Corrigendum in supersession to Circular No. 04 of 2012 dated: 12.01.2012

1. Reference is invited to Annexure I and Annexure II of the DGS STCW 2010 Circular No: 04, Dated: 12.01.2012 on “Revised Course Curriculum for Four Years Degree Course In Marine Engineering”.

2. The following amendments are now being made as under:

2.1 The topic of Applied Mathematics related to Basic Engineering Science was missed out in the Course Outline (Annexure I) though being part of the syllabus. Considering the importance of this topic same is being now added to the course outline. To ensure that the underpinning knowledge imparted through this topic is adequately covered, an additional 100 hours of Classroom study are now added at serial no. 4.0 under competency No. 4 with the topic titled as “Applied Mathematics”. The Total Hours and the Grand Total hours are thus amended accordingly in revised Annexure I attached herewith.

2.2 The Syllabus (Annexure II) is amended to include additional topics including Friction under serial no. 6 (b) – Mechanics and Hydromechanics and new points of Basic Electricity and Basic Electronics are added at serial nos. 12 and 13 respectively to further augment the syllabus as suggested by the Institutes. The details of the added serial nos. are as under:

2.2.1 Friction: Necessary force applied parallel to an inclined plane to pull up or down the plane or to hold it stationary (including effect of friction). Work done at uniform speed up the plane Coefficient of friction, Friction angle. Energy and power lost due to friction in simple bearings. Kinematics. Linear motion. Graphs and equations for displacement speed, velocity and uniform accelerations. Velocity as a vector. Relative velocities in one plane only. Angular motion. Equations for displacement, velocity and uniform acceleration. Coefficient of friction, Friction angle.

Energy and power lost due to friction in simple bearings, friction in belt drive, efficiency of screw jack (square and V thread).

Centroid of composite body, area and volume (pappus theorem), simple lifting machine, graphics of load effort and load efficiency. Linear law. Velocity ratio, mechanical advantages and efficiency of the following machines: wheel and axle, differential wheel and axle, rope pulley block, differential pulley blocks, warwick screw, worm driven chain blocks and single and double purchase crab winches. Virtual work, Moment of inertia of Plane figures, Moment of Inertia of Material Bodies.
2.2.2 Basic electricity - Electric current & Electromagnetic induction:
Explain the composition of an atom. Describe the flow of current subjected to a potential difference referring to Electron flow conventional flow.
Explain materials in terms of Conductors, Insulators with examples.
Explain potential difference and electromotive force stating the symbols and units used and difference between them.
Explain what is (a) Direct current (b) Alternating current. Describe Ohm's Law.
List the factors which govern the variation of resistance of conductors Explain the effect of internal resistance to supply source and it affects (a) emf (b) terminal potential difference., Work energy and power.
State Kirchhoff's law and network theorems (a) Current law (b) Voltage law. Calculate the current flowing and voltage drop across resistors in simple circuits. Magnetism and electromagnetism, MMF, Magnetic, Flux, Reluctance, permeability, magnetic Hysteresys.
Electromagnetic Induction, Self Inductance, Mutual inductance, Faraday Laws of Electromagnetic Induction
State Flemings hand rules to determine the direction of magnetic field motion and current.

2.3 Basic electronics – Electron Theory:
Basic Electronic Circuit Elements – Semi conductor, Thyristor, Integrated Circuit (IC) and Large scale Integrated Circuit (LSI).
Transducers and transmitters suitable for measurement of temperature, pressure, flow, level, speed, torque, vibration, humidity and water content with calibration.
Theoretical knowledge of semi conductor components, Diodes, Transistor, Thyristors their function and operation. Laboratory testing and familiarization of each electronic component mentioned above.
Transistor as an amplifier, switch and oscillator.
Integrated Circuits. (IC)- IC555 based timers.
Large scale Integrated circuits. Examples and applications.
Construction and functioning of LED, LCD, 7 segment display.
Study basics of digital electronics.

3. The above revised course curriculum shall come into force with immediate effect. The additional 100 hrs in 10+2, 4-years Degree in Marine Engineering course have been incorporated in the Annexure I of Circular No. 04 of 2012.

4. It is expected that training institutes would follow these guidelines in letter and spirit and will make necessary amendments in their existing approved STCW 2010 Syllabus with an intimation to the Directorate.

5. This issues with the approval of the Director General of Shipping and ex-officio Additional Secretary to the Government of India, under the power conferred in the Chapter IX Rule 47 of Merchant Shipping (Standards of Certification & watch – keeping for Seafarers) Rules, 1998.

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