UNIVERSITY SENATE AGENDA

EBERLY AUDITORIUM

Jan 26, 2010
3:30 – 5:00 p.m.

Approval of Order

A. Approval of minutes of the meeting of December 1, 2009

B. Approval of current agenda items and order

Reports and Announcements

A. President's Report

B. Provost Intemann

C. Chairperson Broad

D. Vice Chairperson Stith

Standing Committee Reports		**Chairperson**	**Appendix**	**Page(s)**
A.	Rules Committee	Korns		
B.	University-Wide Undergraduate Curriculum Committee	Sechrist/Hannibal	A	2-26
C.	University-Wide Graduate Curriculum Committee	Piper/Baumer		
D.	Noncredit Committee	O'Neil		
E.	Library and Educational Services Committee	Jozefowicz		
F.	Research Committee	Sciulli	B	27
G.	University Development and Finance	Domaracki		
H.	Student Affairs Committee	Rieg		
I.	Academic Committee	Dugan/Novels		
J.	Awards	Ritchey		

Senate Representative Reports		**Representative**
A.	University Planning Council	Reilly
B.	Presidential Athletic Advisory Council	Hinrichsen
C.	Academic Computing Policy Advisory Committee	Chiarulli
D.	University Budget Advisory Committee	Radell

New Business

Adjournment

APPENDIX A
University-Wide Undergraduate Curriculum Committee
Co-Chairs Sechrist and Hannibal

FOR INFORMATION:

The following courses were approved by UWUCC to be offered as distance education courses:

ECON 101 Basic Economics.

Approved the Liberal Studies portion of the BA in Physics, BS in Physics, and BS in Applied Physics.

FOR ACTION:

1 Liberal Studies Committee

Approved RGPL/GEOG 103 Cities of the World: Issues in Planning and Development as a Liberal Studies Non-Western course and a Social Science course.

Approved William Donner as a Type 1 (professor commitment) writing intensive instructor.

2 Department of Chemistry—catalog description change

Current Catalog Description:

CHEM 441 Advanced Physical Chemistry **3c-0l-3cr**
Prerequisite or Corequisite: CHEM 342
A study of fundamental ideas of quantum and statistical mechanics, molecular structure, and other topics of current interest.

Proposed Catalog Description:

CHEM 441 Advanced Physical Chemistry **3c-0l-3cr**
Prerequisite or Corequisite: CHEM 342
An introduction to spectroscopy and molecular structure.

Rationale: The proposed change to the catalog description will make the undergraduate catalog description match the corresponding but pithier graduate catalog description of the dual listed course, CHEM 540 (which is undergoing a request to the Graduate Committee for a number change to CHEM 541). It does not constitute a change in course content.

3 Department of Technology Support and Training—course revision and course number change

Current Catalog Description:

BTST 311 Training Methods in Business and Information Technology Support
Prerequisites: PSYC 101, junior standing **3c-01-3cr**
Includes the application of theories of adult learning to planning, delivering, and evaluating training for education and information technology. Major emphasis is on the planning of instruction. Topics include needs assessment, live and mediated instruction, classroom management, evaluation and follow-up methods, and evaluation of training strategies.

Proposed Catalog Description:

BTST 442 Training Methods in Business and Information Technology Support
3c-01-3cr
Prerequisites: PSYC 101, junior standing
Includes the application of theories of adult learning to planning, delivering, and evaluating training for education and information technology. Major emphasis is on the planning of instruction. Topics include needs assessment, live and mediated instruction, classroom management, evaluation and follow-up methods, and evaluation of training strategies.

Rationale: Graduate students in the program specializing in workforce development requested more courses in the area of training and development in business and information technology. By making this a dual level course it will meet the needs of undergraduates and graduates. The course number change is to accommodate the graduate version of the course.

4 Department of Physics—Catalog Description Changes, Course Revision and Program Revisions

a Course Revision, Course Number Change, and Catalog Description Change

Current Catalog Description:

PHYS 473 Quantum Mechanics I **4c-01-4cr**
Prerequisites: PHYS 222 and 331
Quantum mechanics following methods of Schrodinger and Heisenberg; the theory is applied to properties of harmonic oscillator, hydrogen atom, electron in a magnetic field, and radioactive decay of alpha particles.

Proposed Catalog Description:

PHYS 473 Quantum Mechanics I **3c-01-3cr**
Prerequisites: PHYS 331 and MATH 241
Quantum mechanics following methods of Schrodinger and Heisenberg; application to harmonic oscillator; three dimensional Schrodinger equation;

hydrogen atom; electron in a magnetic field – normal and anomalous Zeeman effect; spin.

Rationale: As part of the revision in the Physics program all major courses will be kept at 3 credits – to facilitate scheduling and timely graduation of students. Many courses will be offered in alternate years following a course sequence sheet that makes class size large enough for the size of our program. The number is being changed so that it matches the graduate number of the course and the catalog description and syllabus have been updated.

b Catalog Description Changes:

Current Catalog Descriptions:	Proposed Catalog Descriptions:
PHYS 131 Physics I-C Lecture 3c-0l-3cr **Prerequisite:** MATH 121, 123, or 127, at least concurrently A calculus-based course in general college physics; topics covered are similar to those covered in Physics 111 but are treated in more depth through the use of calculus.	**PHYS 131 Physics I-C Lecture 3c-0l-3cr** **Prerequisite:** MATH 121 or 125, at least concurrently A calculus-based course in general college physics; topics covered are similar to those covered in Physics 111 but are treated in more depth through the use of calculus.
PHYS 132 Physics II-C Lecture 3c-0l-3cr **Prerequisite:** MATH 122, 124, or 128, at least concurrently A continuation of Physics I-C; topics covered are similar to those covered in Physics II but are treated in more depth through the use of the calculus.	**PHYS 132 Physics II-C Lecture 3c-0l-3cr** **Prerequisite:** MATH 122, or 126, at least concurrently A continuation of Physics I-C; topics covered are similar to those covered in Physics II but are treated in more depth through the use of the calculus.
PHYS 222 Mechanics I 2c-0l-2cr **Prerequisites:** PHYS 112 or 116 or 132; MATH 122 or 124 Covers the basic laws and concepts of the mechanical universe. The dynamics of a particle in one, two, and three dimensions are covered. Central forces, including planetary and satellite motion, are discussed and analyzed in detail using Newton's gravitational law. Other topics covered are statics, multiple particle system dynamics, mechanical energy, and oscillations.	**PHYS 222 Mechanics I 2c-0l-2cr** **Prerequisites:** PHYS 112 or 116 or 132; MATH 122 or 126 Covers the basic laws and concepts of the mechanical universe. The dynamics of a particle in one, two, and three dimensions are covered. Central forces, including planetary and satellite motion, are discussed and analyzed in detail using Newton's gravitational law. Other topics covered are statics, multiple particle system dynamics, mechanical energy, and oscillations.
PHYS 231 Electronics 3c-3l-4cr **Prerequisites:** MATH 122, 124, or 128; PHYS 112 or 132 Circuit theory, transients, transistor circuits, frequency response, input and output impedance, feedback and electronic noise. Operational amplifiers and digital electronics.	**PHYS 231 Electronics 3c-3l-4cr** **Prerequisites:** MATH 122 or 126; PHYS 112 or 132 Circuit theory, transients, transistor circuits, frequency response, input and output impedance, feedback and electronic noise. Operational amplifiers and digital electronics.

PHYS 331 Modern Physics 3c-0l-3cr **Prerequisite:** PHYS 112 or 116 or 132; MATH 122 or 124 The history of modern physics is covered. Particle and wave properties of matter are explored using the ideas of quantum mechanics. Systems examined using the ideas of quantum and classical mechanics are atomic structure, solid state, and nuclear physics. The special theory of relativity will also be covered. Some of the problems are solved using computers.	**PHYS 331 Modern Physics 3c-0l-3cr** **Prerequisite:** PHYS 112 or 116 or 132; MATH 122 or 126 The history of modern physics is covered. Particle and wave properties of matter are explored using the ideas of quantum mechanics. Systems examined using the ideas of quantum and classical mechanics are atomic structure, solid state, and nuclear physics. The special theory of relativity will also be covered. Some of the problems are solved using computers.
PHYS 342 Thermal and Statistical Physics 3c-0l-3cr **Prerequisites:** MATH 122, 124, or 128; PHYS 112 or 132 Thermometry, laws of thermodynamics, low-temperature physics, entropy, properties of ideal gas, and an introduction to statistical mechanics.	**PHYS 342 Thermal and Statistical Physics 3c-0l-3cr** **Prerequisites:** MATH 122 or 126; PHYS 112 or 132 Thermometry, laws of thermodynamics, low-temperature physics, entropy, properties of ideal gas, and an introduction to statistical mechanics.
PHYS 345 Optics 3c-0l-3cr **Prerequisites:** MATH 122, 124, or 128; PHYS 112 or 132 Geometrical optics and physical optics; including interference, diffraction, and polarization. Quantum optics is introduced.	**PHYS 345 Optics 3c-0l-3cr** **Prerequisites:** MATH 122 or 126; PHYS 112 or 132 Geometrical optics and physical optics; including interference, diffraction, and polarization. Quantum optics is introduced.

Rationale: The Mathematics Department has changed the calculus sequence. MATH 125, 126, 225 replaced the former calculus sequence MATH 123, 124. Calculus is a foundational course and hence a prerequisite for many of our courses. This means we need to change the prerequisites on many of our courses. In the transition years, overrides will be given for students who meet the old prerequisites.

c Program Revisions:

Current Program:	**Proposed Program:**
Bachelor of Arts–Physics	**Bachelor of Arts – Physics**
Liberal Studies: As outlined in Liberal Studies section with the following specifications: 50 **Mathematics:** MATH 123 **Natural Science:** PHYS 131-141 and 132-142 **Liberal Studies Electives:** 4cr, MATH 124, no courses with PHYS prefix	**Liberal Studies:** As outlined in Liberal Studies section with the following specifications: 48 **Mathematics:** MATH 125 **Natural Science:** PHYS 131-141 and 132-142 **Liberal Studies Electives:** 3cr, MATH 126, no courses with PHYS prefix
Major: **Required Courses:** 28 PHYS 131 Physics I-C Lecture *cr (1) PHYS 132 Physics II-C Lecture *cr (1) PHYS 141 Physics I-C Lab *cr (1) PHYS 142 Physics II-C Lab *cr (1) PHYS 222 Mechanics I 2cr PHYS 223 Mechanics II 2cr PHYS 231 Electronics 4cr	**Major:** **Required Courses:** 25 PHYS 131 Physics I-C Lecture *cr (1) PHYS 132 Physics II-C Lecture *cr (1) PHYS 141 Physics I-C Lab *cr (1) PHYS 142 Physics II-C Lab *cr (1) PHYS 231 Electronics 4cr PHYS 331 Modern Physics 3cr PHYS 350 Intermediate Experimental Physics I 3cr

PHYS 322	Electricity and Magnetism I	2cr
PHYS 323	Electricity and Magnetism II	2cr
PHYS 331	Modern Physics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
PHYS 351	Intermediate Experimental Physics II	3cr
PHYS 473	Quantum Mechanics I	4cr
Controlled Electives:		
One additional PHYS majors course		3cr

Other Requirements:		22-28
Additional Mathematics and Computer Science:		
COSC 110	Problem Solving and Structured Programming	3cr
MATH 241	Differential Equations	3cr
MATH 342	Advanced Mathematics for Applications	4cr
Additional Natural Science Sequence		6cr
Additional Social or Natural Science Sequence (advanced)		6cr
Foreign Language Intermediate Level (2, 3)		0-6cr
Free Electives:		14-20
Total Degree Requirements:		120

(1) Credits are counted in the Liberal Studies Natural Science requirement.
(2) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(3) 6cr of computer language m ay substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Current Program:

Bachelor of Science –Physics

Liberal Studies: As outlined in Liberal Studies section with the following specifications:		50
Mathematics: MATH 123		
Natural Science: PHYS 131-141 and 132-142		
Liberal Studies Electives: 4cr, MATH 124, no courses with PHYS prefix		
Major:		37
Required Courses:		
PHYS 131	Physics I-C Lecture	*cr (1)
PHYS 132	Physics II-C Lecture	*cr (1)
PHYS 141	Physics I-C Lab	*cr (1)
PHYS 142	Physics II-C Lab	*cr (1)
PHYS 222	Mechanics I	2cr
PHYS 223	Mechanics II	2cr
PHYS 231	Electronics	4cr
PHYS 322	Electricity and Magnetism I	2cr
PHYS 323	Electricity and Magnetism II	2cr
PHYS 331	Modern Physics	3cr
PHYS 342	Thermal and Statistical Physics	3cr
PHYS 345	Optics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
PHYS 351	Intermediate Experimental Physics II	3cr
PHYS 473	Quantum Mechanics I	4cr
Controlled Electives:		

PHYS 441	Classical Mechanics	3cr
PHYS 451	Electricity and Magnetism	3cr
PHYS 461	Quantum Mechanics I	3cr
Controlled Electives:		
Two additional PHYS majors courses		6cr
Other Requirements:		25-31
Additional Mathematics and Computer Science:		
COSC 110	Problem Solving and Structured Programming	3cr
MATH 225	Calculus III	3cr
MATH 241	Differential Equations	3cr
MATH 342	Advanced Mathematics for Applications	4cr
Additional Natural Science Sequence		6cr
Additional Social or Natural Science Sequence (advanced)		6cr
Foreign Language Intermediate Level (2,3)		0-6cr
Free Electives:		16-22
Total Degree Requirements:		120

(1) Credits are counted in the Liberal Studies Natural Science requirement.
(2) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(3) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Proposed Program:

Bachelor of Science –Physics

Liberal Studies: As outlined in Liberal Studies section with the following specifications:		48
Mathematics: MATH 125		
Natural Science: PHYS 131-141 and 132-142		
Liberal Studies Electives: 3cr, MATH 126, no courses with PHYS prefix		
Major:		36
Required Courses:		
PHYS 131	Physics I-C Lecture	*cr (1)
PHYS 132	Physics II-C Lecture	*cr (1)
PHYS 141	Physics I-C Lab	*cr (1)
PHYS 142	Physics II-C Lab	*cr (1)
PHYS 231	Electronics	4cr
PHYS 331	Modern Physics	3cr
PHYS 342	Thermal and Statistical Physics	3cr
PHYS 345	Optics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
PHYS 401	Theoretical Physics	3cr
PHYS 441	Classical Mechanics	3cr
PHYS 451	Electricity and Magnetism	3cr
PHYS 461	Quantum Mechanics I	3cr
Controlled Electives:		
One course from the following: PHYS 472 or 490		3cr
One additional PHYS majors course		3cr

One course from the following: PHYS 472 or 490	3cr	
One additional PHYS majors course	3cr	
Other Requirements:		13-19
COSC 110 Problem Solving and Structured Programming	3cr	
MATH 241 Differential Equations	3cr	
MATH 342 Advanced Mathematics for Applications	4cr	
One course from the following: COSC 250, MATH 171, 363, 421, 423	3cr	
Foreign Language Intermediate Level (2, 3)	0-6cr	
Free Electives:		14-20
Total Degree Requirements:		120

(1) Credits are counted in the Liberal Studies Natural Science requirement.
(2) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(3) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Other Requirements:		16-22
COSC 110 Problem Solving and Structural Programming	3cr	
MATH 241 Differential Equations	3cr	
MATH 225 Calculus III	3cr	
MATH 342 Advanced Math for Applications	3cr	
One course from the following: COSC 250, MATH 171, 363, 421, 423	3cr	
Foreign Language Intermediate Level (2, 3)	0-6cr	
Free Electives:		14-20
Total Degree Requirements:		120

(1) Credits are counted in the Liberal Studies Natural Science requirement.
(2) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(3) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Current Program:

Bachelor of Science – Applied Physics

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 123 **Natural Science:** CHEM 111-112 (replaced by CHEM 113-114 for Chemistry track) **Liberal Studies Electives:** 4cr, MATH 124, no courses with PHYS prefix			50
Major:			28
Required Courses:			
PHYS 131	Physics I-C Lecture	3cr	
PHYS 132	Physics II-C Lecture	3cr	
PHYS 141	Physics I-C Lab	1cr	
PHYS 142	Physics II-C Lab	1cr	
PHYS 222	Mechanics I	2cr	
PHYS 231	Electronics	4cr	
PHYS 322	Electricity and Magnetism I	2cr	
PHYS 331	Modern Physics	3cr	
PHYS 345	Optics	3cr	
PHYS 352	Applied Physics Laboratory	3cr	
PHYS 355	Computer Interfacing	3cr	
Controlled Electives: According to Track			23-27
Solid State Electronics Track: COSC 300, MATH 342, PHYS 323, 342, 353, 432, 475, 476		24cr	
Computer Science Track: COSC 300, 310, 410, 450, PHYS 342, 353, 432, 475, 476		27cr	
Chemistry Track: CHEM 231, 232, 323, 341, 342, 343, MATH 342		24cr	
Biology Track: BIOL 111, 120, CHEM 231, 323, 351 Two biology electives from the following: BIOL 250, 263, 350, 401, 472		27cr	
Geology Track: GEOS 121, 122, 131, 132 Five Geoscience electives from the following: GEOS 220, 325, 326, 362, 412, 440, 481		23cr	
Other Requirements:			9-15
COSC 110	Problem Solving and Structured Programming	3cr	
COSC 250	Introduction to Numerical Methods	3cr	

Proposed Program:

Bachelor of Science – Applied Physics

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 125 **Natural Science:** CHEM 111-112 (replaced by CHEM 113-114 for Chemistry track) **Liberal Studies Electives:** 3cr, MATH 126, no courses with PHYS prefix			48
Major:			30
Required Courses:			
PHYS 131	Physics I-C Lecture	3cr	
PHYS 132	Physics II-C Lecture	3cr	
PHYS 141	Physics I-C Lab	1cr	
PHYS 142	Physics II-C Lab	1cr	
PHYS 231	Electronics	4cr	
PHYS 331	Modern Physics	3cr	
PHYS 345	Optics	3cr	
PHYS 350	Intermediate Experimental Physics I	3cr	
PHYS 355	Computer Interfacing	3cr	
PHYS 441	Classical Mechanics	3cr	
PHYS 451	Electricity and Magnetism	3cr	
Controlled Electives: According to Track			23-27
Solid State Electronics Track: COSC 300, MATH 225, PHYS 342, 490, 401, 461, 475, 476		25cr	
Computer Science Track: COSC 300, 310, 410, 450, PHYS 342, 490, 401, 461, 475		27cr	
Chemistry Track: CHEM 231, 232, 323, 341, 342, 343, MATH 225		24cr	
Biology Track: BIOL 111, 120, CHEM 231, 323, 351 Two Biology electives from the following: BIOL 250, 263, 350, 401, 472		27cr	
Geology Track: GEOS 201, 203 Five Geoscience electives from the following: GEOS 301, 302, 303, 362, 352, 481		23cr	
Other Requirements:			9-15
COSC 110	Problem Solving and Structure Programming	3cr	
COSC 250	Introduction to Numerical Methods	3cr	

MATH 241	Differential Equations	4cr
Foreign Language Intermediate Level (1, 2)		0-6cr
Free Electives:		0-10
Total Degree Requirements:		120

(1) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(2) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

MATH 241	Differential Equations	3cr
Foreign Language Intermediate Level (1, 2)		4cr 0-6cr
Free Electives:		0-10
Total Degree Requirements:		120

(1) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(2) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Bachelor of Science – Applied Physics/Electro-Optics Track

Current Program:

Bachelor of Science – Applied Physics/ Electro-Optics Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 121 **Natural Science:** CHEM 111-112 **Liberal Studies Electives:** 4cr, MATH 122, no courses with PHYS prefix		50
Major:		
Required Courses:		44
EOPT 105	Computer Interfacing in Electro-Optics	3cr
EOPT 110	Geometric Optics	3cr
EOPT 120	Wave Optics	3cr
EOPT 125	Introduction to Electronics	4cr
PHYS 100	Prelude to Physics	
PHYS 115	Physics I for Electro-Optics	
PHYS 116	Physics II for Electro-Optics	3cr
PHYS 115	Physics I for Electro-Optics	3cr
PHYS 116	Physics II for Electro-Optics	3cr
PHYS 222	Mechanics I	2cr
PHYS 322	Electricity and Magnetism I	2cr
PHYS 331	Modern Physics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
Two courses from the following:		6cr
EOPT 210	Detection and Measurement	
EOPT 220	Introduction to Lasers	
MGMT 234	Introduction to Quality Control	
Two courses from the following:		6cr
EOPT 240	Fiber Optics	
EOPT 250	High-Vacuum Technology	
EOPT 260	Industrial Applications of Lasers	
Other Requirements:		15-21
COSC/BTED/IFMG 101 ***or*** COSC/BTED/COMM/IFMG201		3cr
COSC 110	Problem Solving and Structured Programming	3cr
COSC 250	Introduction to Numerical Methods	3cr
MATH 241	Differential Equations	3cr
SAFE 145	Workplace Safety Today and Tomorrow	3cr
Foreign Language Intermediate Level (1, 2)		0-6cr
Free Electives:		5-11

Proposed Program:

Bachelor of Science – Applied Physics/ Electro-Optics Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 121 **Natural Science:** CHEM 111-112 **Liberal Studies Electives:** 4cr**,** MATH 122, no courses with PHYS prefix		50
Major:		
Required Courses:		47
EOPT 105	Computer Interfacing in Electro-Optics	3cr
EOPT 110	Geometric Optics	3cr
EOPT 120	Wave Optics	3cr
EOPT 124	Electronics I	4cr
EOPT 126	Electronics II	3cr
EOPT 145	Laser Safety	1cr
PHYS 100	Prelude to Physics or EOPT 150 Fundamental of Light and Lasers	3cr
PHYS 131	Physics I-C Lecture*	3cr
PHYS 132	Physics II –C Lecture*	3cr
PHYS 331	Modern Physics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
PHYS 441	Classical Mechanics	3cr
PHYS 451	Electricity and Magnetism	3cr
Three courses from the following:		9cr
EOPT 210	Detection and Measurement	
EOPT 220	Introduction to Lasers	
EOPT 240	Fiber Optics	
EOPT 250	High-Vacuum Technology	
EOPT 260	Industrial Applications of Lasers	
MGMT 234	Introduction to Quality Control	
Other Requirements:		15-21
COSC/BTED/IFMG 101 ***or*** COSC/BTED/COMM/IFMG201		3cr
COSC 110	Problem Solving and Structured Programming	3cr
COSC 250	Introduction to Numerical Methods	3cr
MATH 241	Differential Equations	3cr
SAFE 101	Workplace Safety Today and Tomorrow	3cr
Foreign Language Intermediate Level (1, 2)		0-6cr
Free Electives:		2-8

Total Degree Requirements: 120

(1) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(2) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Total Degree Requirements: 120

* PHYS 141,PHYS 142 waived if student took PHYS 115, PHYS 116 or equivalent
(1) Intermediate-level Foreign Language may be included in Liberal Studies electives.
(2) 6cr of computer language may substitute for the foreign language requirement: COSC 110 and 210 or higher-level computer science courses (COSC 250 recommended), with department permission.

Rationale: From the Physics Department's student assessment plan, it has become clear that the students do not make broad connections between the various sub-disciplines in our physics programs. Therefore, the department decided to restructure its Bachelors degree programs. In this restructuring process two new dual level courses are proposed (i) PHYS 441/541 Classical Mechanics and (ii) PHYS 451/551 Electricity and Magnetism. With these new courses the department has decided to offer some of its major courses in alternate years to make our programs more efficient and to effectively use the department's resources. It should be noted that this program revision will have no effect on the Liberal Studies components, the titles of the physics programs or the degree designations.

Current Program:
Bachelors of Science in Education-Physics (*)

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Liberal Studies: As outlined in Liberal Studies section with the following specifications:
Mathematics: MATH 123
Natural Science: CHEM 111-112
Social Science: PSYC 101
Liberal Studies Electives: 9cr, MATH 241, BIOL 103 or 114 or 115, GEOS 111 or 113, no courses with PHYS prefix

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College:
Preprofessional Education Sequence:

COMM 103	Digital Instructional Technology	3cr
EDSP 102	Educational Psychology	3cr

Professional Education Sequence:

EDEX 301	Inclusive Secondary Settings	2cr
EDSP 477	Assessment of Student Learning	3cr
EDUC 242	Pre-Student Teach Clinical Exp I	1cr
EDUC 342	Pre-Student Teach Clinical Exp II	1cr
EDUC 441	Student Teaching	12cr
EDUC 442	School Law	1cr
EDUC 451	Teaching Science in the Secondary School	3cr

Major:

32

Required Courses:

PHYS 131	Physics I-C Lecture	3cr
PHYS 132	Physics II-C Lecture	3cr
PHYS 141	Physics I-C Lab	1cr
PHYS 142	Physics II-C Lab	1cr
PHYS 222	Mechanics I	2cr
PHYS 223	Mechanics II	2cr
PHYS 231	Electronics	4cr
PHYS 322	Electricity and Magnetism I	2cr
PHYS 331	Modern Physics	3cr
PHYS 342	Thermal and Statistical Physics	3cr
PHYS 345	Optics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr

Proposed Program:
Bachelors of Science in Education-Physics (*)

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Liberal Studies: As outlined in Liberal Studies section with the following specifications:
Mathematics: MATH 125
Natural Science: CHEM 111-112
Social Science: PSYC 101
Liberal Studies Electives: 6cr, MATH 241, GEOS 101 or 103 or 105, no courses with PHYS prefix

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College:
Preprofessional Education Sequence:

COMM 103	Digital Instructional Technology	3cr
EDSP 102	Educational Psychology	3cr

Professional Education Sequence:

EDEX 301	Inclusive Secondary Settings	2cr
EDEX 323	Instruction of English Language Learners with Special Needs	2cr
EDSP 477	Assessment of Student Learning	3cr
EDUC 242	Pre-Student Teach Clinical Experience I	1cr
EDUC 342	Pre-Student Teach Clinical Experience II	1cr
EDUC 441	Student Teaching	12cr
EDUC 442	School Law	1cr
EDUC 451	Teaching Science in the Secondary School	3cr

Major:

33

Required Courses:

PHYS 131	Physics I-C Lecture	3cr
PHYS 132	Physics II-C Lecture	3cr
PHYS 141	Physics I-C Lab	1cr
PHYS 142	Physics II-C Lab	1cr
PHYS 231	Electronics	4cr
PHYS 331	Modern Physics	3cr
PHYS 342	Thermal and Statistical Physics	3cr
PHYS 345	Optics	3cr
PHYS 350	Intermediate Experimental Physics I	3cr
PHYS 441	Classical Mechanics	3cr
PHYS 451	Electricity and Magnetism	3cr

Controlled Electives:			
Physics Elective		2cr	
Other Requirements: Additional Math Course:			
MATH 124	Calculus II for Physics, Chemistry, and Mathematics	4cr	4
(#) Total Degree Requirements			120

(*) See requirements leading to teacher certification, titled "3-Step Process for Teacher Education," in the College of Education and Educational Technology section of this catalog.
(#) See advisory paragraph "Timely Completion of Degree Requirements" in the section on Requirements for Graduation.

Controlled Elective:			
Physics Elective – major's course 200 or higher		3cr	
Other Requirements:			10
BIOL 111	Principles of Biology I	4cr	
MATH 126	Calculus II Physics, Chemistry, and Mathematics	3cr	
MATH 225	Calculus III Physics, Chemistry, and Mathematics	3cr	
(#) **Total Degree Requirements**			125

(*) See requirements leading to teacher certification, titled "3-Step Process for Teacher Education," in the College of Education and Educational Technology section of this catalog.
(#) See advisory paragraph "Timely Completion of Degree Requirements" in the section on Requirements for Graduation.

Rationale: From the Physics Department's student assessment plan, it has become clear that the students do not make broad connections between the various sub-disciplines in our physics programs. Therefore, the department decided to restructure its Bachelor of Science in Education - Physics degree program. As a consequence of the restructuring of the Physics Department's course offerings, PHYS 222 Mechanics I (2cr) and PHYS 223 Mechanics II (2cr) are being combined into one new course PHYS 441 Classical Mechanics (3cr) and the course contents of PHYS 322 Electricity and Magnetism I (2cr) and PHYS 323 Electricity and Magnetism II (2cr) are being combined into PHYS 451 Electricity and Magnetism. In addition requirements from PDE have led to the inclusion of EDEX 323 in the program.

5 Department of Biology—New Track

a Bachelor of Science in Biology: Ecology, Conservation, and Environmental Biology Track

The Ecology, Conservation, and Environmental Biology (ECEB) Track includes all core Biology courses and a selection of related courses that focus on ecological and environmental sciences. In order to achieve an environmental focus, the student must complete broad training in the sciences and mathematics. The track is designed to provide flexibility to allow pursuit of specialized interests within ECEB, including minors in other environmental disciplines (e.g., environmental geology, geography, regional planning, law, etc.). Course requirements for professional certification by the Ecological Society of America (Certified Associate Ecologist) and/or The Wildlife Society (Certified Wildlife Biologist) can be met within this track. This track prepares students for pursuing advanced degrees or employment in areas related to ecology and environmental sciences at universities, government, and private companies.

Bachelor of Science in Biology: Ecology, Conservation, and Environmental Biology Track

Liberal Studies Courses: **49**
As outlined in the Liberal Studies section with the following specifications:
Mathematics: MATH 121
Natural Science: CHEM 111 and 112

Social Science: ECON 101
Liberal Studies Electives: 3cr, MATH 216 or 217

Major:			**36-37**
Required courses:			**34**
BIOL 111	Principles of Biology I	4cr	
BIOL 112	Principles of Biology II	4cr	
BIOL 210	Botany	3cr	
BIOL 220	General Zoology	3cr	
BIOL 250	Principles of Microbiology	3cr	
BIOL 263	Genetics	3cr	
BIOL 271	Evolution	3cr	
BIOL 272	Conservation of Plant and Animal Resources	3cr	
BIOL 362	Ecology	3cr	
BIOL 480	Biology Seminar	1cr	
BIOL 480	Biology Seminar	1cr	
BIOL 490	Field Studies in Biology	3cr	
Independent Study or Internship			**2-3**
Must take one of the following:			
BIOL 493	Biology Internship	3cr	
BIOL 499	Biology Research	3cr	
BIOL 483	Honors Thesis/Independent Study	2cr	
Other Requirements:			**26-32**
Required courses:			**8**
GEOS 201	Foundations of Geology	4cr	
PHYS 111	Physics I Lecture	3cr	
PHYS 121	Physics I Lab	1cr	
Controlled Electives:			**18**

BIOL 251, 252, 261, 262, 281, 310, 425, 450, 455, 456, 463, 471, 473, 475, 480, 481, 482, 483, 484, 490; CHEM 231, 232, 323, 351; COSC 105, 110; ECON 361; ENVH 221, 456; GEOG 343, 345, 419; GEOG/RGPL 213, 314, 316, 415, 417, 440, 464; GEOS 310; MATH 122; PHYS 112, 122; RGPL 350, 458

Foreign Language: **0-6**

Two courses beyond placement or intermediate level. In lieu of a foreign language the student may elect to take a sequence of courses in either Computer Science (exclusive of COSC/IFMG 101; COSC 110 and COSC 210 recommended) or Regional Planning from the list of controlled electives (or with permission of advisor.)

Free Electives: **2-9**

Total Degree Requirements: **120**

Rationale: The purpose of an Ecology, Conservation, and Environmental Biology

(ECEB) Track is to allow students who are interested in all areas of ecological science to focus their studies into a program leading to a defined career path or advanced study. Students will develop skills in both laboratory and field biology. This track combines depth of study in biology with breadth of study in relevant natural and social sciences. Students who choose this track may concentrate on such fields as aquatic or terrestrial ecology or work toward a minor in areas such as geology, chemistry, or geography.

The Ecological Society of America (ESA) recommends that students obtain a broad background in the life and natural sciences, including geology, chemistry and physics. The society also recommends that students have a "working knowledge of mathematics, statistics, and computers." In addition to the natural sciences, the Ecological Society of America recommends that students develop communication skills and have background in relevant social sciences, such as economics, geography, and political science. These expectations have been formalized in ESA's professional certification program; another, more specified certification program is offered by The Wildlife Society. Students electing this track will fulfill all course requirements for certification as an Associate Ecologist from ESA and with careful selection of courses within the track can fulfill all requirements for certification as an Associate Wildlife Biologist by The Wildlife Society. Additionally, practical, hands-on experience is essential to successful placement in the job market or for advanced study in ECEB fields. A recent study funded by the National Science Foundation reported that nationwide, 73% of students majoring in the environmental sciences had undergraduate research experience. For this reason, the track requires a minimum of 3cr research or internship experience.

The job market in ECEB is diverse and includes jobs at all levels of experience and education. Many jobs require highly trained individuals with advanced degrees. The ECEB Track would be an initial step in working toward these types of positions because the track will prepare students for graduate programs in ecology or environmental science. Other positions require a bachelor's degree, and the ECEB Track is designed to meet the needs of these employers (e.g., consulting agencies, environmental foundations, and federal, state and local government agencies). The *Handbook* projects for the period 2005-2016 that the number of jobs will grow by 9%, 5%, and 25% for "Zoologists and Wildlife Biologists," "Conservation Scientists," and "Environmental scientists and specialists, including health," respectively. This compares favorably with 4% projected growth for "Biological Sciences, all other areas," which most closely matches the undifferentiated BS in Biological Sciences (without a track), where the majority of majors are currently enrolled. The proposed track will allow students to make more choices in their coursework while providing guidance toward a specific career path. By identifying a specific job market and targeting a specific career goal, this track represents a valuable recruitment tool for attracting students to IUP.

6 Department of Safety Science–Catalog Description Changes

i Current Catalog Description:

SAFE 111 Principles of Safety I–General Industry **3c-0l-3cr**
Prerequisite: SAFE 101
Stresses an understanding of the complexity of the industrial hazard control problem by thoroughly examining elements of safety and health enumerated in the OSHA-promulgated general industry standards and various consensus standards. Emphasis given to plant layout and design, powered industrial vehicles, boilers and unfired pressure vessels, working and walking surfaces, machine guarding, and an introduction to industrial processes.

Proposed Catalog Description:

SAFE 111 Principles of Safety I–General Industry **3c-0l-3cr**
Stresses an understanding of the complexity of the industrial hazard control problem by thoroughly examining elements of safety and health enumerated in the OSHA-promulgated general industry standards and various consensus standards. Emphasis given to plant layout and design, powered industrial vehicles, boilers and unfired pressure vessels, working and walking surfaces, machine guarding, and an introduction to industrial processes.

ii Current Catalog Description:

SAFE 220 Hazardous Materials **3c-0l-3cr**
Prerequisite: CHEM 102, SAFE 101
Provides a basic understanding of the storage, transportation, and use of hazardous materials in business. Includes a discussion on hazardous materials, specifically their definitions, categories, regulations, and evaluation. Emergency response planning is also covered.

Proposed Catalog Description:

SAFE 220 Hazardous Materials **3c-0l-3cr**
Prerequisite: CHEM 101, SAFE 101 or instructor permission
Provides a basic understanding of the storage, transportation, and use of hazardous materials in business. Includes a discussion on hazardous materials, specifically their definitions, categories, regulations, and evaluation. Emergency response planning is also covered.

iii Current Catalog Description:

SAFE 311 Fire Protection **2c-3l-3cr**
Prerequisites: CHEM 102, PHYS 112, SAFE 211
Teaches the fundamental concepts involved in the protection of people and property from fire and explosion. Basic fire safety terminology, fire chemistry and extinguishment, fire safety references and standards, and fire program management are discussed. Also discusses control measures for common fire and explosion hazards and the design of buildings in terms of life safety and fire suppression systems. Development of programs in fire safety, as well as the evaluation and control of fire and explosion hazards, will be studied in laboratory sessions. Practical application of fire principles will be completed in laboratory sessions.

Proposed Catalog Description:

SAFE 311 Fire Protection **2c-3l-3cr**
Prerequisites: CHEM 101 or instructor permission
Provides the fundamental concepts involved in the protection of people and property from fire and explosion. Basic fire safety terminology, fire chemistry and extinguishment, fire safety references and standards, and fire program management are discussed. Also discusses control measures for common fire and explosion hazards and the design of buildings in terms of life safety and fire suppression systems. Development of programs in fire safety, as well as the evaluation and control of fire and explosion hazards, will be studied in laboratory sessions. Practical application of fire principles will be completed in laboratory sessions.

iv Current Catalog Description:

SAFE 330 Recognition, Evaluation, and Control of Occupational Health Hazards I
Prerequisites: BIOL 155, CHEM 102, PHYS 112 **3c-3l-4cr**
Provides an understanding of selected chemical stressors in the workplace that may present occupational health hazards to workers. Students learn to anticipate, identify, evaluate, and control chemical stressors including dusts, mists, metal fumes, airborne fibers, inorganic and organic gases and vapors, and oxygen-deficient atmospheres. Hazard classification systems, adverse health effects from excessive exposures, workplace standards, sampling and analytical methods, and control options are emphasized.

Proposed Catalog Description:

SAFE 330 Recognition, Evaluation, and Control of Occupational Health Hazards I
Prerequisites: BIOL 155, CHEM 101 or instructor permission **3c-3l-4cr**
Provides an understanding of selected chemical stressors in the workplace that may present occupational health hazards to workers. Students learn to anticipate, identify, evaluate, and control chemical stressors including dusts, mists, metal fumes, airborne fibers, inorganic and organic gases and vapors, and oxygen-deficient atmospheres. Hazard classification systems, adverse health effects from excessive exposures, workplace standards, sampling and analytical methods, and control options are emphasized.

v **Current Catalog Description:**

SAFE 345 Systems Safety Analysis **3c-0l-3cr**
Prerequisites: MATH 217, SAFE 211
Focuses on the evaluation of system designs using detailed system analysis techniques. Topics include system definition, economics of systems safety, systems safety methodology, and mathematics of systems analysis, including statistical methods, Boolean algebra, and reliability. Skills gained include the ability to perform system hazard analyses and operating and support hazard analyses. Techniques include failure mode and effect analysis, fault tree analysis, and technique for human error rate prediction. Practical analysis work is accomplished through in-class discussion, demonstration sessions, and homework assignments.

Proposed Catalog Description:

SAFE 345 Systems Safety Analysis **3c-0l-3cr**
Prerequisites: MATH 105 or instructor permission
Focuses on the evaluation of system designs using detailed system analysis techniques. Topics include system definition, economics of systems safety, systems safety methodology, and mathematics of systems analysis, including statistical methods, Boolean algebra, and reliability. Skills gained include the ability to perform system hazard analyses and operating and support hazard analyses. Techniques include failure mode and effect analysis, fault tree analysis, and technique for human error rate prediction. Practical analysis work is accomplished through in-class discussion, demonstration sessions, and homework assignments.

vi Current Catalog Description:

SAFE 347 Ergonomics **2c-3l-3cr**
Prerequisite: BIOL 155
Explores the principles which control human performance and its effect upon the safety and reliability of systems. Engineering anthropometrics, human perception, biomechanics of motion and work posture, work physiology, and human performance measurement are taught in the context of their application in workplace design. Instructs in methodologies for analysis of tasks and human performance requirements. Important human limitations and ergonomic hazard evaluations, such as lifting and repetitive motion tasks, are studied in laboratory sessions.

Proposed Catalog Description: **2c-3l-3cr**
Prerequisite: SAFE 211 or instructor permission
Explores the principles which control human performance and its effect upon the safety and reliability of systems. Engineering anthropometrics, human perception, biomechanics of motion and work posture, work physiology, and human performance measurement are taught in the context of their application in workplace design. Instructs in methodologies for analysis of tasks and human performance requirements. Important human limitations and ergonomic hazard evaluations, such as lifting and repetitive motion tasks, are studied in laboratory sessions.

vii Current Catalog Description:

SAFE 410 Environmental Safety and Health Regulations **3c-0l-3cr**
Prerequisites: CHEM 102, SAFE 220
Provides a working knowledge of federal environmental legislation and their practical application in the work environment. Environmental laws covered include the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and other related environmental laws.

Proposed Catalog Description:

SAFE 410 Environmental Safety and Health Regulations **3c-0l-3cr**
Prerequisites: CHEM 101 or instructor permission
Provides a working knowledge of federal environmental legislation and their practical application in the work environment. Environmental laws covered include the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and other related environmental laws.

viii Current Catalog Description:

SAFE 430 Recognition, Evaluation, and Control of Occupational Health Hazards II
Prerequisites: BIOL 155, CHEM 102, PHYS 112 **3c-3l-4cr**
Provides an understanding of selected physical and biological stressors in the workplace that may present occupational health hazards to workers. Students learn to anticipate, identify, evaluate, and control physical and biological stressors in the workplace. Emphasizes adverse health effects from excessive exposures, workplace standards, sampling and analytical methods, and control options. Concludes with discussions that focus on the effective development and implementation of a comprehensive safety and health program.

Proposed Catalog Description:

SAFE 430 Recognition, Evaluation, and Control of Occupational Health Hazards II
Prerequisites: BIOL 155, PHYS 111 or instructor permission **3c-3l-4cr**
Provides an understanding of selected physical and biological stressors in the workplace that may present occupational health hazards to workers. Students learn to anticipate, identify, evaluate, and control physical and biological stressors in the workplace. Emphasizes adverse health effects from excessive exposures, workplace standards, sampling and analytical methods, and control options. Concludes with discussions that focus on the effective development and implementation of a comprehensive safety and health program.

Rationale: On September 20-22, 2009, the Accreditation Board of Engineering and Technology's (ABET) Applied Science Accreditation Commission (ASAC) visited IUP's Department of Safety Sciences to conduct its accreditation review of IUP's undergraduate Safety Sciences program. A weakness cited by this accreditation team in its evaluation report was that the Safety Sciences program must have and enforce procedures to assure that all students are meeting all program requirements since transcript evaluations indicated that some students have taken courses without fulfilling prerequisites or have taken prerequisites concurrently.

To deal with this weakness, the Safety Sciences Department critically examined the appropriateness of all SAFE current course prerequisites, especially those identified earlier as having a history of overrides. The Curriculum Committee has conducted its review of Safety Science courses and is recommending that the list of prerequisites be revised to include only those which are truly critical and appropriate for the successful completion of the course. As a part of this review, it is being recommended by the Safety Sciences Department's Curriculum Committee that CHEM 101 College Chemistry I replaces CHEM 102 College Chemistry II, PHYS 112 Physics II, and

SAFE 211 Principles of Safety II – Construction Industry as a prerequisite for the SAFE 311 Fire Protection, since CHEM 101 is deemed to be sufficient for the successful completion of the SAFE 311.

7 Department of Food and Nutrition—Revision of Minor and New Track

a Revision of Minor:

Current Program:

Minor--Nutrition **15**

Required Courses:

FDNT 212	Nutrition	3cr
FDNT 213	Life Cycle Nutrition	3cr
FDNT 245	Sports Nutrition	3cr (1)
FDNT 355	Nutrition in Disease I	3cr
FDNT 470	Human Food Consumption Patterns ***or***	3cr
FDNT 402	Community Nutrition	

(1) Students not interested in FDNT 245 may select both FDNT 402 and 470 in place of FDNT 245.

Proposed Program:

Minor in Food and Nutrition **16-17**

Required courses: **7cr**

FDNT 151	Foods Laboratory	1cr
FDNT 212	Nutrition	3cr
FDNT 213	Life Cycle Nutrition	3cr

Controlled Electives: **3-6cr**

Choose at least one of the following:

FDNT 150	Foods Lecture	3cr
FDNT 470	Human Food Consumption Patterns	3cr

Choose two of the following to be approved by the department chair: **3-7cr**

FDNT 245	Sports Nutrition	3cr
FDNT 355	Nutrition in Disease I	3cr
FDNT 362	Experimental Foods	3cr
FDNT 402	Community Nutrition	3cr
FDNT 455	Nutrition in Disease II	3cr
FDNT 458	Advanced Human Nutrition	3cr

Rationale: The existing minor in Nutrition was designed primarily for students majoring in health-related fields, with the expectation that those students had adequate preparation in sciences to complete upper level nutrition courses and an interest in nutrition predominantly from a health care perspective. However, in recent years, many students who seek the minor are not majoring in health related fields, and their interest in nutrition is often more personal. The existing minor does not meet the needs of some students for the following reasons:

1. While the minor requires some fairly minimal prerequisite preparation in chemistry or biology, these requirements do not adequately prepare students for course work in upper level nutrition courses (e.g. FDNT 355), so that those students whose majors do not require additional science courses are not adequately prepared for some courses currently required by the minor.
2. An adequate understanding of nutrition requires some basic understanding of food chemistry and food preparation. Many of today's students lack the food preparation experience common among previous generations of students, and would benefit from some course work relating to food.
3. The current minor does not include courses that some students might choose, based upon personal or career interests (e.g. FDNT 150 and FDNT 362).

The proposed revision of the minor addresses these issues by: (1) requiring a one-credit food preparation course as well as one additional three-credit foods course to enhance understanding of the role of food in meeting nutritional needs and; (2) increasing the choices for the minor to allow flexibility for students from a variety of majors. In addition to better meeting the needs of students electing the minor, this revision will reduce the demand for some major courses and thereby better utilize the distribution of departmental resources.

b New Track:

Culinary Dietetics Track

Catalog Description:

The Culinary Dietetics Track allows students to combine academic preparation in nutrition with extensive hand-on learning experiences in culinary arts by one of two routes: (1) Students who have completed a minimum of 28 credits toward the baccalaureate degree will have the opportunity to enroll in the Culinary Arts program at the Punxsutawney regional campus, where the three semester program (fall, spring, summer) will transfer into the Department of Food and Nutrition 32 credits which apply to the Bachelor of Science degree. Students will complete the culinary arts externship in the summer between the junior and senior years. (2) Students who earn a culinary certificate prior to admission to the dietetics program will receive 32 credits toward the degree.

This track uniquely prepares graduates to incorporate healthy nutrition into classical cuisine, manage food service operations focused on nutrition needs, and integrate culinary arts into hospital, extended care, and school food service operations. Graduates qualify for admission to CADE accredited Dietetic Internships in pursuit of Dietetic Registration.

Bachelor of Science–Culinary Dietetics Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications:			45
Health and Wellness: HPED, NURS or FDNT 143			
Mathematics: MATH 217			
Natural Science: CHEM 101-102			
Social Science: ANTH 470 or PLSC 101 or 111, PSYC 101, SOC 151			
Liberal Studies Electives: 0cr (1)			
Major:			30
Required Courses (3):			
FDNT 110	Careers in Food and Nutrition	1cr	
FDNT 213	Life Cycle Nutrition	3cr	
FDNT 355	Nutrition in Disease I	3cr	
FDNT 362	Experimental Foods	3cr	
FDNT 364	Methods of Teaching	3cr	
FDNT 402	Community Nutrition	3cr	

FDNT 430	Professional Topics	3cr	
FDNT 455	Nutrition in Disease II	3cr	
FDNT 458	Advanced Human Nutrition	4cr	
FDNT 463	Nutrition Counseling	3cr	
FDNT 484	Senior Seminar	1cr	
Other Requirements:			45
Certificate in Culinary Arts (1, 2)		32cr	
Natural Science Sequence**:** BIOL 241 or 270, 105, 155, CHEM 255		13cr	
Free Electives: (4)			0
Total Degree Requirements:			120

(1) The culinary certificate includes a course in computer science (previously transferred as COSC 101), which is considered an additional 3 credits toward Liberal Studies requirements, resulting in a total of 48 credits in Liberal Studies.
(2) Completion of a culinary certificate is required for this degree.
(3) Students who complete their culinary certificate prior to completing Chemistry 101 and 102 are also required to take FDNT 212.
(4) Because the culinary certificate includes considerable additional preparation in foods, the 32 credits include numerous hours of work that can be considered free electives.

Rationale: Every year, several students who enter the dietetics program either have completed a culinary certificate or express interest in seeking credentials in culinary arts.

Over ten years ago, Lechowich and Soto (1995) recommended "partnering with culinary programs to build alliances that position dietetics practitioners as providers of services that enhance the market's products." Soon after, Gilmore, et al. (1997) encouraged dietitians to "create a unique emphasis area, such as … culinary." In 1997, the American Dietetic Association formed a practice group, "Food and Culinary Professionals," for the purpose of supporting the development of this expertise within the profession. Marsico, et al. (1998) noted that the formation of this group "reflects the growing enthusiasm for enhanced food and culinary skills within the profession." More recently, Maillet (2002) observed that dietitians with culinary background are leaders in innovations in product development and foodservice, and Jarratt and Mahaffie (2002) recognized the increased marketability of dietitians who enhance their education with culinary skills.

Of the 224 accredited DPDs, very few offer the unique combination of dietetics and culinary arts within a degree program (to date three have been identified). The addition of this track for our department adds a unique marketing dimension that will appeal to many students who have interest in both fields.

8 Department of Mathematics—Revision of Minor

Current Program:

Minor—Applied Statistics **16**

At least 16cr selected as follows:

a) Introductory calculus course: MATH 115 of 121 or 123
b) Introductory statistics course: MATH 214 or 216 or 217
c) MATH 417
d) MATH 418

The remaining credits may be chosen from the following:

a) A second calculus course: MATH 122 or 124
b) MATH 171
c) QBUS 215
d) Any course for mathematics majors approved by the Applied Statistics Advisor.

Proposed Program:

Minor—Applied Statistics **16**

Required Courses: 9cr
MATH 214 or 216 or 217
MATH 417
MATH 418

Controlled Electives: 7cr
At least 7cr from the following:
MATH 115 or 121 or 125, 363, 364, CRIM 306,
QBUS 215,
ECON 356, PSYC 291, or any statistics or quantitative methods course approved by the Applied Statistics Advisor.

Rationale: Moving introductory calculus (MATH 115, 121, or 123) from required to optional allows students who don't need calculus to earn a minor without turning away students who are
required to take calculus. MATH 123 is being eliminated because it has been phased out of the
curriculum. MATH 171 and a second calculus course are being removed to give more emphasis to statistics in the minor. MATH 363 and 364 (Mathematical Statistics I and II) are viable courses for the minor. Formally listing courses like CRIM 306 Criminological Research Methods, ECON 356 Introduction to Econometrics, and PSYC 291 Research Design and Analysis II; all of which are routinely approved by the Applied Statistics Advisor, will alert students who are taking those courses that they can use them for the Applied Statistics minor.

9 Liberal Studies Committee—Revised Criteria for Liberal Studies Course Categories

Natural Science

Students are required to complete two (2) courses in Natural Science. Unless specified by their major department or college, students may choose Natural Science Option 1 of eight credits (two lab science courses) or Option 2 of seven credits (one lab science course and one non-lab science course). With either option, students are not required to take the same science prefix for both courses unless that requirement is specified by their major department or college. Lab science courses cover a core set of laboratory practices and scientific methodology concepts and include a laboratory component for at least one credit.

In addition to these two required Natural Science courses, students must complete one additional Scientific Literacy Competency-Across-the-Curriculum (CAC) course. The Scientific Literacy CAC course may be accomplished in any other part of a student's curriculum including other Liberal Studies courses, major courses or electives.

1 Natural Science Lab-Science Courses

Lab-Science Courses Expected Undergraduate Student Learning Outcomes

Syllabi for courses designed to fulfill the Liberal Studies Natural Science lab-science requirement must provide course content that enables students to achieve the Expected Undergraduate Student Learning Outcomes identified below. Course proposals may identify additional objectives from the list of Expected Undergraduate Student Learning Outcomes as appropriate to the course content.

As *Informed Learners* students will demonstrate knowledge and understanding of:

- the natural world or the ways of modeling the natural, social and technical worlds

As *Empowered Learners* students will demonstrate:

- problem solving skills using a variety of methods and tools critical thinking skills
- critical thinking skills including analysis, application and evaluation

As *Responsible Learners* students will demonstrate:

- intellectual honesty

Lab Science Required Course Content

Courses designed to meet the Liberal Studies Natural Science lab-science requirement must include content and instruction that provides opportunities for students to:

- examine a body of knowledge of natural science that will contribute to an understanding of the natural world and an appreciation of the impacts that natural sciences have on the lives of individuals and the world in which they live
- understand the difference between science as a knowledge base and science as a process that generates knowledge

- develop an inquiring attitude consistent with the tenets of natural science
- understand the empirical nature of science
- understand the concept of bias and the efforts to which scientists go to avoid it
- to learn the proper application of scientific methodology in an appropriate context

Additionally, individuals proposing courses to fulfill the Natural Science lab-science requirement are encouraged to include course material and instruction in which students:

- develop skills in effective use of oral and written communication as appropriate
- apply problem solving and critical thinking skills to reach conclusions

Lab Science Common Learning Objectives

All courses designed to fulfill the Liberal Studies Natural Science lab-science requirement will establish the following common course learning objectives.

At the conclusion of the course the student should be able to:

- understand a body of knowledge in a science domain
- understand that science knowledge is generated by an empirical approach to nature and analyze problems from the perspective of a natural scientist
- demonstrate an understanding of intellectual honesty in the context of scientific methodology, and contrast science with pseudoscience
- understand how science knowledge is relevant to non-scientists
- use critical thinking skills and scientific methodology

2 ***Natural Science Non-lab Science Courses***

Non-lab Science Expected Undergraduate Student Learning Outcomes

Syllabi for courses designed to fulfill the Liberal Studies Natural Science non-lab science requirement must provide course content that enables students to achieve the Expected Undergraduate Student Learning Outcomes identified below. Course proposals may identify additional objectives from the list of Expected Undergraduate Student Learning Outcomes as appropriate to the course content.

As *Informed Learners* students will demonstrate knowledge and understanding of:

- the natural world or the ways of modeling the natural, social and technical worlds

As *Empowered Learners* students will demonstrate:

- problem solving skills using a variety of methods and tools critical thinking skills
- critical thinking skills including analysis, application and evaluation

As *Responsible Learners* students will demonstrate:

- intellectual honesty

Non-Lab Science Required Course Content

Courses designed to meet the Liberal Studies Natural Science lab-science requirement must include content and instruction that provides opportunities for students to:

- examine a body of knowledge of natural science that will contribute to an understanding of the natural world and an appreciation of the impacts that natural sciences have on the lives of individuals and the world in which they live
- understand the difference between science as a knowledge base and science as a process that generates knowledge
- develop an inquiring attitude consistent with the tenets of natural science
- understand the empirical nature of science
- understand the concept of bias and the efforts to which scientists go to avoid it

Individuals proposing courses to fulfill the Natural Science non-lab science requirement are encouraged to include course material and instruction in which students:

- develop skills in effective use of oral and written communication as appropriate
- apply problem solving and critical thinking skills to reach conclusions

Non-lab Science Common Learning Objectives

All courses designed to fulfill the Liberal Studies Natural Science non-lab science requirement will establish the following common course learning objectives.

At the conclusion of the course the student should be able to:

- understand a body of knowledge in a science domain
- understand that science knowledge is generated by an empirical approach
- demonstrate an understanding of intellectual honesty in the context of scientific methodology, and contrast science with pseudoscience
- understand how science knowledge is relevant to non-scientists
- use critical thinking skills and scientific methodology

Mathematics

Students are required to complete at least one mathematics course to fulfill the Liberal Studies Mathematics requirement. Additional mathematics requirements may be specified by the student's major or college.

In addition to the required Liberal Studies Mathematics courses, students must complete one additional Quantitative Reasoning Competency-Across-the-Curriculum (CAC) course.

Mathematics Expected Undergraduate Student Learning Outcomes

Syllabi for courses designed to fulfill the Liberal Studies Mathematics requirement must provide course content that enables students to achieve the Expected Undergraduate Student Learning Outcomes identified below. Course proposals may identify additional objectives from the list of Expected Undergraduate Student Learning Outcomes as appropriate to the course content.

As *Informed Learners* students will demonstrate knowledge and understanding of:

- the ways of modeling the natural, social and or technical worlds

As *Empowered Learners* students will demonstrate:

- problem solving skills using a variety of methods and tools
- critical thinking skills including analysis, application and evaluation

Mathematics Required Course Content

Proposals for courses designed to fulfill the Liberal Studies Mathematics requirement must include opportunities for students to:

- develop and apply deductive reasoning skills
- apply multiple problem solving techniques as appropriate to the course
- promote understanding and use of mathematical formulas
- enable the interpretation, analysis and use of numerical and graphical data
- develop mathematical models to solve problems

Additionally, individuals proposing courses designed to fulfill the Liberal Studies Mathematics requirement are encouraged to include opportunities for students to:

- increase confidence and ability in using mathematics
- introduce historical context of mathematical problems and their solutions
- introduce the appropriate use of technology as a tool in problem solving
- include applications and problems from a variety of disciplines

Mathematics Common Learning Objectives

All courses meeting the Liberal Studies Mathematics requirement will establish common course objectives stating:

At the conclusion of the course the student should be able to:

- understand deductive reasoning and apply it in the problem solving process
- apply appropriate techniques to solve a variety of problems
- interpret, understand and apply mathematical formulas appropriate to the course
- interpret, analyze and use numerical data and graphs
- develop simple mathematical models to solve problems

Explanation of Revisions to Liberal Studies Information Packet: Criteria for Liberal Studies curriculum categories and courses are being added and/or revised to address the revisions made to the Liberal Studies curriculum, the revised Liberal Studies Curriculum Framework and the approved Expected Undergraduate Student Learning Outcomes approved by University Senate and the IUP Council of Trustees.

These criteria will be implemented along with the revised Liberal Studies curriculum framework in Fall 2011 for incoming first year students. Students enrolled at IUP prior to Fall 2011 will be transitioned out of the current program and curriculum exceptions will be made as needed to accommodate those students.

The proposed criteria were developed in large part by subcommittees of university personnel who wrote guidelines for each category and were then later reviewed by departments and interested individuals. At the start of the fall 2009 semester, these criteria were posted on the Liberal Studies web site and open to campus-wide feedback. The Liberal Studies Committee has considered all the comments received and has completed a final edit of these criteria.

Included in this first proposal are the criteria for Mathematics and the criteria for Natural Science as approved by the Liberal Studies Committee and UWUCC. Evidence of solicitation of letters from affected department and those letters received were available to UWUCC.

APPENDIX B
University Senate Research Committee
Chair Sciulli

The committee met on December 8, 2009.

The committee awarded $7,500 in Small Grants to the following individuals:

- Dr. Parimal Bhagat
- Dr. Kimberly Burch
- Dr. Framarz Byramjee
- Dr. Yu-Ju Kuo
- Dr. Raymond Pavloski
- Dr. Thomas Simmons
- Dr. Lingyan Yang