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| Course Title | **Ship Steering Control Systems** | | | | | | |
| Course Code | MANS-323 | | | | | | |
| Course Type | Elective | | | | | | |
| Level |  | | | | | | |
| Year / Semester | 3rd Year, Fall Semester | | | | | | |
| Teacher’s Name |  | | | | | | |
| ECTS | 4 | Theory | | Laboratory | Simulation | | Tutorial |
| 2 | | --- | --- | | ---- |
| Course Purpose and Objectives | The main objectives of the course are to:   * Understand the principle and operation of the ship magnetic compasses and the ship gyrocompass * Ensure knowledge of the proper use of such compasses and understand the main advantages and disadvantages. * Understand the principle and operation of the different types of automatic steering control systems on a ship. * Be able to use safely such systems with all its components * Ensure a thorough knowledge of the IMO regulations that govern such systems | | | | | | |
| Learning Outcomes | After completion of the course students are expected to be able to:   * Thoroughly understand the principle of operation and characteristics of ship magnetic compasses with all advantages and disadvantages associated with them. * Thoroughly understand the principle of operation and characteristics of ship gyrocompasses with all advantages and disadvantages associated with them. * Be able to make necessary corrections and adjustments as required. * Understand the different types of steering control systems available on a ship * Thoroughly understand the principle of operation such ship control systems with all its parts and components * Be able to use competently both manual and automatic steering control systems. * Show an in depth understanding of the relevant IMO Regulations governing such systems. | | | | | | |
| Prerequisites | None | | Required | | | None | |
| Course Content | **Magnetic compasses**   * Parts, characteristics, principle of operation * Errors and adjustments * The use with the ship steering control system. * Advantages and disadvantages * Potential and Limitations   **Gyrocompasses**   * Types of Gyrocompasses * Installation, Parts, characteristics, principle of operation * Errors and adjustments * The Gyro Recorder * The use with the ship steering control system. * Advantages and disadvantages * Potential and limitations   **Steering Control Systems**  **Characteristics**   * Types and characteristics of steering control systems * Manual and automatic systems * Installation and main part description * Steering engine control linkage * Rudder Plate and Rudder angle transmitter * Feedback control unit   **Operation**   * Follow-up (FU) and Non-Follow-Up–(NFU) * Autopilot system * Control consideration and alarm signals   + Permanent Helm   + Rudder Control   + Rudder Counter   + Rudder Alarm Limit   + Rudder Angle Adjustment   + Weather Adjustment or Steering Control.   + Wheel Dead Band   + Steering Gear Pumps   + Off Course Alarm   + Manual Mode   + Traffic Density   + Speed   + Potentials and important limitations   **IMO Regulations**   * + Annex 18 - Steering Gear, Heading and Track Control Systems | | | | | | |
| Teaching Methodology | Lectures, in-class assignments, sound and video equipment, computer, projector, field training | | | | | | |
| Bibliography | 1. **Required Textbooks/Reading:**  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Authors** | **Title** | **Publisher** | **Year** | **ISBN** | | Stefani, Alex | An Introduction to Ship Automation and Control Systems | Witherby Seamanship International | 2022 | 9781914992384 |  1. **Recommended Textbooks/Reading:**  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Authors** | **Title** | **Publisher** | **Year** | **ISBN** | | W. Burger | Marine Gyro-Compasses and Automatic Pilots: A Handbook for Merchant Navy Officers | Pergamon | 2014 | 978-1483122823 | | | | | | | |
| Assessment | Homework, in-class assignments, projects, midterm, final exam. | | | | | | |
| Language | English | | | | | | |