

NSC 2122

Naval Ship Systems II (Weapons)

Department of Naval Science - Spring 2021

Monday/Wednesday/Friday 0935 – 1035

Van Fleet Hall Rm. 24/HyFlex



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Office Hours: By appointment

MODE OF DELIVERY:

Week 1-2: Fully Virtual

Week 3-completion: HyFlex

Background: As a Naval Science course, this class must fall in line with the University of Florida NROTC unit's "mode of operations" (in-person or virtual) in light of the ongoing COVID-19 pandemic. NROTC is operating fully virtually for the first two weeks of the Spring semester and plans to return to in-person operations during Week 3. This class will follow suit and will be fully virtual for the first two weeks of instruction. The first planned in-person class is Monday, January 25th, although this date could change depending on COVID-19 conditions. Information about the medium of instruction will be sent out well beforehand via Canvas.

ZOOM INFORMATION:

Meeting ID: 451 234 4925

Passcode: *See Canvas Pinned Discussion for Passcode*

[Zoom Link](#)

IN-PERSON CLASSES STATEMENT:

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms, please use the UF Health screening system and follow the instructions on whether you are able to attend class.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

VIRTUAL CLASSES STATEMENT:

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

TEXTBOOK:

The Naval ROTC unit will provide the texts required for this course. These books must be returned in satisfactory condition – NO HIGHLIGHTERS OR PENS – or your grade will be held, and a charge will be placed against your university account for the full amount of the texts.

- Payne, C. M. (LCDR, USN) (2006). *Principles of Naval Weapon Systems*. Annapolis: Naval Institute Press. ISBN 1-59114-658-5

COURSE OBJECTIVES:

This course is designed to provide an overview of naval weapons, their associated systems, and the integration of these weapons in naval warfare. Topics include:

- The concept of an integrated weapon system and its various components
- An in-depth theoretical study of commonly used radar and sonar systems
- The military requirements and general characteristics of naval weapon systems
- System tasks and operational phases from target detection, weapon launch, and destruction
- Functional components of various weapons such as warheads, propulsion systems, and launch vehicles
- The need for system integration and the impact of delay, system errors, and reaction time on weapon effectiveness
- An introduction to cyber warfare

After successful completion of this course you will have a thorough understanding of modern naval weapon systems and how they are used. Further, we will discuss how weapons are integrated into the Fleet, how they are commanded and controlled, and how the Naval Officer fits into the weapons picture.

COURSE PREREQUISITES:

There are no academic prerequisites for NSC 2122, nor is there a requirement to be a member of any ROTC program. All UF students are welcome; however, the analytical portions of this class will require algebra, trigonometry, and basic application of wave and electromagnetic theory.

GUIDING PRINCIPLES:

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 (sccr.dso.ufl.edu/process/student-conduct-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 doubt as to what conduct is acceptable, please ask me. As future Naval Officers you are expected to uphold the highest standards of Honor, Courage, and Commitment. In addition, we will use the following as guiding principles:

Professionalism -- We enable our people to be experts at what they do and do it in a manner that is credible and commands respect.

Integrity - We uphold the Navy core values of Honor, Courage, and Commitment, in everything we say and do.

Creativity - We promote a sense of ownership, belonging, and openness to stimulate innovation.

Effectiveness - Our students will leave us with increased knowledge, high motivation, and dedication to becoming better leaders.

CLASS PROCEDURES AND POLICIES:

1. Class attendance is **mandatory**. If you can't attend class for any reason, it is your responsibility to notify me either by e-mail or phone prior to missing class. After the first unexcused absence, each subsequent unexcused absence will lower your overall grade by 5 points. UF attendance policies: catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/
2. All assigned reading shall be completed prior to the associated lecture. The readings provide a background for the material presented in class, and failing to complete the readings will significantly reduce your understanding of the material. As upper-class college students, I expect that you know how to appropriately prepare for all of your classes as required.
3. Cell phones shall be silenced.
4. Laptop computers are permitted for note-taking in class. However, this privilege will be lost after the first occurrence of a student being caught using a laptop inappropriately (Facebook, browsing the internet, etc.).
5. Eating and drinking in class is permitted as long as it isn't distracting to other students or to me.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES:

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.

HOMEWORK:

I will assign homework sets that complement the lecture material as a way to test your understanding of course material prior to more heavily-weighted exams. These homework assignments will be collected at the beginning of class on the day it is due. You may consult any references or resources you wish (including other students in this class) to assist your completion of homework assignments, but each individual must submit their own homework solutions for grading.

READING QUIZZES:

I may administer several unannounced quizzes covering the assigned reading material throughout the semester. The purpose is to ensure students are completing the reading **PRIOR** to the topic being discussed in class. Reading quizzes will count towards the overall participation grade.

PRESENTATIONS:

Having a basic understanding of major warfare platforms is necessary for all junior officers. Each student will present a naval weapon system of their choosing to the rest of the class during the final weeks of the semester. System topics will be chosen prior to spring break from a list of weapon systems.

EXAMINATIONS:

I will administer three in-class exams throughout the semester with weight denoted below. There will be a comprehensive final exam.

COURSEWORK AND GRADING POLICY:

There will be no credit for late homework or exams missed due to an unexcused absence. Requests for extensions will be considered on a case-by-case basis. Notify me of your need for an extension prior to missing deadlines and we will discuss it. The policy for moving quizzes and tests will be the same. If you miss work due to an emergency, medical or otherwise, that prevents you from being able to notify me, let me know and we will work out a make-up process. If I make a mistake in assigning grades, bring it to my attention for correction. Grades will be determined as follows:

a.	Class Participation	5%
b.	Homework	10%
c.	First Exam	15%
d.	Second Exam	15%
e.	Third Exam	15%
e.	Presentation	10%
f.	Final Exam	30%

Grade Range: (grades will not be rounded)

A	93.5-100	C+	76.5-79.4
A-	89.5-93.4	C	73.5-76.4
B+	86.5-89.4	C-	69.5-73.4
B	83.5-86.4	D+	66.5-69.4
B-	79.5-83.4	D	64.5-66.4
		E	0-64.4

catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

SYLLABUS / OBJECTIVES:

Day	Month	Date	Topic	Reading	Assignments Due
M	Jan	11	Intro / Detect to engage sequence		
W	Jan	13	Electromagnetic Wave Characteristics	Ch. 1, Ch. 2 (5-15, 22-25)	
F	Jan	15	EM Wave Generation and Antennas Part 1	Ch. 2 (15-21)	
M	Jan	18	Martin Luther King Jr. Day – No Class		
W	Jan	20	EM Wave Generation and Antennas Part 2		HW 1
F	Jan	22	Basic RADAR – Pulsed Principles Part 1 & 2	Ch. 3 (26-33, 34-41)	
M	Jan	25	RADAR Performance Factors/ Range Equation		
W	Jan	27	Advanced RADAR Systems Part 1	Ch. 4 (42-53)	HW 2
F	Jan	29	Advanced RADAR Systems Part 2		
M	Feb	1	RADAR Tracking Systems Part 1	CH. 5 (66-82)	
W	Feb	3	RADAR Tracking Systems Part 2		
F	Feb	5	Test Review/Backup Day		
M	Feb	8	Exam 1		
W	Feb	10	Electronic Combat	Ch. 6 (83-98)	
F	Feb	12	Principles of Electro-Optics/Start EO Systems	Ch. 7 (99-124)	HW3
M	Feb	15	Electro-Optics Systems	Ch. 7 (125-133, 146-152)	
W	Feb	17	Principles of Underwater Sound Part 1	Ch. 9 (153-168)	
F	Feb	19	Principles of Underwater Sound Part 2	Ch. 9 (168-187)	HW4
M	Feb	22	Passive USW Part 1		
W	Feb	24	Active USW and USW Systems	Ch. 10 (188-191) Ch. 11 (192-210)	
F	Feb	26	Test Review/Backup Day		
M	Mar	1	Exam 2		
W	Mar	3	FC Problem / Exterior & Interior Ballistics	Ch. 13 (237-261)	
F	Mar	5	Weapon Propulsion & Architecture	Ch. 14 (262-272, 274-275)	HW 5
M	Mar	8	Underwater Explosives, Torpedoes, Mines	Ch. 18 (358-360)	
W	Mar	10	Nuclear Weapons and EM Rail Guns	Ch. 19 (361-372, 376-377)	
F	Mar	12	Blast Warheads and Damage Prediction	Ch. 18 (341-350)	HW 6
M	Mar	15	Fragmentation and Special Warheads	Ch. 18 (350-357)	
W	Mar	17	Guidance Systems	Ch. 15 (298-313)	HW 7
F	Mar	19	Fuzing Systems	Ch. 16 (314-330)	
M	Mar	22	Test Review/Backup Day		
W	Mar	24	Exam 3		
F	Mar	26	Presentations		
M	Mar	29	Presentations		
W	Mar	31	Presentations		
F	Apr	2	Presentations		

M	Apr	5	Cyber: Cyberspace as a Domain		
W	Apr	7	Cyber: Cyber Battlefield I		HW 8
F	Apr	9	Cyber: Cyber Battlefield II – Networking Basics		
M	Apr	12	Cyber: Cyber Battlefield III – WWW		HW 9
W	Apr	14	Cyber: Cyber Ops I		
F	Apr	16	Cyber: Cyber Ops II		
M	Apr	19	Cyber: Cyber Defenses / Final Exam Review		HW 10
W	Apr	21	Final Exam Review		
MON APR 26 @ 10:00 AM			FINAL EXAM – CUMULATIVE	BRING TEXTBOOK	

Note: Classes highlighted in **green** are fully virtual and will be delivered via Zoom.

CAMPUS RESOURCES:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu/.

University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, ufhealth.org/emergency-room-trauma-center.

Academic Resources

E-learning technical support: Contact the [UF Computing Help Desk](http://ufcomputing.com) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: cms.uflib.ufl.edu/ask various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring. teachingcenter.ufl.edu/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process/

Note: Syllabus and contents subject to change as needed to meet course objectives and requirements.