



## Massachusetts Maritime Academy

SHIP CONSTRUCTION

COURSE: MT-2141 (CREDITS: 3)

FALL SEMESTER ACADEMIC YEAR 2022

COURSE LEVEL: UNDERGRADUATE

Assistant Professor    Lieutenant Albion Cassius Llewellyn  
Office                    Bresnahan 303  
Phone                    (508) 830 5434  
Mobile                   (508) 685 4563  
Email                    [allewellyn@maritime.edu](mailto:allewellyn@maritime.edu)  
Department            Marine Transportation

### Class Location & Time

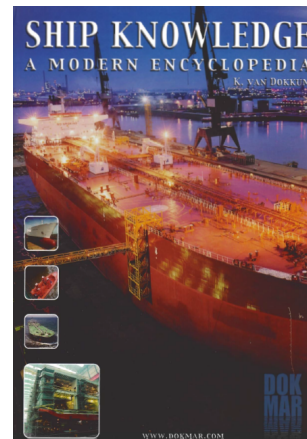
<b>SECTION</b>	<b>Location</b>	<b>DAYS</b>	<b>TIME</b>
MT-2141-14	Bresnahan 303	Mon, Wed & Fri	1100-1150
MT-2141-16	Bresnahan 301	Mon, Wed & Fri	1300-1350

## Required Text



### **Ships Construction**

D. J. Eyres  
M.Sc., F.R.I.N.A.  
Formerly Lecturer in Naval Architecture,  
Department of Maritime Studies,  
Plymouth Polytechnic, (now University  
of Plymouth)  
G. J. Bruce  
M.B.A, F.R.I.N.A., MSNAME.  
Formerly Professor of Shiprepair and  
Conversion,  
School of Marine Science and  
Technology, Newcastle University



### **Ships Knowledge** *Ships Design, Construction And Operation* **9thEd**

**Author:** Klass van Dokkum

**Publisher:** Dokmar Maritime  
Publisher BV

## **Course Description**

Ship Construction (MT-2141) meets the criteria for Training, Certification and Watch-keeping (STCW) and United States Coast Guard. This course will give the students a basic knowledge of ship construction and design, the principal structural members of a ship, and the proper nomenclature for the various components taught in this course. Construction materials and fabrication techniques will be studied. Students will be taught to use ship's plans and the deadweight scale to extract pertinent data. The history of ship's development will be discussed, with a focus on the various tonnages used as a measurement of a ship's size and capacity. Common loading conditions and terms will be taught and proved a base of knowledge for discussion in other courses and use in related maritime industries

This course gives students a comprehensive operational understanding of ship's construction. The course is a prerequisite for Stability and Trim (MT4241) and is designed to prepare the student to successfully pass portions of the USCG examination.

Ship Construction also provides a broad appreciation of the science of naval architecture, explaining the subject in physical rather than in mathematical terms. The student will gain an operational understanding of the ship construction process including the development of design specifications, principle structural design components, materials and strengths, welding, cutting, and structural terminology.

Students are expected to learn about the dynamic forces affecting a ship. They will be introduced to national and international maritime laws and regulatory bodies that govern ship operation and their construction. Students will also gain a better understanding of critical components, major shipboard equipment, and systems. In addition, the student will gain an introductory level concept of vessel stability, hydrostatics forces, and the stresses it may incur due to improper or poor loading.

## **Course requirements & prerequisites**

This is a three-credit hour course. There are no college-level prerequisites required however; cadets must be able to comprehend, read and write English.

## **Teaching Facilities and Equipment**

The Ship Construction (MT-2141) course will be presented in the Massachusetts Maritime Academy's academic facilities BR 302 and HA205. Lectures will be presented via audiovisual classroom setting, practical demonstration onboard training ship, and course material will be posted on Blackboard.

## **Case Study Presentation**

Inductive reasoning has proven to be a very effective method of learning. Most students learn better through real-life scenarios. Each student will be assigned to a group, each group member will collectively analyze an incident/ accident and present their findings to the class. This exercise is designed to help build upon each student's problem-solving and analytical skills. During the presentation, each group should clearly ascertain

- 1) The issue/ problem

- 2) Events leading up to the problem
- 3) Key factors and event
- 4) Lessons learned
- 5) Make a recommendation

Note: The presentations will be graded collectively for content. However, each presenter will also be graded individually.

### **Lecture Policies**

Cadets will wear the appropriate uniform of the day in lecture classrooms. Commuter students should wear appropriate clothing.

Eating, drinking, and the use of tobacco products are prohibited from all classes. The use of cell phones are disallowed; however, personal computers or tablets are permitted ONLY for course material. If students are caught using their cell phones, browsing social media, or websites not related to the discussion will either be placed on report or evicted from class. If students are justifiably evicted, they will not receive credit for that day.

### **Learning Disabilities**

Massachusetts Maritime Academy, upon request, accommodations to students with documented learning disabilities. The ADA Coordinator, Asst. Dean Elaine Craghead, evaluates the documentation provided, determines appropriate services, and is available to discuss accommodations with students. The Disability Resources office is located in the Academic Resource Center, ABSIC 320. Students can drop in during normal business hours, M-F 0800-1600, or call x5120, or email [ADAcpliance@maritime.edu](mailto:ADAcpliance@maritime.edu).

### **Sexual Harassment and Misconduct**

Our school is committed to fostering a safe, productive learning environment. Title IX and our school policy prohibit discrimination on the basis of sex. Sexual misconduct including harassment, domestic and dating violence, sexual assault, and stalking is also prohibited at our school.

Our school encourages anyone experiencing sexual misconduct to talk to someone about what happened, so they can get the support they need and our school can respond appropriately. If you wish to speak confidentially about an incident of sexual misconduct, want more information about filing a report, or have questions about school policies and procedures, please contact our Title IX Coordinator, which can be found on our school's website.

### **References (R)**

- R1 The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978), Table A - II/1 (d)
- R2 The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978), Table A – VI-4 (d)/I (d)
- R3 Code of Federal Regulations 46 CFR 11.910-02

## **Textbooks (T)**

- T1 D.J. Eyres, G.J. Bruce, *Ship Construction, 7<sup>th</sup> Edition*, Butterworth-Heinemann, (ISBN-978-0-08-097239-8)
- T2 Ships Knowledge Ships Design, Construction and Operation 9<sup>th</sup> Edition  
Author: Klaas Van Dokkum

## **Student learning expectations:**

- Understand nomenclature (Ship talk)
- Understand the basic design and dimensions of ships
- Gain an operational understanding of lines, drawings, and plans
- Be able to distinguish the different categories of ships such as:
  - ◆ Bulk carriers
  - ◆ Container ships
  - ◆ Tankers
  - ◆ Liquid Petroleum Gas (LNG) carriers
  - ◆ Mobile Offshore Drilling Units (MODU)
- Understand the development of block erection, strength, and material associated with shipbuilding
- Understand the function of classification societies and the International Maritime Organization (IMO)
- Examine the different materials used to construct ships and methods of testing them
- Understand the dynamic and hydrodynamic stress acting on the vessel
- Gain an operational understanding of machining, welding, and cutting practices used in modern shipyards.
- Understand the process of production and preparation of:
  - ◆ Plate section
  - ◆ Shell plating
  - ◆ Framing
  - ◆ Corrosion prevention and mitigation
  - ◆ Structure and block erection
  - ◆ Bulkheads and pillars
  - ◆ Bottom structure
  - ◆ Fore and aft structure
- Understand the process and method of vessel dry-docking and launching
- Sustainable shipping operation and environmental regulation

## **Examinations Grading and Attendance**

Ship Construction (MT-2141) is an STCW knowledge-based course requiring a minimum passing grade of 70%. If students are unable to achieve the mentioned passing grade, it may result in failure of the course. orientation

Regular tests on lecture material, reading assignments, PowerPoint® presentation notes, and classroom handouts will be administered. You are expected to complete all assigned reading and are accountable for any information found in the lecture material, reading assignments, PowerPoint® presentation notes, and classroom handouts. The final examination will be held during the designated exam time and day of final exam week in December. *There will be NO early or late final examinations for any reason.*

Absence for medical court, legal obligation, and varsity are permitted however students are responsible for the course material. Disciplinary action may be taken for unauthorized absences **and anyone who has more than four class-long, unexcused absences will receive an "F" grade for the COURSE.**

Final Grade Computation:

Assignments & Quizzes	25%
Presentation	15%
Exams	60%
	<hr/>
	100%

The following is a breakdown of the final course grading:

93.0 – 100	<b>A</b>
90.0 – 92.9	<b>A-</b>
87.0 – 89.9	<b>B+</b>
83.0 – 86.9	<b>B</b>
80.0 – 82.9	<b>B-</b>
77.0 – 79.9	<b>C+</b>
73.0 – 76.9	<b>C</b>
70.0 – 72.9	<b>C-</b>
<b>67.0 – 69.9</b>	<b>D+</b>
<b>63.0 – 66.9</b>	<b>D</b>
<b>60.0 – 62.9</b>	<b>D-</b>

Below 60.0	<b>F</b>
Incomplete	<b>I</b>

### **Syllabus Changes**

The syllabus and course schedule is tentative and may be adjusted as required to meet the goals and objectives of the course. Notice of changes will be made to students as soon as possible.

Cited Literature (B)

- B1 Gillmer, T. C., and B. Johnson. Introduction to Naval Architecture. Annapolis, MD: Naval Institute Press, 1982. Third printing, 1987. ISBN: 9780870213182.
- B2 Burcher, R., and L. Rydill. Concepts in Submarine Design. Cambridge: Cambridge University Press, January 28, 1994. ISBN: 9780521416818.
- B3 Tupper, E. Introduction to Naval Architecture. 3rd ed. Jersey City, NJ: Society of Naval Architects and Marine Engineers, April 1, 1996. ISBN: 9780939773213.
- B4 Lewis, E. V., ed. Principles of Naval Architecture. Jersey City, NJ: Society of Naval Architects and Marine Engineers, 1988. ISBN: 9789991181417.
- B5 Murphy, II, J.S., *Deck Officer Study Guide, Volume 1, Deck General, 2011 ed.*, (Buzzards Bay, MA: Academy Publishing Company, 2011)
- B6 Kemp & Young and David, Eyres, *Ship Construction Sketch & Notes 2<sup>nd</sup> ed*: Butterwoth – Heinemann An imprint of Elsevier Science, 225 Wildwood Avenue, Wodburn Ma 01801,
- B6 Dokkum Klaas Ship Knowledge Ship Design Construction and Operation 9<sup>th</sup> ED Dokmar Maritime Publishers BV, 2016