|  |  |
| --- | --- |
| Course Title | **Ship Stability and Strength**  |
| Course Code | MANS-321 |
| Course Type | Required |
| Level | 1st Cycle |
| Year / Semester | 3rd Year, Spring Semester  |
| Teacher’s Name |  |
| ECTS | 7 | Theory | Laboratory | Simulation | Tutorial |
| 4 | 2 | --- | ---- |
| Course Purpose and Objectives | The main objectives of the course are to:* introduce the theories and factors that influence the ship’s trim and stability
* display the measures required to maintain the trim and stability
* exhibit the stability tables and diagrams used on board
* demonstrate the equipment and software to calculate the ship’s trim and stability
* explain the actions to be taken in the event of partial loss of ship’s integrity
* analyze the ship’s structural strength at sea and in port
 |
| Learning Outcomes | After completion of the course students are expected to be able to: * comprehend the theories and factors that influence the ship’s trim and stability
* take all the necessary measures to maintain ship’s trim and stability
* employ the stability tables and diagrams existing on board to perform trim and stability calculations
* utilize the equipment and software available on board to obtain results on trim and stability questions
* implement the proper corrective measures in the event of partial loss of the ship’s integrity
* calculate the vessel’s stresses
 |
| Prerequisites | None | Required | None |
| Course Content | * Determination of various centers (gravity, buoyancy, etc.)
* Displacement, density, specific gravity
* Trim and stability tables and diagrams
* Transverse stability
* Free surface inertia moments effect
* Large angles stability
* Dynamic stability
* Longitudinal stability
* Various stability issues
* Vessel’s stresses
* Bending - torsional moments
* Shearing forces
* Use of relevant software
* Damage stability
* Relevant check lists and forms
 |
| Teaching Methodology | Lectures, in-class assignments, sound and video equipment, computer, projector, relevant software, cargo handling simulator  |
| Bibliography | 1. **Required Textbooks/Reading:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Authors** | **Title** | **Publisher** | **Year** | **ISBN** |
| Barrass, B., Derrett, D.R.  | Ship stability for masters and mates | Elsevier  | 2006 | 987-0-7506-6784-5 |

1. **Recommended Textbooks/Reading:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Authors** | **Title** | **Publisher** | **Year** | **ISBN** |
| IMO | International code on intact stability | IMO | 2009 | 978-92-801-15062 |
| Clark, I. C.  | The management of merchant ship stability, trim and strength  | The nautical institute | 2002 | 1-87-0077-59-8 |

 |
| Assessment | Homework, in-class assignments, projects, exams, final exam. |
| Language | English  |