

Fundamentals of Nuclear and Radiological Engineering, ENU 4934, Section 12958  
Anderson Hall, Room 0019  
M 1250-1340 (UF “Period” 6)  
No Final Exam

## Changes to Syllabus

Changes to this syllabus will be provided via the Canvas platform. Such changes may include those required by policy changes, my travel, changes in the speed of course coverage, university closure, errors in previous syllabus versions, and other reasons.

## Instructor

DuWayne Schubring, Ph.D., Instructional Associate Professor  
317 Materials Engineering Building (MAE, not MAE-A, MAE-B, or MAE-C)  
352-294-7870

dlschubring@ufl.edu (This is the best way to reach me. The Canvas “Inbox” feature *is not* real e-mail. Messages sent via that system will not be acknowledged.)

## Office Hours

M 1400-1440, T 1300-1500, W 1220-1440, F 1340-1440, and by appointment. End times of office hours will be enforced strictly, even if students are still waiting, as I have other engagements (including teaching class) immediately after each office hour block.

Office hours will be via zoom only (<https://ufl.zoom.us/j/9057355922>) until/unless announced otherwise. I will log on at the beginning of each period, but may not stay logged-on the entire time. (When I’m holding office hours and no student is around, I try to get some other work done. Some of this work is bandwidth- or screen-real-estate-intensive.) However, if you notice I am not logged-on to an office hour Zoom meeting, please send me an e-mail. I will keep my e-mail auto-checking – I will log on to the Zoom meeting within 10 minutes (usually closer to 5). If you are in a private space (e.g.; your own house or apartment, a dorm room, etc.), please turn your camera off. If you are in a public space (e.g.; unused classroom, outdoors at UF), your camera status is at your discretion.

There are no office hours on days when no UF classes are held, including reading days and finals week.

## Description

Presentations and discussions on topics of current and continuing interest in nuclear engineering sciences.

## Prerequisites

None

## Course Objectives

This course serves the following purposes: (1) provides an introduction to nuclear physics and nuclear reactors, (2) provides an introduction to career planning, including short-term (scholarships, internships, research) and long-term (employment following graduation), and (3) introduces students to areas of nuclear engineering and related fields through a short series of guest lectures.

## Program Outcomes (ABET)

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (medium coverage)
2. n/a
3. an ability to communicate effectively with a range of audiences (low coverage)
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts (low coverage)
5. n/a
6. n/a
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies (low coverage)

## Text

None

## References

None

## Course Schedule

Following the opening lecture, this course consists of two parts. The first is an introduction to nuclear physics (radiation interactions) and nuclear reactors. The second is an exploration of your professional futures – a live discussion of college and graduate school panning, a live discussion of career planning, and five “town hall” events, in which other faculty, alumni, and other guests will be available to discuss their areas of expertise and careers in that area.

Date	Due	Material
23 Aug		Introduction to Course, Syllabus Review
30 Aug		College and Graduate School Planning) Attendance Will Be Taken
6 Sep		NO CLASS (UF HOLIDAY)
13 Sep		Introduction to Nuclear Physics (1/4)
20 Sep	HW 1 (Scholarship Essay)	Introduction to Nuclear Physics (2/4)
27 Sep	HW 2 (Essay Revision)	Introduction to Nuclear Physics (3/4)
4 Oct	HW 3 (Rad. Interact.)	Introduction to Nuclear Physics (4/4)
11 Oct		Town Hall – Radiation Detection and National Security Attendance Will Be Taken
18 Oct	HW 4 (Rad. Interact.)	Nuclear (Fission) Reactions/Reactors (1/3)
25 Oct		Nuclear (Fission) Reactions/Reactors (2/3)
1 Nov	HW 5 (Reactors)	Nuclear (Fission) Reactions/Reactors (3/3)
8 Nov		Town Hall – Nuclear (Fission) Reactors Attendance Will Be Taken
15 Nov	HW 6 (Reactors)	Career Planning Attendance Will Be Taken
22 Nov		Town Hall – Nuclear Materials Attendance Will Be Taken
29 Nov	HW 7 (Career Planning)	Town Hall – Radiochemistry, Medical Physics, others (?) Attendance Will Be Taken
6 Dec		Town Hall – Plasma/Fusion, others TBD Attendance Will Be Taken
8 Dec	HW 8 (Career Planning)	Due Date Only – 11:59 pm

## Grading

Grades will be assigned based on the following weighting

- Attendance and Participation (300 points)
- Homework (800 points – 8 assignments, 100 points each)

& the following scale

- A: 87%+
- A-: 85-86.99%
- B+: 83-84.99%
- B: 75-82.99%
- C: 66-74.99%
- E: < 66%

Per UF policy, grades are entered into Canvas to enable you to look up grades quickly. These grades are manually copied from other documents. I reserve the right to correct data-entry errors, as well as other errors, until finalization of grades with the registrar.

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

## Grading Notes

1. I reserve the right to grant higher grades at the end of the course at my sole discretion, including the use of B- and C+. Under no circumstances will grades of C- or any flavor of D be used.
2. The gradebook on Canvas is used to enable you to look up grades quickly. Note that this gradebook is *not* official. I reserve the right to correct errors, including transcription errors, from the official (spreadsheet) gradebook, to which I alone have access, until finalization of grades with the registrar.
3. Under no circumstances will a homework be accepted after solutions have been released. If you have any form of excuse/accommodation that delays your due date until after the release of solutions, that will be taken as an excused homework for you. The weighting of your other homework will then be increased to ensure homework is 8/11 of your grade.

## Grade Appeal

All appeals of grades, including those from clerical/grade-calculation errors, must be made within 1 week of return. (This may be modified for specific assignments near the end of the term. I will announce this via e-mail as needed.) Appeals will be considered for clerical errors, addition errors, and inconsistent scoring. Grade appeals will not be entertained if you simply do not like that (for example) Part 1 was worth only 2 points with Part 2 worth 5.

Grade appeals must be provided in the following format:

- Provide, in PDF format only, a written summary of which problem(s) or part(s) you believe were graded inaccurately. Be as specific as possible.
- Send your appeal in the form of an e-mail with “ENU 4934” and “Grade Appeal” in the subject line.

You will be informed of the result of your appeal via e-mail reply.

On very rare occasions, if I believe you are not acting in a good faith belief that more points are deserved, I will deem the appeal frivolous. Following two frivolous appeals, your grade appeal privilege through this method will be *revoked*. Further appeals must be done through the petitions process, which requires formal paperwork and department/program level involvement.

## Course Policies

### Attendance, Participation, Excused Absence, and Late Work Policies

There are seven sessions at which attendance will be taken for a grade (one “A/P mark” – attendance/participation mark – per session); this is noted in the schedule. Students arriving after 1255 may not receive credit; those who leave early may also not be credited. The instructor will explore options for virtual attendance (zoom), but no guarantee is offered as part of this syllabus “contract”.

You are required to *actively* participate in class. Participation points may be earned by contribution to the discussion in these seven sessions, either verbally or via chat, or by sending questions

for our town hall guest speakers to me prior to class. Any constructive participations will earn an A/P mark; a second A/P mark may be awarded for particularly valuable contribution. (The instructor retains full discretion on what qualifies as “particularly valuable”.) You may not earn 3 A/P marks via participation in a single day.

The required-for-full-credit number of participations will be 4, the maximum number of A/P marks earned by participation will be 5, and each of the first 10 A/P marks is worth 30 course points.

Each excused absence reduces the number of A/P marks required by one. For example, if student has two excused absences, that student’s grade will be based on 8 required A/P marks. Since  $300/8$  is 37.5, the student would earn 38 points for their first 7 A/P marks and 34 for their eighth. Students who have 3 or more excused absences among the 7 sessions, or DRC accommodations related to class absence, will be contacted directly to determine how the scoring will operate.

Late-work excuses (extensions) can be grouped into the categories of *professional*, *medical*, and *personal*.

*Professional:* Reasonable extensions for job/internship interviews, technical conferences, or other professional/career development reasons should be requested. Most requests are granted, excluding those that provide a student or group of students an unfair advantage, cause significant disruption to the course or grading schedule, or violate some UF policy.

*Medical:* Extensions will also be granted for (your own) medical reasons – please do not come to class if you are ill. Per UF policy, in the case of medical issues that are frequent or suspiciously-timed (*e.g.*; you are repeatedly, suddenly ill at deadlines), I may request a signed note from a physician or similar professional practitioner.

*Personal:* In addition, UF policies require accommodation for several non-academic, non-medical reasons. Extensions for these personal issues are generally limited to those mandated by the letter of UF policies. The list of UF-approved personal reasons changes from time to time. If you have a question regarding your personal issue and if it qualifies under one of the excused absence/late-work policies, contact me in advance.

All requests for extensions, including excused absences from exams, must be submitted in writing, preferably via e-mail.

The 12-day rule will be enforced strictly. Note that the count of days is based on a per-student, not per-approved-activity basis.

One UF-allowed personal reason for absence or extension is “serious family emergencies”, as provided in the undergraduate catalog. No definition of “family” is provided. Therefore, the following people shall be taken as included as “family” for the purposes of this course:

- Spouse, domestic partner, great-grandparent, grandparent, parent, brother, sister, child, grandchild, or the grandparent, parent, brother, sister, child, grandchild, or great-grandchild of the student’s spouse or domestic partner, or the spouse or domestic partner of any of them. This also includes individuals for whom the student is the current legal guardian. These are based on the UF definition of “immediate family”, which can be accessed at:

[http://benefits.hr.ufl.edu/wp-content/uploads/sites/3/2018/05/immediate\\_family\\_defs.pdf](http://benefits.hr.ufl.edu/wp-content/uploads/sites/3/2018/05/immediate_family_defs.pdf)

Note that the term “domestic partner” does not apply automatically to any partner with whom you cohabitate (formal registration with UF is required).

- Your own aunt/uncle, great-aunt/uncle, nibling (niece or nephew), or great-nibling.

More distant relatives (a cousin, your spouse’s nibbling, etc.), partners (excluding spouse or domestic partner), and pets are not included. Minor illnesses (guideline: anything meriting home care only or care at a walk-in clinic, as opposed to an ER) of family members, including minor children, do not count as serious family emergencies, nor do events such as birthdays, anniversaries, weddings, etc.

I reserve the right to grant extensions for other personal reasons as *rare exceptions to the rule* at my sole discretion – advance notice gives you the best chance at a favorable decision. The approval of an extension does not establish precedent for you (notably, there are some scenarios that I may accommodate only once) or for other students with similar circumstances.

Political activities, including protests, demonstrations, and the like are considered personal matters and not generally permitted as reasons for extensions. This includes activities related to nuclear engineering or nuclear power. Exceptions: (1) if you are pursuing nuclear-related (whether pro- or anti-) politics as a career path, you may be granted extensions, at my discretion, on condition of providing evidence of *bona fide* efforts to secure a full-time position or to secure admission to a relevant, non-STEM degree-granting graduate program and (2) activities on November 12 or 13 or between November 29 and December 2, inclusive, that are connected to the 2021 ANS Young Professionals Congress or 2021 ANS “Winter” Meeting will be taken as related to those professional activities and potentially grounds for extensions.

Further, be advised that any approved reasons for extensions do not reduce the amount of work you are required to complete, but merely rearranges the timing. For those issues that are predictable (interview, holidays, etc.), you should work ahead to avoid disruption.

## Homework and Project

*Excluding the make-up work policies, above, no late homework will be accepted.*

Homework and projects must be submitted electronically (via Canvas) or in hard copy. The following restrictions apply for electronic submissions:

- Submissions may include multiple files, but only files with the following extensions will be accepted: pdf, xls, xlsx, ods, numbers, and txt. This zip archive may not contain any ppt, pptx, doc, or docx files. Such files will be *ignored* for the purposes of grading.
- If a hard copy and electronic submission are provided, the hard copy will take precedence. (Only it will be read, reviewed, and graded.) You may not submit parts of the assignment electronically and parts in hard copy, unless explicitly allowed on that assignment sheet.

## Electronic Communication

The primary means of communication with the class outside of class time will be e-mail listserv. These listservs will send to your @ufl.edu address only. Any inquiries regarding grading will be directed towards your @ufl.edu address only, per FERPA.

Technical and procedural questions will be answered as a reply to whatever e-mail address you used to send them. If the entire class will benefit from the answer, I may send to the class list (either in lieu of or in addition to a direct reply to you, at my discretion). If you do not wish to have a specific e-mail to me regarding technical content or course procedures replied to through the class list, you must explicitly state this in that e-mail. In such a case, I will reply directly to

you and send a general-purpose announcement to the class list, not indicating who caused me to send it.

When sending questions via e-mail, please make sure you provide all the information needed for me to produce an answer or solution. This includes any files on which you are working. (Note: I will not open files from you in the following formats: .ppt, .pptx, .doc, .docx; make a PDF and send that if needed.)

The Canvas platform will be used for file storage, assignment posting, and posting grades. I take no responsibility for downtime of this service, nor for actions of University of Florida staff that affect the website (including Canvas upgrades).

## Letters of Recommendation/Evaluation Policy

To request a letter of recommendation/evaluation (for graduate school or otherwise), you must provide (all in a single e-mail):

- A copy of your UF transcript.
- A copy of a résumé (or CV).
- A copy of the following form with all four circles checked (requests with three or fewer circles checked will be denied):

<http://www.registrar.ufl.edu/pdf/ferparelease.pdf>.

Letters are typically filed once per week. For those of you whom I know only through coursework, my letter typically focuses on an estimate of their rank-in-class and on their performance on projects and challenging problems.

I will only file *one batch* of letters for each of you during the term. (This policy is designed to keep me from looking up slight changes in your rank/performance multiple times for multiple batches of letters.) I recommend that this batch occur as late as possible in the term to allow me sufficient information (sample size) on your performance to write a useful letter.

I reserve the right to refuse to provide a letter for anyone and am not obligated to provide a reason for such refusal.

## Syllabus Boilerplate

### Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting

<https://disability.ufl.edu/students/get-started/>

It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### Course Evaluations

The University of Florida expects students to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at:

<https://gatorevals.ua.ufl.edu/students/>

Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via

<https://ufl.bluer.com/ufl/>

Summaries of course evaluation results are available to students at:

<https://gatorevals.ua.ufl.edu/public-results/>

## **In-Class Recording**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

## **University Honesty Policy**

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.



## Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Undergraduate/Graduate Program Coordinator [for NE/NES students, these are both also your instructor]
- Robin Bielling, Director of Human Resources, 352-392-0903, [rbielling@eng.ufl.edu](mailto:rbielling@eng.ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@ufl.edu](mailto:nishida@ufl.edu)

## Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

## Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<https://registrar.ufl.edu/ferpa.html>

## Campus Resources

### Health and Wellness

#### U Matter, We Care

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

#### Counseling and Wellness Center:

<http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

### **Sexual Discrimination, Harassment, Assault, or Violence**

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the Office of Title IX Compliance, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto:title-ix@ufl.edu)

### **Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>

### **Academic Resources**

E-learning technical support, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)

<https://lss.at.ufl.edu/help.shtml>

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

<https://www.crc.ufl.edu/>

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

<http://cms.uflib.ufl.edu/ask>

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<https://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

<https://writing.ufl.edu/writing-studio/>

Student Complaints Campus:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

On-Line Students Complaints:

<http://www.distance.ufl.edu/student-complaint-process>