Ship Stability

Basic Course Specification		
Course Title	**Course Code**	**Program on which the course is given**
Ship Stability	BS222	Bachelor
Academic Year	**Specialization** (units of study)	**Pre-Requisites**
2020-2021	Theoretical (2 hrs/week) Application (2 hrs/week) Credit 3 Cr	BS 121

Overall Course Objectives

The course provides the student with baseline of information and awareness in ship stability and provides students with the ability and skills to keep his vessel under favorable condition of loading and stability. also enable students to assess the ship stability condition as a preparatory course to meet the mandatory requirements for knowledge, understanding and proficiency in Table A-II/1 of STCW 78, as amended, "Manila 2010" for the function; Controlling the Operation of the Ship and Care for Persons on Board at the Operational Level, and in the light ofIMO model courses 1.17 and 7.03.

Course Learning Outcomes. By successful completion of the course each student will be able to:

Topic	Linking to PLOs	Midterm Assessment	12th Week Assessment	Class Activities	Final Exam
1. Recognize the importance of change of density on ships draft and displacement	a, b	√			√
2. Classify the different transverse statically stability conditions.	a, b	√			√
3. Calculate how list and trim can affect the stability criteria of the ship.	a, b		√		√
4. Demonstrate how vertical movement of the center of gravity can affect the stability of the ship.	a, b		√		√
5. Conclude the corrective action to eliminate free surface effect of liquids	b,d			√	
6. Analyze the hydrostatic curves and the curves of stoical stability to determine the moment of stoical stability	e,f				√

Course Content

Lec./ Week #	Topic	Hrs. #	Theoretical	Application
1	• Introduction • Density and specific Gravity	4	2	2
2	• Laws of flotation • Buoyancy	4	2	2
3	• Displacement and Group weights • Effect of density on draft and displacement	4	2	2

4	• Fresh Water Allowance and dock water Allowance • Form Coefficients	4	2	2
5	• Transverse Statical Stability • Stable, Unstable and Neutral equilibriums	4	2	2
6	• Negative GM and angle of Loll • Effect of free surface of liquid on ship's stability	4	2	2
7	**Revision** **7th Week Exam**	**4**	**2**	**2**
8	• Final KG calculations • Reasons for raise in center of gravity "G"	4	2	2
9	• Ship's transverse stability • Angle of List consideration	4	2	2
10	• Angle of list calculations • Ship's longitudinal stability and the Trim	4	2	2
11	• Aspects of Trim • Trim calculations	4	2	2
12	**Revision** **12th Week Exam**	**4**	**2**	**2**
13	• Stability and hydrostatic curves • Utilizing of Stability Cross Curves	4	2	2
14	• The curve of Statical stability • Plotting the curve of Statical stability	4	2	2
15	• Actions to be Taken in the Event of Partial • General Revision	4	2	2
16	**Final Assessment**	**-**		
	Total Hours	**60**	**30**	**30**

Teaching & Learning Methods	**Facilities Required for Teaching & Learning Methods**
Explanation of the lesson contents – discussing and asking questions to interact with students – solving examples and classroom tasks.	Data show -Computer – White board

Students Assessment Methods	
Assessment Schedule	
Assessment#1	Week 7
Assessment#2	Week 12
Assessment#3	Week 16

Grading Method		
Midterm Assessment	Written exam	**30%**
12th week Assessment	Written exam	**20%**
Class Activities	Participation - Quiz	**10%**
Final Exam	Written exam	**40%**
	Total	**100 %**

Assessment criteria shall meet the standards of the STCW 78 convention "as amended"; and in the light of the related IMO model courses.	
Staff Requirements	
Master FG/ Ph.D.	
List of References	
Course Notes	**Essential Books**
Lecturers Notes	C. B .Barrass& Capt. D. R. Derrett, Ship Stability for Masters and Mates, 6th & 7th edition. OR "recent edition" London Stanford Maritime, 2012 ELSEVIER Ltd.ISBN9780750667845
Recommended Books	**Periodicals and Publications**
The Management of merchant Ship Stability, Trim & Strength	INTERNATIONAL CODE ON INTACT STABILITY, 2008 (last Edition) 2020. International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW), as amended. International Convention for the Safety of Life at Sea (SOLAS), as amended 2020 edition
Others (websites, e-books…etc)	
None	

Accreditation Bodies
*Egyptian Authority for Maritime Safety (EAMS) *European Commission (EC) *ISO (9001 – 2015) DNV-GL* *Central Evaluation and Accreditation Agency Hanover, Germany (ZEVA) *Ministry of Education (KSA) Ministry of Higher Education (Greece)* *Ministry of Higher Education (Oman) *Commission for Academic Accreditation (CAA), Ministry of higher Education (UAE) *University of Plymouth, United Kingdom (dual degree)

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