NS 3326 Naval Weapons Systems

Spring 2027, Section A
3.0 Credits

Course Location and Meeting
Tuesday/Thursday, 0930-1045
O'Keefe Building, Second Floor, Navy Classroom (Room 210)

Instructor	**Email**	**Office Hours & Location**
LT Robert Guild	rbguildjr@gatech.edu	O'Keefe, Room 212G M, W 0900-1000 or by appointment

General Information

Course Description

This course is designed to develop and broaden the student's understanding of basic engineering concepts and principles applied in naval engineering plants. The course will provide students with an understanding of naval engineering concepts that will be applied first-hand while on summer cruise in preparation for their division officer tours. It is not the intent of this course to cover each area in great detail, but rather to create a sound foundational understanding of the engineering principles at work on naval platforms.

Learning Objectives

- Demonstrate Watchstanding and Documentation Skills
  Demonstrate an understanding of proper watch relief and maintenance of accurate engineering logs.
- Communicate Effectively in Professional Contexts
  Deliver clear oral briefings and technical reports using Navy standards.
- Comprehend Naval Safety and Administrative Practices
  Articulate how safety programs are implemented and maintenance appropriately documented on naval vessels.
- Understand Core Engineering Principles
  Apply concepts of work, power, efficiency, and fluid dynamics to propulsion and auxiliary systems.
- Analyze and Compare Propulsion Systems
  Explain the operation and safety principles of steam, nuclear, diesel, and gas turbine plants.
- Integrate Auxiliary and Electrical Systems
  Describe hydraulic, pneumatic, distilling, refrigeration systems and electrical power generation/distribution within the context of naval engineering plants.
- Evaluate Ship Design and Stability
  Demonstrate ability to assess structural integrity, stability factors, and seaworthiness.
- Understand Damage Control and Safety Procedures

Demonstrate understanding firefighting, flooding countermeasures, and use of damage control equipment.

- Comprehend Maintenance and Material Management Standards
  Comprehend the Navy 3M system and planned maintenance procedures.

Course Texts

(1) Carr, Matthew A. Principles of Naval Engineering: Propulsion and Auxiliary Systems. Annapolis, MD. Naval Institute Press, 2012. (BLUE)

(2) Blank, David A., Bock, Arthur E. , and Richardson, David J. Introduction to Naval Engineering, 2nd Ed. Annapolis, MD: Naval Institute Press, 1985. (GREEN)

(3) Naval Education and Training Command. Principles of Naval Engineering. NAVEDTRA 12960. Washington D.C.: Government Printing Office, 1992. (WHITE)

*Course texts are loaned to students but are subject to availability with priority going to NROTC students.

Course Learning Management Software

canvas.gatech.edu

Grading

Assignment	Date	Weight (Points)
Quizzes	N/A	100
Propulsion Project	12MAR/19MAR	200
Exam I	10FEB	200
Exam II	07APR	200
Final Oral Board	07MAY	300
Total		**1000**

Description of Graded Components

Quizzes

Quizzes will occur at my discretion and will cover any material discussed or read. Generally, a short quiz will take place each class meeting period. The format will always be short answer. The lowest four quiz scores will be dropped.

Tests

All tests will be conducted in class and will cover any material discussed or read.

Propulsion Project

In small groups, students will design, analyze, and present a conceptual naval engineering plant for a surface, subsurface, or auxiliary vessel, applying principles from thermodynamics, propulsion, and auxiliary systems.

Final Oral Board

The final oral boards will be given at the end of the course, individually. The student is expected to answer course related questions with high accuracy, to include drawings, simple engineering math problems, and large course concepts.

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

No grades will be curved. Final grades will be rounded up if within 0.50% of the next grade.

Regrading

Regrading must be requested via email within 24 hours of an assignment being returned. Regrade requests cannot be submitted for any grades higher than 80%. The request should stipulate the issue of concern and will typically be honored only in cases of an obvious oversight on the part of the grader. A regrade will constitute a complete reassessment of the concerned portion; the score will not always increase.

Late/Missed Assignments

Any assignment not submitted on time or an assessment not begun on time due to an unexcused absence will result in a loss of 10% from the assignment score for each day late. Assignments not submitted or made up within three days will not be accepted for any credit. An assignment submitted, or an assessment begun, one second after the scheduled time constitutes late submission of one day and so forth for every 24-hour period thereafter. Refer to the attendance policy for assignments missed due to institute approved absences.

Late quiz submission or make-up will not be permitted unless due to an institute approved absence as outlined in the attendance policy. Note that the lowest four quizzes are dropped.

Course Expectations & Guidelines

Academic Integrity

Cheating, plagiarism, and all forms of academic dishonesty are expressly forbidden in this class, and by the university's Honor Code (http://honor.gatech.edu/content/2/thehonor-code). Any form of cheating will immediately earn you a failing grade for the assignment, and I will pursue further disciplinary actions according to Georgia Tech's policies and procedures (see

http://www.policylibrary.gatech.edu/student-affairs/academic-honor-code#Article_II:_Academic_Honor_Code for more information on this).

Academic misconduct is any act that does or could improperly distort Student grades or other Student academic records. Such acts include but need not be limited to the following:

- Unauthorized Access: Possessing, using, or exchanging improperly acquired written or verbal information in the preparation of a problem set, report, essay, examination, or other academic assignment.
- Unauthorized Collaboration: Unauthorized interaction with another Student or Students in the fulfillment of academic requirements.
- Plagiarism: Submission of material that is wholly or substantially identical to that created or published by another person or persons, without adequate credit notations indicating the authorship.
- False Claims of Performance: False claims for work that has been submitted by a Student.
- Grade Alteration: Alteration of any academic grade or rating so as to obtain unearned academic credit.
- Deliberate Falsification: Deliberate falsification of a written or verbal statement of fact to a Faculty member and/or Institute Official, so as to obtain unearned academic credit.
- Forgery: Forgery, alteration, or misuse of any Institute document relating to the academic status of the Student.
- Distortion: Any act that distorts or could distort grades or other academic records.

Faculty are responsible for the academic integrity of their classroom. If I have reason to believe that a breach of the Honor Code has been committed, I am obligated to report the offense to Student Honor Committee and the unit chain of command.

The flagrancy of the violation determines which course of action the instructor or student is expected to follow. The option of warning the student personally is open to the instructor only in the event of minor suspicion or if there is no evidence available. If suspicion is strong or if evidence is available, the instructor is obligated to report the incident to the Student Honor Committee and the unit chain of command. Any NROTC midshipman suspected of cheating or plagiarism will be subject to a Performance Review Board and potential disenrollment.

Accommodation for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or http://disabilityservices.gatech.edu/, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible to set up a time to discuss your learning needs.

Attendance

Students are responsible for all material covered in their absences, and they are responsible for the academic consequences of their absences. Students should discuss planned absences with their instructors as soon as possible after the beginning of an academic term.

All lecture slides will be posted to the course canvas page following the lecture.

In the event of an illness that requires medical attention, students are responsible for contacting the Office of the Vice President for Student Life and Dean of Students as soon as possible to report the medical issue or emergency, providing dated documentation from a medical professional and requesting assistance in notifying their instructors.

Students who are absent because of participation in approved Institute activities (i.e. field trips, professional conferences, athletic events) will be permitted to make up the work missed. Approval of such activities will be granted by the Student Academic and Financial Affairs Committee of the Academic Senate, and statement of the approved absence may be obtained from the Office of the Registrar.

I respect your right to observe your religion and will do what I can to accommodate your needs. With this in mind, you are permitted to be absent from class to take part in religious observances. For planning purposes, I ask that you provide me with written notice of your upcoming absence within the first two weeks of class. For more information on Georgia Tech's policy regarding student rights and responsibilities around planned absences from class, please see http://catalog.gatech.edu/rules/4/.

Communicating all absences is key to success.

Confidentiality of Student Information

All faculty must report allegations of sexual misconduct and intimate partner violence to the Title IX Coordinator. In addition, all faculty are obligated to report any allegations of discrimination to the Office of Human Resources. I encourage you to talk with me about an incident if you think I can be helpful—I just want you to understand my reporting obligations before doing so.

Honor Code

All students are expected to abide by the Georgia Tech Honor Code, and abide by the standards of the US Navy. For students participating in the Naval Reserve Officers Training Corps, violations of academic integrity may have professional consequences to include a Performance Review Board and potential disenrollment from the program with forfeiture of all benefits.

Collaboration, Group Work, and use of Generative AI

Students are encouraged to discuss class content and ask each other questions. However, quizzes and exams shall not be shared.

In this course, the use of Generative AI tools is encouraged as part of your learning and creative process. These tools can support brainstorming, revising drafts, exploring alternative perspectives, and practicing communication with emerging technologies. However, responsible use is expected.

All submitted work must include a brief AI Usage Statement outlining:
· Which tools were used
· When they were used
· What prompts or questions were given
· How the AI output informed or shaped your final submission
You are expected to critically engage with any AI-generated content and ensure your final work reflects your own understanding and academic voice. Generative AI should never be used to fabricate data, cite non-existent sources, or bypass learning objectives. Use of Generative AI must comply with Georgia Tech's Honor Code and academic integrity guidelines.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Student Use of Mobile Devices and Laptops in the Classroom

Cellphones shall not be used in the classroom. Laptops may be used at my discretion. If you have a need to take notes on a computer, send me an email and we will figure out a solution on a case-by-case basis.

Food and Drink in the classroom

No food is permitted in the classroom. Please only have sealable drinks.

Uniform and Appearance

Midshipmen shall arrive to class in the uniform of the day and well-groomed. I ask civilian students to adhere to a business-casual dress code.

Campus Resources for Students

The mental health of my students is one of my top priorities. In the event you do need help, please reach out to the Counseling Center at Georgia Tech. While I am willing and able to be a resource, I am required to report on anything I learn about that may threaten you or others in any way. A list of resources for undergraduate students' academic success and information about advising can be found at Success at Tech

Teaching Philosophy

I want to focus on the following attributes over my time teaching at Georgia Tech. You will find these exceptionally important when you go out to the fleet, in my experience. I will abide by these and I ask that you try to as well.

Humility

None of us ever know everything – there is always something we can work and improve on. Humility is also a matter of respect. Respect the learning process, and be self-aware enough to know that none of us have it all figured out.

Communication

Ensure that we are always on the same page. If we aren't, that's a problem! If you master this skill here, you will be ahead of your peers in the fleet. Make sure that I am up-to-date on things you think I need to know about, which is a skill in itself. I have an open door policy.

Patience

Be respectful when others are sharing opinions. Be kind in the face of adversity. You will need plenty of patience once you commission. Leading sailors is a blessing but can be extremely frustrating as well.

I hope you practice these attributes and join me in having a successful semester.

Submitted: Robert Guild
R. B. GUILD, LT, USN

Approved: _____
H. S. VASQUEZ, CAPT, USN

Course Schedule

Date	Topic	Reading	Notes
12 Jan	Principles of Measurement	Syllabus / WHITE Ch. 7	Intro + Book Issue
14 Jan	Energy + Heat Transfer	GREEN Section 2.5	
19 Jan	Thermodynamic Processes I	BLUE Section 1.15	MLK Holiday (18JAN)
21 Jan	Thermodynamic Processes II	BLUE Section 1.15	Project Intro
26 Jan	Auxiliary Systems		
28 Jan	Steam Turbines	GREEN Pg. 115-135	
02 Feb	Condensate and Feed Systems	WHITE Ch. 13	
04 Feb	Main Steam Cycle	GREEN Pg. 115-135	Exam Review
09 Feb	**Exam I**		
11 Feb	Nuclear Fundamentals	BLUE Ch. 8	
16 Feb	Diesel Engine Theory	GREEN Pg. 195-210	
18 Feb	Gas Turbine Theory	GREEN Ch. 12	
23 Feb	Propulsion Train Components	WHITE Ch. 5	
25 Feb	Compressed Air Systems		
02 Mar	Enrichment Activity I		KSU Spring Break
04 Mar	**Propulsion Design Project Presentations I**		KSU Spring Break
09 Mar	No Class		GT Spring Break
11 Mar	No Class		GT Spring Break
16 Mar	Enrichment Activity II		GSU Spring Break
18 Mar	**Propulsion Design Project Presentations II**		GSU Spring Break
23 Mar	Distilling Plants and Hydraulic Systems	BLUE Ch. 10 BLUE Ch. 3	
25 Mar	Refrigeration and Air Conditioning Systems	GREEN Ch. 19	
30 Mar	Fundamental Electrical Theory	GREEN Ch. 16	

November 2, 2026

(Subject to Change)

Date	Topic	Reading	Notes
01 Apr	Shipboard Electrical Distribution	GREEN Ch. 17	Exam Review
06 Apr	**Exam II**		
08 Apr	3M and Naval Supply System		
13 Apr	Engineering Documentation and Tagouts	GREEN Ch. 9	
15 Apr	Damage Control Systems and Equipment	WHITE Ch. 4	
20 Apr	Principles of Stability		
22 Apr	Ship Design and Engineering		Oral Board Review
27-Apr	Engineering Logs and Records		Oral Board Practice
6-May	**Final Oral Board**		