Proposal to modernise the Methodology of Teaching, Assessment/ Examination

Nautical - STCW II/ 1 CoC	Name of respondent, organisation, and role:		
Competency/ Module: Celestial Navigation	*Competency : Plan and conduct a passage and determine position*		
Knowledge, understanding and proficiency	**Recommendation of working group regarding the outcome and objective.**	**Rationale**	**Action required**
Outcome 1: Demonstrate the use and maintenance of relevant precision instruments.	Keep	Essential	See sub-outcome actions.
1.1 Using the sextant	Keep	The sextant is a practical evolution, and the students will be able to use and operate the marine sextant to the required standard.	A practical element could be added for when the students go to sea so that they must review and practice what they learnt at sea.
1.2 Possible errors of a sextant and methods of correction	Modernise	Knowing the parts of the sextant is not relevant to understanding possible errors of sextant.	Remove teaching parts of the sextant elements.
1.3 Sextant observations	Keep	Sextant observations are still secondary means of position fixing to verify the position during trans ocean voyages.	None
1.4 Use the chronometer	Modernise	Modern chronometer does not require technical maintenance.	Remove the technical maintenance of chronometer from the syllabus.
1.5 Coordinated Universal Time (UTC), Greenwich Mean Time (GMT) and Chronometer Time	Remove	UTC, and GMT already in 2.5 Add Chronometer to 2.5	Remove
1.6 Local Mean Time (LMT), Zone Time (ZT) and Standard Time (ST)	Remove	Duplicated in 2.5	Remove
Outcome 2: Apply the principles and concepts of the celestial sphere to navigation techniques	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use	Simplify outcome 2 to be less prescriptive of the exact content to be covered. This will allow for only relevant information to be covered.

		of Celestial Navigation Computer Software.	
2.1 Key components of the celestial sphere	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.2 Use of the nautical almanac to find the Greenwich Hour Angle (GHA), Local Hour Angle (LHA) and declination of sun stars and planets	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.3 Use of nautical almanac altitude correction tables	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.4 Predicting the time of twilight, meridian passage, sunrise and sunset	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.5 Using UTC, GMT, LMT, ST and ZT and Chronometer Time	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method. Add "Chronometer Time", see action of sub-outcome 1.5.
2.6 Factors influencing the suitability of celestial bodies for sights	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.

2.7 Use of planet and star diagrams in the nautical almanac	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.8 Star charts or short method tables to pre-compute altitudes and azimuths of stars to determine availability for position fixing	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.9 NP323 star finder and identifier	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.10 Star constellations	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.11 Random and systematic errors	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
2.12 Resolution of the cocked hat	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
Outcome 3: Evaluate the accuracy of gyro and magnetic compasses using celestial objects.	Keep	Essential	See sub-outcome actions.
3.1 Calculation of compass error and deviation by means of azimuths of	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with

celestial bodies and amplitude of the sun		of Celestial Navigation Computer Software.	manual calculation as the contingency method.
3.2 Calculation of compass error using polaris	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
3.3 The reliability of compass errors obtained from celestial objects in relation to random and systematic errors	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
Outcome 4: Determine the position of a ship using a range of celestial navigation techniques.	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Simplify outcome 4 to be less prescriptive of the exact content to be covered. This will allow for only relevant information to be covered.
4.1 Use of nautical almanac to find the time of meridian passage for the sun	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
4.2 Application of TZD to declination to obtain latitude	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
4.3 Correction of true altitude of polaris to obtain position line and latitude	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
4.4 Marc St. Hilaire method (by calculation or short method tables) to obtain a position line and a point through which it passes	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with

		Software.	manual calculation as the contingency method.
4.5 Plotting position lines	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
4.6 Fix the vessel's position by means of celestial observations	Modernise	Contextualise to teach in the way that candidates will use practically on-board vessels including the use of Celestial Navigation Computer Software.	Commence the use of Celestial Navigation Computer Software as the primary use of teaching with manual calculation as the contingency method.
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 industry, showing how they can put theory into practice in the work they carry out at sea.	Raise awareness throughout the Cadet's training of the areas in which human element factors will have an impact. Recommendations on where this 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.