Office of the Registrar
FORM 40 REV. 5/11

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT: ECE EFFECTIVE SESSION: 201710

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- ☐ 1. New course with supporting documents
- ☐ 2. Add existing course offered at another campus
- ☐ 3. Expiration of a course
- ☑ 4. Change in course number
- ☐ 5. Change in course title
- ☐ 6. Change in course credit/type
- ☐ 7. Change in course attributes (department head signature only)
- ☐ 8. Change in instructional hours
- ☑ 9. Change in course description
- ☑ 10. Change in course requisites
- ☑ 11. Change in semesters offered (department head signature only)
- ☐ 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	ECE	Subject Abbreviation	ECE
Course Number	30412	Course Number	41200
Long Title	Introduction to Engineering Optics		
Short Title			

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
☐ Summer ☐ Fall ☑ Spring

CAMPUS(ES) INVOLVED
☐ Calumet ☐ N. Central
☐ Cont Ed ☐ Tech Statewide
☐ Ft. Wayne ☑ W. Lafayette
☐ Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. ____
2. Variable Credit Range: ____
Minimum Cr. Hrs
(Check One) To ☐ Or ☐
Maximum Cr. Hrs ____
3. Equivalent Credit: Yes ☐ No ☐

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only ☐
2. Satisfactory/Unsatisfactory Only ☐
3. Repeatable ☐
Maximum Repeatable Credit: ☐
4. Credit by Examination ☐
5. Fees ☐Coop ☐Lab ☐Rate Request
Include comment to explain fee
6 Registration Approval Type
Department ☐ Instructor ☐
7 Variable Title ☐
8 Honors ☐
9 Full Time Privilege ☐
10 Off Campus Experience ☐

Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

The control and characteristics of optical radiation are covered. Applications to optical instrumentation, thin films, holography and polarizing optics are discussed. Major topics: Geometrical Optics: Lenses, prisms; Huygens' principle, Fermat principle; Rays; Incoherent light. Physical Optics: Gratings, interferometers, diffraction elements, polarizers; Huygens-Fresnel principle, Maxwell's equations; Waves; Field vectors; Amplitude and phase, Coherent light. Law of reflection and refraction. Students are also suggested to consider taking experimental lab course 30413 together with 30412.

*COURSE LEARNING OUTCOMES

i. An ability to analyze simple optical systems (dielectric slabs, thin lenses, reflectors). [a,k]
ii. An ability to model Gaussian beams and the transformation of beams. [a,k]
iii. An ability to analyze and design polarization systems, including polarizers and wave plates. [a,c,k]
iv. A knowledge of optical interferometers and the operations of interferometers such as the Michelson, Fabry-Perot and double-slit . [a,k]
v. An ability to analyze diffraction patterns. [a,k]

	Date		Date
Calumet Department Head		Calumet School Dean	
Fort Wayne Department Head		Fort Wayne School Dean	
Indianapolis Department Head		Indianapolis School Dean	
North Central Faculty Senate Chair		Vice Chancellor for Academic Affairs	
* West Lafayette Department Head	3/7/16	West Lafayette College/School Dean	3/7/16
		West Lafayette Registrar	

OFFICE OF THE REGISTRAR

To: The Faculty of the College of Engineering

From: The Faculty of the School of Electrical and Computer Engineering

RE: Changes to ECE 41200

The faculty of the School of Electrical and Computer Engineering has approved the following changes. This action is now submitted to the Engineering Faculty with a recommendation for approval.

FROM: **ECE 41200 Introduction to Engineering Optics**
Sem. 1. Lecture 3, Credit 3
Requisites: Undergraduate level ECE 31100 Minimum Grade of D- and Undergraduate level ECE 30100 Minimum Grade of D- [may be taken concurrently]
Course Description: Basic concepts of electromagnetism such as Maxwell's equations, uniform plane waves and reflection and refraction of plane waves.

TO: **ECE 30412 Introduction to Engineering Optics**
Sem. 2. Lecture 3, Credit 3
Requisites: Undergraduate Level ECE 30100 Minimum Grade of D- and Undergraduate level ECE 31100 Minimum Grade of D- [all may be taken concurrently] Students are also suggested to consider taking experimental lab course 30413 together with 30412
Course Description: The control and characteristics of optical radiation are covered. Applications to optical instrumentation, thin films, holography and polarizing optics are discussed. Major topics: Geometrical Optics: Lenses, prisms; Huygens' principle, Fermat principle; Rays; Incoherent light. Physical Optics: Gratings, interferometers, diffraction elements, polarizers; Huygens-Fresnel principle, Maxwell's equations; Waves; Field vectors; Amplitude and phase, Coherent light. Law of reflection and refraction.

REASON: The change is intended to improve the progression of courses from the 200 level to 300 and 400 level courses, for students who wish to focus their studies more precisely in the optics area.

For V. Ragu Balakrishnan, Head
School of Electrical and Computer Engineering

Approved for the faculty of the Schools of Engineering by the Engineering Curriculum Committee
ECC Minutes 14 Date 3-1-16
Chairman ECC