NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF MECHANICAL ENGINEERING
NAVAL ENGINEERING PROGRAM

MV461 – NAVAL PROJECTS I

1. GENERAL INFORMATION

COURSE NAME	**:**	MV 461 Naval Projects I
SEMESTER	**:**	9
CREDITS	**:**	4
HOURS PER WEEK	**:**	6
PREREQUISITE	**:**	Shipbuilding Technology II
CONDITION	**:**	Mandatory

2. OBJECTIVES

a) GENERAL OBJECTIVES

At the end of the course the student will be able to size, perform the calculation and selection of structural members, plates, gussets bonding, welding, protective elements and equipment of a Dinghy NO propelled; making use of knowledge, procedures and techniques of calculations made during the previous eight cycles, reinforced those acquired during this.

Likewise, the student should be able to develop a personal work where applicable knowledge, creativity and originality in the objective to be evaluated with the presentation of the plans in each of the four practices scheduled.

b) Specific objectives

After completing the course the student should be able to:

1. Dimensioning the vessel according to the characteristics of its function.
2. Draw Lines Form and calculate Hydrostatic curves and Crusades of the boat
3. Calculate and select the structural elements and hull plates
4. Outlining the systems required for smooth operation at sea
5. Prepare the preliminary TRIM AND STABILITY BOOKLET to see the theoretical behavior of the boat so we can correct defects before putting it into operation
6. Develop plans required by the Maritime Authority to obtain construction licenses, construction and equipment.
7. Make a basic budget of the vessel designed.

3. SUMMARY

In this course, students will have the opportunity to develop the first professional work with the development of forms of the boat, calculations and drawings, as well as know and apply the rules of Sorters Companies, Maritime Authority and Conventions international of which Peru is a member.
The project to develop is a “1200 m3 FRESH WATER BARGE” with accommodation for 4 crew, pumps and pipes for loading and unloading.

4. PROGRAM

WEEK	CONTENT	PROGRAMMING EVALUATION
First week Chapter 1: INTRODUCTION 06 to 11 of 04-09	General concepts applicable to all types of craft, naval terminology difference between Insurance Companies and Qualifying Companies, Determining the type of vessel and its ability to develop	Next week's task: to determine the main dimensions of the vessel proposal.
Second week Episode 2: DIMENSIONS AND FORMS	How to size the length, breadth, depth and draft of the boat and apply the concepts of round of beam, standard sheer, freeboard, dead rise, etc.	Ongoing assessment with random questions on the subject of the previous class and 1st qualified practice.
Third week Chapter 3: SUBDIVISION	Determination of cargo compartments and buoyancy, location of transverse watertight bulkheads and / or longitudinal.	**First practice qualified. Present plans Form Lines**
Fourth week Chapter 4: GENERAL STRUCTURE	Types of structure: Transversal, Longitudinal and mixed. primary and secondary elements. Girders, stringers, deck longitudinals, side and bottom, bulkheads, web frames, etc.	Ongoing assessment with random questions on the subject of the previous class and first practice quialified
Fifth week Chapter 5: PLATES	Calculate the thickness of cover plates, Sides, Bottom, transverse bulkheads, longitudinal bulkheads and select them according to existing excess thicknesses in the local market.	**Second qualifying practice. General Structure submit drawings, frames and bulkheads, Structural Details**
Sixth Week Chapter 6: Structural calculations	Chosen the type of structure to develop and plate thicknesses; outline a primary distribution of primary and secondary structural elements and applying the rules	Ongoing assessment with random questions on the subject of the previous class and 2nd

	in use, calculate and choose each of the elements mentioned in the previous chapter.	practice
Seventh Week Chapter 7: VESSEL BEAM	Check the structural behavior of the beam vacuum vessel and cargo, calculating the modulus of the midship and compare it to the minimum required by the rules in use.	Ongoing assessment with random questions on the subject of the previous class and 2nd practice
Eighth Week	MID-TERM EXAM WEEK	----
Ninth Week Chapter 8: Superstructures and deckhouses	Location and dimensions according to accommodation needs. Calculation of plates deck, sides, front, rear and interior and their respective reinforcements. Guidelines for calculating the G.C. of the vessel and make the Trim and Stability Booklet.	Ongoing assessment with random questions on the subject of the previous class and 3rd Qualifying practice
tenth Week Chapter 9: WELDING	General concepts of butt joints, overlap, T, zigzag, chain, steak, Bevel, etc. When a weld is continuous and when intermittent. Types of electrodes.	Ongoing assessment with random questions on the subject of the previous class and 3rd Qualifying practice
Eleventh Week Chapter 10: LOADING SYSTEMS.	Calculation and pipe dimensions, Manifold, bulkhead feedthrough, suctions, filters, flanges, bolts, etc ..	**Third Qualifying Practice. Present General Arrangement drawings and Pumping System and Block Diagram**
Twelfth Week Chapter 11: -BILGE AND FIRE SYSTEM -FUEL SYSTEM -FRESHWATER AND SANITARY SYSTEMS	Determining the minimum recommended flow rate, calculating the main pipe, branches, manifold, bottom outlets, filters, valves, shock, etc.	Ongoing assessment with random questions on the subject of the previous class and practice 4ta practice

Thirteenth Week Chapter 12: -ELECTRIC SYSTEM -MOORING AND ANCHORING SYSTEM	Genset selection depending on the needs of the boat. Lighting board, Navigation Lights Force, Emergency, cables, fuses, etc. Selecting anchors, chains, shackles, locker chains, etc.	**Fourth qualified practice: Presentation of the Trim and stability booklet.**
Fourteenth Week Chapter Chapter 13: HULL PROTECTION	Against environmental corrosion: Sandblasting, painting Zinc Anodes. Rubbing strake.	Ongoing assessment with random questions on the subject of the previous class.
Fifteenth Week Chapter Chapter 14: MISCELLANEOUS	- Diesel engines cooling by keel cooler. - Engine room ventilation. - Determination of costs.	Ongoing assessment with random questions on the subject of the previous class.
Sixteenth Week July 20 to 250de	FINAL EXAM WEEK IN FIM	----
Seventeenth Week	SUBSTITUTE EXAM WEEK IN FIM	----

5. PROCESS OF TEACHING - LEARNING

1. Classes will be the master type.
2. During class parts of a boat as an example of application they will be resolved.
3. Use of Standards Classification American Bureau of Shipping "STEEL VESSELS UNDER 61m IN LENGTH" and commercial catalogs for calculation and selection of machine elements will be made
4. Consultations concerning the topic developing as a group and not individually will be resolved.

6. TEACHING RESOURCES - LEARNING

6.1 Didactic means or procedures

- Exhibition of theoretical bases in classroom
- Presentation of real cases and technical discussions around it
- Visits to a shipyard.
- Student participation in consultations at random to be made before each class ..

6.2 Materials Process Teaching – Learning

- Course reprints accumulated during my years of experience.
- Teacher Notes
- oral presentation of "problem cases" during manufacture and solution.

7. EVALUATION

7.1 Evaluation System

1. The course has 4 qualifying practices and none of them can be canceled because the works are complementary and this can not be unfinished. The average grade is on the four notes, corresponding to "0" to which one of them does not present.
2. All questions asked in class will be taken into account for the final score.
3. The course attendance is compulsory and when absences exceed 30% of the classes, the student will be automatically disapproved according to the existing Regulation
4. The tolerance of admission to classes is 15 minutes maximum, from the time fixed for its beginning and the student can not enter for any reason, being able to do so only at the beginning of the second hour.

8. BIBLIOGRAPHIC REFERENCES

8.1 Text

- "STEEL VESSELS UNDER 61 METERS IN LENGTH 2002
- PRINCIPLES OF NAVAL ARCHITECTURE ANTONIO MANDELLI
- GUIDE TO STRUCTURE OF SHIPS AMELIO