Proposal to modernise the Methodology of Teaching, Assessment/ Examination

Marine Engineering - STCW III/1 CoC	**Name of respondent, organisation, and role:**		
Competency/ Module: Marine Engineering Stability and Structure of Merchant Ships	***Competency***		
Knowledge, understanding and proficiency	**Recommendation of working group regarding the outcome and objective.**	**Rationale**	**Action required**
Outcome 1: Apply the principles of hydrostatics to solve problems relating to merchant navy vessels	Modernise	The topics below are all relevant and basic understanding of ship form & theory is essential. However, these should be taught to show how they will be used in the workplace.	Teach using loading computers or other relevant software.
1.1 Principles of Flotation, Buoyancy and Displacement	Keep	Relevant	None
1.2 Coefficients of Form	Keep	Relevant	None
1.3Tonnes per centimetre immersion TPC	Keep	Relevant	None
1.4 Small changes in draught over change in mass or density	Keep	Relevant	None
1.5 Hydrostatic Forces	Keep	Relevant	None
Outcome 2: Determine Small Angle Stability including Free Surface Effect on typical merchant navy vessel.	Modernise	The topics below are all relevant and basic understanding of ship form & theory is essential. However, these should be taught to show how they will be used in the workplace	Teach using loading computers or other relevant software.
2.1 Centre of Gravity	Modernise	We must contextualise this outcome to help candidates understand the practical aspects of how this will impact on board operations.	Bring practical application by introducing loading computers or other relevant software.

2.2 Transverse stability at small angles of heel	Keep	Relevant	None
2.3 Angle of List	Keep	Relevant	None
2.4 Free Surface Effect	Keep	Relevant	None
2.5 Effects on stability of transferring fluids within the vessel	Modernise	We must contextualise this outcome to help candidates understand the practical aspects of how this will impact on board operations.	Include how to use tank tables to find tank contents. This is useful for bunkering operations and how the ship is affected by the daily fuel consumption, as well other consumable fluids.
2.6 Centre of Gravity when loading/discharging	Keep	Relevant	None
Outcome 3: Analyse Basic Ship Construction of standard merchant ship types.	Modernise	The topics below are all relevant and basic understanding of ship form & theory is essential. However, these should be taught to show how they will be used in the workplace	Teach using loading computers or other relevant software.
3.1 Basic Ship's Geometry	Modernise	We must contextualise this outcome to help candidates understand the practical aspects of how this will impact on ship's hull.	Relate this outcome to stresses and strains in mechanical principle, so that candidates understand how the basic geometry impacts these factors.
3.2 Ship's Cross Sections	Modernise	Relevant	None
3.3 Basic Propeller Terminology	Keep	Relevant	None
3.4 Include rudder construction.	Add	Required knowledge that is relevant to this topic.	Add this outcome, ensuring a modern focus. This should include reference to energy efficiency.
Proposal submitted by:	**Any other outcomes for this competency, above and beyond STCW which would be needed due to use of modern technology and impact of future fuels onboard:**		
	Objective	Reason Why	**Action required**
Cadet Training & Modernisation Working Group	Include Human Element Factors throughout the syllabus	To provide seafarers with a contextualised understanding of the Human Element in the maritime	Raise awareness throughout the Cadet's training of the areas in which human element factors will have an impact. Recommendations on where this

		industry, showing how they can put theory into practice in the work they carry out at sea.	can be included have been noted throughout the entire syllabus. Not every template has Human Element Factor recommendations but please do add any you feel may have been missed.
Cadet Training & Modernisation Working Group	Include Data Science skills throughout the syllabus	Data Science Skills (Comprehension, Analysis, Presentation, etc...) are already required within much of the syllabus. A further, specific focus on these skills needs to be taught where relevant.	A specific topic will need to be introduced to improve Cadets' Data Science skills. Practical application of data science skills should be highlighted throughout the syllabus. Not every template has Data Science recommendations but please do add any you feel may have been missed.
Cadet Training & Modernisation Working Group	Ensure all outcomes are contextualised to help Cadets understand what they are learning in relation to what they will experience at sea.	While some outcomes are intrinsically linked to work carried out at sea, some need to be contextualised to show how they apply to work on board. Where this is the case, it is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Where outcomes do not specifically cover a topic which relates to work carried out at sea, more must be done to contextualise the outcome and make it relevant to the maritime industry, giving specific shipping examples of how the outcome may be applied in a modern shipping context. Not every template has contextualisation recommendations but please do add any you feel may have been missed.