Armstrong State University
Faculty Senate Bill FSB-2015-01-26-01:
University Curriculum Committee

Presidential Action

The attached University Curriculum Committee minutes and actions are provided to the University President for approval.

Delivered:

Signature: [Signature] Date: [Date]

Approve: [Checkmark]

Disapprove: [Blank]

Remand: [Blank]

Comments: (please attach an additional sheet if necessary)

Signature: [Signature]
Dr. Linda M. Bleicken, President
Armstrong State University

Date: 2/2/15
CALL TO ORDER. The meeting was called to order at 3:01 by Dr. David Lake.

APPROVAL OF MINUTES. The minutes of November 5, 2014 were approved as presented.

ITEMS

I. College of Education (no items)

II. College of Health Professions
   A. Diagnostic and Therapeutic Sciences

   Item 1 from the Department of Diagnostic and Therapeutic Sciences was discussed and approved by the committee. It is being submitted to the Faculty Senate for approval.

   1. Modify the following program of study:

   Program for the Degree of Bachelor of Science in Radiologic Sciences

   A. General Requirements (Core Areas A, B, C, D.IIB, and E) ................. 42 hours
      (Nuclear Medicine students must complete a general chemistry course with lab)
   Core Area F ........................................................................................................ 18 hours
      BIOL 2081 Human Anatomy and Physiology I
      BIOL 2082 Human Anatomy and Physiology II
      HLPR 2000 Research in Health Professions
      Guided Electives from the following list (4 credit hours)
RADS 2000 or RESP 2110
COMM 2280 (except for Sonography track), or a lower-level class (1000-
or 2000-level) in MATH, CSCI, ITEC, BIOL, CHEM, PHYS, PHSC,
ASTR, or GEOL, or ISC1
(Nuclear Medicine students who have not completed a Chemistry sequence
in Area D must complete one chemistry course with lab as the science
elective)

One of the following:
PHSC 1211/1211L Physical Environment and Lab
PHYS 1111K Introductory Physics I

Rationale: Clarity.

Effective Term: Fall 2015

B. Health Sciences (no items)
C. Nursing (no items)

D. Rehabilitation Sciences

*Items 1-3 from the Department of Rehabilitation Sciences were discussed and
approved by the committee. They are being submitted to the Faculty Senate for
approval.*

1. Modify the following Program of Study:

Program for the Degree of Bachelor of Science in Communication Sciences and
Disorders

A. General Requirements (Core Areas A, B, C, D.IIB, and E) 42 hours
Core Area F ................................................................. 18 hours
CHEM 1151 Survey of Chemistry I
CHEM 1151L Survey of Chemistry I Laboratory
CSDS 1220 Introduction to Communication Disorders
HSCC 2500 Health Issues & Resources
PHSC 1211 Physical Science
PHSC 1211L Physical Science Lab
HLPR 2000 Introduction to Research in the Health Professions
HSCC 2200 Health Communication
PSYC 2950 Lifespan Developmental Psych
Physical Education ....................................................... 3 hours
First-Year Seminar ...................................................... 1 hour

B. Major Field Courses ............................................. 33 hours
CSDS 2230 Anatomy and Physiology of Speech and Hearing Mechanisms
CSDS 2240 Normal Speech and Language Development
CSDS 2250 Phonetics  
CSDS 3400 Speech Science  
CSDS 3410 Introduction to Audiology  
CSDS 3420 Language Disorders  
CSDS 3430 Organically Based Communication Disorders  
CSDS 3450 Articulation Disorders  
CSDS 4050 Intercultural Communication  
CSDS 4190 Clinical Methods in Speech-Language Pathology  
CSDS 4151 Clinical Writing for the Health Professions  

C. Related Field Courses ...................... 12-15 hours  
PSYC 1101 General Psychology (if not taken in area E)  
Note: PSYC 1101 should be completed during the first 36 hours  
EDUC 3300 Educating Students w/Disabilities  
RHAB 4000 Application of Research to the Rehabilitation Professions  
PSYC 3400 Introduction to Learning  
PSYC 5060U Basic Behavior Principles and Behavior Change  
GERO 5500U Survey of Gerontology  

D. Electives ............................................... 12-15 hours  
At least six nine-hours of electives must be courses numbered 3000 or above. PSYC  
1101 Introduction to Psychology should be taken if not taken in Area E.  
If the following sequence is taken in American Sign Language: CSDS 1001, 1002,  
2001, all of the additional electives must be at 3000 level or higher.  

Total Semester Hours .............................. 124 hours  

E. Admission to the program, Preservice Portfolio, Current Certification in  
CPR/First Aid, Criminal Background Check.  

Rationale: Program accreditation standards effective September 1, 2014 recommend a  
course in chemistry or physics to meet the physical science requirement.  
PSYC 1101 is not a related field course. In addition, the program of study as well as the  
15 to Finish Roadmap for the program specifies PSYC 1101 in the first year of study.  
PSYC 3400 has been added as a prerequisite for PSYC 5060U/G which is listed in the  
current program of study.  
Elective hours were adjusted in response to the addition of PSYC 3400 in the related field  
area.  
Students are no longer required to gain admissions to the program or submit the  
Preservice Portfolio, Current Certification in CPR/First Aid, or Criminal Background  
Checks.  

Effective Term: Fall 2015  

2. Modify the following Program of Study:  

Program for the Associate of Science -Communication Sciences and Disorders Track  

A. General Requirements (Core Areas A, B, C, D.IIB, E)...... 42 hours
Physical Education .................................................. 3 hours
First-Year Seminar ............................................. 1 hour

B. Additional Requirements ................................. 18 hours
CHEM 1151 Survey of Chemistry I
CHEM 1151L Survey of Chemistry I Laboratory
CSDS 1220 Introduction to Communication Disorders
HLPR 2000 Introduction to Research in the Health Professions
HSCC 2200 Health Communication
HSCC 2500 Health Issues and Resources
PHSC 1211/PHSC 1211L Physical Science with lab
PSYC 1101 Introduction to Psychology or PSYC 2950 Lifespan Developmental Psychology

Total Semester Hours ........................................... 64

C. Exit Exam

Rationale: Program accreditation standards effective September 1, 2014 recommend a course in chemistry or physics to meet the physical science requirement.

Effective Term: Fall 2015

3. Create the following program of study:

Post-Baccalaureate Certificate in Communication Sciences and Disorders

The post-baccalaureate program is designed for individuals who have earned a Bachelor’s degree in disciplines other than Communication Sciences and Disorders and now wish to complete the prerequisite courses (i.e., “leveling courses”) that are often required for admission into a graduate program in either audiology or speech-language pathology.

The certificate is available to students who hold a baccalaureate degree from an accredited institution and have earned a cumulative GPA of 3.0. Interested students should submit an application to the program. Course rotation begins each fall.

Post-Baccalaureate Certificate in Communication Sciences and Disorders .... 24 hours

CSDS 1220 Introduction to Communication Sciences
CSDS 2230 Anatomy and Physiology of Speech and Hearing Mechanisms
CSDS 2240 Normal Speech and Language Development
CSDS 2250 Phonetics
CSDS 3400 Speech Science
CSDS 3410 Introduction to Audiology
CSDS 3420 Language Disorders
CSDS 4151 Writing for the Health Professions
Students completing the certificate in Communication Sciences and Disorders are required to obtain twenty-five clinical observation hours verified with a signature by a certified audiologist or speech-language pathologist as required by the American Speech-Language-Hearing Association. Students are also required to obtain 10 hours of volunteer activities that are unpaid and serve the University or the Community for the certificate to be awarded.

While completion of the Post-baccalaureate program does not guarantee admission into the Communication Sciences and Disorders Graduate Program at Armstrong, it does qualify students to submit an application for admission into the graduate program at Armstrong and for many other graduate programs in the United States.

For more information about the certificate or for a career in Communication Sciences and Disorders, please contact the program.

**Rationale:** Communication Sciences and Disorders programs prepares students for careers in the high demand fields of audiology and speech-language pathology. The professions attract working professionals from various backgrounds who are seeking a career change. A graduate degree (Master's in speech-language pathology or Au.D. in audiology) is required in order to become a certified practitioner in the field of communication sciences and disorders. Many graduate programs in speech-language pathology and audiology require applicants to have either an undergraduate degree in the field or a core of prerequisite coursework in the field. Our post-baccalaureate studies program has been developed to help students who wish to pursue a career in speech-language pathology or audiology, but who have an undergraduate degree in an area other than communication sciences and disorders. The Communication Sciences and Disorders program has received significant interest in post-baccalaureate courses which continues to increase.

**Effective Term:** Fall 2015

### III. College of Liberal Arts

A. Art, Music, and Theatre (no items)

B. Criminal Justice, Social and Political Science

*Item 1 from the Department of Criminal Justice, Social and Political Science was discussed and approved by the committee. It is being submitted to the Faculty Senate for approval.*

1. **Modify the following program of study:**

   **PROGRAM FOR THE DEGREE OF ASSOCIATE OF APPLIED SCIENCE IN CRIMINAL JUSTICE**
A. General Requirements: Core Areas ............28 hours
   ENGL 1101 Composition I
   ENGL 1102 Composition II
   MATH 1001 Quantitative Skills and Reasoning or MATH 1111 College Algebra
   HIST/POLS 1100 Political History of America and Georgia
   PSYC 1101 Introduction to Psychology
   SOCI 1101 Introductory Sociology
   One course from the following:
     HIST 1111, HIST 1112, HIST 2111, HIST 2112, POLS 2100, ANTH 1102,
     ECON 2105
   One course from the following:
     ENGL 2100, ARTS 1100, ARTS 2710, ARTS 2720, THEA 1100, MUSC
     1100, PHIL2010, PHIL 2030
   One course from the following:
     BIOL 1107/1107L, CHEM 1211 (and lab), PHYS 1111K, PHSC 1211/1211L

   Rationale: Adding Math 1001 allows the Associate degree to be consistent with the
   Bachelor degree.

   Effective Term: Fall 2015

C. Economics

   Item 1 from the Department of Economics was discussed and approved by the
   committee. It is being submitted to the Faculty Senate for approval.

   1. Modify the major field courses for the BS in Business Economics

   PROGRAM FOR THE DEGREE OF BACHELOR OF SCIENCE IN
   BUSINESS ECONOMICS

B. Major Field Courses ........................................30 hours
   ECON 3230 Finance
   ECON 3700 Econometrics or ECON/MKTG 3800 Quantitative Marketing
   Research
   MGMT 3220 Management
   MGMT 4111 Entrepreneurship or ECON 4900 Economic Methods and Senior
   Thesis
   MKTG 3210 Marketing
   Six credits selected from:
     ECON 3050 Intermediate Macroeconomics and ECON 3060 Intermediate
     Microeconomics
     ECON 3050 Intermediate Macroeconomics and ECON 3500 Managerial
     Economics
ECON 3060 Intermediate Microeconomics and ECON 3300 Money and Banking

**Nine hours** Six credits selected from:
- ECON 3100 Multinational Economic Enterprises
- ECON 3200 International Trade
- ECON 3300 Money and Banking
- ECON 3400 Economics of Labor
- ECON 3450 Environmental Economics
- ECON 3460 Economics of Immigration
- ECON 3470 Economics of Health
- ECON 3500 Managerial Economics
- ECON/MKTG 3800 Quantitative Marketing Research
- ECON 4100 Financial Economics: Portfolio Analysis
- ECON 4150 Money and Capital Markets
- ECON 4310 International Finance
- ECON 4410 Regional Economics
- ECON 4450 Comparative Economics
- ECON 4451 Industrial Organization
- ECON 4460 Economic Analysis of the Law
- ECON 4500 Public Finance
- ECON 4520 Internship

Three credits of upper division economics, 3000 and above, except for ECON 5150U.

**Rationale:** ECON 3100 and 4460 are sufficiently business oriented to be included in the major field courses. ECON 4450 and 4520 were removed because they are taught as experiential learning courses. The new structure with six credits from a list and three credits from any upper division economics course allows the student to take no more than three credits of the major as experiential learning or as a less business-oriented economics course. Title and crosslist corrections.

**Effective Term:** Fall 2015

D. Gender Studies (no items)
E. History (no items)
F. Languages, Literature, & Philosophy (no items)
G. Liberal Studies (no items)
H. Honors Program (no items)

**IV. College of Science and Technology**

**A. Biology**

*Items 1-6 from the Department of Biology were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.*
1. Create the following course:
BIOL 4240 BEHAVIORAL ECOLOGY 3-0-3
Prerequisite: BIOL 3030 (minimum grade of C) or BIOL 3050 (minimum grade of C)
Examines the survival value of behavior; how behavior is shaped by the environment;
and the evolution of behavior.

Rationale: Biology majors will benefit from a comprehensive examination of animal
behavior, a subject of biology that is not well addressed by the current curriculum.
The subject has been previously offered on two occasions as a section of BIOL 4970,
SPECIAL TOPICS.

Effective Term: Fall 2015

CURCAT:
Major Department: Biology
Can Course be repeated for additional credit? No
Maximum Number of Credit Hours: 3
Grading Mode: Normal
Instruction Type: Lecture
Course Equivalent: None

2. Modify the following course:
BIOL 3770 DEVELOPMENTAL AND COMPARATIVE Vertebrate
ANATOMY OF THE VERTEBRATES 3-6-43-3-4
Prerequisite: BIOL 1108 (minimum grade of C) or BIOL 1108H (minimum grade of C)
Development, anatomy, and evolution of vertebrate organ systems. Form, function,
and evolution of major vertebrate systems. Laboratories examine the anatomy of
different vertebrate taxa.

Rationale: To better align the focus of the course with that of other institutions and
address the needs of pre-veterinary biology students.

Effective Term: Fall 2015

3. Modify the following course:
BIOL 2010 MICROBIOLOGY 3-3-4
Prerequisite: BIOL 1107-1108 (minimum grade of C) or BIOL 1108H (minimum grade of C),
and both CHEM 1211 (minimum grade of C) and CHEM 1211L (minimum grade of C).
and BIOL 1107L (minimum grade of C) or BIOL 1107H (minimum grade of C) and BIOL 1107A (minimum grade of C).

Rationale: Students will benefit from exposure to concepts in evolution addressed in
BIOL 1108 and will benefit from practice with microscopic techniques in BIOL
1108L. Students will benefit from having learned basic chemistry principles that they
can apply to understanding microbial metabolism.
Effective Term: Fall 2015

4. Modify the following course:
   BIOL 3050 GENERAL ECOLOGY
   Prerequisites: BIOL 1108 (minimum grade of C) or BIOL 1108H (minimum grade of C) and BIOL 2010 (minimum grade of C)
   Introduction to behavioral, individual, population, community, and ecosystem ecology. Field and laboratory activities cover ecological principles and emphasize sampling procedures and data analysis.

   Rationale: Currently, the laboratory section is required for all students who take General Ecology. With recent ecologist hires in Biology, more upper-level ecology courses will be offered and for these, BIOL 3050 will be a pre-requisite. The number of seats in the laboratory section are currently limiting enrollment and this course suffers from bottlenecks. With the proposed change, BIOL 3050 will still be a required major field course for two tracks, but the lab will count as a biology elective.

Effective Term: Fall 2015

CURCAT:
   Major Department: Biology
   Can course be repeated for additional credit? No
   Maximum number of credit hours: 3
   Instruction type: Lecture and Laboratory
   Course Equivalent: None

5. Modify in Banner/add to catalog the following course:
   BIOL 3050L GENERAL ECOLOGY Laboratory
   Prerequisites: BIOL 1108 (minimum grade of C) or BIOL 1108H (minimum grade of C) and BIOL 2010 (minimum grade of C)
   Prerequisite or Corequisite: BICL 3050
   Field and laboratory activities cover ecological principles and emphasize sampling procedures and data analysis.

   Rationale: Currently, the laboratory section is required for all students who take General Ecology. With recent ecologist hires in Biology, more upper-level ecology courses will be offered and for these, BIOL 3050 will be a pre-requisite. The number of seats in the laboratory section are currently limiting enrollment and this course suffers from bottlenecks. With the proposed change, BIOL 3050 will still be a required major field course for two tracks, but the lab will count as a biology elective.

Effective Term: Fall 2015

CURCAT:
   Major Department: Biology
Can course be repeated for additional credit? No
Maximum number of credit hours: 0 1
Instruction type: Laboratory
Course Equivalent: None

6. Modify the following course:
BIOL 2400 Introduction to Cell and Molecular Biology 3-0-3
Prerequisite: Both BIOL 1107 (minimum grade of C) and BIOL 1107L (minimum grade of C) or both BIOL 1107H (minimum grade of C) and BIOL 1107A (minimum grade of C), and both CHEM 1211 (minimum grade of C) and CHEM 1211L (minimum grade of C).

Rationale: Students will benefit from having learned basic chemistry principles that they can apply to understanding metabolic pathways, energy transformations, and molecular concepts.

Effective Term: Fall 2015

Item 7, modification of the program of study for the B.S. in Biology, was remanded so errors/omissions could be corrected.

B. Chemistry and Physics

Items 1-7 from the Department of Chemistry and Physics were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.

1. Modify the following course:
PHYS 3120 DIGITAL ELECTRONICS AND MICROCONTROLLERS 1-5-32-2-3
Prerequisite: PHYS 2212K (minimum grade of C) or both MATH 1161 and PHYS 1112K (minimum grade of C)

Introduction to discrete components and integrated circuits. Hands-on lab experience in constructing and investigating an array of digital circuits that are directly applicable in instrumentation. Digital circuits, analysis of logic signals, microcontroller programming and interfacing with applications to physical systems.

Rationale: Given the rapid evolution of digital technology, the Digital Electronics course must be updated to reflect the current state of the art. The extreme increase in capabilities and decrease in cost that has transformed the personal computer industry has had the same effect on the microcontroller industry. As a result, many problems that would previously have required a handful of integrated circuits can now be addressed with a single microcontroller and several lines of code. The lab and lecture
hours are being adjusted to reduce the number of lab contact hours and increase the number of lecture contact hours.

**Effective term:** Fall 2015

**Courses for the proposed Robotics and Mechatronics Track:**

2. **Create the following course:**

**PHYS 3170 SENSOR DEVELOPMENT AND DATA ANALYSIS**  2-2-3

Prerequisite: PHYS 2212K (minimum grade of C) or both MATH 1161 and PHYS 1112K (minimum grade of C)

Design and construction of a variety of sensors for physical quantities. Implementation, data collection, and analysis of sensor output.

Rationale: The ubiquity of computers and embedded systems in modern life illustrates the importance of the interaction between the physical and virtual worlds. This course will discuss the principles behind that interaction and focus on ways to develop sensors for a variety of stimuli, as well as the analysis and interpretation of the data collected.

**Effective Term:** Fall 2015

**CURCAT:**
- **Major Department:** Chemistry and Physics
- **Can course be repeated for additional credit:** No
- **Maximum Number of Credit Hours:** 3
- **Grading Mode:** Normal
- **Instruction Type:** Lecture-Lab
- **Equivalent Course:** None

3. **Create the following course:**

**PHYS 4200 ANALYSIS AND SYNTHESIS OF MECHATRONIC SYSTEMS**  2-2-3

Prerequisite: PHYS 3170 (minimum grade of C) and either ENGR 1371 or CSCI 1301 (minimum grade of C)

Students will design and construct complete systems involving sensors, algorithms, and physical action on the environment. Hands-on lab experience through applications in experimental physics. Includes a variety of oral and written assignments. Physics faculty involved in assessments.

Rationale: The capstone course for students in the Mechatronics track. This will represent the synthesis of previous coursework; sensors, microcontrollers, and actuators will be combined into a unified device built to accomplish a particular task.

**Effective Term:** Fall 2015
4. Create the following course:
**PHYS 3370 HUMAN COMPUTER INTERACTION**  
3-0-3
Prerequisite: CSCI 1301 or ITEC 1310 or ENGR 1371
Paradigms in user interface design and related human factors. Topics include: user-system compatibility analysis, techniques for user interface design, methods for interface analysis, multimodal interaction and interaction analysis.

Rationale: A key component in the construction of systems that collect data, analyze it, and act on the results is the way the system interfaces with its human programmer or operator. This course will involve haptic devices and their use to provide another channel for the bidirectional flow of information between human and computer.

Effective Term: Fall 2015

5. Create the following course:
**PHYS 2030 INTRODUCTION TO COMPUTER ENGINEERING**  
3-0-3
Prerequisite: CSCI 1060 or CSCI 1301 or ENGR 1371 or CSCI 1371
Computer systems and digital design principles. Architectural concepts, software, Boolean algebra, number systems, combinational datapath elements, sequential logic, storage elements. Design of DRAM control and I/O bus.

Rationale: The design and development of computer hardware allows the students to move beyond prepackaged general purpose control devices and begin to create their own specialized circuitry.

Effective Term: Fall 2015
6. Create the following course:

**PHYS 2031 DIGITAL DESIGN LABORATORY**

**1-3-2**

Prerequisite: ENGR 2030 or PHYS 2030 (minimum grade of C)

Design and implementation of digital systems, including a team design project. CAD tools, project design methodologies, logic synthesis, and assembly language programming.

Rationale: The design of special-purpose circuitry using FPGA (Field Programmable Gate Array) devices is an invaluable aid in finding solutions to problems involving sensor management and control. This lab will show students how to use the FPGA to combine the flexibility of software with the high performance of special-purpose integrated circuits.

**Effective Term:** Fall 2015

**CURCAT:**

- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: No
- Maximum Number of Credit Hours: 2
- Grading Mode: Normal
- Instruction Type: Lecture-Lab
- Equivalent Course: None

7. Create the following course:

**PHYS 2035 PROGRAMMING FOR HARDWARE/ SOFTWARE SYSTEMS**

**3-3-4**

Prerequisite: ENGR 2030 or PHYS 2030 (minimum grade of C)

Programming techniques for hardware and software systems including creation of complex execution and storage mechanisms based on instruction set architecture and software design including programming languages and operating systems. Students will apply and develop these concepts through programming design projects.

Rationale: Most programming courses focus on programs to be executed by personal computers; the microcontroller and embedded-device environments are quite different in terms of chip capabilities, capacities, and support circuitry. This course will move beyond standard PC programming and investigate these other areas.

**Effective Term:** Fall 2015

**CURCAT:**

- Major Department: Chemistry and Physics
Can course be repeated for additional credit: No
Maximum Number of Credit Hours: 4
Grading Mode: Normal
Instruction Type: Lecture-Lab
Equivalent Course: ENGR 2035

Items 8-12, courses for the proposed Health Physics Track, were withdrawn by the department.

Items 13-14 from the Department of Health Sciences were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.

13. Modify the following program of study:

PROGRAM FOR THE DEGREE OF BACHELOR OF SCIENCE IN APPLIED PHYSICS

Track 1: Applied Physics

A. General Requirements

Core Areas A, B, C, D, IIA, and E ............................ 42 hours
Applied physics majors are required to take MATH 1113 in core area A and MATH 1161 in core area D

Area F .......................................................... 18 hours

PHYS 2211K, 2212K Principles of Physics I, II (unless taken to satisfy core area D, in which case replace with 8 hours of lower division electives)
MATH 2072 Calculus II
MATH 2083 Calculus III
One hour excess for MATH 1161 from Core Area D
1 hour excess from PHYS 1000 or from any science or math course

Physical Education .............................................. 3 hours
First-Year Seminar ............................................ 1 hour

B. Major Field Courses ................................. 30 hours

Choose one of the following courses:

PHYS 3100 Electrical Circuit Analysis or ENGR 3100 Circuit Analysis
PHYS 3120 Digital Electronics
PHYS 3300 Thermodynamics or PHYS 3400 Chemical Thermodynamics
PHYS 3801K Modern Physics
PHYS 3802 Introduction to Quantum Mechanics
PHYS 4120 Scientific Measurement with Digital Interfacing
PHYS 4170 Advanced Mechanics

Choose twelve semester hours from:

PHYS 2900 Introduction to Research in Physics
PHYS 3100 Electrical Circuit Analysis or ENGR 3100 Circuit Analysis (if not previously counted above)
PHYS 3120 Digital Electronics (if not previously counted above)
PHYS 3142 Computational Physics
PHYS 3200 Mathematical Methods for Physicists
PHYS 3220 Mechanics of Deformable Bodies
PHYS 3230 Fluid Mechanics
PHYS 3312 Electromagnetism
PHYS 3500 Diffraction and Crystallography
PHYS 3700K Optics
PHYS 4800 Pedagogy and Supplemental Instruction in Physics (maximum of 3 hours can be used in this section)
PHYS 4900 Independent Study in Physics
PHYS 4950 Special Topics in Physics
PHYS 4960 Physics Internship
PHYS 4991 Advanced Research in Physics

C. Related Field Courses .................................................. 23 hours
CHEM 1211 Principles of Chemistry I (and lab)
CHEM 1212 Principles of Chemistry II (and lab)
CSCI 1301 Introduction to Programming Principles or ENGR 1371 Computing for Engineers
MATH 2160 Linear Algebra
MATH 3411 Differential Equations
A three semester-hour upper-division math course (3000 or 4000 level, excluding MATH 3411, 3900, 3911, 3912, 3932, 4000,4750, 4900, 4910, 4961, 4962, 4963, 5412U, 5600U, 5700U, 5900U, 5911U)
Three semester hours of related field electives approved by the physics faculty

D. Electives ............................................................................ 7 hours
Upper-division courses (6 semester hours)
Free elective (1 semester hour)

Total Semester Hours ................................................................. 124 hours

E. Exit Exam

Rationale: See Item 14, below.

Effective Term: Fall 2015

14. Create the following track for the B.S. in Applied Physics:

Track II: Robotics and Mechatronics
A. General Requirements
Core Areas A, B, C, D,IIA, and E ............................... 42 hours
Applied physics majors are required to take MATH 1113 in core area A and MATH 1161 in core area D

Area F ..................................................................................... 18 hours
PHYS 2211K, 2212K Principles of Physics I, II (unless taken to satisfy core area D, in which case replace with 8 hours of lower division electives)
MATH 2072 Calculus II
MATH 2160
CSCI 1301 or ENGR 1371

Physical Education .................................................. 3 hours
First-Year Seminar .................................................... 1 hour

B. Major Field Courses .......................................... 30 hours
PHYS 2030 Introduction to Computer Engineering
PHYS 2031 Digital Design Laboratory
PHYS 2035 Programming for Hardware/Software Systems
PHYS 3100 Electrical Circuit Analysis
PHYS 3120 Digital Electronics and Microcontrollers
PHYS 3142 Computational Physics
PHYS 3170 Sensor Development and Data Analysis
PHYS 3801K Modern Physics
PHYS 4200 Analysis and Synthesis of Mechatronic Systems
PHYS 3370 Human Computer Interaction

C. Related Field Courses ........................................... 23 hours
CHEM 1211 Principles of Chemistry I (and lab)
CHEM 1212 Principles of Chemistry II (and lab)
MATH 3411 Differential Equations

Twelve semester hours (nine hours of which must be upper division level) of related field electives approved by the physics faculty.

D. Electives ............................................................. 7 hours
Upper-division courses (6 semester hours)
Free elective (1 semester hour)

Total Semester Hours ................................................. 124 hours

E. Exit Exam

Rationale: As a result of program review, the physics program has concluded that the program should seek to become more attractive than just being able to offer the traditional applied physics major. We see this as an opportunity to offer specialized tracks in Robotics and Mechatronics.

The Robotics and Mechatronics track would prepare the graduate the skills from not only the world of physics but from engineering and computer science to be capable of understanding the processes of measurement and control that are being utilized in industry and manufacture. This would require the creation of six new physics courses. However, three of these courses are being created to cross-list pre-existing one CSCI and two ENGR courses as equivalent to physics courses in the physics major field. This is being done by consultation and agreement with CSCI and ENGR programs.

Effective Term: Fall 2015

Item 15, the proposed Health Physics Track, was withdrawn by the department.
C. Computer Science and Information Technology

Item 1 from the Department of Computer Science and Information Technology was discussed and approved by the committee. It is being submitted to the Faculty Senate for approval.

1. Create the following track:

PROGRAM FOR THE DEGREE OF ASSOCIATE OF SCIENCE.

Cyber Security Track
A. General Requirements (Core Areas A, B, C, D.I, and E) ............... 42 hours
   Physical Education ........................................................................ 3 hours
   First-Year Seminar ........................................................................ 1 hour
B. Additional Requirements ....................................................... 18 hours
   MATH 1111 - College Algebra (if not taken in Core Area A)
   ITEC 1310 – Programming for IT
   CSCI 2070 - Ethical Considerations in Computer Science
   ITEC 3700 – Cyber Security I
   ITEC 4200 – Cyber Security II, Network Security
   ITEC 4300 – Cyber Security III, Ethical Hacking
   If MATH 1111 was taken in Core A, then select one of the following:
      MATH 1113 – Pre-Calculus Mathematics
      CSCI 1150 – Fundamentals of the Internet and the World Wide Web (if not
taken in Area D)

Total Semester Hours ................................................................. 64

Rationale: By offering an Associate of Science with a Cyber Security track, the Cyber
Security curriculum will become “stackable.” The courses for the Undergraduate
Certificate in Cyber Security stack within this track, allowing a certificate-seeking
student to apply them to an Associate’s degree. Should that student decide to earn a
Bachelor’s in Information Technology at Armstrong, or an equivalent Bachelor’s
degree at another institution (especially another USG institution), the Associate
degree will allow that student to seamlessly transition into the major program.

Effective Term: Fall 2015

D. Engineering Studies

Items 1-2 from the Engineering Studies Program were discussed and approved
by the committee. They are being submitted to the Faculty Senate for approval.
1. Cross-list the following course as PHYS 2030:
   ENGR 2030 INTRODUCTION TO COMPUTER ENGINEERING 3-0-3

   **Rationale.** This course is required for electrical and computer engineers in the engineering transfer program, it is also a course that may be taken towards obtaining an Associates of Science with a concentration in engineering. The physics program is currently proposing a mechatronics track within the BS Physics program. ENGR2030 would be a requisite course in this track, cross listed as PHYS 2030.

   **Effective Term:** Fall 2015

   **CURCAT:**
   Course Equivalent: PHYS 2030

2. Cross-list the following course as PHYS 2031:
   ENGR 2031 DIGITAL DESIGN LABORATORY 1-3-2

   **Rationale.** This course is required for electrical and computer engineers in the engineering transfer program, it is also a course that may be taken towards obtaining an Associates of Science with a concentration in engineering. The physics program is currently proposing a mechatronics track within the BS Physics program. ENGR2031 would be a requisite course in this track, cross listed as PHYS 2031.

   **Effective Term:** Fall 2015

   **CURCAT:**
   Course Equivalent: PHYS 2031

**E. Mathematics**

*Items 1-4 from the Department of Mathematics were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.*

1. **Create the following course:**
   MATH 0987 Foundations for Quantitative Reasoning (MATH 1001) 3-0-3
   **Prerequisite:** Placement according to Math Placement Index (MPI) < 1075
   **Description:** Study of set relationships, Venn diagrams, real number arithmetic, algebraic expressions, equations, functions, slopes, rates of change, coordinate graphing, and introductory statistics topics. This course is designed to review common arithmetic topics as well as introduce students to foundational algebra and statistics topics covered in MATH 1001.

   **Rationale:** This is course is being created for all University System of Georgia institutions offering remediation for MATH 1001. It is intended as a full semester
remedial course to be followed by MATH 1001, together with corequisite course MATH 0997.

Effective Term: Fall 2015

CURCAT:
   Major Department: Mathematics
   Can course be repeated for additional credit? No
   Maximum Number of Credit Hours: 3
   Grading Mode: S/U
   Instruction Type: Lecture
   Course Equivalent: None

2. Create the following course:
   MATH 0997 Support for Quantitative Reasoning (MATH 1001) 2-0-2
   Prerequisite: Placement according to Math Placement Index (1075 ≤ MPI < 1165) or successful completion of MATH 0987.
   Description: Provides just-in-time support for students concurrently enrolled in MATH 1001. Additional review and practice will be provided for relevant MATH 1001 course topics: logic and reasoning, sets and Venn diagrams, units of measure, percentages, formulas, fundamentals of statistics and statistical graphics, probability, functions, and modeling.

   Rationale: This course is being created for all University System of Georgia institutions offering remediation for MATH 1001. It will be taught concurrently with MATH 1001.

   Effective Term: Fall 2015

CURCAT:
   Major Department: Mathematics
   Can course be repeated for additional credit? No
   Maximum Number of Credit Hours: 2
   Grading Mode: S/U
   Instruction Type: Lecture
   Course Equivalent: None

3. Create the following course:
   MATH 0989 Foundations for College Algebra (MATH 1111) 3-0-3
   Prerequisite: Placement according to Math Placement Index (MPI) < 1100
   Description: A study of the essential mathematical concepts required for success in College Algebra (MATH 1111). Topics include properties of real numbers, linear equations and inequalities, quadratic equations, graphs, polynomials, and roots.

   Rationale: This is course is being created for all University System of Georgia institutions offering remediation for MATH 1111. It is intended as a full semester
remedial course to be followed by MATH 1111, together with corequisite course MATH 0999.

Effective Term: Fall 2015

CURCAT:
  Major Department: Mathematics
  Can course be repeated for additional credit? No
  Maximum Number of Credit Hours: 3
  Grading Mode: S/U
  Instruction Type: Lecture
  Course Equivalent: None

4. Create the following course:
   MATH 0999 Support for College Algebra (MATH 1111)  2-0-2
   Prerequisite: Placement according to Math Placement Index (1100 ≤ MPI < 1265) or successful completion of MATH 0989.
   Description: Provides just-in-time support for students concurrently enrolled in MATH 1111. Topics will parallel topics studied in MATH 1111, as well as essential quantitative skills needed to be successful in MATH 1111, including factoring, polynomial expressions, and roots.

   Rationale: This course is being created for all University System of Georgia institutions offering remediation for MATH 1111. It will be taught concurrently with MATH 1111.

   Effective Term: Fall 2015

CURCAT:
  Major Department: Mathematics
  Can course be repeated for additional credit? No
  Maximum Number of Credit Hours: 2
  Grading Mode: S/U
  Instruction Type: Lecture
  Course Equivalent: None

F. Psychology

*Items 1-3 from the Department of Psychology were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.*

1. Modify the following course:
   PSYC 2190 – Careers and Professional Skills in Psychology  3-0-3
   Prerequisites: PSYC 1101 and MATH 2200 (minimum grade of C)
   Corequisites: PSYC 2200 and 2201
Rationale: The course content in PSYC 2190, 2200, and 2201 are complementary and taking these courses as a learning community will help students synthesize the course content across all three courses.

Effective Term: Fall 2015

2. Modify the following course:
PSYC 2200 INTRODUCTION TO PSYCHOLOGICAL RESEARCH 3-0-3
Prerequisites: PSYC 1101 and MATH 2200 (minimum grade of C)
Corequisites: PSYC 2190 and PSYC 2201
An introduction to scientific methodology and its application to psychology, with emphasis on data collection methods and statistical techniques including, but not limited to, correlation, factorial ANOVA, and nonparametric procedures.
Students are required to perform statistical analyses using SPSS statistical programs, conduct an original psychological investigation, and write an APA style report of the research.

Rationale: The course content in PSYC 2190, 2200, and 2201 are complementary and taking these courses as a learning community will help students synthesize the course content across all three courses.

Effective Term: Fall 2015

3. Modify the following course:
PSYC 2201 INTRODUCTION TO PSYCHOLOGICAL RESEARCH LAB 0-1-1
Prerequisites: PSYC 1101 and MATH 2200 (minimum grade of C)
Co-requisites: PSYC 2190 and PSYC 2200

Rationale: The course content in PSYC 2190, 2200, and 2201 are complementary and taking these courses as a learning community will help students synthesize the course content across all three courses.

Effective Term: Fall 2015

OTHER BUSINESS

A. Requiring courses in the Core. Dr. Brooks followed up on the question from the November meeting regarding whether or not particular courses can be required in Core Areas A-E. She received verification from the system office that institutions must apply for permission to do this. In addition, Courses in Areas A-E may not be prerequisites for courses in the major. There are exceptions, as listed in the USG Academic and Student Affairs Handbook, Section 2.4.7. Any requirements in place as of the 2008-2009 catalog are allowed.

B. CIP in CURCAT. There was discussion of whether or not to add a field for the CIP code to the CURCAT information for new courses. It was agreed that the CIP is really only
necessary for new course prefixes, and Mr. McCaskill said his office would be happy to work with faculty on determining the CIP codes in these cases. Therefore, the field will not be added to required CURCAT information.

**ADJOURNMENT.** The meeting was adjourned at 4:25 p.m.

Respectfully submitted,

Phyllis L. Fulton  
Catalog Editor and Secretary to the Committee
CALL TO ORDER. The meeting was called to order at 3:02 p.m. by Dr. David Lake.

APPROVAL OF MINUTES. The minutes December 3, 2014 were approved as presented.

ITEMS

I. College of Education
   A. Childhood and Exceptional Student Education

   Items 1-4 from the Department of Childhood and Exceptional Student Education were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.

   1. Create the following course:
      ECUG 4075 Teaching of Social Studies and Science
      Prerequisites: Admission to Candidacy in the Department of Childhood and Exceptional Student Education and EDUC 3200, ECUG 3040, ECUG 3060 Emphasizes the teaching and learning of meaningful social studies and science concepts for children in grades PreK-5. A field experience is required.

      Rationale: By combining the social studies methods and science methods courses, a mathematics methods course can be developed and added to the program of study.

      Effective Term: Fall 2015

CURCAT:
Major Department: Childhood and Exceptional Student Education  
Can Course be repeated for additional credit? No  
Maximum Number of Credit Hours: 3  
Grading Mode: Normal  
Instruction Type: Lecture  
Course Equivalent: ECU G 4070 & ECU G 4080

2. Delete the following courses:
   ECU G 4070 SOCIAL STUDIES 3-V-3
   ECU G 4080 METHODS IN EARLY CHILDHOOD SCIENCE 3-V-3

Rationale: By combining the social studies methods and science methods courses, a mathematics methods course can be developed and added to the program of study.

Effective Term: Fall 2015

3. Create the following course:
   ECU G 4085 Teaching of Mathematics 3-V-3
   Prerequisites: Admission to Candidacy in the Department of Childhood and Exceptional Student Education and ECU G 3200, ECU G 3040, ECU G 3060. Emphasizes the teaching and learning of meaningful mathematics to children in grades PreK-5. A field experience is required.
   Co-requisite: ECU G 3750

Rationale: Since students in Fall of 2015 will be required to complete a math section on edTPA, it’s essential that a math methods course be developed.

Effective Term: Spring 2016

CURCAT:  
   Major Department: Childhood and Exceptional Student Education  
   Can Course be repeated for additional credit? No  
   Maximum Number of Credit Hours: 3  
   Grading Mode: Normal  
   Instruction Type: Lecture  
   Course Equivalent: None

4. Modify the following program of study:

   Program for the Degree of Bachelor of Science in Early Childhood Education

   Track 1: Early Childhood Education with Teacher Certification

   B. Major Field Courses .............................................47 hours
   ECU G 3100 Technology Applications for Teachers
   ECU G 3200 Curriculum, Instruction, and Assessment
EDUC 3300 Educating Students with Disabilities in the General Education Classroom
ECUG 3040 Childhood Development from Prenatal Period to Adolescence
ECUG 3060 Language Arts: Oral Language, Writing, Spelling And Grammar
ECUG 3071 Teaching Children’s Literacy
ECUG 3072 Teaching of Reading
ECUG 3750 Internship I Pre-Student Teaching
ECUG 4070 Social Studies
ECUG 4080 Methods in Early Childhood Science
ECUG 4075 Teaching of Social Studies and Science
ECUG 4085 Teaching of Mathematics
ECUG 4090 Classroom Management
ECUG 4300 Language Arts Assessment and Modification
ECUG 4750 Internship II Student Teaching

B. Secondary, Adult, and Physical Education

Item 1 from the Department of Secondary, Adult, and Physical Education was discussed and the undergraduate portion approved by the committee. It is being submitted to the Graduate Curriculum Committee and therefore is marked “For Information Only” for the report to the Senate.

1. Create the following course:
EDUC 5750U/G Extended Field Experience V-V-(3-9)
Undergraduate Prerequisite: Satisfactory score(s) on the appropriate GACE II certification test(s), and completion of all coursework in the program of study.
Graduate Prerequisite: Satisfactory score(s) on the appropriate GACE II certification test(s), and completion of all coursework in the program of study.
This field experience is a targeted experience in Planning, Instruction, and /or Assessment based on the performance assessment data. Completion and submission of a national pedagogical assessment is required (edTPA).

Rationale: In order to be a “program completer” in the state of Georgia, educator preparation candidates must take and pass a 3 task, 15/16 rubric pedagogical content performance assessment, edTPA. Undergraduate students must have completed ECEG 4750, SPED 4750, PEHM 4750 or MGSE 4750 and graduate students must have completed ECMT 6750, EEEX 6750 or SCED 6750. Undergraduate students must enroll in EDUC 5750U and graduate students must enroll in EDUC 5750G. This is a rigorous assessment that is portfolio based and developed by the candidate during clinical internship II (student teaching). In order for candidates to take the assessment they must be affiliated as a candidate (student) in a College of Education or Educator Preparation Program (EPP). Though we expect all of our candidates will be successful on the assessment that is scored nationally by external scorers hired by Pearson, the College of Education wants to create opportunities for those students who may struggle, or not pass particular rubric(s) or task(s). This is a highly
consequential assessment that is required of all new teachers entering the profession in Georgia. Currently there is no cut score published by the Georgia Professional Standards Commission, though the ‘rule’ goes into effect July 1, 2015. Another new rule that impacts enrollment in this course is the requirement that anyone who is doing field experiences or internships in Georgia public schools must attain a Pre-service Certificate. The Pre-service Certificate is connected to a sponsoring EPP, and once a candidate is labeled “program completer” the Pre-service Certificate is removed immediately, regardless of passing the required assessments necessary for teacher certification in Georgia. edTPA is a field based assessment that candidates must provide evidence including videotaping of instruction and assessment, as well as student artifacts. The assessment cannot be completed without a field placement, or affiliation with an EPP. Therefore, it is imperative that we have opportunities for candidates to “re-take” the edTPA, as well as retain their Pre-service Certificate in order to support candidate progression to eligibility to become teachers in Georgia.

Another possible target group who would register for this course includes “new teachers” (less than 3 years experience) from other states, which must take and pass the edTPA in order to obtain an Induction Certificate in Georgia.

Effective Term: Fall 2015

CURCAT:
Major Department: Secondary, Adult, and Physical Education
Can course be repeated for additional credit? Yes
Maximum number of credit hours: 9
Grading Mode: S/U
Instruction Type: Lab

II. College of Health Professions
A. Diagnostic and Therapeutic Sciences (no items)

B. Health Sciences

*Item 1 from the Department of Health Sciences was discussed and approved by the committee. It is being submitted to the Faculty Senate for approval.*

1. Modify the following program of study:

Program for the Degree of Bachelor of Health Science

Track One: Health Services Administration
C. Related Field Courses ................................................. 48 hours
   GER 5500U Survey of Gerontology
   HLPR 2200 Interprofessional Teams in Healthcare Organizations
   HSCA 3600 Financial Management for Health-Related Organizations
HSCA 4201 Health Care Marketing
HSCA 4600 Principles of Human Resources Management
HSCA 4610 Health Care Economics
HSCA 4620 Principles of Management in Health Services Organizations
HSCA 4630 Health Information Systems
HSCA 4655 Principles of Health Insurance and Reimbursement
HSCA 4660 Survey of Health Outcomes
HSCC 3130 Health Policy Issues
HSCP 2000 Ethical Theories/Moral Issues in Health
MHSA 5800U Comparative Health Care Systems

Students must take 12-9 hours from this list
  ECON 2105 Macroeconomics
  ECON 2106 Microeconomics
  GER 5510U Healthy Aging
  HSCCC 4005 Interprofessional Patient Advocacy Internship
  HSCC 4950 Practicum
  HSCF 3710 Worksite Wellness and Safety
  HSCP 2050 Introduction to the Disease Continuum
  HSCP 4000 Independent Study in Health Sciences
  PSYC 5150U Conflict Resolution
  PSYC 5300U Leadership and Group Dynamics
  PUBH 5560U Introduction to International Health
  PUBH 5570U Women and Minority Health Issues
  SPAN 1001 Elementary Spanish I
  SPAN 1002 Elementary Spanish II

**Rationale:** HLPR 2200 is a newly created course that would give health administration students exposure to other health professional disciplines and foster the development of inter-professional team skills that are congruent with the CHP strategic plan. The track allowed for 12 hours of electives, giving the program flexibility to add an additional required course to the major.

**Effective Date:** Fall 2015

C. Nursing (no items)
D. Rehabilitation Sciences (no items)

III. College of Liberal Arts (no items)

**IV. College of Science and Technology**

**A. Biology**

*Item 1 from the Department of Biology was discussed and approved by the committee. It is being submitted to the Faculty Senate for approval.*
1. Modify the following program of study:

PROGRAM FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY

Track I: General Biology
B. Major Field Courses .................................................................\[31-38\] hours

Required Courses (\[15-14\] hours)
- BIOL 2020 Plant Biology
- BIOL 3000 Cell Biology
- BIOL 3050 General Ecology
- BIOL 3700 Genetics

Elective Courses (\[17-24\] hours)

Choose one of the following:
- BIOL 4150 Plant Physiology
- BIOL 4200 Mammalian Physiology
- BIOL 4210 Comparative Physiology

Choose one of the following:
- BIOL 3250 Limnology
- BIOL 3470 Environmental Restoration
- BIOL 3600 Salt Marsh Ecology
- BIOL 4320 Environmental Microbiology
- BIOL 4460 Phytoplankton Ecology
- BIOL 4750 Tropical Field Biology
- BIOL 4240 Behavioral Ecology

Choose two of the following:
- BIOL 3030 Evolution
- BIOL 3520 Medical Microbiology
- BIOL 4000 Cancer Biology
- BIOL 4100 Cell and Molecular Biology Laboratory
- BIOL 4220 Endocrinology
- BIOL 4230 Neurophysiology and Disease
- BIOL 4310 Applied Microbiology
- BIOL 4400 Virology
- BIOL 4500 Bioinformatics and Biotechnology
- BIOL 4510 Molecular Development
- BIOL 4520 Epigenetics
- BIOL 4650 Immunology

Choose two of the following:
- BIOL 3020 Vertebrate Zoology
- BIOL 3150 Horticulture
- BIOL 3200 Plant Taxonomy
- BIOL 3300 Entomology
- BIOL 3310 Invertebrate Zoology
- BIOL 3750 Natural History of Vertebrate Animals
- BIOL 3770 Developmental and Comparative Vertebrate Anatomy of the Vertebrates
- BIOL 3800 Mycology
BIOL 3920 Parasitology
BIOL 3950 Human Embryology
BIOL 4470 Sea Turtle Biology
BIOL 4550 Biology of Marine Organisms
BIOL 4600 Ichthyology

C. Related Field Course .............................................. 1 hour
   CHEM 2101L Organic Chemistry I Lab

D. Electives ......................................................... 20-27 21-28 hours
   Select free electives to bring total of 3000+ course work to at least 39 hours.

Track II: Marine Biology

B. Major Field Courses ............................................. 32-35 31-34 hours
   Required Courses (19-18 hours)
      BIOL 2020 Plant Biology
      BIOL 3000 Cell Biology
      BIOL 3050 General Ecology
      BIOL 3700 Genetics
      BIOL 4550 Biology of Marine Organisms
   Elective Courses (13-15 hours)
      Choose one of the following:
         BIOL 4150 Plant Physiology
         BIOL 4200 Mammalian Physiology
         BIOL 4210 Comparative Physiology
      Choose one of the following:
         BIOL 3020 Vertebrate Zoology
         BIOL 3310 Invertebrate Zoology
         BIOL 3750 Natural History of Vertebrate Animals
         BIOL 3770 Comparative Vertebrate Anatomy
      Choose two of the following:
         BIOL 3030 Evolution
         BIOL 3200 Plant Taxonomy
         BIOL 3250 Limnology
         BIOL 4320 Environmental Microbiology
         BIOL 4460 Phytoplankton Ecology
         BIOL 4470 Sea Turtle Biology
         BIOL 4600 Ichthyology
         BIOL 4240 Behavioral Ecology
         BIOL 4750 Tropical Field Biology

C. Related Field Courses ........................................... 9 hours
   CHEM 2101L Organic Chemistry I Lab
   PHYS 1111K Introductory Physics I or PHYS 2211K Principles of Physics I
   MATH 1161 Calculus I (If taken in core area A, then substitute with either MATH 2072; PHYS 1112K or PHYS 2212K)

D. Electives ......................................................... 16-19 17-20 hours
   Select free electives to bring total of 3000+ course work to at least 39 hours.
Track III: Cell and Molecular Biology

B. Major Field Courses .................................................................25-28 hours

Required Courses (12 hours)

BIOL 3000 Cell Biology
BIOL 3700 Genetics
BIOL 4100 Cell and Molecular Biology Laboratory
BIOL 4500 Bioinformatics and Biotechnology

Elective Courses (13-16 hours)

Choose one of the following:

BIOL 4150 Plant Physiology
BIOL 4200 Mammalian Physiology
BIOL 4210 Comparative Physiology

Choose one of the following:

BIOL 3020 Vertebrate Zoology
BIOL 3030 Evolution
BIOL 3300 Entomology
BIOL 3310 Invertebrate Zoology
BIOL 3750 Natural History of Vertebrate Animals
BIOL 3770 Comparative Vertebrate Anatomy
BIOL 3800 Mycology
BIOL 3920 Parasitology

Choose two of the following:

BIOL 3520 Medical Microbiology
BIOL 3950 Human Embryology
BIOL 4000 Cancer Biology
BIOL 4220 Endocrinology
BIOL 4230 Neurophysiology and Disease
BIOL 4310 Applied Microbiology
BIOL 4320 Environmental Microbiology
BIOL 4400 Virology
BIOL 4510 Molecular Development
BIOL 4520 Epigenetics
BIOL 4650 Immunology

Rationale: To incorporate new classes, to update modified classes, and to change credit hour allocation due to separation of BIOL 3050 and BIOL 3050L and making BIOL 3050L optional at the December meeting.

Effective Date: Fall 2015

B. Chemistry and Physics

Items 1-12 from the Department of Chemistry and Physics were discussed and approved by the committee. They are being submitted to the Faculty Senate for approval.
Biochemistry Curriculum Items

1. Create the following course:
   BChM 2900 INTRODUCTION TO BIOCHEMICAL RESEARCH 0-(3-9)-(1-3)
   Prerequisite: permission of the department head, declared biochemistry major.
   Prerequisite or co-requisite: CHEM 1211
   Faculty originated biochemical lab-based research project. Written report required.

   Rationale: When developing the B.S. Biochemistry program of study, undergraduate research in biochemistry was inadvertently omitted from the program of study. This course is in line with other research opportunities for students in our department (CHEM 2900, 3900, 4991, PHYS 2900, 4991) and our College.

   Effective Term: Fall 2015

   CURCAT:
   Major Department: Chemistry and Physics
   Can course be repeated for additional credit: Yes
   Maximum Number of Credit Hours: 9
   Grading Mode: S/U
   Instruction Type: Laboratory

2. Create the following course:
   BChM 3900 BIOCHEMICAL RESEARCH 0-(3-9)-(1-3)
   Prerequisite: permission of department head, declared biochemistry major.
   Prerequisite or co-requisite: CHEM 2102
   Faculty originated biochemical lab-based research project. Scientific paper required.

   Rationale: When developing the B.S. Biochemistry program of study, undergraduate research in biochemistry was inadvertently omitted from the program of study. This course is in line with other research opportunities for students in our department (CHEM 2900, 3900, 4991, PHYS 2900, 4991) and our College.

   Effective Term: Fall 2015

   CURCAT:
   Major Department: Chemistry and Physics
   Can course be repeated for additional credit: Yes
   Maximum Number of Credit Hours: 9
   Grading Mode: S/U
   Instruction Type: Laboratory

3. Create the following course:
BCHM 4991 ADVANCED BIOCHEMICAL RESEARCH \(0-(3-9)-(1-3)\)
Prerequisite: permission of department head, declared biochemistry major and CHEM 3801 and BCHM 3811
Prerequisite or co-requisite: BCHM 4501
Faculty-originated biochemical lab-based research project. Literature evaluation and lab investigation. Scientific paper and oral presentation to faculty.

Rationale: When developing the B.S. Biochemistry program of study, undergraduate research in biochemistry was inadvertently omitted from the program of study. This course is in line with other research opportunities for students in our department (CHEM 2900, 3900, 4991, PHYS 290C, 4991) and our College.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: Yes
- Maximum Number of Credit Hours: 9
- Grading Mode: S/U
- Instruction Type: Laboratory

4. Create the following course:
BCHM 4700 ADVANCED TOPICS IN BIOCHEMISTRY \(2-0-2\)
Prerequisites: CHEM 3801 and instructor/Department Head permission
Topics include advanced areas of study in biological chemistry and may include biocatalysis, bioinorganic chemistry, computational biochemistry, protein structure and design as well as others. Course may be repeated as topics vary.

Rationale: The B.S. Biochemistry program would like to have the ability to offer advanced courses on a regular basis to supplement the core instruction given to our students. These courses would enhance the theoretical knowledge of our students and allow for faculty to teach disciplinary courses in their specialty and interest areas.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: Yes
- Maximum Number of Credit Hours: 6
- Grading Mode: Normal
- Instruction Type: Lecture

5. Modify the following program of study:

Program for the Degree of Bachelor of Science in Biochemistry
B. Major Field Courses ........................................................................... 36 hours
BCHM 3301 Bioanalytical Chemistry
BCHM 3403 Biophysical Chemistry
BCHM 3811 Introduction to Biochemical Techniques
Choose one of the following classes:
   BCHM 3812 Advanced Biochemistry Laboratory
   BCHM 3900 Biochemical Research (1 credit hour)
   BCHM 4991 Advanced Biochemical Research (1 credit hour)
   CHEM 3900 Chemical Research (Biochemistry approved, 1 credit hour)
BCHM 4811 Bioinstrumental Laboratory
CHEM 2101/2101L Organic Chemistry I with Laboratory
CHEM 2102/2102L Organic Chemistry II with Laboratory
CHEM 2300 Principles of Chemical Analysis
CHEM 3801 Biochemistry I
CHEM 3802 Biochemistry II
CHEM 4500 Chemistry Seminar or BCHM 4501 Biochemistry Seminar
7 hours of approved upper division chemistry or biochemistry courses. No more than 3 hours total can be from CHEM 3900, CHEM 4991, BCHM 3900 and BCHM 4991.

Effective Term: Fall 2015

6. Create the following minor

CHEM 1211 & 1212 are used by BCHM majors in core D.

Minor in Biochemistry 17 hours
CHEM 2101, 2101L, 2102 & 2102L (8 hours total)
CHEM 3801, Biochemistry I (3 hours of upper division)
CHEM 3802, Biochemistry II (3 hours of upper division)
3 additional hours of BCHM courses at the 3000 or 4000 level

Rationale: There is expressed interest in a minor in biochemistry from students. This collection of coursework would allow the student to complete a minor within the guidelines set forth by the BOR related to minors. This would place us at 17 hours (which meets the requirement) and 9 hours of upper division coursework (which meets the requirement).

Effective Term: Fall 2015

Physics Curriculum Items: Proposed Health Physics Track

7. Create the following course:
   PHYS 3601 INTRODUCTION TO RADIATION PHYSICS I 3-0-3
   Prerequisite: PHYS 3801K (minimum grade of C)
Fundamentals about atomic physics and radiation: atomic structure, the nucleus, nuclear radiation, radioactive decays and interactions of heavy charged particles with matter.

Rationale: This course lays the foundation for the health physics track. Health physicists must have an understanding of radiation and its interactions with matter and how to detect radiation in the environment.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: No
- Maximum Number of Credit Hours: 3
- Grading Mode: Normal
- Instruction Type: Lecture
- Equivalent Course: None

8. Create the following course:
PHYS 3602 INTRODUCTION TO RADIATION PHYSICS II 3-0-3
Prerequisite: PHYS 3601 (minimum grade of C)
Fundamentals about atomic physics and radiation: interactions of electrons with matter, interactions of photons with matter, neutrons, fission, and methods of radiation detection.

Rationale: This course continues to lay the foundation for the health physics track. Health physicists must have an understanding of radiation and its interactions with matter and how to detect radiation in the environment.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: No
- Maximum Number of Credit Hours: 3
- Grading Mode: Normal
- Instruction Type: Lecture

9. Create the following course:
PHYS 3403 Biophysics 3-0-3
Prerequisite: PHYS 3801K (minimum grade of C)
A survey of physics applications to biology, including the thermodynamics of life, forces affecting conformation in biological molecules, physics of membranes, and spectroscopy.
Rationale: The study of the intersection of physics and biology will give the health physics track major a deeper understanding of biological systems as they relate to physics. This course will be cross-listed by CHEM program as being equivalent to BCHM 3403.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: No
- Maximum Number of Credit Hours: 3
- Grading Mode: Normal
- Instruction Type: Lecture
- Equivalent Course: BCHM 3403

10. Create the following course:

PHYS 3650 RADIATION EXPOSURE IN THE WORKPLACE AND IN THE ENVIRONMENT 3-0-3

Prerequisite: PHYS 3801K (minimum grade of C)
A survey of how radiation is used in a variety of contexts, how it is detected and measured (i.e. dosimetry and radiation detectors), and the effect on people and the environment.

Rationale: Health physicists must have knowledge of how radiation is used for the benefit of people in various sectors of society.

Effective Term: Fall 2015

CURCAT:
- Major Department: Chemistry and Physics
- Can course be repeated for additional credit: No
- Maximum Number of Credit Hours: 3
- Grading Mode: Normal
- Instruction Type: Lecture
- Equivalent Course: None

11. Create the following course:

PHYS 3660 MEDICAL IMAGING 3-0-3

Prerequisite: PHYS 3801K (minimum grade of C)
A survey of how electromagnetic and nuclear radiation is used in a variety of medical imaging techniques (such as CT, MRI, and PET).

Rationale: Health physicists must have knowledge of medical imaging techniques.

Effective Term: Fall 2015
12. Create the following track for the program of study for the B.S. of Science in Applied Physics:

Track III: Health Physics

A. General Requirements

Core Areas A, B, C, D.IIA, and E ...................... 42 hours
Applied physics majors are required to take MATH 1113 in core area A and
MATH 1161 in core area D

Area F ................................................................. 18 hours
   PHYS 2211K, 2212K Principles of Physics I, II (unless taken to satisfy core
   area D, in which case replace with BIOL 1107, 1107L and 1108)
   MATH 2160 or STAT 3231
   MATH 2072 Calculus II
   CSCI 1301 Introduction to Programming Principles or ENGR 1371
   Computing for Engineers

Physical Education .............................................. 3 hours
First-Year Seminar ............................................. 1 hour

B. Major Field Courses ........................................ 30 hours
PHYS 3100 Electrical Circuit Analysis or ENGR 3100 Circuit Analysis
PHYS 3801K Modern Physics
PHYS 3802 Introduction to Quantum Mechanics
PHYS 3403 Biophysics
PHYS 3601 Introduction to Radiation Physics I
PHYS 3602 Introduction to Radiation Physics II
PHYS 3650 Radiation Exposure in the Workplace and Environment
PHYS 3660 Medical Imaging

Choose three semester hours from:
   PHYS 2900 Introduction to Research in Physics
   PHYS 3220 Mechanics of Deformable Bodies
   PHYS 3230 Fluid Mechanics
   PHYS 3312 Electromagnetism
   PHYS 3400 Chemical Thermodynamics
   PHYS 3500 Diffraction and Crystallography
   PHYS 4991 Advanced Research in Physics

Choose three semester hours from:
   PHYS 4900 Independent Study in Physics
   PHYS 4950 Special Topics in Physics
   PHYS 4960 Physics Internship
C. Related Field Courses ..................................................23 hours
CHEM 1211 Principles of Chemistry I (and lab) (unless taken to satisfy core area D,
in which case replace with BIOL 1107 and 1107L)
CHEM 1212 Principles of Chemistry II (and lab) (unless taken to satisfy core area
D, in which case replace with BIOL 1107 and 1107L)
MATH 3411 Differential Equations
Twelve semester hours of related field electives approved by the physics faculty.

D. Electives .................................................................7 hours
Upper-division courses (6 semester hours)
Free elective (1 semester hour)

Total Semester Hours ..........................124 hours

E. Exit Exam

Rationale: As a result of program review the physics program has concluded that the
program should seek to become more attractive than just being able to offer the
traditional applied physics major. We see this as an opportunity to offer a specialized
track in Health Physics.

The Health Physics Track would teach graduates the skills needed to either enter
graduate school in programs such as a biophysics or to pursue a career in policy
design/decisions at laboratories and health facilities. This would require the creation
of five new physics courses. However, one of these courses would be cross-listed
with a pre-existing BCHM course as equivalent to the course in the physics major
field of study. This is being done by agreement with the BCHM program.

Effective Term: Fall 2015

C. Computer Science and Information Technology (no items)
D. Engineering Studies (no items)

E. Mathematics

*Items 1-4 from the Department of Mathematics were discussed and approved by
the committee. They are being submitted to the Faculty Senate for approval.*

1. Modify the following course:
MATH 1001 QUANTITATIVE SKILLS AND REASONING 3-0-3
Prerequisite: regular admission to the university or a passing grade on COMPASS.
Prerequisite: Math Placement Index (MPI) of 1165 or higher
Corequisite: MATH 0997 for MPI of 1075 or higher and less than 1165
Rationale: These prerequisite and name changes are being made for all University System of Georgia institutions offering MATH 1001 and its corequisite remedial course, MATH 0997.

Effective Term: Fall 2015

2. Modify the following course:
   **MATH 1111 COLLEGE ALGEBRA** 3-0-3
   Prerequisite: regular admission to the university or a passing grade on COMPASS
   Prerequisite: Math Placement Index (MPI) of 1265 or higher
   Corequisite: MATH 0999 for MPI of 1100 or higher and less than 1265

   Rationale: These prerequisite changes are being made for all University System of Georgia institutions offering MATH 1111 and its corequisite remedial course, MATH 0999.

   Effective Term: Fall 2015

3. Modify the following course:
   **MATH 1113 PRE-CALCULUS MATHEMATICS** 3-0-3
   Prerequisite: MATH 1111 (minimum grade of C) or a score of at least 550 on the mathematics portion of the SAT or a score of at least 21 on the mathematics portion of the ACT 1500 or higher on the Math Placement Index (MPI)

   Rationale: These prerequisite changes incorporate the use of the University System of Georgia’s Math Placement Index.

   Effective Term: Fall 2015

4. Modify the following course:
   **MATH 1161 CALCULUS I** 4-0-4
   Prerequisite: MATH 1113 (minimum grade of C) or a score of at least 600 on the mathematics portion of the SAT or a score of at least 24 on the mathematics portion of the ACT 1600 or higher on the Math Placement Index (MPI)

   Rationale: These prerequisite changes incorporate the use of the University System of Georgia’s Math Placement Index.

   Effective Term: Fall 2015

F. Psychology (no items)

**OTHER BUSINESS**
A. The Department of Adolescent and Adult Education is now the Department of Secondary, Adult, and Physical Education, effective January 1, 2015.

B. CRJU 1200 Introduction to Cyber Crime, created at the meeting of 11/5/2014, was assigned a number that had previously been used. It has been changed to CRJU 1210 Introduction to Cyber Crime.

ADJOURNMENT. The meeting was adjourned at 3:32 p.m.

Respectfully submitted,

Phyllis L. Fulton
Catalog Editor and Secretary to the Committee