

LSC Use Only Proposal No:

LSC Action-Date:

AP-4/19/12

UWUCC Use Only Proposal No:

UWUCC Action-Date:

11-173
AP-4/24/12

Senate Action Date:

App-5/10/12

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s)

Devki Talwar or Andy Zhou or Stanley Sobolewski

Email Address

sobolews@iup.edu

Proposing Department/Unit

Physics

Phone

(724) 357-2370

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 ChangeCurrent 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☐ OtherCurrent program name:

Associate in Science-Electro-Optics

Proposed program name, if changing:

Associate in Science – Electro-Optics and Laser Engineering Technology

5. Approvals

Signature

Date

Department Curriculum Committee Chair(s)

4/21/12

Department Chairperson(s)

4/23/12

College Curriculum Committee Chair

4/23/12

College Dean

4/23/12

Director of Liberal Studies (as needed)

4/20/12

Director of Honors College (as needed)

4/30/12

Provost (as needed)

Additional signature (with title) as appropriate

UWUCC Co-Chairs

4/30/12

Received

APR 24 2012

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.

Old Description

The two associate degrees in Electro-Optics, Associate in Applied Science in Electro-Optics (A.A.S.E.O.) and Associate in Science in Electro-Optics (A.S.E.O.), are designed to produce trained and skilled workers that will move into senior technician slots in the electro-optics industry, both locally and nationally. With the A.S.E.O. degree the student has a choice of either going directly to work or matriculating at the IUP main campus in the Electro-Optics track in Applied Physics. The two associate degrees, A.A.S.E.O and A.S.E.O., are offered at the IUP Northpointe Campus.

New Description

The Associate in Science in Electro-Optics (A.S.E.O.) 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.E.O. degree the student has a choice of either entering the workforce or transitioning to the Bachelor of Science in Physics/Electro-Optics track on the IUP Indiana campus. The A.S.E.O is offered at the IUP Northpointe Campus.

Associate in Science - Electro-Optics and Laser Engineering Technology	
Liberal Studies: As outlined in Liberal Studies section with the following specifications	25-26
English: ENGL 101	
Fine Arts: 3cr	
Humanities: 3cr	
Mathematics: MATH 110 or 121	
Natural Science: CHEM 101 or CHEM 111	
Social Science: 3cr	
Health and Wellness: 3cr	
Liberal Studies Electives: COSC/BTED/IFMG 101 or COSC/BTED/COMM/IFMG 201	
Major:	34
Required Courses:	
EOPT 105 Computer Interfacing	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 or PHYS 131 Physics I	3cr
PHYS 116 Physics II for Electro-Optics or PHYS 132 Physics II	3cr
Other Requirements:	3cr
One PHYS or EOPT elective - PHYS 100 will satisfy this requirement	
Total Degree requirements:	62-63

2. Summary of Changes

a. The Physics Department is modifying the A.S. degree to better prepare students to meet industry needs. Appropriate features from the former Associate in Applied Science in Electro-Optics degree (in moratorium) are being incorporated into the A.S. degree. The course changes suggested are listed in the table below.

Title change	Old: Electro-Optics	New: Electro-Optics and Laser Engineering Technology
Courses removed	EOPT 250 High-Vacuum Technology	
	EOPT 260 Industrial Applications of Lasers	
	MGMT 234 Introduction to Quality Control	
	SAFE 145 Workplace Safety Today and Tomorrow	
Courses added	EOPT 126 Electronics II	
	EOPT 150 Fundamentals of Photonics and Laser Safety	
	One PHYS or EOPT elective	
Alternatives	MATH 110 Elementary Functions	Alternative to MATH 121 Calculus I
	PHYS 131 Physics I and PHYS 132 Physics II	Alternative to PHYS 115 Physics I for Electro-Optics and PHYS 116 Physics II for Electro-Optics
	CHEM 101 College Chemistry I	Alternative to CHEM 111 General Chemistry I

b. The program name is changed to “Electro-Optics and Laser Engineering Technology” because the initial name “Electro-Optics” is not well known to local people. The new name “Electro-Optics and Laser Engineering Technology” will match the nature of the program better and make the program more visible.

In the old program, there are “pick two from three” and “pick two from four” options. These options are being eliminated to make the program more focused on the training of technical skills required by the EO industry.

The four courses, including EOPT 250 High-Vacuum Technology, EOPT 260 Industrial Applications of Lasers, MGMT 234 Introduction to Quality Control and SAFE 145 Workplace Safety Today and Tomorrow, are being removed from the program. Instead, we add three courses - EOPT 126 Electronics II (Digital Electronics), EOPT 150 Fundamentals of Photonics and Laser Safety, and one PHYS or EOPT elective – to the program.

For students who only intend to pursue the two-year A.S. degree, MATH 110, PHYS 115/116 and CHEM 101 are adequate preparation. We keep MATH 121, PHYS 131/132 and CHEM 111 as alternatives for those students who intend to transition into the BS Physics/Electro-Optics track.

Associate of Science in Electro-Optics Program Revision

Old Program		New Program	
Associate in Science - Electro-Optics (A.S.E.O.)		Associate in Science - Electro-Optics and Laser Engineering Technology	
Liberal Studies: Following are the required	30	Liberal Studies: As outlined in Liberal Studies section with	25-26
Liberal Studies courses:		the following specifications	
English Composition: ENGL 101		English Composition: ENGL 101	
Fine Arts: 3cr		Fine Arts: 3cr	
Humanities: 3cr		Humanities: 3cr	
Mathematics: MATH 121		Mathematics: MATH 110 or 121	
Natural Science: CHEM 111		Natural Science: CHEM 101 or CHEM 111	
Social Science: 3cr			
Health/Wellness: 3cr		Social Science: 3cr	
Liberal Studies Electives: SAFE 145,		Health and Wellness: 3cr	
COSC/BTED/IFMG 101 or		Liberal Studies Electives:	
COSC/BTED/COMM/IFMG 201		COSC/BTED/IFMG 101 or COSC/BTED/COMM/IFMG 201	
Major:	34	Major:	34
Required Courses:		Required Courses:	
EOPT 105 Computer Interfacing in Electro-Optics	3cr	EOPT 105 Computer Interfacing	3cr
EOPT 110 Geometric Optics	3cr	EOPT 110 Geometric Optics	3cr
EOPT 120 Wave Optics	3cr	EOPT 120 Wave Optics	3cr
EOPT 125 Introduction to Electronics	4cr	EOPT 125 Introduction to Electronics	4cr
PHYS 100 Prelude to Physics	3cr	EOPT 126 Electronics II	3cr

PHYS 115 Physics I for Electro-Optics	3cr	EOPT 150 Fundamentals of Photonics and Laser Safety	3cr
PHYS 116 Physics II for Electro-Optics	3cr	EOPT 210 Detection and Measurement	3cr
Two courses from the following:	6cr	EOPT 220 Introduction to Lasers	3cr
EOPT 210 Detection and Measurement		EOPT 240 Fiber Optics	3cr
EOPT 220 Introduction to Lasers		PHYS 115 Physics I for Electro-Optics or PHYS 131 Physics I	3cr
MGMT 234 Introduction to Quality Control		PHYS 116 Physics II for Electro-Optics or PHYS 132 Physics II	3cr
Two courses from the following:	6cr		
EOPT 240 Fiber Optics		Other Requirements:	3cr
EOPT 250 High-Vacuum Technology		One PHYS or EOPT Elective - PHYS 100 will satisfy this requirement	
EOPT 260 Industrial Applications of Lasers			
Total Degree requirements:	64	Total Degree requirements:	62-63

Rationale for Changes

Addition of EOPT 150 Fundamentals of Photonics and Laser Safety – EOPT 150 is added because it provides (1) essential training in laser safety for the EO students and (2) the necessary optics background for the students who can attend either year of the program curricula under the rotation plan. Once the rotation plan is implemented, every EO course will be offered once every two years, except EOPT 150 which will be offered every fall. Thus every student will have the required knowledge in laser safety and optics for subsequent courses.

Removal of SAFE 145 Workplace Safety Today and Tomorrow – SAFE 145 has also been renumbered as SAFE 100. This course is no longer offered at the Northpointe campus. Furthermore, the content of this course is too general and does not include laser safety which is very important to the electro-optics industry.

Removal of EOPT 250 High-Vacuum Technology and EOPT 260 Industrial Applications of Lasers - Initially six courses including these two are offered but students take any of the four courses out of six. In order to meet the local industrial needs better, we want to eliminate these two courses since the contents are less essential to this A.S.E.O. program. Then every student has to take EOPT 210 Detection and Measurement, EOPT 220 Introduction to Lasers and EOPT 240 Fiber Optics, because these courses are closely connected to the technologies required by the industry.

Addition of EOPT 126 Electronics II – EOPT 125 Introduction to Electronics covers only analog electronics, while EOPT 105 Computer Interfacing requires some background in digital electronics. Hence we add EOPT 126 Electronics II (Digital Electronics) needed for EOPT 105. The revised new program will have two electronics related courses (EOPT 125 and EOPT 126), which will be more appropriate for the EO students.

Addition of one PHYS or EOPT Elective – We replace the choice of two of EOPT 240, EOPT 250 and/or EOPT 260 with one PHYS or EOPT elective and EOPT 240 which is required. PHYS 100 Prelude to Physics is one of the courses listed in the articulation agreements signed with three VOTECH schools. So we keep PHYS 100 for Vo-Tech students.

Removal of MGMT 234 Introduction to Quality Control – Similar to SAFE 145, this course is also no longer offered at the Northpointe campus. The content of this course is also too general, and does not meet the requirements of the electro-optics industry.

CHEM 101 as the alternative to CHEM 111 – CHEM 101 is offered at Northpointe, to serve the largest number of students. 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 CHEM 111 at the Indiana Campus to align with the B.S. Physics/ Electro Optics Track.

MATH 110 as the alternative to MATH 125 – MATH 110 is offered at Northpointe, to serve the largest number of students. 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 125 at the Indiana Campus to align with the B.S. Physics/ Electro Optics Track.

PHYS 131/132 as an alternative to PHYS 115/116 – PHYS 115/116 is offered at Northpointe to serve the largest number of students. It is a suitable course for the typical optical technician who will earn the A.S. Students choosing to pursue the four year degree from the beginning would take the PHYS 131/132 sequence instead of the PHYS 115/116 sequence.

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

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

Students in the program will be able to take the new classes in place of the old; the department will waive the requirements for those students.

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 department evaluates both students currently in the program as well as graduates. Current students are assessed at the beginning and at the end of the program. Before the first week of the first semester, all students must take the Math Assessment test, because the math level provides a good indication of the student's performance in the EO program. Students below a certain score are required to seek extra help from tutors. Advisers will carefully monitor the progress of students in this category. At the end of the same semester, students will take the Math Assessment test again. If over one or two semesters, students do not show a significant gain in their scores, the students are required to take extra Math courses such as MATH 100.

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. As a result of this assessment, we suggested some of the changes mentioned above.

Part V. Course Proposals

The new courses have passed the UWUCC at this time.

Part VI. Letters of Support or Acknowledgement

Attached below are four emails that indicate the supports to the changes related to SAFE 100, MGMT 234, MATH 110/Math 121 and CHEM 101/CHEM 111.

- (a) Dr Lon Ferguson, the Chair of Department Safety Sciences, approved the removal of SAFE 100.

From: Lon Ferguson
Sent: Tuesday, April 13, 2010 11:56 AM
To: Feng Zhou
Subject: Re: Course SAFE 145 offered for the EO program at Northpointe campus

I approve this change!

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

From: Feng Zhou
To: Lon.Ferguson@iup.edu
Cc: Ola Kaniasty ; Devki Talwar
Sent: Tuesday, April 13, 2010 12:01 PM
Subject: Course SAFE 145 offered for the EO program at Northpointe campus

Dear Dr. Lon Ferguson, Chair of Department of Safety Sciences,

So far, the SAFE 145 has been a mandatory for our Electro-Optics AASEO and ASEO 2 Yr degree students. The course had been offered every year at the Northpointe Campus in the past since 2003. However, due to a relatively small size of the class and tight budgetary conditions, offering SAFE 145 every other year has become even problematic. In our recent departmental meetings, the Physics faculty has decided to replace this course with EOPT 150 "Fundamentals of Photonics and Laser Safety", in order to make the EO program compact and attractive – more importantly for our students to graduate on-time. I am, therefore, writing you this email to get your support for this change in the EO AASEO and ASEO program. I would appreciate if you could kindly agree to this change.

Yours sincerely,

Feng Zhou, PhD
EO Program Coordinator
Department of Physics, IUP
167 Northpointe Blvd, Freeport, PA 16229
Tel: 724 294 3300 x 27; Fax: 724 294 3310

- (b) Dr Ramesh Soni, the Chair of Management Department, agreed the removal of MGMT 234.

From: Ramesh Soni
Sent: Saturday, April 10, 2010 9:28 PM
To: Feng Zhou
Cc: Devki Talwar ; Ola Kaniasty
Subject: Re: Course MGMT 234 offered for the EO program at Northpointe campus

I have heard from a majority in my Department; they have no objection in your removing this course from your curriculum.

I have heard from a majority in my Department; they have no objection in your removing this course from your curriculum.

If this email is not sufficient, please let me know and I will be glad to write a letter. Best wishes,
rgs

Ramesh G. Soni, Ph.D., Chair & Professor,

Management Dept, 304A Eberly COBIT (IUP)	(www.eberly.iup.edu/rgsoni/)
Indiana, PA 15705 USA	Office Hours: Mon: 10am to 11:15am
Ph. 724 357 7786; Fax 724 357 5743	Tue: 10:50am to 12:05pm; Wed: 9:30 am to 12:00 noon

On 4/7/2010 8:38 PM, Feng Zhou wrote:

Dear Dr. Ramesh Soni, Chair of Department of Management,

So far, the MGMT 234 has been a mandatory for our Electro-Optics AASEO and ASEO 2 Yr degree students. The course had been offered every year at the Northpointe Campus in the past since 2003. However, due to a relatively small size of the class and tight budgetary conditions, offering MGMT 234 every other year has become even problematic. In our recent departmental meetings, the Physics faculty has decided to replace this course with contents that are more closely related to emerging EO technology, in order to make the EO program compact and attractive – more importantly for our students to graduate on-time. I am, therefore, writing you this email to get your support for this change in the EO AASEO and ASEO program.

Yours sincerely,

Feng Zhou, PhD
EO Program Coordinator
Department of Physics, IUP
167 Northpointe Blvd, Freeport, PA 16229
Tel: 724 294 3300 x 27; Fax: 724 294 3310

- (c) Dr Francisco Alacon, the Chair of Mathematics Department, supported the use of MATH 110 as an alternative of MATH 121.

From: Francisco Alarcón
To: Feng Zhou
Cc: Francisco Alarcon
Sent: Friday, February 25, 2011 7:19 PM
Subject: Re: EOPT math requirement

Dr. Zhou,

I would support the request of the change of Mathematics Requirements for the Electro Optics Associates degree from MATH 121 to MATH 110. As we discussed we would not support the change for the Bachelors program.

Thanks for your patience.

Sent from Francisco's iPad

On Feb 09, 2011, at 7:46 PM, "Feng Zhou" <fzhou@iup.edu> wrote:

Dear Dr Francisco Alarco,

As you are aware, the existing AASEO and ASEO programs at IUP Northpointe Campus will consolidate to one ASEO program. Right now, we are working on the ASEO program revision. As we noticed, there were a lot of EO students who failed the Math 121 course in the past. Considered this, we would like to change the Math requirement for the ASEO program from MATH 121 to MATH 110. However, we will keep the MATH requirement for the Bachelor degree unchanged, which means, if the student wants to pursue a Bachelor degree, he/she has to take and pass the MATH 121.

If this is ok with you, please drop me a short email to indicate your support to this change. Your support would be very much appreciated.

Feng Zhou, PhD
EO Program Coordinator, Department of Physics
Indiana University of Pennsylvania
167 Northpointe Blvd
Freeport, PA 16229
Tel: 724 294 3300 x 27; Fax: 724 294 3310

- (d) Dr John Woolcock, the Chair of Chemistry Department, agreed the use of CHEM 101 as an alternative for CHEM 111.

From: "John Woolcock" <woolcock@iup.edu>
Sent: Tuesday, April 06, 2010 3:12 PM
To: "Feng Zhou" <fzhou@iup.edu>
Cc: "Stanley Sobolewski" <sobolews@iup.edu>
Subject: Re: Chem 101 for the EO program

Feng,

I agree to this change.

John Woolcock

John Woolcock, Chair
IUP Chemistry Department
975 Oakland Avenue
Indiana, PA 15705
Telephone: 724-357-4828
Email: woolcock@iup.edu
Web page: <http://nsm1.nsm.iup.edu/woolcock/>

On Apr 6, 2010, at 2:37 PM, Feng Zhou wrote:

> Dear John,

>

> We have quite a few communications in the past about the replacing CHEM 111 with CHEM 101 for the EO
> program. The current CHEM 111 (General Chemistry I) is mandatory for electro-optics AASEO and ASEO
> degree candidates, and it has been offered at the Northpointe Campus in the past. However, the feedback collected

> from the local industry and the EO graduates who are employed shows that the contents covered by the CHEM
> 101 have a better match to the typical optical technician jobs for the 2-years associate degrees. The optical
> technician jobs normally require the proper handling and use of some chemicals to clean optical components.
> Based on this, we would like to change CHEM 111 to CHEM 101 for the EO program. However,
> CHEM 111 is required for the 4-year bachelor degree EO students who need a good understand of
> chemistry for their jobs that may involve in material research and development. Hence for the students who is
> pursuing Bachelor's degree with EO concentration, they will take CHEM 111.
>
> I would appreciate if you could kindly agree to this change.
>
> Feng Zhou, PhD
> EO Program Coordinator
> Department of Physics, Indiana University of Pennsylvania
> 167 Northpointe Blvd, Freeport, PA 16229
> Tel: 724 294 3300 x 27; Fax: 724 294 3310