## Course Descriptions

**MMK 1113 ADVANCED MARINE STRUCTURES**
Introduction to loads, response, limits stress and optimisation methods, Marine structure modelling procedures, Ship Design For Production, Weight and Cost, Structural Reliability, Safety Margin, First and Second Order Reliability Methods, Introduction to Finite Element Analysis. Vibration analysis on marine structures.

**MMK 1213 BEHAVIOUR OF MARINE VEHICLES**
Introduction to types of marine vehicles and structures. Basic hydrodynamics, sea-keeping and manoeuvring behaviour of ships in sea. Environment forces; wind, current and waves and its effect to ship and marine structures. Analysis of behaviour and ship performance at sea.

**MMK 1712 SHIP PRODUCTION TECHNOLOGY**
Introduction of shipbuilding industry, its nature, status and challenges. Overview on ship production process, shipyards layout and facilities, ship production systems and computer application. Advance ship production concepts including design and engineering for production, modular construction, zone/advance outfitting, product work breakdown structures, accuracy and quality controls and advance computing.

**MMK 2513 ADVANCED MARINE DESIGN**
Fleet system design requirements including type, number, speed and size. Marine design philosophy for stereotyped and innovative design. Design concepts with application of expert systems, database management and fuzzy sets. Computer aided ship design. Optimization method using Classical and numerical approach for linear and non linear constraint problems.

**MMK 2313 SHIP PROPULSION AND PERFORMANCE**
Introduction and review of basic screw propeller design. Different types of unconventional propulsion systems, their governing principles, design and performance. Machinery design matching with energy saving and reduction of vibration. Performance of ship at sea due to wind, hull roughness, seaway and water depth. Speed monitoring for determining power and fuel consumption, and method of improving ship performance.

**MMK 2822 MARINE SAFETY**
Introduction to marine safety. Onboard safety information including safety procedure, safety communication, navigation, mooring, access and safety practices. Operational deck safety for ship shipment and handling, cleaning, storage and handling dangerous goods. Safety in cargo operation. Tanker work safety and safety in offshore working environment.

**MMK 3842 MARINE LAW**
Introduction to maritime law, ownership and registration. Ship mortgages and investment criteria. Sale of ship and shipbuilding contracts. Jurisdiction, collision, salvage and towage. Limitation of liability, oil pollution and prevention. Seafarers and ship's master contract, pilotage, harbour and dock operation.

**MMK 2822 ADVANCED MARINE MANAGEMENT**

Introduction to management structure, Marine business and finance, industrial relation, Introduction to marine economics. Liner shipping conference and world sea borne statistics. Cost benefit analysis concept. Shipping cost in terms of transport cost and freight rate structures.

**MMK 1912 EXPERIMENTAL TECHNIQUES IN MARINE TECHNOLOGY**

Introduction to methods, techniques and equipment for model tests. Full scale measurements on resistance and propulsion. Ship vibration and ship hull strength. Instrumentation and signal conditioning for control and monitoring process. Signal processing.

**MMK 1412 DYNAMICS OF MARINE POWER PLANT**

Vibration of marine propulsion systems and machinery. Torsional analysis of turbine and diesel propulsion systems. Longitudinal and lateral analysis of propulsion shafting system. Optimal propulsion power and rating components. Design interaction between hull and machinery. Application of system analysis techniques to problems.

**MMK 2012 COMPUTER METHOD IN MARINE TECHNOLOGY**

Introduction to computer programming – Fortran. Overview of ship lines and mathematical representation. Calculation of area, centroid and volume using approximation (numerical) methods. Mathematical methods for ship lines modelling using polynomial, cubic splines, B-splines. Numerical method for analysis of marine system behaviour of ship motion using linear and non linear systems.

**MMK 2832 MARINE TRANSPORT SYSTEMS**

Trade and market of major trade routes and cargo flows. System operation including close, semi-closed and open system, competition, and handling. Marine transport economics including elements of revenue and expenditure, increasing profitability, cash flow calculation and estimating. Theory and principles of international trade using linear programming and networks system and queuing theory. Forecasting and market research.