

Curriculum Proposal Cover Sheet

LSC Use Only Proposal No: LSC Action-Date:	UWUCC Use Only Proposal No: <u>12-1196</u> UWUCC Action-Date: <u>App-4/16/13</u> Senate Action Date: <u>App-4/30/13</u>
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Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) Andy Zhou	Email Address fzhou@iup.edu
Proposing Department/Unit Physics/Electro-Optics and Laser Engineering Technology	Phone 724-357-4593

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

☐ New Course ☐ Course Prefix Change ☐ Course Deletion
☐ Course Revision ☐ Course Number and/or Title Change ☐ Catalog Description Change

Current course prefix, number and full title: _____

Proposed course prefix, number and full title, if changing: _____

2. Liberal Studies Course Designations, as appropriate

☐ This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)
☐ Learning Skills ☐ Knowledge Area ☐ Global and Multicultural Awareness ☐ Writing Intensive (include W cover sheet)
☐ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)
 ☐ Global Citizenship ☐ Information Literacy ☐ Oral Communication
 ☐ Quantitative Reasoning ☐ Scientific Literacy ☐ Technological Literacy

3. Other Designations, as appropriate

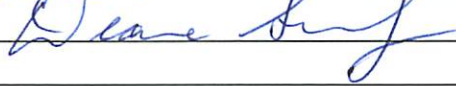
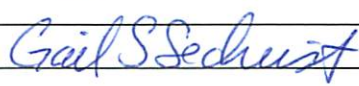
☐ Honors College Course ☐ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

☐ Catalog Description Change ☒ Program Revision ☐ Program Title Change ☐ New Track
☐ New Degree Program ☐ New Minor Program ☐ Liberal Studies Requirement Changes ☐ Other

Current program name: Associate in Science – Electro Optics and Laser Engineering Technology

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		<u>2/11/13</u>
Department Chairperson(s)		<u>2/11/13</u>
College Curriculum Committee Chair		<u>4/2/13</u>
College Dean		<u>4/3/13</u>
Director of Liberal Studies (as needed)		
Director of Honors College (as needed)		
Provost (as needed)		<u>4/10/13</u>
Additional signature (with title) as appropriate		
UWUCC Co-Chairs		<u>4/16/13</u>

Received

APR 4 2013

Liberal Studies

Part I. Curriculum Proposal Cover Sheet (see above)

Part II. Description of Curriculum Changes

1. Catalog description for the revised program in the appropriate form. This includes both the description about the program and the list of courses and credits for the revised program.

Proposed Description

The A.S.in Electro-Optics and Laser Engineering Technology produces trained and skilled workers who will move into senior technician slots in the electro-optics and laser industry, both locally and nationally. With the A.S. degree the student has a choice of either entering the workforce or transitioning to the Bachelor of Science in Physics/Electro-Optics and Laser Engineering Technology track. Both the A.S. and B.S. are offered at the IUP Indiana Campus.

Associate in Science - Electro-Optics and Laser Engineering Technology

Liberal Studies: As outlined in Liberal Studies section with the following specifications:

25-26

Dimensions of Wellness: 3cr

English Composition: ENGL 101

Fine Arts: 3cr

Humanities: 3cr

Mathematics: MATH 110 or 125 (1) (2)

Natural Science: CHEM 101 or 111 (2) or 113(2)

Social Science: 3cr

Liberal Studies Electives:

COSC/BTED/IFMG 101 or COSC/BTED/COMM/IFMG 201 or MATH 126 (2)

Major:

31

Required Courses:

EOPT 105 Computer Interfacing in Electro-Optics

3cr

EOPT 130 Introduction to Optics

4cr

EOPT 125 Introduction to Electronics

4cr

EOPT 150 Fundamentals of Photonics and Laser Safety

3cr

EOPT 210 Detection and Measurement

3cr

EOPT 220 Introduction to Lasers

3cr

EOPT 240 Fiber Optics

3cr

PHYS 131/141 Physics I or PHYS 111/121 Physics I (2)

4cr

PHYS 132/142 Physics II or PHYS 112/122 Physics II (2)

4cr

Free Electives:

3-4

Total Degree requirements:

60

(1) Other Math courses may be substituted at the discretion of the chair.

(2) These courses will satisfy the requirements for both the associate degree in EOLET and the BS-Physics/EOLET track degree.

2. Summary of Changes

a) Side by Side Comparison

Associate of Science in Electro-Optics and Laser Engineering Technology Program Revision

Current Program		Proposed Program	
Liberal Studies: Following are the required		Liberal Studies: Following are the required	
Liberal Studies courses:	25-26	Liberal Studies courses:	25-26
Dimensions of Wellness:	3cr	Dimensions of Wellness:	3cr
English Composition: ENGL 101	3cr	English Composition: ENGL 101	3cr
Fine Arts:	3cr	Fine Arts:	3cr
Humanities:	3cr	Humanities:	3cr
Mathematics: MATH 110 or 121	3cr	Mathematics: MATH 110 or 125 (1) (2)	3-4cr

Natural Science: CHEM 101 or 111 4cr
Social Science: 3cr
Liberal Studies Electives: COSC/BTED/IFMG 3cr
 101 or COSC/BTED/COMM/IFMG 201

Major: 34

Required Courses:

EOPT 105 Computer Interfacing in Electro-Optics 3cr
 EOPT 110 Geometric Optics 3cr
 EOPT 120 Wave Optics 3cr
 EOPT 125 Introduction to Electronics 4cr
 EOPT 126 Electronics II 3cr
 EOPT 150 Fundamentals of Photonics and Laser Safety 3cr
 EOPT 210 Detection and Measurement 3cr
 EOPT 220 Introduction to Lasers 3cr
 EOPT 240 Fiber Optics 3cr
 PHYS 115 Physics I for Electro-Optics 3cr *or* 3cr
 PHYS 131 Physics I
 PHYS 116 Physics II for Electro-Optics *or* 3cr 3cr
 PHYS 132 Physics II

Other Requirements: 3

One PHYS or EOPT elective–PHYS 100 will satisfy this requirement

Total Degree Requirements: 62-63

Natural Science: CHEM 101, 111 or 113 (2) 4cr
Social Science: 3cr
Liberal Studies Electives: COSC/BTED/IFMG 3cr
 101 or COSC/BTED/COMM/IFMG 201 or MATH 126 (2)

Major: 31

Required Courses:

EOPT 105 Computer Interfacing in Electro-Optics 3cr
 EOPT 130 Optics 4cr
 EOPT 125 Introduction to Electronics 4cr
 EOPT 150 Fundamentals of Photonics and Laser Safety 3cr
 EOPT 210 Detection and Measurement 3cr
 EOPT 220 Introduction to Lasers 3cr
 EOPT 240 Fiber Optics 3cr
 PHYS 131/141(2) Physics I 4cr *or* PHYS 111/121 4cr
 PHYS 132/142 (2) Physics II 4cr *or* PHYS 112/122 4cr

Free Electives: 3-4

Total Degree Requirements: 60

(1) Other Math courses may be substituted at the discretion of the chair.

(2) These courses will satisfy the requirements for both the associate degree in EOLET and the BS-Physics/EOLET track degree.

Current Program	Proposed Program
The A.S.–Electro-Optics and Laser Engineering Technology produces trained and skilled workers who will move into senior technician slots in the electro-optics industry, both locally and nationally. With the A.S. degree the student has a choice of either entering the workforce or transitioning to the Bachelor of Science in Physics/Electro-Optics and Laser Engineering Technology track. The A.S. is offered at the IUP Northpointe Regional Campus.	The A.S.in Electro-Optics and Laser Engineering Technology produces trained and skilled workers who will move into senior technician slots in the electro-optics and laser industry, both locally and nationally. With the A.S. degree the student has a choice of either entering the workforce or transitioning to the Bachelor of Science in Physics/Electro-Optics and Laser Engineering Technology track. Both the A.S. and B.S. are offered at the IUP Indiana Campus.

b) List of associated course changes

Numbering scheme is used below in part “c) Rationale for change”	
1) Courses Removed	i) PHYS 115 <i>Physics I for Electro-Optics</i> ii) PHYS 116 <i>Physics II for Electro-Optics</i> iii) EOPT 110 <i>Geometric Optics</i> iv) EOPT 120 <i>Wave Optics</i> v) EOPT 126 <i>Electronics II</i>
2) New Course Added	i) EOPT 130 <i>Introduction to Optics</i> ii) CHEM 113 alternative to CHEM 111
3) Courses Replaced	i) PHYS 131/141 or PHYS 111/121 <i>Physics I</i> for PHYS 115 <i>Physics I</i> ii) PHYS 132/142 or PHYS 112/122 <i>Physics II</i> for PHYS 116 <i>Physics II</i>
4) Course Options added	i) MATH 125 <i>Calculus I</i> , alternative to MATH 110 <i>Elementary Functions</i> ii) MATH 126 <i>Calculus II</i> , alternative to COSC/BTED/IFMG 101 or COSC/BTED/COMM/IFMG 201
5) Description Change	“The A.S. is offered at the IUP Northpointe Regional Campus” in the current description is now replaced by “Both the A.S. and B.S. are now offered at IUP Indiana Campus.”

The five courses, EOPT 110 *Geometric Optics*, EOPT 120 *Wave Optics*, EOPT 126 *Electronics II*, PHYS 115 *Physics I* and PHYS 116 *Physics II*, are being removed from the program. We added a new course EOPT 130 *Introduction to Optics* to replace EOPT 110 and EOPT 120. We also use PHYS 131/141 or PHYS 111/121 *Physics I* to replace PHYS 115 and PHYS 132/142 or PHYS 112/122 *Physics II* to replace PHYS 116.

For students who only intend to pursue the A.S. degree, MATH 110, CHEM 101, PHYS 111/121 and PHYS 112/122 are adequate preparation. We add MATH 125, MATH 126, PHYS 131/141 and PHYS 132/142 as alternatives for those students who intend to transition into the BS Physics/Electro-Optics and Laser Engineering Technology track.

c) Rationale for change

The Physics Department is bringing the A.S. degree in Electro-Optics and Laser Engineering Technology (EOLET) from the Northpointe Campus to the Indiana Campus. Courses formerly offered at the Northpointe Campus will be replaced with similar courses at the Indiana Campus. The course change rationales are listed below.

1) i) & ii) and 3) i) & ii) Removal of PHYS 115 *Physics I for Electro-Optics* (3cr) and PHYS 116 *Physics II for Electro-Optics* (3cr) and addition of course replacement PHYS 111/121 *Physics I* (4cr) and PHYS 112/122 *Physics II* (4cr), or PHYS 131/141 *Physics I* (4cr) and PHYS 132/142 *Physics II* (4cr)

Rationale: The two courses PHYS 115 and PHYS 116 are being removed from the program because the existing courses at Indiana campus PHYS 111/121 and PHYS 112/122 cover more material than the contents of PHYS 115 and PHYS 116. Similarly, the existing courses PHYS 131/141 and PHYS 132/142 at Indiana campus cover more material than the contents of PHYS 115 and PHYS 116. The students who pursue the two-year associate degree should take PHYS 111/121 and PHYS 112/122 while the students who pursue the four-year bachelor degree should take PHYS 131/141 and PHYS 132/142.

1) iii) & iv) Removal of EOPT 110 *Geometric Optics* (3cr) and EOPT 120 *Wave Optics* (3cr) and addition of new course EOPT 130 *Introduction to Optics* (4cr)

Rationale: EOPT 110 and EOPT 120 will be replaced with EOPT 130, since the PHYS 111/121 (4cr) and PHYS 112/122 (4cr) cover some Geometric Optics and Wave Optics already. In order to reduce the duplication, we will remove EOPT 110 and EOPT 120, and combine the new contents which are not covered in PHYS 111/121 and PHYS 112/122 to form a new course EOPT 130 *Introduction to Optics* (4cr).

1) v) Removal of EOPT 126 *Electronics II* (3cr)

Rationale: Since the PHYS 111/121 (4cr) and PHYS 112/122 (4cr) cover some electronics, EOPT 125 *Introduction to Electronics* (4cr) will be enough to cover the rest.

4) i) MATH 125 *Calculus I* (3cr) as the added course option for MATH 110 *Elementary Functions* (3cr)

Rationale: MATH 110 is the course required by the two-year associate degree, which is a suitable course for the typical optical technician who will earn the A.S.

Students who choose to pursue the B.S. in Physics/EOLET will need to take MATH 125 to align with the B.S. Physics/ Electro Optics Track.

4) ii) MATH 126 *Calculus II* (3cr) as the added course option for COSC/BTED/IFMG 101 or COSC/BTED/COMM/ IFMG 201 (3cr)

Rationale: COSC/BTED/IFMG 101 or COSC/BTED/COMM/ IFMG 201 (3cr) is the course required by the two-year associate degree. It is a suitable course for the typical optical technician who will earn the A.S. Students who choose to pursue the B.S. in Physics/Electro-Optics will need to take MATH 126 to align with the B.S. Physics/ Electro Optics Track.

2) ii) CHEM 113 (4) is being added as a course option for the chemistry requirement. It will be added as an option to the current chemistry courses of CHEM 101 and CHEM 111.

Rationale: Adding this course as a chemistry option will offer more flexibility with the B.S. Physics / Pre-Engineering track. That program requires CHEM 113.

As a result of these changes, the total credits for the revised program is 60.

Part III. Implementation - Provide answers to the following questions:

1. How will the proposed revision affect students already in the existing program?

Almost all of the students presently enrolled will graduate this Fall from the AS program. The number of students who will continue with the revised program is quite small. Since we mainly revised the courses offered in the first year, these remaining students will not be affected by this revision. The students enrolled with this the program in the fall will be able to take the new class sequence.

2. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty.

Faculty resources are adequate. It is expected that the suggested revision will raise class enrollment close to its maximum number of 24.

3. Are other resources adequate? (Space, equipment, supplies, travel funds)

Yes.

4. Do you expect an increase or decrease in the number of students as a result of these revisions? If so, how will the department adjust?

The rotation plan is designed to be suitable for both the two-year and four-year students. The pattern of course offering is such that students can take the courses in each of the two years of the program. With the rotation plan, the student number in each class will be increased close to its maximum number of 24.

Part IV. Periodic Assessment

Departments are responsible for an on-going review of curriculum. Include information about the department's plan for program evaluation:

The assessment of the proposed changes described in the proposal will be performed as part of the Physics Department's overall curriculum assessment policies.

The program also surveys graduates. We asked them what their current positions are, the salary information, the usefulness of different courses, and ways to change the program for the better

Part V. Course Proposals

The new course and other changes are submitted with this proposal. These proposals include changes in the catalog descriptions of EOPT 210, EOPT 220 and EOPT 240, as well as a new course, EOPT 130.

Part VI. Letters of Support or Acknowledgement

The email requests have been sent to the departments of Math and Computer Science. The response from Computer Science and Mathematics are copied below.

From: William W Oblitey
Sent: Thursday 29 November 2012 8:22 AM
To: Devki Talwar
Subject: Re: Fw: see the 2 course replacement forms and 2 course option forms attached (Email 4 of n)

Hi Devki,

The Computer Science Department fully supports the choice of COSC 110 for your B.S. Physics/EOPLET track and we also agree to your addition of COSC 210 as an option in lieu of COSC 250.

We plan on working with your department to make sure that there are enough seats for both your students and our students each semester.

Wishing things are well with you personally.

-Bill Oblitey

Chair, Computer Science

On Wed, 28 Nov 2012 20:36:18 -0500

"Devki Talwar" <talwar@iup.edu> wrote:

Hello Francisco and Bill,

As we are in the process of revising the A.S. and B.S EOPLET programs – bringing them from the Northpointe to the main campus, we need a letter of support:

Computer Science: In the revised program COSC 101 is replaced by COSC 110 for the B.S. Physics/EOPLET track and added COSC 210 as an option in lieu of COSC 250

Math: In the revised program MATH 225 is added for the B.S.

Physics/EOPLET track

If you have any questions pl. do not hesitate to contact me.

Thanks

Devki

----- Original Message -----

From: Edel Reilly

To: fzhou@iup.edu

Cc: ereilly@iup.edu

Sent: Thursday, February 21, 2013 7:15 AM

Subject: FW: Physics Program Change

Andy,

Here is the letter of support from the math department for MATH 125 and 126 for the A.S. program. However, we are not going to be able to accommodate students in MATH 121.

Edel

Dr. Edel Reilly

Assistant Chairperson Mathematics Department

Coordinator of Elementary and Middle Level Mathematics

University Senate Secretary

236 Stright Hall

Indiana University of Pennsylvania

Indiana PA 15705

(724) 357 7907

From: Francisco Alarcón [mailto:falarcon@iup.edu]

Sent: Tuesday, February 19, 2013 3:01 PM

To: ereilly@iup.edu

Subject: RE: Physics Program Change

Yes for the 125 and 126 sequence, but we really don't have the extra seats for 121 .

Francisco E. Alarcón, Ph. D.

Professor and Chair

Department of Mathematics

233 Stright Hall

Indiana University of PA

Phone: 724-357-2608

www.ma.iup.edu/people/falarcon.html

From: Edel Reilly [mailto:ereilly@iup.edu]

Sent: Tuesday, February 19, 2013 1:15 PM

To: falarcon@iup.edu

Cc: ereilly@iup.edu

Subject: Physics Program Change

Hello Francisco,

I am currently reviewing the Associate in Science—EOPLET program. Their revisions including preparing those graduates to be able to continue with the B.S. program. The A.S. program required MATH 110 but Physics would like to include the option of students taking MATH 121 or MATH 125 instead in order to be better prepared for the transition to the B.S. program as their liberal studies math requirement. Also for liberal studies electives they would like MATH 126 to be an option along with COSC/BTED/IFMG courses.

Can we support these additions?

I know you have already agreed to supporting MATH 225 for the B.S. Physics/EOPLET track.

Edel

Dr. Edel Reilly

Assistant Chairperson Mathematics Department

Cooordinator of Elementary and Middle Level Mathematics

University Senate Secretary

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