<table>
<tr><td>Course Title</td><td colspan="5">Stability – Stresses</td></tr>
<tr><td>Course Code</td><td colspan="5">MANS-321</td></tr>
<tr><td>Course Type</td><td colspan="5">Required</td></tr>
<tr><td>Level</td><td colspan="5">1st Cycle</td></tr>
<tr><td>Year / Semester</td><td colspan="5">3rd Year, Spring Semester</td></tr>
<tr><td>Teacher’s Name</td><td colspan="5">Captain. Dr. Andreas Frangos</td></tr>
<tr><td rowspan="2">ECTS</td><td rowspan="2">7</td><td>Theory</td><td>Laboratory</td><td>Simulation</td><td>Tutorial</td></tr>
<tr><td>4</td><td>2</td><td>---</td><td>----</td></tr>
<tr><td>Course Purpose and Objectives</td><td colspan="5">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</td></tr>
<tr><td>Learning Outcomes</td><td colspan="5">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</td></tr>
<tr><td>Prerequisites</td><td colspan="2">None</td><td>Required</td><td colspan="2">None</td></tr>
<tr><td>Course Content</td><td colspan="5">Determination of various centers (gravity, buoyancy, etc.)</td></tr>
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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

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<tr><td>Teaching Methodology</td><td>Lectures, in-class assignments, sound and video equipment, computer, projector, relevant software, cargo handling simulator</td></tr>
<tr><td>Bibliography</td><td>
Required Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Barrass, B., Derrett, D.R.</td><td>Ship stability for masters and mates</td><td>Elsevier</td><td>2006</td><td>987-0-7506-6784-5</td></tr>
</table>
Recommended Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>IMO</td><td>International code on intact stability</td><td>IMO</td><td>2009</td><td>978-92-801-15062</td></tr>
<tr><td>Clark, I. C.</td><td>The management of merchant ship stability, trim and strength</td><td>The nautical institute</td><td>2002</td><td>1-87-0077-59-8</td></tr>
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<tr><td>Assessment</td><td>Homework, in-class assignments, projects, exams, final exam.</td></tr>
<tr><td>Language</td><td>English</td></tr>
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