

**Naval Architecture Course: EMNA 102**

Module code	Module name	Credit Value
EMVA 102	Naval Architecture 102	14

**Purpose**

The module develops learners' understanding of marine terminology and the basics of ship stability and design.

**Learning outcomes**

On successful completion of this module the learners will be able to:

- Understand and use basic maritime and vessel terminology
- Understand the broad history of the use of vessels and their changes in design through time and the reasons for this
- Explain the factors influencing displacement and buoyancy (vessel gross displacement, hull dimensions)
- Calculate displaced volume of simple floating bodies
- Explain the factors influencing buoyancy and reserve buoyancy
- Explain the effect of water density of flotation and stability
- Calculate centre of buoyancy of simple floating body
- Explain the concept of load lines and draft marks and their relationship to stability
- Explain basic vessel stability
- Explain how inclining experiments are carried out and their purpose (GM, BM etc.)
- Calculate the stability of a simple floating body
- Calculate metacentric height of simple floating bodies
- Explain seakeeping combined with the effect of cargo and free surfaces in tanks
- Explain the resistance to movement of a vessel moving through water (draft and hull configuration)
- Explain the effect of vessel hull appendages on resistance (bulbous bow, stability tabs and rudder)
- Explain the reasons for a vessels attitude when floating (heel, trim and list)
- Explain the stresses on a ship's hull due to loading and sea conditions (hogging and sagging)
- Calculate the stresses imposed on a floating body due to hogging and sagging
- Explain basic vessel hull construction materials (wood, steel, aluminium, GRP, etc)
- Explain and describe corrosion of steel structures (cathodic protection)
- Explain the different types of ships built/designed of the reasons for their different design philosophies

**Core content (as per prospectus/ or refined)**

- Understanding of marine terminology
- Understand major factors affecting vessel stability
- Understand major forces applied to a floating body
- Application of advanced CAD techniques (functional design)

**Assessment**

Year Mark:

Test 1	30%
Assignment 1	20%
Test 2	30%
Assignment 2	20%

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Examination: 1 x 3hr paper

Final mark = (year mark x 0.4) + (Examination mark x 0.6)

Minimum pass mark = 50%

### **Moderation**

Internal

### **Pre-requisites for this module**

PHYV 101 and MATV 101

### **Co-requisites for this module**