

UNIVERSITY OF MICHIGAN
College of Engineering
Curriculum Committee Meeting
Tuesday, October 15, 2024

Attending: Varun Agrawal, Sarah Barbrow, Yavuz Bozer, Xudong Fan, Chris Fidkowski, Anouck Girard, Saadet Albayrak Guralp, Elizabeth Holm, Amir Kamil, Pei-Chung Ku, Ryan Latimer, Xiaogan Liang, Frank Marsik, Ryan McBride, Radoslaw Michalowski, Nolgi Oquendo-Colon, Yulin Pan, Eric Rutherford, Elyse Vigiletti, Won Sik Yang

Support Staff: Mercedes Carmona, Betsy Dodge, Matthew Faunce

Call to Order: 1:35 PM

Adjourned: 2:17 PM

Agenda:

1. Approval of 10.1.2024 Meeting Minutes – Page 3 - **APPROVED**
2. Revised CoE Grade Grievance Policy – Action Item – Page 6 - **APPROVED**
 - a. The agreed upon deadline information of 30 days was given to the CoE Grade Grievance Policy and nothing more, as it was suggested to keep the policy short and minimal revisions to be made.
 - b. EECS-CSE points out an adjustment to be made to the revised beginning sentence from “This initial inquiry...” to “The initial inquiry...”.
 - i. Members agreed on this change for the revised policy.
 - c. CEE says that the information is redundant for the Grade Grievance Procedure and Student Grievances.
 - i. CC Chair asks if the CCC can make a change to the section for Student Grievances.
 1. CoE RO says that yes, the CCC can make change to this section within the policy.
 - ii. CLaSP suggests changing order of grievances within the policy starting with Student Grievances and then Grade Grievances Procedure.
 1. EECS-CSE says that the grade grievances occur more frequently and should be listed first within the policy. Also notes, that both processes are different from one another. Suggestion of updating the title for “Student Grievances” to “Non-Grade Student Grievances”.
 - a. Members agreed on this change for the revised policy.
 - d. CoE CC members voted unanimously to approve this revised policy with the two changes needing to be made which were discussed during the meeting. The proposal will appear at the December CoE Faculty meeting.
 3. Proposal for NERS Minor – Action Item – Page 12 – **APPROVED**
 - a. Students are eligible for this minor if they declare a major other than NERS and have a good academic standing of a minimum 2.0 GPA. Effective term of Fall 2025. Minimum of 16 credits broken down as the following:
 - i. Required Core Course – NERS 250
 - ii. Foundation Course (must select one or more) – NERS 311, NERS 421, NERS 471, NERS 484
 - iii. Electives – Remaining credits to reach 16 credit minimum – Any NERS 300 level and above courses and/or PHYSICS 405
 - b. EECS-CSE asks what are the prerequisites of these courses and/or minors and do students need background in NERS to pursue this minor?
 - i. NERS Presenter says the Optional Specialization Areas breaks down the different areas in which students can pursue the NERS minor and the courses associated the most with Fission Systems, Nuclear Materials, Radiation Measurements & Applications, and Plasma Science & Engineering. If a student does not want to pursue one of these areas, they are to complete the Minimum Program Requirements listed.
 - c. CoE CC members voted unanimously to approve this minor proposal. The proposal will appear at the December CoE Faculty meeting.

CARF SUMMARIES

PAGE	SUBJECT	COURSE #	ACTION	SUMMARY	EFFECTIVE TERM	MIN. GRADE REQ. FOR ENF. PREPREQ	Is Course on LSA Course Guide?	APPROVED	NOTES & REVISIONS	TABLED
17	EECS	542	MOD	Change to Course Description and Course Credit Type.	WT 2025	NO	YES	APPROVED		
20	EECS	542	MOD	Change to Advisory and Enforced Prerequisites.	FT 2025	C	YES	APPROVED		
23	IOE	837	MOD	Change to Full Term Credit Hours.	WT 2025	NO	YES	APPROVED	Update CARF with Course Description changes. Review Course Title with department.	
26	NAVARCH	470	MOD	Change to Course Components.	FT 2025	NO	YES	APPROVED	Cross-listed with MFG 470.	
29	NERS	250	MOD	Change to Enforced Prerequisite.	WT 2026	C	YES	APPROVED		
32	NERS	311	MOD	Change to Advisory Prerequisite.	FT 2026	C	YES	APPROVED		
35	NERS	441	MOD	Change to Enforced Prerequisite.	FT 2027	C	YES	APPROVED		
38	NERS	484	MOD	Change to Enforced Prerequisite.	FT 2026	C	YES	APPROVED	Cross-listed with BIOMEDE 484.	

UNIVERSITY OF MICHIGAN
College of Engineering
Curriculum Committee Meeting
Tuesday, October 1, 2024

Attending: Varun Agrawal, Achilleas Anastasopoulos, Sarah Barbrow, Yavuz Bozer, Xudong Fan, Chris Fidkowski, Anouck Girard, Vineet Kamat, Amir Kamil, Ryan Latimer, Xiaogan Liang, Frank Marsik, Radoslaw Michalowski, Nolgi Oquendo-Colon, Yulin Pan, Jeffrey Scruggs, Elyse Vigiletti, Won Sik Yang

Support Staff: Mercedes Carmona, Betsy Dodge, Matthew Faunce

Call to Order: 1:33 PM

Adjourned: 2:50 PM

Agenda:

1. Approval of 9.17.2024 Meeting Minutes – Page 3 - **APPROVED**
2. Proposal for CoE Grade Grievance Policy – Action Item – Page 8 – **APPROVED**
 - a. After discussions with Kevin Pipe and faculty, a request was directed to the CoE Curriculum Committee to review the current CoE Grade Grievance Policy. The current CoE policy does not have specific deadlines or timelines, nor a process outlined for grade grievances.
 - i. CEE says that LSA policy provides guidelines and information that should be included in the CoE policy for students, departments, staff, etc.
 - ii. EECS – CSE states out that the LSA policy is too long. If CoE is to create a revised policy that our policy should be shortened and to only add deadlines, but not include as much information as LSA's policy.
 - iii. IOE brings up why does the Dean need to be involved in a grade grievance. CoE Policy needs to be clear on who gets the final word for a grade dispute. Graduate Education agrees that there needs to be an outline of who is involved in the grade grievance process. Suggestion that this should be instructor, department chair, associate dean/dean.
 1. EECS -CSE says that we would want the Dean included so that the student is provided the opportunity to present their case. The CCC needs to reach out to the associate dean/dean if they would like to be involved in these conversations. LSA's policy states that nobody can override the instructor with the final grade grievance. Although the chair and/or dean can provide their opinion to the instructor, it is the instructor who gets the final say on the grade grievance for the student.
 - a. IOE understands that a hearing to involve all within the department is reasonable, but CoE is a large college to involve the dean with these issues.
 - b. Graduate Education suggests letting the dean be involved if a student is still not happy with the result of the grade grievance process as this may be a small number of cases, so rare for the dean to be involved.
 - c. Later in email, CLaSP points out that the CoE Grade Grievance Policy states, "The final appeal at the College level is by petition to the Associate Dean for Undergraduate Education or the Associate Dean for Graduate and Professional Education."
 - iv. EECS – ECE points out the Grade Grievance Committee listed in the LSA policy and is not in favor of creating another committee to oversee these issues. This needs to be listed in the CoE revised policy. IOE also agrees with this.
 - v. TCHNCLCM agrees with adding deadlines, but there needs to be more context provided regarding the request to review the Coe Grade Grievance Policy to give an opinion.
 - b. The CCC was asked to consider the following when reviewing the policy:
 - i. Would the committee like to add deadlines to the current CoE policy?
 1. Majority vote from the committee agreed that the CoE Policy does need to include deadlines.

- ii. What should the deadlines be (e.g., align with LSA)?
 - 1. The committee agreed that deadlines need to be outlined in a draft policy. A suggestion was given and agreed upon by the committee for a deadline of 30 days after the start of the next semester for a student to submit a grade grievance.
 - iii. Does the committee want the language to be as detailed as LSA's policies? Are there other issues that should be addressed?
 - 1. Majority vote from the committee agreed that the CoE Policy does not need to be as lengthy as LSA's, but to include all information needed for the student, department, staff, etc.
 - 2. The CCC Chair suggests keeping the policy revision as simple as possible given the current policy has not been brought to a meeting to be discussed until now.
 - c. A draft revision policy will be presented at a future CCC meeting. The committee will vote on the revised policy.
3. Proposal for CEE MSE Program Modifications for CE and EnvE – Action Item – Page 13 – **APPROVED**
- a. Modifications to 2 CEE MSE Programs:
 - i. MSE Degree in Civil Engineering (CE) modifications
 - 1. Specialization Requirements – Instead of 12 credits, students are now required to take 6 credits of “specialization elective” coursework. Each specialization also has a list of "specialization prerequisites" that must be completed, without credit, if a student has not already completed similar coursework prior to matriculating.
 - 2. New Specialization Area – Hazards, Risk and Resilience (HRR), which reflects a growing area of strength among the faculty to provide to students to focus on.
 - 3. Math Cognate - The requirement of having students take one elective “math course” has been removed completely.
 - 4. CEE Cognate - The requirement to take one elective in an area outside their major concentration has been removed completely.
 - ii. MSE Degree in Environmental Engineering (EnvE) modifications
 - 1. Core course requirements – Instead of 9 credits, students are now required to take 6 credits of core coursework in at least two of three areas provided This is designed to allow flexibility for the student’s program of study. New areas are:
 - a. C-Environmental Chemical Sciences
 - b. B-Environmental Biological Sciences
 - c. P-Environmental Physical Sciences
 - 2. Major concentration – There has been an update to the concentrations offered and revised completely for the degree. Changes in the field and availability of course offerings as well as keeping guidelines up to date. The new revised areas are:
 - a. Environmental Process Engineering
 - b. Energy, Climate, and Air Quality
 - c. Environmental Data Systems and Finance
 - d. Ecohydrology and Environmental Fluid Mechanics
 - 3. Math cognate – The requirement of having students take one elective “math course” has been removed completely.
 - 4. CEE cognate – The requirement to take one elective in an area outside their major concentration has been removed completely.
 - iii. The effective term for these changes to occur is Fall 2025. All changes will be retroactively applicable to all students who matriculated in 2024.
 - b. IOE questions the re-organizing of the courses in the new concentrations/specializations and to make sure a new course fits properly into the concentrations/specialization for the students.
 - i. Department presenter states that the department is fully aware and engaged in creating new courses that will take into effect how to group the courses in the future. Counting courses for the proper concentration/specialization will not be overlooked and a top priority for the department.
 - c. CoE CC members voted unanimously to approve this proposal. The proposal will appear at the December CoE Faculty meeting.

CARF SUMMARIES

PAGE	SUBJECT	COURSE #	ACTION	SUMMARY	EFFECTIVE TERM	MIN. GRADE REQ. FOR ENF. PREPREQ	Is Course on LSA Course Guide?	APPROVED	NOTES & REVISIONS	TABLED
38	AEROSP	573	MOD	Change to Course Title, Abbreviated Title, and Course Description.	WT 2025	NO	YES	APPROVED		
41	AEROSP	586	NEW		FT 2025	NO	NO	APPROVED	Cross-listed with IOE 586.	
56	ECE	602	MOD	Change to Course Number.	FT 2025	NO	YES	APPROVED	Course change to ECE 567.	
59	ECE	995	MOD	Change to Enforced Prerequisite.	FT 2025	NO	YES	APPROVED		
62	IOE	567	NEW		WT 2025	NO	NO	APPROVED	Recommendation to make changes to Course Title.	
73	IOE	667	NEW		WT 2025	NO	NO	APPROVED	Recommendation to make changes to Course Title.	
84	NAVARCH	470	MOD	Change to Course Components.	FT 2025	NO	YES	TABLED	Cross-listed with MFG 470.	
87	NERS	250	MOD	Change to Enforced Prerequisite.	WT 2026	C	YES	TABLED		
90	NERS	311	MOD	Change to Advisory Prerequisite.	FT 2026	C	YES	TABLED		
93	NERS	441	MOD	Change to Enforced Prerequisite.	FT 2027	C	YES	TABLED		
96	NERS	484	MOD	Change to Enforced Prerequisite.	FT 2026	C	YES	TABLED	Cross-listed with BIOMEDE 484.	

CoE Grade Grievance Policy Proposal

Updated language for CCC Approval regarding CoE Grade Grievance Policy Proposal:

Grade Grievances Procedure

If there is justification to question the accuracy of an assigned grade, the student should first pursue the matter with the instructor. The responsibility for the assignment of grades is primarily that of the instructor and should be settled between the student and instructor whenever possible. Further pursuit of a grade grievance should be addressed with the instructor's Department Chair. The final appeal at the College level is by petition to the Associate Dean for Undergraduate Education or the Associate Dean for Graduate and Professional Education.

This initial inquiry between the student and the instructor should take place within the first 30 days of the beginning of the following winter term for courses taken during the fall semester, and within the first 30 days of the beginning of the following fall semester for courses taken during the winter, spring, or summer sessions. In the case of an incomplete or a grade that is submitted after the start of the next full term, the initial inquiry should take place within the first 30 days after the official posting of the grade.

Student Grievances

The College of Engineering has a grievance procedure to address student complaints.

Undergraduate and graduate students should follow these steps until a resolution is achieved:

1. Attempt to resolve the grievance directly with the individual involved (faculty member, staff member, or fellow student).
2. If the matter is unresolved, and the grievance is with a faculty member or teaching assistant, discuss the grievance with the appropriate Department Chair.
3. If the issue is still unresolved, undergraduate students should see the Associate Dean for Undergraduate Education and graduate students should see the Associate Dean for Graduate and Professional Education who are both located in the Robert H. Lurie Engineering Center.
4. All students have the right to appeal to the Dean of the College if they feel their grievances have not been resolved satisfactorily by another dean.

Per a request from Kevin Pipe, following a discussion with faculty, he requested that the CoE Curriculum Committee review our current Grade Grievance Policy and possibly consider aligning with LSA's policy that includes deadlines (in bold under the LSA's Policy section), if needed.

For the CCC consideration:

1. Would the committee like to add deadlines to our current policy?
2. What should the deadlines be (e.g., align with LSA)?
3. Does the committee want the language to be as detailed as LSA's policies (see below)? Are there other issues that should be addressed?
4. We can bring back a final draft for the committee to vote upon at the next meeting.

[CoE's Current Policy in the Online CoE Bulletin:](#)

Grade Grievances Procedure

If there is justification to question the accuracy of an assigned grade, the student should first pursue the matter with the instructor. The responsibility for the assignment of grades is primarily that of the instructor and should be settled between the student and instructor whenever possible. Further pursuit of a grade grievance should be addressed with the instructor's Department Chair. The final appeal at the College level is by petition to the Associate Dean for Undergraduate Education or the Associate Dean for Graduate and Professional Education.

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2. If the matter is unresolved, and the grievance is with a faculty member or teaching assistant, discuss the grievance with the appropriate Department Chair.
3. If the issue is still unresolved, undergraduate students should see the Associate Dean for Undergraduate Education and graduate students should see the Associate Dean for Graduate and Professional Education who are both located in the Robert H. Lurie Engineering Center.
4. All students have the right to appeal to the Dean of the College if they feel their grievances have not been resolved satisfactorily by another dean.

[LSA's Current Policies from their LSA Academic Policies website:](#)

Grade Grievance

Grade Change Policy

"A grade change may be submitted by your instructor to correct an error on a Supplementary Grade Report which the instructor obtains from their department office. The request must be accompanied by a formal explanation by the faculty member in charge of the course outlining the circumstances surrounding the original error and justifying the grade change." (Faculty Code B5.07)

LSA Student Records cannot approve any Supplementary Grade Report for a grade change when "extra work is submitted," "student rewrote a paper," "student retook the final," or another special arrangement unless the instructor is able to provide a statement that the arrangement giving this one student the opportunity to raise his/her grade was an arrangement available to and known by every student in the course. If the grade is being changed because the work was submitted after grades were due and no "incomplete" grade was originally given, the grade will be posted with and "I" as long as the work was completed during the incomplete deadline period.

When the instructor is changing a grade from "incomplete", they must include the date the student submitted their completed work. Even if the course has lapsed to E the grade can still be approved for posting if the work completed by the student was within the incomplete deadline date or the extended deadline date.

Grade Grievance Procedures

Introduction

Instructors are expected to set fair and consistent grading procedures for their respective courses. The following policy provides students a means to contest a final course grade received in a credit-bearing course if a student believes fair and consistent grading procedures have not been followed. A final grade is only subject to review when 1) a procedural error has been discovered in the calculation or recording of a grade, or 2) there is a concern that the grade was not fairly given. Disagreeing with grading policies or an instructor's assessment of work is not a basis for a grade grievance.

Occasionally, the basis of a student's grade grievance is that the student was subjected to harassment or discrimination. It is not the function of the Grade Grievance process to evaluate claims of discrimination or harassment. Please contact the [Office of Diversity, Equity & Inclusion](#) (ODEI), and the Associate Chair of Undergraduate Studies (ACUS) or Director of

Undergraduate Studies (DUS) in the department in question will evaluate whether the grade grievance should be paused until the OIE matter is resolved.

The steps for the grade grievance process are outlined below:

Step 1: Seek Resolution with the Instructor

As the first step in the grade grievance process, the student should inquire about the accuracy of their final grade to the lead instructor of the course. This initial inquiry should take place **within the first 15 university business days** of the beginning of the following winter term for courses taken during the fall semester, and **within the first 15 university business days** of the beginning of the following fall semester for courses taken during the winter, spring, or summer sessions. In the case of an incomplete or a grade that is submitted after the start of the next full term, the initial inquiry should take place within the first 15 university business days after the official posting of the grade.

If, after this inquiry, the student is not satisfied with the instructor's response, the student may choose to initiate a formal grade grievance. If the lead instructor has left the University, is on approved leave, or does not respond to the student after a reasonable effort (within 10 business days), the student may also proceed directly to Step 2 and initiate a formal grade grievance.

Step 2: Submit a Formal Grade Grievance

To begin the formal grade grievance process the student must submit to the Associate Chair of Undergraduate Studies (ACUS) or Director of Undergraduate Studies (DUS) [refer to the [LSA Grade Grievance Department Contact list](#)] a written statement that includes the following information:

- the basis for the allegation of arbitrary grading, including specific evidence (e.g. course syllabus, graded work) that supports the allegation

- a summary of the outcome of the initial inquiry to the course instructor, indicating what aspects are in dispute and any documentation to support the initial inquiry with the instructor
- the desired outcome for the grievance

This written statement must be submitted **within the first 30 university business days** of the beginning of the following winter term for courses taken during the fall semester, and **within the first 30 university business days** of the beginning of the following fall semester for courses taken during the winter, spring, or summer sessions. In the case of an incomplete or a grade that is submitted after the start of the next full term, the written statement must be submitted within the first 30 university business days after the official posting of the grade.

If any of the above deadlines are not met by the student, the grievance will be considered invalid and closed, unless, due to extenuating circumstances, the office of the LSA Assistant Dean of Undergraduate Education and Student Academic Affairs grants an extension of time. If you believe there was an extenuating circumstance (i.e. hospitalization, extended leave from health reasons) please contact the LSA Office of Student Academic Affairs (lsa.saa.office@umich.edu) for more information.

Upon receipt of the written complaint in Step 2, the ACUS/DUS will notify the office of the LSA Assistant Dean of Undergraduate Education and Student Academic Affairs of the complaint within 5 business days of receipt of the complaint. The ACUS/DUS will then ask the instructor to provide a written summary explaining how the final grade was determined and responding to the specific claims made by the student. After receiving the response from the instructor, the ACUS/DUS will determine if sufficient evidence exists to convene the Department's Grade Grievance Committee. If the ACUS/DUS determines that there is insufficient evidence for the grade grievance, the matter is considered closed, and the original grade stands. The ACUS/DUS will communicate this in writing to the student **within 15 university business days** from receipt of the complaint. A copy of the response should also be sent to the office of the LSA Office of Student Academic Affairs at the same time.

Step 3: Formal Grade Grievance Hearing

If the ACUS/DUS determines that the grade grievance should proceed, an appropriate Departmental Grade Grievance Committee will be selected, and a date for a formal hearing with

the Grade Grievance Committee will be set. The hearing should occur no more than 60 days after submission of the complaint. All parties (student, instructor, and committee) will be provided with copies of the written student complaint and the instructor's summary in advance of the formal hearing. During the formal hearing, the student will be asked to first present the basis of their complaint; the instructor will then be asked to present their explanation for how grades were determined. Following an open period of questions to all parties, the formal hearing will be adjourned.

The Grade Grievance Committee will then have **ten university business days** to determine its recommendation and submit a written report to the ACUS/DUS.

- If the Grade Grievance Committee decides that a grade change is not warranted, the ACUS/DUS will convey this in writing to the student and the instructor. The original grade will stand and the matter is considered closed.
- If the committee recommends a grade change, the ACUS/DUS will communicate that decision directly to the instructor. The instructor will then be asked to respond in writing within five university business days to the ACUS/DUS indicating whether or not they will abide by the Grade Grievance Committee's recommendation.
 - If the instructor agrees to a grade change, the ACUS/DUS will in writing inform the student of the instructor's decision and the student's final course grade will be changed. The matter is considered closed.
 - If an instructor does not accept the Grade Grievance Committee's recommendation to change the final grade, the original grade will stand. A final course grade rests solely with the instructor and, as such, a course grade cannot be changed without the instructor's consent. When this occurs, the ACUS/DUS will convey in writing this decision to the student. The matter is considered closed. There is no appeal beyond the Department.
- A report stating what procedures were followed and what decision was reached will be sent to the office of the LSA Office of Student Academic Affairs by the ACUS/DUS **within 5 business days** after the conclusion of the review process.



30 Sep 2024

CoE Curriculum Committee

Subject: Nuclear Engineering & Radiological Sciences Minor Proposal

Dear CoE Curriculum Committee:

The Department of Nuclear Engineering & Radiological Sciences would like to request the establishment of a Nuclear Engineering and Radiological Sciences Minor with an effective term beginning in Fall 2025 for undergraduate students.

The primary goal of the minor in Nuclear Engineering & Radiological Sciences is to allow students who are not majoring in Nuclear Engineering and Radiological Sciences to be exposed to the industrial, medical, governmental, and environmental applications of nuclear and plasma processes and radiation.

Enclosed is the full minor proposal, which includes eligibility, advising support, program requirements, course prerequisites, and optional specialization areas.

Thank you for your consideration.

Sincerely,

Todd Allen
Professor & Chair
Department Of Nuclear Engineering & Radiological Sciences



Proposal for a Minor in Nuclear Engineering and Radiological Sciences (Effective Term: Fall 2025)

The primary goal of the minor in Nuclear Engineering & Radiological Sciences (NERS) is to allow undergraduate students who are not majoring in Nuclear Engineering and Radiological Sciences to be exposed to the industrial, medical, governmental, and environmental applications of nuclear and plasma processes and radiation.

Eligibility

To be eligible to declare the minor, students must be in good academic standing (minimum 2.0 cumulative GPA). Students must declare a major (other than Nuclear Engineering & Radiological Sciences) before declaring the NERS minor.

Minimum Program Requirements

A minimum of 16 credits must be completed with a grade of C or higher in all minor courses.

- **Required Core Course (4 cr):**
 1. NERS 250 Fundamentals of NERS 4 cr
**NERS 211 may be substituted for NERS 250 on approval by the NERS Undergraduate Chair*

- **Foundation Course (must select 1 or more)**
 - NERS 311 Elements of NERS I 3 cr
 - NERS 421 Nuclear Engineering Materials 3 cr
 - NERS 471 Introduction to Plasmas and Fusion 3 cr
 - NERS 484 Radiological Health Eng Fundamentals 4 cr

- **Electives (remaining credits to reach 16 credit minimum)**
 - Any 300 level and above NERS course
 - ****a maximum of 3 credits of NERS 499 can be used towards the minor**
 - PHYSICS 405

Course Prerequisite Information

Students can reference the [NERS course descriptions](#), [NERS course schedule](#), and [Atlas](#) for a basic introduction to NERS Courses.



Optional Specialization Areas

The recommended specializations provide guidance for creating sensible course structures for NERS students minoring in Nuclear Engineering & Radiological Sciences, particularly for those seeking expertise in fission systems, nuclear materials, radiation protection and measurements, or plasma science and engineering. Bridge courses are listed as key electives to take before selecting more advanced specialization courses, following the completion of the core and foundational courses. Students seeking a broad generalization in Nuclear Engineering are recommended to take all foundation courses in lieu of listed bridge or advanced specialization courses.

Fission Systems

- Foundation Courses: NERS 311
- Bridge Courses: NERS 312
- Advanced Specialization: NERS 320, NERS 344, NERS 420, NERS 425, NERS 441, NERS 442, NERS 444, NERS 462, NERS 490, NERS 499, NERS 543, NERS 544, NERS 546, NERS 547, NERS 551, NERS 561, NERS 570, NERS 590

Nuclear Materials

- Foundation Courses: NERS 421, NERS 320
- Bridge Courses: NERS 521
- Advanced Specialization: NERS 425, NERS 499, NERS 522, NERS 524, NERS 531, NERS 590

Radiation Measurements & Applications

- Foundation Courses: NERS 311
- Bridge Courses: NERS 315
- Advanced Specialization: NERS 312, NERS 484, NERS 490, NERS 499, NERS 518, NERS 532, NERS 585, NERS 586, NERS 590

Plasma Science & Engineering

- Foundation Courses: NERS 471
- Bridge Courses: PHYSICS 405, NERS 472
- Advanced Specialization: NERS 571, NERS 572, NERS 573, NERS 574, NERS 575, NERS 576, NERS 577, NERS 578, NERS 590, NERS 672, NERS 673, NERS 674, NERS 675



Program Advising & Administrative Support

Advising & administrative support for the NERS minor will be provided by the NERS Student Administration Manager and the Recruitment and Outreach Coordinator. Responsibilities include:

1. Advising students who are interested in and/or already enrolled in the NERS minor program on the academic requirements, career opportunities, and other related questions that students may have about the minor.
2. Maintaining the related academic records of students in the NERS minor, and timely auditing of the minor requirements upon request and during the student's final term. The NERS Undergraduate Chair will be responsible for approving variances to the minor requirements for individual students. For example, NERS 211 may be substituted for NERS 250 on approval by the NERS Undergraduate Chair. While the two courses cover similar topics, the depth/rigor vary. The preferred course for the NERS minor is NERS250 due to the better foundation provided for many of the possible electives to complete the minor. Due to other CoE departments allowing NERS 211 to satisfy a technical elective requirement, the Undergraduate Chair may allow NERS 211 to replace NERS 250 if the student has a sufficient academic foundation to proceed in the additional NERS coursework.
3. The Student Administration Manager is responsible for responding to the CoE Registrar's request for the audit of the minor requirements. Students who declare and complete a minor such as the NERS minor will have a notation on their transcript but not on their diploma.

KEVIN P. PIPE

Associate Dean for Undergraduate Education, College of Engineering
Professor of Mechanical Engineering, Electrical Engineering & Computer Science, and Applied Physics
1261 LEC / 1221 Beal Ave. / Ann Arbor, MI 48109-2102
pipe@umich.edu / (734) 647-7150

September 24, 2024

CoE Curriculum Committee
College of Engineering
University of Michigan
145A Chrysler Center
Ann Arbor, MI 48109-2092

Dear CoE Curriculum Committee,

I am writing to express my strong support for the creation of a minor in Nuclear Engineering & Radiological Sciences by the Nuclear Engineering and Radiological Sciences (NERS) Department. This topic has broad relevance across engineering disciplines and will allow students to be exposed to the industrial, medical, governmental, and environmental applications of nuclear and plasma processes and radiation.

The proposed minor will have an operational home within the NERS Department and will be offered according to our relevant policies, which state that a minor is a coherent program of study allowing depth in the exploration of a topic outside a student's major (15 credits or 4+ courses). This opportunity will be open to all CoE undergraduate students whose major is not NERS; NERS students have the same courses available for further study within their degree program.

Sincerely,



Kevin Pipe
Associate Dean for Undergraduate Education



Course Approval Request Form

Office of the Registrar, University of Michigan

1210 LSA Building
500 S. State Street
Ann Arbor, MI 48109-1382
Phone: 734.763.2113
Fax: 734.936.3148
ro.curriculum@umich.edu
ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
 Modification of Existing Course
 Deletion of Existing Course

Date of Submission: 2024-09-28

Effective Term: Winter 2025

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Elec Engin & Computer Sci Subject: EECS Catalog: 542	Dept (Home): Elec Engin & Computer Sci Subject: EECS Catalog: 542												
<input type="checkbox"/>	<input type="checkbox"/> Course is Cross-Listed with Other Departments	<input type="checkbox"/> Course is Cross-Listed with Other Departments												
<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number			
Department	Subject	Catalog Number												
Department	Subject	Catalog Number												
<input type="checkbox"/>	Course Title (full title) Advanced Topics in Computer Vision	Course Title (full title) Advanced Topics in Computer Vision												
<input type="checkbox"/>	Abbreviated Title (20 char) Adv Top Comp Vision	Abbreviated Title (20 char) Adv Top Comp Vision												
<input checked="" type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Advanced topics in computer vision. Topics are selected from large-scale vision and language foundation models, generative methods such as denoising diffusion and energy-based models, discriminative methods such as contrastive learning and few-shot classification, neural net architectures, model optimization and compression, current research on recognition, detection, segmentation, tracking, inferring depth, reconstructing scenes in 2D, 3D, and 4D, multimodal perception and robotics.													
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 3 Graduate Min: 3 Undergraduate Max: 3 Graduate Max: 3	Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:												
<input checked="" type="checkbox"/>	Course Credit Type Undergraduate Student, Rackham Graduate Student, Non-Rackham Graduate Student													
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit Maximum number of repeatable credits:	<input type="checkbox"/> Course is Y graded <input type="checkbox"/> Can be taken more than once in the same term												

Subject: Elec Engin & Computer Sci Catalog: 542	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p style="text-align: center;">Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p style="text-align: center;">Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char) EECS 442 or EECS 504 or permission of the instructor	Advisory Prerequisite (254 char) EECS 442 or EECS 504 or permission of the instructor
<input type="checkbox"/>	Enforced Prerequisite (254 char) Minimum grade requirement:	Enforced Prerequisite (254 char) Minimum grade requirement:
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input checked="" type="checkbox"/> Fall</p> <p><input checked="" type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
	Cognizant Faculty Member Name: Stella Yu	Cognizant Faculty Member Title:

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Punam Vyas Email: vyas@umich.edu Phone: 734-647-1754

CoE Curriculum Committee Representative:  Print: Amir Kamil Date: 10/06/24

CoE Curriculum Committee Chair: Print: Date:

Home Department Chair:  Print: Chris Peikert Date: 10/7/24

Cross-Listed Department Chair: Print: Date:

Cross-Listed Department Chair: Print: Date:

Cross-Listed Department Chair: Print: Date:

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

The course discusses advanced topics and current research in computer vision. Topics will be selected from various subareas such as physics based vision, geometry, motion and tracking, reconstruction, grouping and segmentation, recognition, activity and scene understanding, statistical methods and learning, systems and applications.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

Advanced topics in computer vision. Topics are selected from large-scale vision and language foundation models, generative methods such as denoising diffusion and energy-based models, discriminative methods such as contrastive learning and few-shot classification, neural net architectures, model optimization and compression, current research on recognition, detection, segmentation, tracking, inferring depth, reconstructing scenes in 2D, 3D, and 4D, multimodal perception and robotics.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Other

Special resources of facilities required for this course:Supporting statement:

The current course description reflects what a traditional advanced computer vision course would cover. Advances in computer vision, language, robotics, and machine learning are no longer isolated from each other. It thus needs to be updated with new terms and descriptions that align with today's course content, in order to provide clear guidance to students' course selection.



Course Approval Request Form

Office of the Registrar, University of Michigan

1210 LSA Building
 500 S. State Street
 Ann Arbor, MI 48109-1382
 Phone: 734.763.2113
 Fax: 734.936.3148
 ro.curriculum@umich.edu
 ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
- Modification of Existing Course
- Deletion of Existing Course

Date of Submission: 2024-10-01
 Effective Term: Fall 2025

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Elec Engin & Computer Sci Subject: EECS Catalog: 542	Dept (Home): Elec Engin & Computer Sci Subject: EECS Catalog: 542												
<input type="checkbox"/>	<input type="checkbox"/> Course is Cross-Listed with Other Departments	<input type="checkbox"/> Course is Cross-Listed with Other Departments												
<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number			
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<input type="checkbox"/>	Course Title (full title) Advanced Topics in Computer Vision	Course Title (full title) Advanced Topics in Computer Vision												
<input type="checkbox"/>	Abbreviated Title (20 char) Adv Top Comp Vision	Abbreviated Title (20 char) Adv Top Comp Vision												
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Advanced topics in computer vision. Topics are selected from large-scale vision and language foundation models, generative methods such as denoising diffusion and energy-based models, discriminative methods such as contrastive learning and few-shot classification, neural net architectures, model optimization and compression, current research on recognition, detection, segmentation, tracking, inferring depth, reconstructing scenes in 2D, 3D, and 4D, multimodal perception and robotics.													
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 3 Graduate Min: 3 Undergraduate Max: 3 Graduate Max: 3	Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:												
<input type="checkbox"/>	Course Credit Type Undergraduate Student, Rackham Graduate Student, Non-Rackham Graduate Student													
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit <input type="checkbox"/> Course is Y graded Maximum number of repeatable credits: <input type="checkbox"/> Can be taken more than once in the same term													

Subject: Elec Engin & Computer Sci Catalog: 542	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p>Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p>Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input checked="" type="checkbox"/>	Advisory Prerequisite (254 char) EECS 442 or EECS 504 or permission of the instructor	Advisory Prerequisite (254 char)
<input checked="" type="checkbox"/>	Enforced Prerequisite (254 char) Minimum grade requirement:	Enforced Prerequisite (254 char) EECS 442 or 504; (C or better, No OP/F) or Graduate Standing Minimum grade requirement: C
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input checked="" type="checkbox"/> Fall</p> <p><input checked="" type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
Cognizant Faculty Member Name: Stella Yu		Cognizant Faculty Member Title:

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Punam Vyas Email: vyas@umich.edu Phone: 734-647-1754

CoE Curriculum Committee Representative:  Print: Amir Kamil Date: 10/06/24

CoE Curriculum Committee Chair: Print: Date:

Home Department Chair:  Print: Chris Peikert Date: 10/7/24

Cross-Listed Department Chair: Print: Date:

Cross-Listed Department Chair: Print: Date:

Cross-Listed Department Chair: Print: Date:

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

Advanced topics in computer vision. Topics are selected from large-scale vision and language foundation models, generative methods such as denoising diffusion and energy-based models, discriminative methods such as contrastive learning and few-shot classification, neural net architectures, model optimization and compression, current research on recognition, detection, segmentation, tracking, inferring depth, reconstructing scenes in 2D, 3D, and 4D, multimodal perception and robotics.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

Advanced topics in computer vision. Topics are selected from large-scale vision and language foundation models, generative methods such as denoising diffusion and energy-based models, discriminative methods such as contrastive learning and few-shot classification, neural net architectures, model optimization and compression, current research on recognition, detection, segmentation, tracking, inferring depth, reconstructing scenes in 2D, 3D, and 4D, multimodal perception and robotics.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Other

Special resources of facilities required for this course:Supporting statement:

We are updating the prerequisites to make them enforced for undergraduate students.

Subject: Industrial & Operations Engin		Catalog: 837	
<input type="checkbox"/>	Grading Basis <input type="checkbox"/> Graded (A – E) <input type="checkbox"/> Credit/No Credit <input checked="" type="checkbox"/> Satisfactory/Unsatisfactory <input type="checkbox"/> Pass/Fail <input type="checkbox"/> Business Administration Grading <input type="checkbox"/> Not for Credit <input type="checkbox"/> Not for Degree Credit <input type="checkbox"/> Degree Credit Only	Add Consent <input type="checkbox"/> Department Consent <input type="checkbox"/> Instructor Consent <input checked="" type="checkbox"/> No Consent	Drop Consent <input type="checkbox"/> Department Consent <input type="checkbox"/> Instructor Consent <input checked="" type="checkbox"/> No Consent

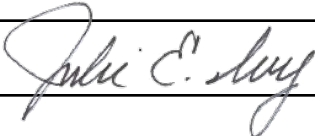
	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char) Graduate Standing	Advisory Prerequisite (254 char) Graduate Standing
<input type="checkbox"/>	Enforced Prerequisite (254 char) Graduate Standing Minimum grade requirement: S	Enforced Prerequisite (254 char) Graduate Standing Minimum grade requirement: S
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	Course Components <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Seminar <input type="checkbox"/> Recitation <input type="checkbox"/> Lab <input type="checkbox"/> Discussion <input type="checkbox"/> Independent Study	Graded Component <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		Terms Typically Offered <input type="checkbox"/> Fall <input checked="" type="checkbox"/> Winter <input type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/> Spring/Summer
Cognizant Faculty Member Name: Leia Stirling		Cognizant Faculty Member Title: Assoc. Professor

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Leonora Lucaj Email: lucajl@umich.edu Phone: 734-764-3297

CoE Curriculum Committee Representative: Yavuz Bozer  Print: Yavuz Bozer Date: 9/30/2024

CoE Curriculum Committee Chair: _____ Print: _____ Date: _____

Home Department Chair: Julie Ivy  Print: Julie Simmons Ivy Date: 9/30/2024

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

DEPARTMENTAL/COLLEGE USE ONLY

Current:**Requested:**Course Description

This seminar is to provide an opportunity for graduate students interested in occupational health and safety-engineering problems to become acquainted with various related contemporary research and professional activities, as presented by both staff and guest speakers.

Course Description

This seminar is to provide an opportunity for graduate students interested in occupational health and safety-engineering problems to become acquainted with various related contemporary research and professional activities, as presented by both staff and guest speakers.

Class Length

Full term

Class Length

Full term

Contact hours (lecture):

1

Contact hours (lecture):

2

Contact hours (recitation)Contact hours (recitation)Contact hours (lab)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:Special resources of facilities required for this course:Supporting statement:

This course is the flagship course for our U.S. National Institute for Occupational Safety and Health Education and Research Center training grant (see cohse.umich.edu) that supports engineering, public health and nursing students and postdocs. It is the primary course in which all trainees meet together for interdisciplinary work and also is part of the university's interprofessional education curriculum. The current 1 credit offering has not provided sufficient class time for the interactions needed among the students and with the experts who join our course as guest lecturers and case study clients, and the amount of work needed for the students to truly develop the competencies we are imparting is greater than that allowed for with 1 credit. Thus, we are expanding it to 2 credits.



Course Approval Request Form

Office of the Registrar, University of Michigan

1210 LSA Building
 500 S. State Street
 Ann Arbor, MI 48109-1382
 Phone: 734.763.2113
 Fax: 734.936.3148
 ro.curriculum@umich.edu
 ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
- Modification of Existing Course
- Deletion of Existing Course

Date of Submission: 2024-03-12
 Effective Term: Fall 2025

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING


<input type="checkbox"/>	Dept (Home): Naval Arch & Marine Engin Subject: NAVARCH Catalog: 470	Dept (Home): Naval Arch & Marine Engin Subject: NAVARCH Catalog: 470												
<input checked="" type="checkbox"/>	Course is Cross-Listed with Other Departments	Course is Cross-Listed with Other Departments												
<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td colspan="3">Manufacturing - MFG - 470</td> </tr> </tbody> </table>	Department	Subject	Catalog Number	Manufacturing - MFG - 470			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td colspan="3">Manufacturing - MFG- 470</td> </tr> </tbody> </table>	Department	Subject	Catalog Number	Manufacturing - MFG- 470		
Department	Subject	Catalog Number												
Manufacturing - MFG - 470														
Department	Subject	Catalog Number												
Manufacturing - MFG- 470														
<input type="checkbox"/>	Course Title (full title) Foundations of Ship Design	Course Title (full title) Foundations of Ship Design												
<input type="checkbox"/>	Abbreviated Title (20 char) Ship Design	Abbreviated Title (20 char) Ship Design												
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Organization of ship design. Preliminary design methods for sizing and form; powering, maneuvering, seakeeping estimation; arranging; propulsion; structural synthesis; and safety and environmental risk of ships. Extensive use of design computer environment. Given owner's requirements, students individually create and report the conceptual/preliminary design for a displacement ship.													
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 4 Graduate Min: 4 Undergraduate Max: 4 Graduate Max: 4	Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:												
<input type="checkbox"/>	Course Credit Type Undergraduate Student, Rackham Graduate Student, Non-Rackham Graduate Student													
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit <input type="checkbox"/> Course is Y graded Maximum number of repeatable credits: <input type="checkbox"/> Can be taken more than once in the same term													

Subject: Naval Arch & Marine Engin Catalog: 470	
<input type="checkbox"/>	Grading Basis <input checked="" type="checkbox"/> Graded (A – E) <input type="checkbox"/> Credit/No Credit <input type="checkbox"/> Satisfactory/Unsatisfactory Add Consent <input type="checkbox"/> Pass/Fail <input type="checkbox"/> Department Consent <input type="checkbox"/> Business Administration <input type="checkbox"/> Instructor Consent Grading <input checked="" type="checkbox"/> No Consent <input type="checkbox"/> Not for Credit <input type="checkbox"/> Not for Degree Credit <input type="checkbox"/> Degree Credit Only
	Drop Consent <input type="checkbox"/> Department Consent <input type="checkbox"/> Instructor Consent <input checked="" type="checkbox"/> No Consent

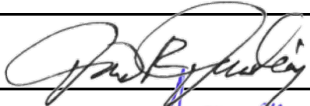
	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char) NAVARCH 321, NAVARCH 332, NAVARCH 340. Co-req: NAVARCH 310.	Advisory Prerequisite (254 char) NAVARCH 321, NAVARCH 332, NAVARCH 340. Co-req: NAVARCH 310.
<input type="checkbox"/>	Enforced Prerequisite (254 char) Minimum grade requirement:	Enforced Prerequisite (254 char) Minimum grade requirement:
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input checked="" type="checkbox"/>	Course Components <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Recitation <input type="checkbox"/> Lab <input type="checkbox"/> Discussion <input type="checkbox"/> Independent Study	Graded Component <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		Terms Typically Offered <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Winter <input type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/> Spring/Summer
Cognizant Faculty Member Name: Nickolas Vlahopoulos		Cognizant Faculty Member Title: Professor


SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: _____ Email: _____ Phone: _____

CoE Curriculum Committee Representative:  Print: Yulin Pan Date: 4/10/24

CoE Curriculum Committee Chair: _____ Print: _____ Date: _____

Home Department Chair:  Print: David R. Dowling Date: 4/4/24

Cross-Listed Department Chair: ISD  Print: Mihaela Banu Date: 04/09/2024

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

Organization of ship design. Preliminary design methods for sizing and form; powering, maneuvering, seakeeping estimation; arranging; propulsion; structural synthesis; and safety and environmental risk of ships. Extensive use of design computer environment. Given owner's requirements, students individually create and report the conceptual/preliminary design for a displacement ship.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)

2

Additional Info:Submitted by:

Home dept

Describe how this course fits with the degree requirements:Special resources of facilities required for this course:Supporting statement:

Removing LAB requirement to fit HLC compliance guidelines.

Requested:Course Description

Organization of ship design. Preliminary design methods for sizing and form; powering, maneuvering, seakeeping estimation; arranging; propulsion; structural synthesis; and safety and environmental risk of ships. Extensive use of design computer environment. Given owner's requirements, students individually create and report the conceptual/preliminary design for a displacement ship.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)



Course Approval Request Form
Office of the Registrar, University of Michigan

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Ann Arbor, MI 48109-1382
Phone: 734.763.2113
Fax: 734.936.3148
ro.curriculum@umich.edu
ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
- Modification of Existing Course
- Deletion of Existing Course

Date of Submission: 2024-07-08
Effective Term: Winter 2026

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Nuclear Engin & Radiolog Sci			Dept (Home): Nuclear Engin & Radiolog Sci		
	Subject: NERS			Subject: NERS		
	Catalog: 250			Catalog: 250		
	<input type="checkbox"/> Course is Cross-Listed with Other Departments			<input type="checkbox"/> Course is Cross-Listed with Other Departments		
<input type="checkbox"/>	Department	Subject	Catalog Number	Department	Subject	Catalog Number
<input type="checkbox"/>	Course Title (full title) Fundamentals of Nuclear Engineering and Radiological Sciences			Course Title (full title) Fundamentals of Nuclear Engineering and Radiological Sciences		
<input type="checkbox"/>	Abbreviated Title (20 char) Fund Nuc Eng/Rad Sci			Abbreviated Title (20 char) Fund Nuc Eng/Rad Sci		
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Technological, industrial and medical applications of radiation, radioactive materials and fundamental particles. Special relativity, basic nuclear physics, interactions of radiation with matter. Fission reactors and the fuel cycle.					
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 4 Graduate Min: Undergraduate Max: 4 Graduate Max:			Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:		
<input type="checkbox"/>	Course Credit Type Undergraduate Student					
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit Maximum number of repeatable credits:			<input type="checkbox"/> Course is Y graded <input type="checkbox"/> Can be taken more than once in the same term		

Subject: Nuclear Engin & Radiolog Sci Catalog: 250	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p>Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p>Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char)	Advisory Prerequisite (254 char)
<input checked="" type="checkbox"/>	Enforced Prerequisite (254 char) Preceded or accompanied by Math 216 and Physics 240. No OP/F. Minimum grade requirement: C	Enforced Prerequisite (254 char) Preceded or accompanied by NERS 320 and Physics 240. No OP/F. Minimum grade requirement: C
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input type="checkbox"/> Fall</p> <p><input checked="" type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
Cognizant Faculty Member Name: Todd Allen		Cognizant Faculty Member Title: Professor

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Michelle Sonderman Email: mlwhit@umich.edu Phone: 734-936-3130

CoE Curriculum Committee Representative: *Won Sik Yang* Print: Won Sik Yang Date: 08/13/2024

CoE Curriculum Committee Chair: _____ Print: _____ Date: _____

Home Department Chair: *Todd Allen* Print: Todd Allen Date: 18 July 2024

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

Technological, industrial and medical applications of radiation, radioactive materials and fundamental particles. Special relativity, basic nuclear physics, interactions of radiation with matter. Fission reactors and the fuel cycle.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

Technological, industrial and medical applications of radiation, radioactive materials and fundamental particles. Special relativity, basic nuclear physics, interactions of radiation with matter. Fission reactors and the fuel cycle.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Required for all students in BSE NERS program.

Special resources of facilities required for this course:Supporting statement:

Updating the enforced prerequisites to ensure the success of students enrolled in the course.



Course Approval Request Form

Office of the Registrar, University of Michigan

1210 LSA Building
500 S. State Street
Ann Arbor, MI 48109-1382
Phone: 734.763.2113
Fax: 734.936.3148
ro.curriculum@umich.edu
ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
 Modification of Existing Course
 Deletion of Existing Course

Date of Submission: 2024-07-18
Effective Term: Fall 2026

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Nuclear Engin & Radiolog Sci			Dept (Home): Nuclear Engin & Radiolog Sci		
	Subject: NERS			Subject: NERS		
	Catalog: 311			Catalog: 311		
	<input type="checkbox"/> Course is Cross-Listed with Other Departments			<input type="checkbox"/> Course is Cross-Listed with Other Departments		
<input type="checkbox"/>	Department	Subject	Catalog Number	Department	Subject	Catalog Number
<input type="checkbox"/>	Course Title (full title) Elements of Nuclear Engineering and Radiological Sciences I			Course Title (full title) Elements of Nuclear Engineering and Radiological Sciences I		
<input type="checkbox"/>	Abbreviated Title (20 char) N E & Rad Sci I			Abbreviated Title (20 char) N E & Rad Sci I		
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Photons, electrons, neutrons, and protons. Particle and wave properties of radiation. Introduction to quantum mechanics. Properties and structure of atoms.					
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 3 Graduate Min: Undergraduate Max: 3 Graduate Max:			Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:		
<input type="checkbox"/>	Course Credit Type Undergraduate Student					
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit Maximum number of repeatable credits:			<input type="checkbox"/> Course is Y graded <input type="checkbox"/> Can be taken more than once in the same term		

Subject: Nuclear Engin & Radiolog Sci Catalog: 311	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p>Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p>Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input checked="" type="checkbox"/>	Advisory Prerequisite (254 char) Concurrent: NERS 320	Advisory Prerequisite (254 char) Concurrent: NERS 420
<input type="checkbox"/>	Enforced Prerequisite (254 char) Physics 240. No OP/F. Minimum grade requirement: C	Enforced Prerequisite (254 char) Physics 240. No OP/F. Minimum grade requirement: C
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input checked="" type="checkbox"/> Fall</p> <p><input type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
Cognizant Faculty Member Name: Zhong He		Cognizant Faculty Member Title: Professor

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Michelle
Sonderman

Email: mlwhit@umich.edu

Phone: 734-936-3130

CoE Curriculum
Committee Representative: *Won Sik Yang* Print: Won Sik Yang Date: 08/13/2024

CoE Curriculum Committee Chair: _____ Print: _____ Date: _____

Home Department Chair: *Todd Allen* Print: Todd Allen Date: 18 July 2024

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

Cross-Listed Department Chair: _____ Print: _____ Date: _____

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

Photons, electrons, neutrons, and protons. Particle and wave properties of radiation. Introduction to quantum mechanics. Properties and structure of atoms.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

Photons, electrons, neutrons, and protons. Particle and wave properties of radiation. Introduction to quantum mechanics. Properties and structure of atoms.

Class Length

Full term

Contact hours (lecture):

3

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Required course for all students in NERS BSE program.

Special resources of facilities required for this course:Supporting statement:

Updating the advisory prerequisite to align with our new math sequence.



Course Approval Request Form
Office of the Registrar, University of Michigan

1210 LSA Building
500 S. State Street
Ann Arbor, MI 48109-1382
Phone: 734.763.2113
Fax: 734.936.3148
ro.curriculum@umich.edu
ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
- Modification of Existing Course
- Deletion of Existing Course

Date of Submission: 2024-07-16
Effective Term: Fall 2027

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Nuclear Engin & Radiolog Sci Subject: NERS Catalog: 441	Dept (Home): Nuclear Engin & Radiolog Sci Subject: NERS Catalog: 441												
<input type="checkbox"/>	<input type="checkbox"/> Course is Cross-Listed with Other Departments	<input type="checkbox"/> Course is Cross-Listed with Other Departments												
<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Department	Subject	Catalog Number			
Department	Subject	Catalog Number												
Department	Subject	Catalog Number												
<input type="checkbox"/>	Course Title (full title) Nuclear Reactor Theory I	Course Title (full title) Nuclear Reactor Theory I												
<input type="checkbox"/>	Abbreviated Title (20 char) Nucl React I	Abbreviated Title (20 char) Nucl React I												
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) An introduction to the theory of nuclear fission reactors including neutron transport theory, the P1 approximation, diffusion theory, criticality calculations, reactor kinetics, neutron slowing down theory, and numerical solution of the diffusion equation.													
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 4 Graduate Min: 4 Undergraduate Max: 4 Graduate Max: 4	Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:												
<input type="checkbox"/>	Course Credit Type Undergraduate Student, Rackham Graduate Student													
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit <input type="checkbox"/> Course is Y graded Maximum number of repeatable credits: <input type="checkbox"/> Can be taken more than once in the same term													

Subject: Nuclear Engin & Radiolog Sci Catalog: 441	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p>Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p>Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char)	Advisory Prerequisite (254 char)
<input checked="" type="checkbox"/>	Enforced Prerequisite (254 char) NERS 312 and NERS 320 (No OP/F); or graduate standing. Minimum grade requirement: C	Enforced Prerequisite (254 char) NERS 312 and NERS 420 (No OP/F); or graduate standing. Minimum grade requirement: C
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input checked="" type="checkbox"/> Fall</p> <p><input type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
Cognizant Faculty Member Name: Won Sik Yang		Cognizant Faculty Member Title: Professor

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Michelle
Sonderman

Email: mlwhit@umich.edu

Phone: 734-936-3130

CoE Curriculum

Committee Representative: *Won Sik Yang*

Print: Won Sik Yang

Date: 08/13/2024

CoE Curriculum Committee Chair:

Print:

Date:

Home Department Chair: *Todd Allen*

Print: Todd Allen

Date: 18 July 2024

Cross-Listed Department Chair:

Print:

Date:

Cross-Listed Department Chair:

Print:

Date:

Cross-Listed Department Chair:

Print:

Date:

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

An introduction to the theory of nuclear fission reactors including neutron transport theory, the P1 approximation, diffusion theory, criticality calculations, reactor kinetics, neutron slowing down theory, and numerical solution of the diffusion equation.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

An introduction to the theory of nuclear fission reactors including neutron transport theory, the P1 approximation, diffusion theory, criticality calculations, reactor kinetics, neutron slowing down theory, and numerical solution of the diffusion equation.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Required course for all students in the BSE in NERS program.

Special resources of facilities required for this course:Supporting statement:

Modifying enforced prerequisites due to the change in the required math sequence for the NERS BSE program



Course Approval Request Form

Office of the Registrar, University of Michigan

1210 LSA Building
 500 S. State Street
 Ann Arbor, MI 48109-1382
 Phone: 734.763.2113
 Fax: 734.936.3148
 ro.curriculum@umich.edu
 ro.umich.edu

CHECK APPROPRIATE BOXES FOR ALL CHANGES

Action Requested

- New Course
- Modification of Existing Course
- Deletion of Existing Course

Date of Submission: 2024-07-16
 Effective Term: Fall 2026

<input checked="" type="checkbox"/>	Course Offered <input checked="" type="checkbox"/> Indefinitely <input type="checkbox"/> One term only	RO USE ONLY Date Received: Date Completed: Completed By:
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CURRENT LISTING

REQUESTED LISTING

<input type="checkbox"/>	Dept (Home): Nuclear Engin & Radiolog Sci Subject: NERS Catalog: 484	Dept (Home): Nuclear Engin & Radiolog Sci Subject: NERS Catalog: 484												
<input checked="" type="checkbox"/>	Course is Cross-Listed with Other Departments	Course is Cross-Listed with Other Departments												
<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td colspan="3">Biomedical Engineering- BIOMEDE- 484</td> </tr> </tbody> </table>	Department	Subject	Catalog Number	Biomedical Engineering- BIOMEDE- 484			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Department</th> <th style="width: 25%;">Subject</th> <th style="width: 50%;">Catalog Number</th> </tr> </thead> <tbody> <tr> <td colspan="3">Biomedical Engineering- BIOMEDE- 484</td> </tr> </tbody> </table>	Department	Subject	Catalog Number	Biomedical Engineering- BIOMEDE- 484		
Department	Subject	Catalog Number												
Biomedical Engineering- BIOMEDE- 484														
Department	Subject	Catalog Number												
Biomedical Engineering- BIOMEDE- 484														
<input type="checkbox"/>	Course Title (full title) Radiological Health Engineering Fundamentals	Course Title (full title) Radiological Health Engineering Fundamentals												
<input type="checkbox"/>	Abbreviated Title (20 char) RHE Fundamentals	Abbreviated Title (20 char) RHE Fundamentals												
<input type="checkbox"/>	Course Description (Please limit to 80 words and attach separate sheet if necessary) Fundamental physics behind radiological health engineering and topics in quantitative radiation protection. Radiation quantities and measurement, regulations and enforcement, external and internal dose estimation, radiation biology, radioactive waste issues, radon gas, emergencies, and wide variety of radiation sources from health physics perspective.													
<input type="checkbox"/>	Full Term Credit Hours Undergraduate Min: 4 Graduate Min: 4 Undergraduate Max: 4 Graduate Max: 4	Half Term Credit Hours Undergraduate Min: Graduate Min: Undergraduate Max: Graduate Max:												
<input type="checkbox"/>	Course Credit Type Undergraduate Student, Rackham Graduate Student													
<input type="checkbox"/>	Repeatability <input type="checkbox"/> Course is Repeatable for Credit <input type="checkbox"/> Course is Y graded Maximum number of repeatable credits: <input type="checkbox"/> Can be taken more than once in the same term													

Subject: Nuclear Engin & Radiolog Sci Catalog: 484	
<input type="checkbox"/>	<p>Grading Basis</p> <p><input checked="" type="checkbox"/> Graded (A – E)</p> <p><input type="checkbox"/> Credit/No Credit</p> <p><input type="checkbox"/> Satisfactory/Unsatisfactory</p> <p><input type="checkbox"/> Pass/Fail</p> <p><input type="checkbox"/> Business Administration</p> <p>Grading</p> <p><input type="checkbox"/> Not for Credit</p> <p><input type="checkbox"/> Not for Degree Credit</p> <p><input type="checkbox"/> Degree Credit Only</p>
	<p>Add Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>
	<p>Drop Consent</p> <p><input type="checkbox"/> Department Consent</p> <p><input type="checkbox"/> Instructor Consent</p> <p><input checked="" type="checkbox"/> No Consent</p>

	CURRENT LISTING	REQUESTED LISTING
<input type="checkbox"/>	Advisory Prerequisite (254 char)	Advisory Prerequisite (254 char)
<input checked="" type="checkbox"/>	Enforced Prerequisite (254 char) MATH 216 or MATH 256 or MATH 286. Minimum grade requirement: C	Enforced Prerequisite (254 char) NERS 320 or MATH 216 or MATH 256 or MATH 286; or graduate standing Minimum grade requirement: C
<input type="checkbox"/>	Credit Exclusions	Credit Exclusions
<input type="checkbox"/>	<p>Course Components</p> <p><input checked="" type="checkbox"/> Lecture</p> <p><input type="checkbox"/> Seminar</p> <p><input type="checkbox"/> Recitation</p> <p><input type="checkbox"/> Lab</p> <p><input type="checkbox"/> Discussion</p> <p><input type="checkbox"/> Independent Study</p>	<p>Graded Component</p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
		<p>Terms Typically Offered</p> <p><input checked="" type="checkbox"/> Fall</p> <p><input type="checkbox"/> Winter</p> <p><input type="checkbox"/> Spring</p> <p><input type="checkbox"/> Summer</p> <p><input type="checkbox"/> Spring/Summer</p>
Cognizant Faculty Member Name: Kimberlee Kearfott		Cognizant Faculty Member Title: Professor

SIGNATURES ARE REQUIRED FROM ALL DEPARTMENTS INVOLVED (Please Print AND Sign Name)

Contact Person: Michelle Sonderman

Email: mlwhit@umich.edu

Phone: 734-936-3130

CoE Curriculum Committee Representative: *Won Sik Yang* Print: Won Sik Yang Date: 08/13/2024

CoE Curriculum Committee Chair: Print: Date:

Home Department Chair: *Todd Allen* Print: Todd Allen Date: 18 July 2024

Cross-Listed Department Chair: *Mary-Ann Mycek* Print: Mary-Ann Mycek Date: 18 July 2024

Cross-Listed Department Chair: Print: Date:

Cross-Listed Department Chair: Print: Date:

DEPARTMENTAL/COLLEGE USE ONLY

Current:Course Description

Fundamental physics behind radiological health engineering and topics in quantitative radiation protection. Radiation quantities and measurement, regulations and enforcement, external and internal dose estimation, radiation biology, radioactive waste issues, radon gas, emergencies, and wide variety of radiation sources from health physics perspective.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Requested:**Course Description

Fundamental physics behind radiological health engineering and topics in quantitative radiation protection. Radiation quantities and measurement, regulations and enforcement, external and internal dose estimation, radiation biology, radioactive waste issues, radon gas, emergencies, and wide variety of radiation sources from health physics perspective.

Class Length

Full term

Contact hours (lecture):

4

Contact hours (recitation)Contact hours (lab)**Additional Info:**Submitted by:

Home dept

Describe how this course fits with the degree requirements:

Selective course for BSE NERS program.

Special resources of facilities required for this course:Supporting statement:

Updating enforced prerequisite to account for the math sequence change in the NERS BSE program.