not be repeated at the 500 level.

LIFE SCIENCES

Dr. Charles J. Amlaner, Jr., Chairperson
Department Office: Room 283, Science Building

The Department of Life Sciences offers programs designed for students entering academic, allied health, industrial, and governmental careers. Areas of study include cell and molecular biology, microbiology, biotechnology, organismal and conservation biology, physiology, and plant biology. A wide range of areas of concentration may be selected as indicated by the research interests of the faculty (listed above). Students, by mutual consent, select a major professor to serve as a thesis or dissertation advisor from the graduate faculty. The student and major professor will jointly select the student's committee, subject to approval by the department and the School of Graduate Studies.

Students seeking a professional secondary school teacher certificate in biology will be assigned a life sciences advisor by the Chairperson of the Department.

DEGREES

Master of Science--Life Sciences (non-thesis)
Master of Science--Life Sciences (thesis)
Doctor of Philosophy--Life Sciences (dissertation)

A Master of Science (with or without thesis) degree program in life sciences is available for students seeking to professionalize an Indiana Teacher License.

MASTER'S PROGRAM--LIFE SCIENCES

Admission to the Programs

In addition to the requirements of the School of Graduate Studies for admission, applicants are expected to have completed an undergraduate major in biology or its equivalent, mathematics through calculus or statistics, one year of physics, and chemistry through organic. Applicants with deficiencies may be granted conditional admission. Deficiencies must be removed by taking the appropriate courses or directed study. Prospective students should submit official transcripts, scores on the General Tests of the Graduate Record Examinations, and letters of recommendation. Graduate Record Examinations are strongly recommended but not required for non-thesis program applications.

A number of graduate assistantships, fellowships, and scholarships are available through the Department of Life Sciences. In addition, research assistantships are available from individual faculty research grants. All are awarded on a competitive basis.

Full-time students in life sciences with teaching or research assistantships, fellowships, and scholarships are expected to carry a minimum of eight hours per semester.

REQUIREMENTS

Master of Science with thesis (32 semester hours minimum)

Research: 699--6 hrs.
Major: 640--1 hrs., 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 8 additional hours of Life Sciences course work.
Other Requirements: 6 hours of course work outside the department.
Electives: 8 hours of directed electives.
Culminating Experience: Satisfactory performance on a final oral examination and thesis defense (Life Sciences 699--6 hrs.), conducted by the student's thesis committee selected from the graduate faculty.

At least 16 credit hours must be in courses numbered 600 or above.

Master of Science without thesis (32 semester hours minimum)

Research: 2-4 hours of 692.
Major: 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 11-13 additional hours of Life Sciences course work.
Other Requirements: 6 hours of course work outside the department.
Electives: 8 hours of directed electives.
Culminating Experience: Satisfactory performance on an oral and/or written examination given by an examining committee selected from the graduate faculty.

At least 16 credit hours must be in courses numbered 600 or above.

Master of Science with thesis (For Teacher Licensure--32 semester hours minimum)

Research: 699--6 hrs.
Major: 640--1 hr., 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 8 additional hours of Life Sciences course work.
Other Requirements: Curriculum, Instruction, and Media Technology 660 or 662--3 hrs.; 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; and 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611.
Electives: 5 hours of directed electives.
Culminating Experience: Successful thesis defense (Life Sciences 699--6 hrs.), conducted by the candidate's thesis committee.

This program is designed for individuals who have completed a teacher preparation program; it does not lead to an initial teaching license.

At least 16 credit hours must be in courses numbered 600 or above.

Master of Science without thesis (For Teacher Licensure--32 semester hours minimum)

Research: 2-4 hours of 692.
Major: 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 11-13 additional hours of Life Sciences course work.
Other Requirements: Curriculum, Instruction, and Media Technology 660 or 662--3 hrs.; 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; and 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611.
Electives: 5 hours of directed electives.
Culminating Experience: Satisfactory performance on an oral and/or written examination given by an examining committee selected from the graduate faculty.

This program is designed for individuals who have completed a teacher preparation program; it does not lead to an initial teaching license.

At least 16 credit hours must be in courses numbered 600 or above.

DOCTOR OF PHILOSOPHY PROGRAM

The Department of Life Sciences offers study and research leading to a Ph.D. degree in one of the disciplines listed below.

1. Ecology
2. Microbial and Cellular Biology
3. Physiology

4. Sports Medicine

The completion of the degree qualifies the individual for university teaching, research, or professional work in the respective discipline. Each candidates individual program is based on his knowledge and ability upon entering the program and his/her objective. After completion of coursework, all students must pass a written and oral qualifying examination followed by submission of an acceptable dissertation based on original research. The specific requirements for completion of the degree are listed below.

Admission Procedures and Standards

1. Submit an Indiana State University application for admission to the School of Graduate Studies, together with an official transcript from each school at which any undergraduate or graduate work has been done. Also submit a Life Science Curriculum Vitae form.

2. Submit scores on the General Tests of the Graduate Record Examinations. (See GRE or GMAT section of chapter concerning admissions.)

3. Submit names of five persons from whom you have requested letters of recommendation.

4. Be admitted to the School of Graduate Studies. In addition to meeting the requirements of the School of Graduate Studies, applicants must be admitted to the Department of Life Sciences. The following departmental guidelines indicate approximate minimum standards, but meeting these guidelines does not guarantee admission to the program.
   a. Attain a score of 500 on each of the sections of the General Tests of the Graduate Record Examinations or a total of 1550 for all General Tests;
   b. In addition, international students should have a score of 620 or better on the Test of English as a Foreign Language, or provide equivalent evidence of language proficiency;
   c. An overall undergraduate index of 3.00 or above on a 4.00 scale;
   d. A minimum graduate index of 3.00 for students entering with advanced standing; and
   e. Satisfactory references.

   A telephone or personal interview may be required to assess academic and English language preparation.

5. Applicants are expected to have completed an undergraduate major in biology, mathematics through calculus or statistics, one year of physics, and chemistry through organic. Applicants may be granted admission conditional on the removal of any deficiencies by taking the appropriate courses or directed study.

6. Recommendations for admission are made by the Department of Life Sciences to the School of Graduate Studies. Official notification of admission is sent to the student by the School of Graduate Studies.

Requirements

A minimum of 83 semester hours of graduate credit are required, including an acceptable dissertation (899--18 hrs.); 640--1 hr. (required twice); 660--1 hr.; 690--1 hr. (required at least once); and at least two area seminars (620, 630, 650, 670, or 680--2 hrs. each).

Areas for the major and minor, as well as further requirements which may be appropriate, will be determined by the student's committee. Selection of the major professor and committee should be done no later than the end of the first academic year.

Demonstration of proficiency in two research tools is required. Research tools include those foreign languages approved by the student's committee and the department, statistics, and computer programming.

The student must satisfactorily pass both written and oral preliminary examinations and must demonstrate satisfactory performance on a final oral examination and dissertation defense.

Note that the School of Graduate Studies requires that students must complete one of the two consecutive full-time residence semesters before advancing to candidacy. By special arrangement with this department, hourly loads for the residence requirement can be reduced from 9 to 8 hours per consecutive semester.

Each candidate must participate in the teaching program of the department for at least two semesters or one semester and a full summer session.

COURSES (LIFS)

503 General Virology--3 hours. A molecular approach to the study of viruses. Prerequisite: 374.

504 Biophysical Properties of Macromolecules--3 hours. An intensive laboratory course in the purification and analysis of macromolecules. Using a safe virus as a model, students will become proficient in preparative and analytical centrifugation, sucrose and CsCl density gradients, gel electrophoresis for analysis of proteins and nucleic acids, serological techniques used in virus identification, spectrophotometry, and manuscript preparation. Prerequisites: 403 or equivalent, and consent of instructor.

505 Cellular Development--3 hours. Cellular and molecular aspects of development and differentiation, including regulatory mechanisms and cellular interactions. Prerequisites: 330; 374 or consent of instructor.

506 Cell and Tissue Culture--2 hours. Readings and discussions on the theory, history, techniques, and applications of cell and tissue culture. Prerequisites: 330; 374 or consent of instructor.

506L Cell and Tissue Culture Laboratory--2 hours. An experimental approach to the topics considered in 506. To be taken concurrently with or subsequent to 506.

507 Immunity to Infectious Agents—3 hours. Integration of overall understanding of the process and pathogenesis of microbial infections in the context of immune function and dysfunction. Prerequisite: Basic understanding of immunology and microbiology. Offered: alternate years.

508 General Immunology--3 hours. Lectures in general immunology. Prerequisite: successful completion of or concurrent enrollment in 508L.

508L General Immunology Laboratory--1 hour. An experimental approach to the topics considered in 508. Prerequisite: successful completion of or concurrent enrollment in 508.

521 Entomology--3 hours. A general course introducing the insects. Includes fieldwork, laboratories, and lectures relating to classification, physiology, ecology, behavior, and control. Prerequisite: 102 or consent of instructor.

523 Animal Parasitology--2 hours. The history, taxonomy, biology, epidemiology, pathogenesis, treatment, and control of animal parasites. Prerequisites: 102 or consent of instructor; successful completion of or concurrent enrollment in 523L. Offered: fall.

523L Animal Parasitology Laboratory--1 hour. Laboratory exercises supporting concepts presented in 523. Prerequisite: successful completion of or concurrent enrollment in 523.

524 Vertebrate Zoology--2 hours. Principles of taxonomy and evolution as applied to vertebrates. Includes lectures, laboratories, and fieldwork on classification, identification, and behavior. Prerequisites: 102.

524L Vertebrate Zoology Laboratory--2 hours. Laboratory exercises supporting concepts presented in 524. Prerequisite: successful completion of or concurrent enrollment in 524.

525 Herpetology--2 hours. Lectures on reptiles and amphibians, including their classification, evolution, ecology, and methods of study. Prerequisites: 424 or consent of instructor; successful completion of or concurrent enrollment in 525L. Offered: spring.

525L Herpetology Laboratory--1 hour. Laboratory and field studies to accompany 525. Prerequisite: successful completion of or concurrent enrollment in 525.

526 Ornithology--2 hours. Lectures on North American birds. Identification by sight and song and life history are included. Prerequisites: 102 and successful completion of or concurrent enrollment in 526L. Offered: spring.

526L Ornithology Laboratory--1 hour. Laboratory and field studies to accompany 526. Prerequisite: successful completion of or concurrent enrollment in 526.

527 Plant Taxonomy--2 hours. Principles of taxonomy, evolution, and phylogeny. Emphasis on the variation within the relationships among selected orders and families of vascular plants represented in the Indiana flora. Prerequisites: 102 and successful completion of or concurrent enrollment in 527L. Offered: spring.

527L Plant Taxonomy Laboratory--2 hours. Laboratory and field studies to support the principles covered in 527. Prerequisite: successful completion of or concurrent enrollment in 527.

528 Mammalogy--2 hours. Lectures on mammals, including their classification, evolution, ecology, and methods of study. Prerequisites: 524 or consent of instructor; successful completion of or concurrent enrollment in 528L. Offered: spring.

528L Mammalogy Laboratory--1 hour. Laboratory and fieldwork to support the principles covered in 528. Prerequisite: successful completion of or concurrent enrollment in 528.

532 Vertebrate Physiology--3 hours. The function of the various vertebrate organ systems with emphasis on functions as related to the adaptation and survival of organisms in their natural environments. Prerequisites: 330; Chemistry 352, 352L; successful completion of or concurrent enrollment in 532L. Offered: fall.

532L Vertebrate Physiology Laboratory--1 hour. Laboratory exercises to support the topics considered in 532. Prerequisite: successful completion of or concurrent enrollment in 532.

533 Reproductive Physiology—3 hours. An introduction to the anatomical, physiological, endocrinological and clinical aspects of human reproduction. Prerequisite: 330. Offered: fall.

534 Introduction to Neurobiology--3 hours. An introduction to basic principles and concepts in the biology of the nervous system, in particular the structures and functions of the brain and its relationship with drugs. Prerequisites: 101 and 102; Chemistry 105 and 106 or their equivalents.

550 Advanced Ecology--3 hours. An examination of advanced topics and issues in ecology, including levels of selection, models of population growth and regulation, multispecies interactions, niche theory, and community ecology. Prerequisites: 350; 351.

551 Field Study of Ecosystems--3 hours. This course is designed to give students experience in applying ecological principles under field conditions. Sampling procedures will be used to collect original information to study topics such as ecosystem components, population estimation, species interrelations, food webs, and succession, using firsthand information. Prerequisites: 350 and 351.

554 Animal Behavior--3 hours. Introduction to the comparative study of animal behavior from psychological, ecological, and evolutionary perspectives. Prior study in experimental approaches to behavior and/or zoology is recommended. Prerequisite: 102 or consent of instructor.

558 Wildlife Management--2 hours. The ecological relationships, biological characteristics, population dynamics, habitat requirements, and management of important wildlife species. Prerequisite: 350 and 524 are recommended, or consent of instructor.

558L Wildlife Management Laboratory--1 hour. Laboratory exercises supporting concepts presented in 558.

561 Embryology--2 hours. Studies of the development of the vertebrate embryo. Prerequisites: 102 and successful completion of or concurrent enrollment in 561L.

561L Embryology Laboratory--1 hour. Laboratory exercises supporting the concepts presented in 561. Prerequisites: 102 and successful completion of or concurrent enrollment in 561.

575 Mechanisms of Microbial Disease--3 hours. Principle of host-pathogen interactions, an examination of the mechanisms of infectious diseases and the host immune response, a survey of the microorganisms involved, and the pathophysiology of infectious diseases. Prerequisite: 374 or equivalent.

576 Microbial Physiology—3 hours. Physiological and biochemical properties of microorganisms with special emphasis on unique and diverse characteristics. Prerequisites: 374 and Chemistry 352 and 431/531, or equivalent with consent of instructor.

580 General Evolution--3 hours. A discussion of evidences for and mechanisms and theories of evolution emphasizing how evolution provides unifying patterns for understanding living organisms at all levels of organization. Prerequisite: 380.

582 Recombinant DNA--2 hours. Provides a complete description of general methods for genetic manipulation including restriction analysis, cloning vectors, library construction, Southern blots, and polymerase chain reaction. Applications to biotechnology include overexpression, transgenic organisms, AIDS, DNA diagnostics, and gene therapy.

582L Recombinant DNA Lab--2 hours. A companion laboratory for Life Sciences 582 providing hands-on experience with gene cloning, gene splicing, restriction analysis, sequencing, and genetic transformation. Prerequisite: successful completion or concurrent enrollment in 582.

585 Introduction to Biometry--3 hours. Principles of probability and statistics applied to biological data. Binomial, chi-square, and normal distributions, including analysis of variance, regression, and correlation. Prerequisite: Math 111.

601 Cellular and Molecular Biology I--3 hours. A detailed description of biological structure and processes with emphasis at the cellular level. Beginning graduate students in the area of cellular-molecular biology are expected to take this course during their first year in the program. Prerequisite: Chemistry 531 or equivalent (may be taken concurrently).

602 Cellular and Molecular Biology II--3 hours. A detailed consideration of the structure, biosynthesis, organization, and regulation of biological macromolecules. Beginning graduate students in the area of cellular-molecular biology are expected to take this course during their first year in the program. Prerequisite: Chemistry 531 or equivalent.

609 Collecting and Analyzing Biological Data--2 hours. This course deals with automated data collection and analysis techniques in modern laboratory situations. The theory as well as practical applications of methods will be discussed and demonstrated.

609L Collecting and Analyzing Biological Data Laboratory--1 hour. A laboratory/hands-on approach to the topics covered in 609.

610 Seminar: Preparation for College Teaching--2 hours.

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NOTE: Courses in the 500 series are open to undergraduate students as *400 series. Graduate students are

required to do additional work of a research nature. A course taken at the 400 level may not be repeated at the 500 level.

PROPOSED CATALOG COPY

LIFE SCIENCES DEPARTMENT and CENTER for SCIENCE EDUCATION

Dr. Charles J. Amlaner, Jr., Chairperson
Department Office: Room 283, Science Building E-mail: lsamlan@indstate.edu

The Department of Life Sciences offers programs designed for students entering academic, allied health, industrial, and governmental careers. Areas of study include cell and molecular biology, microbiology, biotechnology, organismal and conservation biology, physiology, and plant biology. A wide range of areas of concentration may be selected as indicated by the research interests of the faculty (listed above). Students, by mutual consent, select a major professor to serve as a thesis or dissertation advisor from the graduate faculty. The student and major professor will jointly select the student's committee, subject to approval by the department and the School of Graduate Studies.

The Center for Science Education provides graduate students with professional science education courses which are directly related to science teaching at all grade levels. Although the courses offered by the department are oriented toward people interested in the teaching of sciences and related fields, these offerings will help persons interested in careers in commerce, industry, or communication to develop a perspective on and an
understanding of the current philosophy of science and science teaching.
Staff members of the department are the academic advisors for graduate students pursuing master's degrees in science education. These curricular patterns enable students to develop a broad, general, interdisciplinary background in science and utilize existing courses and faculties of the various science departments in the University. Students seeking a professionalized Adolescence/Young Adulthood (secondary) and/or Early Adolescence (middle & junior high school) teacher certificate in Sciences will be assigned an advisor by the Chairperson of the Department or the Coordinator of the Center for Science Education.

DEGREES

Master of Science--Life Sciences (thesis or non-thesis)
Master of Science—Science Education (thesis or non-thesis)[for Licensed Teachers]
Doctor of Philosophy--Life Sciences (dissertation)

MASTER'S PROGRAMS in the LIFE SCIENCE DEPARTMENT
THE LIFE SCIENCE OPTIONS

Admission to the Programs

In addition to the requirements of the School of Graduate Studies for admission, applicants are expected to have completed an undergraduate major in biology or its equivalent, mathematics through calculus or statistics, one year of physics, and chemistry through organic. Applicants with deficiencies may be granted conditional admission. Deficiencies must be removed by taking the appropriate courses or directed study. Prospective students should submit official transcripts, scores on the General Tests of the Graduate Record Examinations, and letters of recommendation. Graduate Record Examinations are strongly recommended but not required for non-thesis program applications.

A number of graduate assistantships, fellowships, and scholarships are available through the Department of Life Sciences. In addition, research assistantships are available from individual faculty research grants. All are awarded on a competitive basis. Full-time students in life sciences with teaching or research assistantships, fellowships, and scholarships are expected to carry a minimum of eight hours per semester.

REQUIREMENTS

Master of Science with thesis (32 semester hours minimum)

Research: 699--6 hrs.
Major: 640--1 hrs., 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 8 additional hours of Life Sciences course work.
Other Requirements: 6 hours of course work outside the department.
Electives: 8 hours of directed electives.
Culminating Experience: Satisfactory performance on a final oral examination and thesis defense (Life Sciences 699--6 hrs.), conducted by the student's thesis committee selected from the graduate faculty.

At least 16 credit hours must be in courses numbered 600 or above.

Master of Science without thesis (32 semester hours minimum)

Research: 2-4 hours of 692.
Major: 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 11-13 additional hours of Life Sciences course work.
Other Requirements: 6 hours of course work outside the department.
Electives: 8 hours of directed electives.
Culminating Experience: Satisfactory performance on an oral and/or written examination given by an examining committee selected from the graduate faculty.

At least 16 credit hours must be in courses numbered 600 or above.

THE CENTER FOR SCIENCE EDUCATION OPTIONS:

ADMISSION TO THE PROGRAMS

A student who is interested in enrolling in one of the following degree programs must meet all admission requirements as stated in the general regulations of the School of Graduate Studies. The student must be accepted into a degree program before admission procedures are complete. A student should contact the Advisor in the Center for Science Education before beginning any course work and to establish a tentative graduate program direction to professionalize your teacher's license.

The master's degree programs in science education are designed to provide to the individual student:
1. a broad understanding in most areas of science;
2. further in-depth training in a specific area of science;
3. an opportunity to become involved in the processes of science;
4. experiences in the pedagogies of those sciences which are directly related to the interests and professional goals of the student;
5. a perspective which enables the student to evaluate the importance of various science topics and select for inclusion in the curriculum only those topics which most efficiently and effectively contribute to his or her educational objectives; and meeting the state standards
6. an avenue to complete the course work requirements for the **Indiana Professional Instructional License** with teaching areas in science. See licensure regulations in the School of Education section of this *Catalog*. The ultimate goal of these programs is to develop students with a science background and a knowledge of the pedagogies of science so that they may be prepared:

1. for more advanced study in science education, chemistry, geography/geology, life sciences, mathematics, and/or physics;
2. for research in the teaching of science and the sciences;
3. for additional work resulting in supervisory and/or administrative positions dealing with the teaching of science; and/or
4. for positions which deal with the applied aspects of science teaching.

REQUIREMENTS

Master of Science—Science Education with thesis (For a Licensed Teacher or a Bachelor Degree in a Science Field)--32 semester hours minimum.

*Research: LIFS*699--6 hrs or SCED699—6 hrs..
Major: 640--1 hr., 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 8 additional hours of Life Sciences course work or 640—1 hr., 690—1 hr.; at least 10 additional hours of graduate Science course work.
Other Requirements: Curriculum, Instruction, and Media Technology 660 or 662--3 hrs.; 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; and 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611.
Electives: 5 hours of directed electives.
Culminating Experience: Successful thesis defense (LIFS 699--6 hrs.), or (SCED 699-—6 hrs.), conducted by the candidate's thesis committee. At least 16 credit hours must be in courses numbered 600

or above.

Master of Science—Science Education without thesis (For Licensed Teacher or a Bachelor Degree in a Science Field)--32 semester hours minimum.

Research: 2-4 hours of LIFS 692 or 1-3 hours of SCED 680 and 1-3 hours in a selected Science.
Major: 690--1 hr.; area seminars (minimum of 2 hrs. in Life Sciences 620, 630, 650, 670, or 680); at least 11-13 additional hours of Life Sciences course work or 640—1 hr., 690—1 hr.; at least 10 additional hours of graduate Science course work.
.*Other Requirements:* Curriculum, Instruction, and Media Technology 660 or 662--3 hrs.; 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; and 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611.
Electives: 5 hours of directed electives.

Culminating Experience: Satisfactory performance on an oral and/or written examination given by an examining committee selected from the graduate faculty. At least 16 credit hours must be in courses numbered 600 or above.

DOCTOR OF PHILOSOPHY PROGRAM

The Department of Life Sciences offers study and research leading to a Ph.D. degree in one of the disciplines listed below.

1. Ecology
2. Microbial and Cellular Biology
3. Physiology
4. Sports Medicine

The completion of the degree qualifies the individual for university teaching, research, or professional work in the respective discipline. Each candidates individual program is based on his knowledge and ability upon entering the program and his/her objective. After completion of coursework, all students must pass a written and oral qualifying examination followed by submission of an acceptable dissertation based on original research. The specific requirements for completion of the degree are listed below.

Admission Procedures and Standards

1. Submit an Indiana State University application for admission to the School of Graduate Studies, together with an official transcript from each school at which any undergraduate or graduate work has been done. Also submit a Life Science Curriculum Vitae form.

2. Submit scores on the General Tests of the Graduate Record Examinations. (See GRE or GMAT section of chapter concerning admissions.)

3. Submit names of five persons from whom you have requested letters of recommendation.

4. Be admitted to the School of Graduate Studies. In addition to meeting the requirements of the School of Graduate Studies, applicants must be admitted to the Department of Life Sciences. The following departmental guidelines indicate approximate minimum standards, but meeting these guidelines does not guarantee admission to the program.

a. Attain a score of 500 on each of the sections of the General Tests of the Graduate Record Examinations or a total of 1550 for all General Tests;

b. In addition, international students should have a score of 620 or better on the Test of English as a Foreign Language, or provide equivalent evidence of language proficiency;

c. An overall undergraduate index of 3.00 or above on a 4.00 scale;

d. A graduate index of 3.00 or above on a 4.00 scale; for students entering with advanced standing; and

e. Satisfactory references.

A telephone or personal interview may be required to assess academic and English language preparation.

5. Applicants are expected to have completed an undergraduate major in biology, mathematics through calculus or statistics, one year of physics, and chemistry through organic. Applicants may be granted admission conditional on the removal of any deficiencies by taking the appropriate courses or directed study.

6. Recommendations for admission are made by the Department of Life Sciences to the School of Graduate Studies. Official notification of admission is sent to the student by the School of Graduate Studies.

Requirements

A minimum of 83 semester hours of graduate credit are required, including an acceptable dissertation (899--18 hrs.); 640--1 hr. (required twice); 660--1 hr.; 690--1 hr. (required at least once); and at least two area seminars (620, 630, 650, 670, or 680--2 hrs. each).
Areas for the major and minor, as well as further requirements which may be appropriate, will be determined by the student's committee. Selection of the major professor and committee should be done no later than the end of the first academic year.
Demonstration of proficiency in two research tools is required. Research tools include those foreign languages approved by the student's committee and the department, statistics, and computer programming.

The student must satisfactorily pass both written and oral preliminary examinations and must demonstrate satisfactory performance on a final oral examination and dissertation defense.

Note that the School of Graduate Studies requires that students must complete one of the two consecutive full-time residence semesters before advancing to candidacy. By special arrangement with this department, hourly loads for the residence requirement can be reduced from 9 to 8 hours per consecutive semester.

Each candidate must participate in the teaching program of the department for at least two semesters or one semester and a full summer session.

COURSES (LIFS)

503 General Virology--3 hours. A molecular approach to the study of viruses. Prerequisite: 374.

504 Biophysical Properties of Macromolecules--3 hours. An intensive laboratory course in the purification and analysis of macromolecules. Using a safe virus as a model, students will become proficient in preparative and analytical centrifugation, sucrose and CsCl density gradients, gel electrophoresis for analysis of proteins and nucleic acids, serological techniques used in virus identification, spectrophotometry, and manuscript preparation. Prerequisites: 403 or equivalent, and consent of instructor.

505 Cellular Development--3 hours. Cellular and molecular aspects of development and differentiation, including regulatory mechanisms and cellular interactions. Prerequisites: 330; 374 or consent of instructor.

506 Cell and Tissue Culture--2 hours. Readings and discussions on the theory, history, techniques, and applications of cell and tissue culture. Prerequisites: 330; 374 or consent of instructor.

506L Cell and Tissue Culture Laboratory--2 hours. An experimental approach to the topics considered in 506. To be taken concurrently with or subsequent to 506.

507 Immunity to Infectious Agents—3 hours. Integration of overall understanding of the process and pathogenesis of microbial infections in the context of immune function and dysfunction. Prerequisite: Basic understanding of immunology and microbiology. Offered: alternate years.

508 General Immunology--3 hours. Lectures in general immunology. Prerequisite: successful completion of or concurrent enrollment in 508L.

508L General Immunology Laboratory--1 hour. An experimental approach to the topics considered in 508. Prerequisite: successful completion of or concurrent enrollment in 508.

521 Entomology--3 hours. A general course introducing the insects. Includes fieldwork, laboratories, and lectures relating to classification, physiology, ecology, behavior, and control. Prerequisite: 102 or consent of instructor.

523 Animal Parasitology--2 hours. The history, taxonomy, biology, epidemiology, pathogenesis, treatment, and control of animal parasites. Prerequisites: 102 or consent of instructor; successful completion

of or concurrent enrollment in 523L. Offered: fall.

523L Animal Parasitology Laboratory--1 hour. Laboratory exercises supporting concepts presented in 523. Prerequisite: successful completion of or concurrent enrollment in 523.

524 Vertebrate Zoology--2 hours. Principles of taxonomy and evolution as applied to vertebrates. Includes lectures, laboratories, and fieldwork on classification, identification, and behavior. Prerequisites: 102.

524L Vertebrate Zoology Laboratory--2 hours. Laboratory exercises supporting concepts presented in 524. Prerequisite: successful completion of or concurrent enrollment in 524.

525 Herpetology--2 hours. Lectures on reptiles and amphibians, including their classification, evolution, ecology, and methods of study. Prerequisites: 424 or consent of instructor; successful completion of or concurrent enrollment in 525L. Offered: spring.

525L Herpetology Laboratory--1 hour. Laboratory and field studies to accompany 525. Prerequisite: successful completion of or concurrent enrollment in 525.

526 Ornithology--2 hours. Lectures on North American birds. Identification by sight and song and life history are included. Prerequisites: 102 and successful completion of or concurrent enrollment in 526L. Offered: spring.

526L Ornithology Laboratory--1 hour. Laboratory and field studies to accompany 526. Prerequisite: successful completion of or concurrent enrollment in 526.

527 Plant Taxonomy--2 hours. Principles of taxonomy, evolution, and phylogeny. Emphasis on the variation within the relationships among selected orders and families of vascular plants represented in the Indiana flora. Prerequisites: 102 and successful completion of or concurrent enrollment in 527L. Offered: spring.

527L Plant Taxonomy Laboratory--2 hours. Laboratory and field studies to support the principles covered in 527. Prerequisite: successful completion of or concurrent enrollment in 527.

528 Mammalogy--2 hours. Lectures on mammals, including their classification, evolution, ecology, and methods of study. Prerequisites: 524 or consent of instructor; successful completion of or concurrent enrollment in 528L. Offered: spring.

528L Mammalogy Laboratory--1 hour. Laboratory and fieldwork to support the principles covered in 528. Prerequisite: successful completion of or concurrent enrollment in 528.

532 Vertebrate Physiology--3 hours. The function of the various vertebrate organ systems with emphasis on functions as related to the adaptation and survival of organisms in their natural environments.

Prerequisites: 330; Chemistry 352, 352L; successful completion of or concurrent enrollment in 532L. Offered: fall.

532L Vertebrate Physiology Laboratory--1 hour. Laboratory exercises to support the topics considered in 532. Prerequisite: successful completion of or concurrent enrollment in 532

533 Reproductive Physiology—3 hours. An introduction to the anatomical, physiological, endocrinological and clinical aspects of human reproduction. Prerequisite: 330. Offered: fall.

534 Introduction to Neurobiology--3 hours. An introduction to basic principles and concepts in the biology of the nervous system, in particular the structures and functions of the brain and its relationship with drugs. Prerequisites: 101 and 102; Chemistry 105 and 106 or their equivalents.

550 Advanced Ecology--3 hours. An examination of advanced topics and issues in ecology, including levels of selection, models of population growth and regulation, multispecies interactions, niche theory, and community ecology. Prerequisites: 350; 351.

551 Field Study of Ecosystems--3 hours. This course is designed to give students experience in applying ecological principles under field conditions. Sampling procedures will be used to collect original information to study topics such as ecosystem components, population estimation, species interrelations, food webs, and succession, using firsthand information. Prerequisites: 350 and 351.

554 Animal Behavior--3 hours. Introduction to the comparative study of animal behavior from psychological, ecological, and evolutionary perspectives. Prior study in experimental approaches to behavior and/or zoology is recommended. Prerequisite: 102 or consent of instructor.

558 Wildlife Management--2 hours. The ecological relationships, biological characteristics, population dynamics, habitat requirements, and management of important wildlife species. Prerequisite: 350 and 524 are recommended, or consent of instructor.

558L Wildlife Management Laboratory--1 hour. Laboratory exercises supporting concepts presented in 558.

561 Embryology--2 hours. Studies of the development of the vertebrate embryo. Prerequisites: 102 and successful completion of or concurrent enrollment in 561L.

561L Embryology Laboratory--1 hour. Laboratory exercises supporting the concepts presented in 561. Prerequisites: 102 and successful completion of or concurrent enrollment in 561.

575 Mechanisms of Microbial Disease--3 hours. Principle of host-pathogen interactions, an examination of the mechanisms of infectious diseases and the host immune response, a survey of the microorganisms involved, and the pathophysiology of infectious diseases. Prerequisite: 374 or equivalent.

576 Microbial Physiology—3 hours. Physiological and biochemical properties of microorganisms with special emphasis on unique and diverse characteristics. Prerequisites: 374 and Chemistry 352 and 431/531, or equivalent with consent of instructor.

580 General Evolution--3 hours. A discussion of evidence for and mechanisms and theories of evolution emphasizing how evolution provides unifying patterns for understanding living organisms at all levels of organization. Prerequisite: 380.

582 Recombinant DNA--2 hours. Provides a complete description of general methods for genetic manipulation including restriction analysis, cloning vectors, library construction, Southern blots, and polymerase chain reaction. Applications to biotechnology include overexpression, transgenic organisms, AIDS, DNA diagnostics, and gene therapy.

582L Recombinant DNA Lab--2 hours. A companion laboratory for Life Sciences 582 providing hands-on experience with gene cloning, gene splicing, restriction analysis, sequencing, and genetic transformation. Prerequisite: successful completion or concurrent enrollment in 582.

585 Introduction to Biometry--3 hours. Principles of probability and statistics applied to biological data. Binomial, chi-square, and normal distributions, including analysis of variance, regression, and correlation. Prerequisite: Mathematics111 or equivalent or consent of Instructor. Offered: Fall.

601 Cellular and Molecular Biology I--3 hours. A detailed description of biological structure and processes with emphasis at the cellular level. Beginning graduate students in the area of cellular-molecular biology are expected to take this course during their first year in the program. Prerequisite: Chemistry 531 or equivalent (may be taken concurrently).

602 Cellular and Molecular Biology II--3 hours. A detailed consideration of the structure, biosynthesis, organization, and regulation of biological macromolecules. Beginning graduate students in the area of cellular-molecular biology are expected to take this course during their first year in the program. Prerequisite: Chemistry 531 or equivalent.

609 Collecting and Analyzing Biological Data--2 hours. This course deals with automated data collection and analysis techniques in modern laboratory situations. The theory as well as practical applications of methods will be discussed and demonstrated.

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SCIENCE EDUCATION COURSES (SCED)

524 Special Problems in the Preparation and Utilization of Film and Tape Media--1-3 hours. Media experiences designed using the background, needs, and interests of the students as points of departure. Opportunities to experience sophisticated techniques will be provided. Prerequisite: 423 or Physics 423 or consent of instructor.

560 The Science Curriculum (K-12)--2-3 hours. The history, the various philosophies, science curricular patterns, curriculum construction, curricular trends, and selected new science curricula. Prior completion of the science methods course recommended.

561 The Supervision of Science (K-12)--2-3 hours. Special emphasis on the supervisory aspects of science teaching. Guidelines relating to science facilities, new curricula, equipment, and supplies are investigated. Prior completion of the science methods course recommended.

595 Environmental Sciences--1-6 hours. Experiences from ecology and the associated sciences which are used to develop the content, background, and activities that teachers could use to present these

concepts in a natural laboratory setting.

623 Fundamentals of Light and Its Applications to Photography--1-3 hours. A lecture/laboratory course emphasizing fundamental optical principles of photography such as reflection, absorption, refraction, polarization, color, interference, and photochemical effects.

673 Topics in Science Education--1-6 hours. Topics not usually presented in traditional science education courses. Topic titles, prerequisites, credit, course outline, and content will be arranged by the faculty member(s) involved. A maximum of 6 semester hours may be counted toward the master's degree.

675 Seminar and Readings in Science Education--0-2 hours. A survey of selected current problems and research being conducted in science education. Individual class members are expected to prepare papers and/or participate in discussions of contemporary topics in science and/or science education.

680 Problems and Research in the Teaching of Science--1-3 hours. Selected topics designed for the individual who wishes to carry out special projects in the area of science education.

685 Advanced Methods Seminar in the Teaching of Science--2-3 hours. Experiences in the pedagogies of science instruction for teachers. This course is designed for students who have a special interest in the teaching of science and/or require special instruction pertaining to one or more specific science curriculum projects.

687 Practicum in Advanced Techniques and Media in the Teaching of Science--3 hours. An opportunity to design, prepare, evaluate, and possibly distribute materials which relate to the teaching of science concepts. This course is designed for advanced students specializing in the teaching of science.

688 Practicum in Curriculum Construction in Science--1-3 hours. An opportunity to design, prepare, teach, evaluate, and possibly distribute a curriculum related unit in science. This course is designed for advanced students specializing in the teaching of science.

697 The Teaching of Science in Colleges and Universities--1-3 hours. A wide variety of experiences which would be pertinent for students planning careers in college or university teaching. This course may be taken more than once, but no more than 3 hours of credit may be earned.

699 Master's Thesis in Science Education--6 hours. Registration for this course is dependent on the approval of the student's academic advisor and his/her committee.

NOTE: Courses in the 500 series are open to undergraduate students as *400 series. Graduate students are required to do additional work of a research nature. A course taken at the 400 level may not be repeated at the 500 level.

SCHOOL OF EDUCATION: Curriculum, Instruction, & Media Technology

M.S. in Educational Technology

Executive Summary:

The proposal changes the title of the M.S. in Educational Media to Educational Technology and creates three distinct specializations within the degree that serve three distinct needs of students and the community. The revisions also bring the coursework and degree program in line with certification standards for the Library/Media Specialization, and International Society for Technology Education (ISTE) standards for advanced degrees in educational technology and for technology coordinators. The change in hours from a minimum of 32 to a minimum of 33 provides a more realistic view of the hours required.

Rationale:

The program responds to the ISU Strategic Goal Two. Within the School of Education, the program revisions will provide a more viable connection to practice within our professional development schools, and a more direct track to the Ph.D. in Curriculum Instruction with a specialization in Media Technology, i.e. these courses are more in line with the expected outcomes of the program.

Three specializations have been created within the master's to meet different needs. The Library/Media specialization provides a Master's degree opportunity for those completing the course work for additional licensure. The Educational Technology specialization is an updated version of the current educational media option. The Technology Coordinator specialization is offered nowhere else in the state. Most school systems nationwide have a technology coordinator located in the central office; this in not a licensed position. School systems have difficult time recruiting qualified candidates. This specialization would prepare a student to have a background in administration, and management through the required Educational Leadership and Foundation courses and supervision course, and a solid grounding in expected technology knowledge through the required networking course.

CURRENT CATALOG COPY

CURRICULA FOR LICENSURE PROGRAMS

Master of Arts or Master of Science--Educational Media
(32 semester hours minimum)

The program is designed to provide candidates with the appropriate professional skill to plan, operate, and evaluate specific types of instructional media and technology programs in educational institutions.

The curriculum stresses a broad concept of media in order to provide students with experience in a variety of instructional media.

The program can be designed to provide the necessary course work to professionalize an all grade major in school media services or a minor in audiovisual services or library services.

Degree Requirements

Research: Curriculum, Instruction, and Media Technology 610--3 hrs.

Major Area: 18 hours of educational media courses and approved related area courses. If the student has not had the following as undergraduate courses he or she must take them as part of the major area: Curriculum, Instruction, and Media Technology 543--3 hrs.; 544--3 hrs.; 546--3 hrs.

NOTE: Students seeking the M.A. degree will take Curriculum, Instruction, and Media Technology 699--6 hrs. as part of the major area.

Professional Education: 3 hours from Educational Leadership, Administration, and Foundations 605, 607, or 608; 3 hours from Educational Psychology 521, 522, 625, or Curriculum, Instruction, and Media Technology 611; 3 hours from Elementary Education 660, Curriculum, Instruction, and Media Technology 660, or 560M.
Electives: 2-3 hours.
Culminating Experience: All students are required to pass a final culminating examination.

In general, one-half of the credit hours must be in courses numbered 600 or above.

MASTER'S DEGREE PROGRAMS FOR INSTITUTIONAL AND AGENCY SETTINGS

Master of Arts or Master of Science--Educational Media (32 semester hours minimum)

The program is designed to provide candidates with the appropriate professional skills to plan, operate, and evaluate specific types of instructional media and technology programs in educational institutions.

Admission Requirements

Applicants must satisfy the general criteria for admission to the School of Graduate Studies.

Degree Requirements

Research: Curriculum, Instruction, and Media Technology 610--3 hrs. or 740--2 hrs.
Major Area: 18 hours of educational media courses and approved related area courses. If the student has not had the following as undergraduate courses he or she must take them as part of the major area: Curriculum, Instruction, and Media Technology 543--3 hrs.; 544--3 hrs.; 546--3 hrs.
Adjunct Field: 8 hours in related field.
Electives: 3-4 hours.
Culminating Experience: All students are required to pass a final culminating examination.

In general, one-half of the credit hours must be in courses numbered 600 or above.

NOTE: Students seeking the M.A. degree will take Curriculum, Instruction, and Media Technology 699--6 hrs. as part of the major area.

PROPOSED CATALOG COPY

Master of Science--Educational Technology (33 semester hours minimum)

The program provides candidates with one of three possible specializations. The Library/Media Specialization (and an additional 6 credit hours) will add the Indiana Library/Media license on to an existing Indiana License for the license school setting. The Educational Technology specialization provides a background in instructional design, distance education, instructional technology, and organization of educational technology centers. The Technology Coordinator specialization provides preparation for the candidate interested in assuming a non-licensed, administrative role with the implementation of educational technology in the school setting.

Degree Requirements

Research: Curriculum, Instruction, and Media Technology 610--3 hrs.
Core Courses: Curriculum, Instruction, and Media Technology 660 and 620--6 hrs.
Major Area: Select 21 hours of educational technology courses and approved related area courses form selected specialization.

Library/Media – Curriculum, Instruction, and Media Technology 512, 509, 522, 531, 656, 543, 659;

Educational Technology – Curriculum Instruction and Media Technology 630 (required), 543, 547, 635, 640, 641, 647, 656, 671, 672, 740, 743; Elementary Education 571, 573, 671, 672; or other courses as approved by the advisor.

Technology Coordinator – Curriculum, Instruction, and Media Technology 630, 641 (both required), 675 (required), 543, 544, 546, 547, 571, 625, 640, 647, 671, 672, 740, 743; Educational Leadership and Foundations 650 (required), 656 or 657 (one is required); Elementary Education 573, 671, 672; or other courses as approved by the advisor.

Electives: 3 hours.
Culminating Experience: All students are required to pass a final culminating examination or complete a culminating practicum experience.

In general, one-half of the credit hours must be in courses numbered 600 or above.

SCHOOL OF EDUCATION: Curriculum, Instruction, & Media Technology
Ph.D. in Curriculum & Instruction with a Specialization in Teaching and Learning

Executive Summary:

The present Ph.D. Program in Curriculum and Instruction has eight approved areas for which a student may secure a specialization: English, history, instructional technology education, media technology, elementary education, early childhood education, languages, literatures, and linguistics, and secondary education. Approval is sought to add an additional area of specialization in teaching and learning in the existing Ph.D. program. The focus is to prepare future faculty for college level instructional roles who

already have a masters degree in their selected content field. The area of specialization will include 21 to 30 hours drawn from multiple departments in the School of Education as approved and recommended by the applicant's committee. Applicants for the degree of Doctor of Philosophy in Curriculum and Instruction with specialization in teaching and learning are expected to complete all requirements listed in the graduate catalog.

Rationale:

The Department of CIMT has a number of doctoral candidates who currently hold faculty positions in other institutions, and receives weekly requests from other faculty interested in pursuing the terminal degree. These doctoral candidates are often interested in a hybrid of the Higher Education doctorate and the C&I Ph.D. the teaching and learning specialization is an attempt to provide the hybrid that has a focus on college teaching pedagogy and the university academic environment. A major in curriculum and instruction with a specialization in this area will increase the marketability of the program in attracting students (particularly given the new Community College of Indiana). There is a growing interest regionally in persons who would like to see a doctorate with this specialization. This specialization will allow the School of Education to effectively combine existing resources from multiple departments for the benefit of the student.

CURRENT CATALOG COPY

Ph.D. Degree Program in Curriculum and Instruction (72 semester hours minimum)

The program leading to the Doctor of Philosophy degree in Curriculum and Instruction is designed to prepare students for positions of leadership and research in public schools, colleges and universities, and governmental agencies. The program requires the student to successfully complete a **minimum** of 72 hours of graduate work beyond the bachelor's degree and to write and defend a doctoral dissertation as prescribed in the regulations of the School of Graduate Studies. The areas of specialization are secondary education, English education, history education, industrial technology education, and media technology.

Admission to Programs

A student must satisfy all general regulations of the School of Education and the School of Graduate Studies as stated elsewhere in this *Catalog*. An additional admission criterion for the Ph.D. in Curriculum and Instruction requires the applicant to have a grade point average of 3.50 or above on all graduate work attempted.
It must not be assumed that meeting minimal standards guarantees admission to the program.
The admissions committee must have the following before an admission decision will be made:

1. Completed application form.

2. Letters of recommendation from at least five persons who know the prospective student in a personal, and/or academic, and/or professional capacity.

3. **One** official transcript from each school at which any undergraduate or graduate work has been done.

4. Scores on Graduate Record Examinations General Tests.

In most cases the admissions committee may require the applicant to appear for a personal interview and to present evidence of his or her ability to write acceptable prose under controlled conditions.

Admission to Candidacy

Students may apply for admission to candidacy after any provisions or conditions that may have been attached to admission to the program have been removed. Additionally, all the standards of the School of Graduate Studies must be met. Refer to that section of this *Catalog* for details.

Dissertation

An acceptable dissertation on a topic or problem relating to the student's area of specialization is required for completion of degree requirements.

Degree Requirements

A. Foundational Studies (9 hours)
To develop competencies through understanding of contributions from philosophical, sociological, historical, and psychological foundations of education.

B. Inquiry Studies (12 to 15 hours)
To develop competency in statistics, measurement, and research in education.

C. Core Area--Curriculum and Instruction (15 to 27 hours)
To provide the knowledge and understanding essential to every specialist in curriculum, instruction, and supervision.

D. Area of Specialization (21 to 30 hours)
To enable the student to develop either (a) further specialization in curriculum, instruction, or supervision, or (b) a specialized program emphasizing secondary education,
English, history, industrial technology education, media technology, or any other approved area.

E. Related Studies (0-15 hours)
Courses from content areas may be selected to enhance special competencies in the area of specialization.

Independent study, field experiences, and internship assignments are utilized in this program as a means for achieving thorough preparation and competence. The final program for each student is cooperatively developed by the student, the advisor, and the committee.

PROPOSED CATALOG COPY

Ph.D. Degree Program in Curriculum and Instruction (72 semester hours minimum)

The program leading to the Doctor of Philosophy degree in Curriculum and Instruction is designed to prepare students for positions of educational leadership and research in public schools, colleges and universities, and governmental agencies. The program requires the student to successfully complete a **minimum** of 72 hours of graduate work beyond the bachelor's degree and to write and defend a doctoral dissertation as prescribed in the regulations of the School of Graduate Studies. The areas of specialization are secondary education, elementary education, media technology, Languages, Literatures and Linguistics, and teaching and learning.

Admission to Programs

A student must satisfy all general regulations of the School of Education and the School of Graduate Studies as stated elsewhere in this *Catalog*. An additional admission criterion for the Ph.D. in Curriculum and Instruction requires the applicant to have a grade point average of 3.50 or above on all graduate work attempted.
It must not be assumed that meeting minimal standards guarantees admission to the program.
The admissions committee must have the following before an admission decision will be made:

1. Completed application form.

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Dissertation

An acceptable dissertation on a topic or problem relating to the student's area of specialization is

required for completion of degree requirements.

Degree Requirements

A. Foundational Studies (9 hours)
To develop competencies through understanding of contributions from philosophical, sociological, historical, and psychological foundations of education.

B. Inquiry Studies (12 to 15 hours)
To develop competency in statistics, measurement, and research in education.

C. Core Area--Curriculum and Instruction (15 to 27 hours)
To provide the knowledge and understanding essential to every specialist in curriculum, instruction, and supervision.

D. Area of Specialization (21 to 30 hours)
To enable the student to develop either (a) further specialization in curriculum, instruction, or supervision, or (b) a specialized program emphasizing secondary education, business education, elementary education, early childhood education, English, history, industrial technology education, media technology, Languages, Literatures, and Linguistics, teaching and learning, or any other approved area.

E. Related Studies (0-15 hours)
Courses from content areas may be selected to enhance special competencies in the area of specialization.

Independent study, field experiences, and internship assignments are utilized in this program as a means for achieving thorough preparation and competence. The final program for each student is cooperatively developed by the student, the advisor, and the committee.

COURSE REACTIVATIONS

SCHOOL OF EDUCATION: Curriculum, Instruction, & Media Technology

CIMT 868 Seminar in Postsecondary Teaching – 3 hours. A seminar to introduce graduate students to the principles and methods of designing and delivering college-level courses and academic programs in their respective fields.

UNDERGRADUATE APPROVALS

COURSE REVISIONS

SCHOOL OF HEALTH & HUMAN PERFORMANCE: Health & Safety

HLTH 360 (317) **Epidemiology – 3 hours.** Epidemiology is the study of the etiological agents, reservoirs, vectors, cultural, geographical factors, etc., determining the occurrence of disease in a population; the natural history of disease and its control; and the study of the variables of disease: time, place, person. Prerequsite: 340 or consent of instructor.

Change number and description to:

HLTH 360 **Epidemiology – 3 hours.** Epidemiology is the study of the distribution and determinants of health events among the human population. Topics include: history of disease; epidemologic study design, data collection, analysis, presentation, and application in community diagnosis, risk assessment, and program evaluation. Prerequisite: 340 or consent of instructor.

SCHOOL OF TECHNOLOGY: Industrial and Mechanical Technology

IMT 351A-Z **Cooperative Industrial Practice**—3 hours. Coordinated work experiences in industry and a comprehensive written report of the experience. Prerequisite: participation in Professional Practice Program.

Change description to:

IMT 351 **Cooperative Industrial Practice—3 hours.** Coordinated work experiences in industry and a comprehensive written report of the experience. Prerequisite: participation in Professional Practice Program. Course may be taken twice for an maximum of 6 credits.

IMT *409 **Senior Project in Mechanical Technology—2-3 hours.** A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of design competency in mechanical technology and is performed in consultation with one or more faculty advisors. Collaboration with representatives of industry, government agencies, or community institutions is encouraged.

Change title and description to:

IMT *409 **Senior Project in Industrial Technology – 2-3 hours.** A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of competency in the student's major and is performed in consultation with one or more faculty advisors. Collaboration with representatives of industry, government agencies, or community institutions is encouraged.

**Course has a graduate level equivalent*

UNDERGRADUATE PROGRAM REVISIONS

SCHOOL OF HEALTH AND HUMAN PERFORMANCE: Health and Safety
Safety Management Major

Summary:

This is a minor change in catalog description. The catalog description of the course of study will be changed to clarify the existing description of admission and retention review level requirements for the Safety Management Major which includes "Tentative Admission to Safety Management, Candidate for Internship, and Candidate for Graduation." Prerequisite courses from other departments have changed requiring replacement foundation courses of similar content. The subject area was in the management area. The change affects major students and the total credit hours of the program will not change.

Rationale:

Safety managers need a foundation in management procedures in order to implement behavior based methods for eliminating hazards in the work place. These prerequisites will enhance their knowledge of how to integrate safety in business practices. This management foundation is also a requirement for accreditation by the Accrediting Board for Engineering and Technology (ABET).

OLD CATALOG COPY

Safety Management Major (66 semester hours)

A course of study in the management, evaluation, and control of safety and health hazards associated with the workplace environment.

Admission and Retention

There are three levels of review for selective admission, retention, and graduation from the Safety Management major.

Tentative Admission to Safety Management

Unconditionally admitted new freshmen or current students with a minimum cumulative grade point average (GPA) of 2.0 must: complete satisfactorily all foundation courses; complete Health and Safety 212, 314, 340 with a grade of C or better; and establish an Indiana State University minimum cumulative GPA of 2.25.

Candidate for Internship

The internship policy of the major requires filing of an application, normally at the Student Internship Qualification Meeting in the academic year prior to the internship, and meeting these performance standards:

1. Be in good standing during tentative admission phase of the curriculum.

2. Have earned 65 or more semester hours and have an Indiana State University minimum cumulative GPA of 2.25 (including a minimum of ten Indiana State University hours with a GPA of 2.25 or

higher.)

3. Maintain an Indiana State University GPA of 2.5 or higher in departmental safety management courses.

4. Maintain no less than a C grade in departmental safety management courses.

5. Complete all prerequisite courses required for the internship, an internship application, attend internship organizational meeting, and submit a resume.

Candidate for Graduation

Applicants for graduation must complete all University graduation requirements stated elsewhere in the *Catalog* and simultaneously file an application for graduation review with the Safety Management Program. Safety management candidates for graduation must:

1. Present a minimal ISU cumulative GPA of 2.25.

2. Present a minimum Indiana State University GPA of 2.5 in all safety management courses. At least 24 semester hours of the major must be completed at Indiana State University.

3. Receive no less than a grade of "C" in each safety management course.

4. Satisfactorily complete supervised safety management internship experience.

The student will be notified of denial of admission to the Safety Management Program or removal from the Safety Management Program.

Health-Safety courses (45 hours): 212--3 hrs.; 314--3 hrs.; 315--3 hrs.; 315L--1 hr.; 318--3 hrs.; 319--3 hrs.; 328--3 hrs.; 335--3 hrs.; 335L--1 hr.; 340--3 hrs.; 411--3 hrs.; 416--3 hrs.; 423--3 hrs.; 429--3 hrs.; 460--3 hrs.; 492--4 hrs.

Foundation courses (21 hours): Management 200--3 hrs.; Systems and Decision Sciences 345--3 hrs.; Chemistry 103--3 hrs.; 103L--1 hr.; 104--3 hrs.; 104L--1 hr.; Physics 105--4 hrs.; Mathematics 115--3 hrs. (or equivalent).

NEW CATALOG COPY

Safety Management Major (66 semester hours)

A course of study in the management, evaluation, and control of safety and health hazards associated with the workplace environment.

Admission and Retention

There are three levels of review for selective admission, retention, and graduation from the Safety Management major.

Tentative Admission to Safety Management

Unconditionally admitted new freshmen or current students with a minimum cumulative grade point average (GPA) of 2.0 must: complete satisfactorily all basic foundation courses (listed below); complete Health and Safety 212, 314, 340 with a grade of C or better; and establish an Indiana State University minimum cumulative GPA of 2.25.

Candidate for Internship

The internship policy of the major requires filing of an application, normally at the Student Internship Qualification Meeting in the academic year prior to the internship, and meeting these performance standards:

1. Be in good standing during tentative admission phase of the curriculum.

2. Have earned 65 or more semester hours and have an Indiana State University minimum cumulative GPA of 2.25 (including a minimum of ten Indiana State University hours with a GPA of 2.25 or higher.)

3. Maintain an Indiana State University GPA of 2.5 or higher in departmental safety management courses.

4. Maintain no less than a C grade in departmental safety management courses.

5. Complete an internship application, attend internship organizational meeting, and submit a resume.

6. Complete all prerequisite courses required for the internship (all Tentative Admission phase courses; Management 301; and Health and Safety 315 and 315L, 318, 319, 328, and 411).

Candidate for Graduation

Applicants for graduation must complete all University graduation requirements stated elsewhere in the *Catalog* and simultaneously file an application for graduation review with the Safety Management Program. Safety management candidates for graduation must:

1. Present a minimal ISU cumulative GPA of 2.25.

2. Present a minimum Indiana State University GPA of 2.5 in all safety management courses. At least 24 semester hours of the major must be completed at Indiana State University.

3. Receive no less than a grade of "C" in each safety management course.

4. Satisfactorily complete a supervised safety management internship experience (HLTH 492).

5. Complete remainder of major course requirements (Management 400 or Manufacturing and Construction Technology 492; and Health 335 and 335L, 416, 423, 429, and 460).

The student will be notified of denial of admission to the Safety Management Program or removal from the Safety Management Program.

Health-Safety courses (45 hours): 212--3 hrs.; 314--3 hrs.; 315--3 hrs.; 315L--1 hr.; 318--3 hrs.; 319--3 hrs.; 328--3 hrs.; 335--3 hrs.; 335L--1 hr.; 340--3 hrs.; 411--3 hrs.; 416--3 hrs.; 423--3 hrs.; 429--3 hrs.; 460--3 hrs.; 492--4 hrs.

Basic Foundation courses (15 hours): Chemistry 103--3 hrs.; 103L--1 hr.; 104--3 hrs.; 104L--1 hr.; Physics 105--4 hrs.; Mathematics 115--3 hrs. (or equivalent).

Basic Foundation courses (6 hours): Management 301--3 hrs.; Management 400--3 hrs., or Manufacturing and Construction Technology 492--3 hrs.

UNDERGRADUATE PROGRAM REVISIONS

SCHOOL OF TECHNOLOGY: Electronics and Computer Technology
Computer Hardware Technology Major: Instrumentation Control Option

Executive Summary:

In response to the Program Array Review Process, the Bachelor of Science Program in Instrumentation and Control Technology is being revised to be offered as an option under the Bachelor of Science in Computer Hardware Technology. The title of the program will change from Instrumentation and Control Technology to Computer Hardware Technology: Instrumentation and Control Option. The option provides opportunities and experiences to students interested in the field of computer hardware instrumentation and computer instrumentation systems. Programs are designed to provide students with the necessary knowledge and application skills needed to be successful at the job entry level. This change will eliminate the CIP Code 150404 by placing the option under the CIP code 150301.

Rationale:

Eliminating IMT 438 from the curriculum because it has not been taught for many years. This elimination will remove the need for course substitutions. The change in the number of technical elective hours from 6 to 9 increases the number of elective hours available to the student making the degree program more flexible for the individual to tailor the course of study to individual interests. Due to low number of graduates in the past, the Program Array Review process has identified this degree as requiring change. It was proposed and approved to modify the program from a stand-alone B.S. program to being offered as an option under the B.S. of Computer Hardware Technology. This will eliminate the CIP code for the Instrumentation B.S. degree.

OLD CATALOG COPY

Instrumentation and Control Major (83 semester hours)

Required courses:

Electronics Technology courses (42 hours): 130—2 hrs.; †160—3 hrs.; †165—3 hrs.; 220—3 hrs.; 221—3 hrs.; 231—3 hrs.; †232—3 hrs.; 321—3 hrs.; †331—3 hrs.; †334—3 hrs.; 421—3 hrs.; 430—1 hr.; †442—3 hrs.; †444—3 hrs.; †446—3 hrs.

Chemistry and Physics: 8 hours from the following: Chemistry 105—3 hrs. and 105L—1 hr.; 106—3 hrs. and 106L—1 hr.; Physics 105—3 hrs. and 105L—1 hr.; 106—3 hrs. and 106L—1 hr.

Industrial and Mechanical Technology (6 hours): †329—3 hrs.; †438—3 hrs.

Management: 12 hours from the following: Electronics and Computer Technology 437—3 hrs.; Management 301—3 hrs. or 140—3 hrs.; Manufacturing and Construction Technology 473—3 hrs.; 497—3 hrs.

Mathematics and Computer Science (9 hours): Mathematics 115—3 hrs.; 301—3 hrs. (or higher level of mathematics); Computer Science 156 or 256—3 hrs. or higher level structured language.

Electives: 6 hours.

NEW CATALOG COPY

Computer Hardware Technology Major – Instrumentation and Control Option (83 semester hours)

Required courses:

Electronics Technology courses (42 hours): 130—2 hrs.; †160—3 hrs.; †165—3 hrs.; 220—3 hrs.; 221—3 hrs.; 231—3 hrs.; †232—3 hrs.; 321—3 hrs.; †331—3 hrs.; †334—3 hrs.; 421—3 hrs.; 430—1 hr.; †442—3 hrs.; †444—3 hrs.; †446—3 hrs.

Chemistry and Physics: 8 hours from the following: Chemistry 105—3 hrs. and 105L—1 hr.; 106—3 hrs. and 106L—1 hr.; Physics 105—3 hrs. and 105L—1 hr.; 106—3 hrs. and 106L—1 hr.

Industrial and Mechanical Technology (3 hours): †329—3 hrs.

Management: 12 hours from the following: Electronics and Computer Technology 437—3 hrs.; Management 140—3 hrs. or 301—3 hrs.; Manufacturing and Construction Technology 473—3 hrs.; 497—3 hrs.

Mathematics and Computer Science (9 hours): Mathematics 115—3 hrs.; 301—3 hrs. (or higher level of mathematics); Computer Science 156 or 256—3 hrs. or higher level structured language.

Electives: 9 hours.

SCHOOL OF TECHNOLOGY: Electronics and Computer Technology
Electronics Technology Major: Biomedical Electronics Option

Executive Summary:

In response to the Program Array Review Process, the Bachelor of Science Program in Biomedical Electronics Technology is being revised to be offered as an option under the Bachelor of Science in Electronics Technology. The option provides opportunities and experiences to students interested in the field of Biomedical Electronics. Program are designed to provide graduates with the necessary knowledge

and application skills needed to be successful at the job entry level. This change will eliminate the CIP code 150401 by placing the option under the CIP code 150303. The chance will also decrease the required hours by 3 from 90 to 87 by removing MATH 301 as a requirement.

Rationale:

Due to the low number of graduates in the past, the Program Array Review process has identified this degree as requiring change. It was proposed and approved to modify the program fro a stand alone B.S. program to being offered as an option under the B.S. of Electronics Technology. This will eliminate the CIP code for the B.S. degree. The reduction of 3 hours is possible due to the alteration of the program resulting in the elimination of Math 301 as a required course.

OLD CATALOG COPY

Biomedical Electronics Technology Major (90 semester hours)

Required courses:

Electronics Technology courses (39 hours): 130—2 hrs.; †160—3 hrs.; †165—3 hrs.; 220—3 hrs.; 221—3 hrs.; 231—3 hrs.; †232—3 hrs.; 321—3 hrs.; †324—3 hrs.; †325—3 hrs.; 331—3 hrs.; †334—3 hrs.; †369—3 hrs.; 430—1 hr.

Industrial and Mechanical Technology (9 hours): †103—3 hrs.; 303—3 hrs.; †329—3 hrs.

Chemistry (8 hours): 105—3 hrs.; 105L—1 hr.; 106—3 hrs.; 106L—1 hr.

Life Sciences (8 hours): 101—3 hrs.; 101L—1 hr.; 102—3 hrs.; 102L—1 hr.

Mathematics and Computer Science (9 hours): Mathematics 115—3 hrs.; 301—3 hrs. (or higher level of mathematics); Computer Science 156 or 256—3 hrs. (or higher level structured language).

Physics (8 hours): 105—3 hrs.; 105L—1 hr.; 106—3 hrs.; 106L—1 hr.

Required Electives (9 hours): Electronics and Computer Technology †281—3 hrs.; †335—3 hrs.; 351A—3 hrs.; 437—3 hrs.; Clinical Laboratory Science 400—3 hrs.; 401—5 hrs.; 490—1 hr.; Life Sciences 330—3 hrs.; 330L—1 hr.

† Denotes a course having a laboratory component requiring additional contact hours.
Additional courses to satisfy the General Education requirements.

NEW CATALOG COPY

Electronics Technology Major – Biomedical Electronics Technology Option (87 semester hours)

Required courses:

Electronics Technology courses (39 hours): 130—2 hrs.; †160—3 hrs.; †165—3 hrs.; 220—3 hrs.; 221—3 hrs.; 231—3 hrs.; †232—3 hrs.; 321—3 hrs.; †324—3 hrs.; †325—3 hrs.; 331—3 hrs.; †334—3 hrs.; †369—3 hrs.; 430—1 hr.

Industrial and Mechanical Technology (9 hours): †103—3 hrs.; 303—3 hrs.; †329—3 hrs.

Chemistry (8 hours): 105—3 hrs.; 105L—1 hr.; 106—3 hrs.; 106L—1 hr.

Life Sciences (8 hours): 101—3 hrs.; 101L—1 hr.; 102—3 hrs.; 102L—1 hr.

Mathematics and Computer Science (9 hours): Mathematics 115—3 hrs.; Computer Science 156 or 256—3 hrs. (or higher level structured language).
Physics (8 hours): 105—3 hrs.; 105L—1 hr.; 106—3 hrs.; 106L—1 hr.
Required Electives (9 hours): Electronics and Computer Technology †281—3 hrs.; †335—3 hrs.; 351A—3 hrs.; 437—3 hrs.; Clinical Laboratory Science 400—3 hrs.; 401—5 hrs.; 490—1 hr.; Life Sciences 330—3 hrs.; 330L—1 hr.

† Denotes a course having a laboratory component requiring additional contact hours.

SCHOOL OF TECHNOLOGY: Industrial and Mechanical Technology
Automotive Technology Management Major

Executive Summary and Rationale:

Change of course requirements to comply with GE2000 and change of title to better reflect program content. Industrial Technology pre-programs are by nature and design management programs. Industrial Technology programs are accredited by the National Association of Industrial Technology (NAIT). NAIT Accreditation Standards state that Industrial Technology programs must prepare management-oriented technical professionals. The overwhelming major of industrial technology grauduates, especially Automotive Technology, are employed as managers and other salaried (as compared to hourly) professionals. The Automotive program does not prepare automotive technicians. However, the title Industrial Automotive Technology does not describe the professions for which the major prepares graduates. Most students and potential clients and University personnel, e.g., admissions, administrators, etc., believe, based on the current title, that the major prepares technicians. The program prepares managers – not technicians. The current title is misleading and hinders recruiting, marketing, and placement of graduates in the program. The required course changes are required to adhere to General Education 2000. MATH 111 or 115 and IMT 115 constitute the approved quantitative literacy requirement. MCT 295 is the approved information technology literacy requirement.

OLD CATALOG COPY

Industrial Automotive Technology Major
(64 semester hours)

Required courses:

Industrial and Mechanical Technology: 103—3 hrs.; 130—2 hrs.; 132—3 hrs.; 233—3 hrs.; 329—3 hrs.; 333—3 hrs.; 334—3 hrs.; 335—3 hrs.; 336—3 hrs.; 337—3 hrs.; 430—1 hr.; 433—3 hrs.; 434—3 hrs.
Manufacturing and Construction Technology: 370 or 371—3 hrs.; 492—3 hrs.; 497—3 hrs.
Electronics and Computer Technology: 160—3 hrs
Mathematics: 111—3 hrs. or 115—3 hrs.
Physics: 101—3 hrs.; 101L—0 hr.

Chemistry: 100—3 hrs.; 100L—1 hr. or 105—3 hrs.; 105L—1 hr.
Management: 301—3 hrs.
Directed Electives: (3 hours from the following): Mathematics 301—3 hrs.; Industrial and Mechanical Technology 301—3 hrs.

NEW CATALOG COPY

Automotive Technology Management Major
(68 semester hours)

Required courses:

Industrial and Mechanical Technology: 103—3 hrs.; 130—2 hrs.; 132—3 hrs.; 215—3 hrs.; 233—3 hrs.; 329—3 hrs.; 333—3 hrs.; 334—3 hrs.; 335—3 hrs.; 336—3 hrs.; 337—3 hrs.; 430—1 hr.; 433—3 hrs.; 434—3 hrs.
Manufacturing and Construction Technology: 295—3 hrs.; 370 or 371—3 hrs.; 492—3 hrs.; 497—3 hrs.
Electronics and Computer Technology: 160—3 hrs
Mathematics: 111—3 hrs. or 115—3 hrs.
Physics: 101—3 hrs.; 101L—0 hr.
Chemistry: 100—3 hrs.; 100L—1 hr.
Management: 301—3 hrs.

COURSE DELETIONS

SCHOOL OF TECHNOLOGY: Industrial and Mechanical Technology

IMT *439 **Senior Project in Power and Automotive Technology – 2-3 hours.** A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of professional competence in an area of power and automotive technology and is carried out in consultation with one or more faculty advisors. Collaboration with representatives in industry, government agencies, or community institutions is encouraged.

**Course has a graduate level equivalent*

IMT 489 **Senior Project in Packaging Technology—3 hours.** A project approved by the instructor is planned and carried out by the student. The project must demonstrate an advanced level of professional competence in an area of packaging technology and be carried out in consultation with one or more faculty advisors. Collaboration with representatives in industry, government agencies, or community institutions is encouraged.

UNDERGRADUATE PROGRAMS TO BE ELIMINATED

The following programs were reviewed as part of the Program Array Review Process***** and have been

recommended by the departments to be eliminated. They will not report to another Major as an option under that major.

SCHOOL OF TECHNOLOGY

B.S. Instrumentation and Control CIP Code [150404]
B.S. Biomedical Electronics CIP Code [150401]

***** Program Array Review is the examination of degree programs identified by specific CIP codes that graduate few students. Departments that offer the programs are not the subjects of this review. Courses and concentrations in these content areas will be available under other programs.

GRADUATE APPROVALS

COURSE REVISIONS

SCHOOL OF HEALTH & HUMAN PERFORMANCE: Health and Safety

HLTH 612 **Epidemiology and Infection Control of Environments--3 hours.** Epidemiology is the study of the following variables: cultural, geographical, ethological, religious, environmental, occupational, reservoirs, vectors, hosts, and how these variables may cause injury and disease. The scope of the course will also include the study of the natural history of disease and infection control as applied to the workplace, public health establishments, and health care facilities. In addition, statistical analysis and study of disease, including time, place, and person will be covered.

Change title and description to:

HLTH 612 **Epidemiology – 3 hours.** Epidemiology is the study of the distribution and determinants of health events among the human population in work place, community, and schools. Topics include: spectrum of diseases and injuries and their prevention; epidemiologic study designs, data collection, statistical analysis, presentation, and application in community diagnosis, risk assessment, and program evaluation.

GRADUATE PROPOSALS – Course Revisions: continued

SCHOOL OF TECNOLOGY

SOT 899 **Dissertation--3 hours**. A required course for all doctoral students. Offered by arrangement with the chairperson of the dissertation committee. Registration must be a total of 18 semester hours with 9 from Indiana State University and 9 from the Consortium University of the chair of the dissertation committee. Prerequisite: admission to candidacy.

Change credit hours and description to:

SOT 899 **Dissertation—1-9 hours**. The requirement for all doctoral students is 9 hours with ISU,

a total of 18 hours is required. Offered by arrangement with the chairperson of the student's dissertation committee. Credit registration must have 9 hours of the 18 hours from ISU and 9 from the University of the dissertation chairperson. Select course subscript to match department of the advisor.

SCHOOL OF TECHNOLOGY: Industrial and Mechanical Technology

IMT *509 **Research Project in Mechanical Technology--2-3 hours**. A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of design competency in mechanical technology and is performed in consultation with one or more faculty advisors. Collaboration with representatives of industry, government agencies, or community institutions is encouraged.

Change title and description to:

IMT *509 **Research Project in Industrial Technology – 2-3 hours.** A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of competency in the student's major and is performed in consultation with one or more faculty advisors. Collaboration with representatives of industry, government agencies, or community institutions is encouraged.

**Course has an undergraduate level equivalent*

COURSE DELETIONS

SCHOOL OF TECHNOLOGY: Industrial and Mechanical Technology

IMT *539 **Research Project in Power and Automotive Technology--2-3 hours**. A project approved by the professor is planned and carried out by the student. The project must demonstrate an advanced level of professional competence in an area of power and automotive technology and is carried out in consultation with one or more faculty advisors. Collaboration with representatives of industry, government agencies, or community institutions is encouraged.

**Course has an undergraduate level equivalent*

CORRECTIONS

*******The following courses were approved for banking in Academic Notes on April 15, 2002. It should not have been done so and should be an active course. They are being reprinted here to show that they are **APPROVED** courses.

ARTH 584 **Study in Art History Abroad--1-6 hours.** Tours designed as an introduction to the history and appreciation of the arts of selected countries. Research paper required on a specific related topic.