

Nuclear Engineering Analysis I

ENU 4001 Section 1B91

Class Periods: TR, 2-3 periods, 8:30-10:10

Location: FLG0275

Academic Term: Fall 2018

Instructor:

Dr. Sedat Goluoglu

goluoglu@mse.ufl.edu

352-294-1690

Office Hours: TBA, Rhines 168

Teaching Assistants:

None

Course Description

Four one period-hour lectures discussing continuous and discrete variable solution methods for the statistical, algebraic, differential and integral equations important in nuclear engineering. Problems involving neutron, photon, fluid and temperature distributions in configuration, time and velocity are mathematically modeled, solved and interpreted.

Course Pre-Requisites / Co-Requisites

MAP 2302. Co-req: COP 2271

Course Objectives

1. Graduates will have successful careers in Nuclear Engineering or related disciplines.
2. Graduates will pursue advanced degrees or continuing education.

Materials and Supply Fees

N/A

Professional Component (ABET):

4 credits engineering

1. Provide students with the ability to apply knowledge of mathematics, science and engineering for problem solving in engineering.
2. Provide students with the ability to identify, formulate and solve engineering problems.
3. Provide students with the ability to apply advanced mathematics, science, atomic and nuclear physics and engineering to nuclear and radiological systems and processes.

Relation to Program Outcomes (ABET):

Outcome a: an ability to apply knowledge of mathematics, science and engineering for problem solving in engineering.

Outcome e: an ability to identify, formulate and solve engineering problems.

Outcome k: an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Outcome l: an ability to apply advanced mathematics, science, atomic and nuclear physics and engineering to nuclear and radiological systems and processes.

Required Textbooks and Software

- Title: Foundations in Applied Nuclear Engineering Analysis
- Author: Glenn E. Sjoden
- Publication date and edition: March 30, 2015, 2nd Edition
- ISBN number: 9814630934

Course notes are derived from:

Advanced Engineering Mathematics, 10th Edition, E. Kreyszig, John Wiley & Sons, Inc. 2011, ISBN: 978-0-470-45836-5

As well as the required textbook above and recommended textbook below.

Code Packages Required: MCNP6/MCNP5/MCNPX and SCALE (Procured from RSICC). Without this you will lose minimum 25% of your grade in ENU4103 next semester. Send e-mail confirmation showing you requested the software by the beginning of 3rd class this semester. You will also need these in your senior year.

Recommended Materials

- Title: Introduction to Nuclear Engineering
- Author: J.R. Lamash, A.J. Baratta
- Publication date and edition: 2001, 3rd Edition
- ISBN number: 0201824981

Course Schedule

1. First Order Ordinary Differential Equations (ODEs)
2. Second Order ODEs
3. Series Solutions of ODEs
4. Vector Differential Calculus
5. Partial Differential Equations (PDEs)
6. Selected Topics Important to Nuclear Engineering as Time Permits

Attendance Policy, Class Expectations, and Make-Up Policy

You are expected to attend all class meetings, barring meritorious professional or University-sanctioned personal reasons. Particularly meritorious reasons are expected for any absence from exams. Whether or not your justification for your absence is acceptable (other than those that are sanctioned by the University) is at sole discretion of the Instructor. Notify the Instructor and check to see if it is acceptable as soon as you know you will be absent. As a hint, "I partied too much and have a hangover" will not pass the muster.

Class distractions such as **cell phones and pagers are unacceptable**. Students will ensure that any such devices that are brought into the classroom will be turned off. There is no tolerance for mobile phones or other electronic disruptions. Such disruptions (including texting) will lead to the student being told to leave the room for the duration of the class period, including during examination periods. Note that if a pop quiz is given after the student is asked to leave, he/she will receive zero as a grade for that pop quiz. Laptops, tablets, iPads, etc. are not allowed during the lecture period. If a student arrives late or leaves early, he/she is expected to do so with minimum level of disruption to the class in progress. If a pop quiz is given before or after the student is in the classroom, he/she will receive zero for that pop quiz (no make-up). You will notice that there is a strong correlation between number of students absent in a class period and the probability of having a pop quiz!

All exams are cumulative, i.e., every topic that is covered prior to the exam day (including the latest class period) may be on the test. This means you should study in advance – those who wait until the last day typically do not do well in this class! Instructor will assume you already know the topics covered in the prerequisite course MAP 2302. Excused absences are consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Projects	100	15%
(Pop) Quizzes	100	20%
Midterm Exams	100	40%
Final Exam	100	25%
		100%

Grading Policy

Percent	Grade	Grade Points
94.0 - 100	A	4.00
90.0 - 93.9	A-	3.67
87.0 - 89.9	B+	3.33
84.0 - 86.9	B	3.00
80.0 - 83.9	B-	2.67
77.0 - 79.9	C+	2.33
74.0 - 76.9	C	2.00
70.0 - 73.9	C-	1.67
67.0 - 69.9	D+	1.33
64.0 - 66.9	D	1.00
60.0 - 63.9	D-	0.67
0 - 59.9	E	0.00

Instructor reserves the right to curve the grades.

More information on UF grading policy may be found at:

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

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

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.

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: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

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 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.
<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, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

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.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.