# Course Description Form

| Basic Course Specifications | | | | |
|---|---|---|---|---|
| **Course Title** | : **Operative electronic navigation systems** | | | |
| **Course Code** | : TI 364 | | | |
| **Program on which the course is given** | : ☐ <br> **Bachelor** | ☐ **Diploma** | ☐ **Master** | ☐**Pre- PhD** |
| **Academic year** | : **2015/2016** | | | |
| **Specialization** (units of study) | : Application : 180 Hrs.   Credit :3 | | | |
| **Pre-Requisites** | : BS 214-BS235 | | | |

| Overall Course Objectives |
|---|
| The course aims to enable the student to distinguish between types of fixing methods, bearings, types of ship's tracks and courses in addition to use the celestial bodies to determine ship position and compasses error beside understanding the methods of fixing using celestial sphere; **According to STCW 1978 as amended in addition to IMO model course 7.03**. |

## Intended Learning Outcomes

### Knowledge and Understanding

**At the end of the course, students should be able to:**

**a**.1  Demonstrate a knowledge and understanding of the differences between using gyro and magnetic
Compasses to steer the ship.

a.2  Demonstrate understanding of Radar plotting techniques and compare the results with visual Observation.

a.3 Demonstrate understanding of methods of fixing the ship's position via radar and how to use parallel indexing techniques.

a.4   Demonstrate understanding of electronic position fixing equipment such as GPS.

a.5 Describe information displayed by echo sounder, speed logs and AIS.

a.6  Demonstrate fundamental knowledge of ECDIS and its limitations.

a.7  Demonstrate knowledge and understanding of the fundamentals of Radar &amp; Automatic Radar
   • Plotting Aid (ARPA).

### Intellectual Skills

**By the end of the programme the students should have acquired the following attitudes and ethical concept-:**
**b.1 Overcome fear associated with the use of navigational instruments.**
**b.2  Use the Operational Manuals provided with navigational instruments to properly operate**
**Instruments.**
**b.3 Coordinate the use of all bridge navigational systems to maintain a safe watch.**

### Professional and Practical skills

**At the end of the course, students should be able to:**
**c.1 Steer the ship using gyro and magnetic headings while being able to calculate the error of each.**
**c.2 Control and maneuver the ship by both manual steering and autopilot control.**
**c.3 Use Radar plotting techniques to avoid close encounters.**
**c.4 Fix the ship's position using radar and apply parallel indexing techniques.**
**c.5 Properly operate GPS to; fix the ship's position, plot and monitor ship's route, etc.**
**c.6 Properly operate and use information displayed by echo sounder, speed logs and AIS.**
**c.7 Properly use ECDIS to draw, check and monitor ship's route to maintain the safety of navigation.**

**C.8 Properly operate Radar using ARPA to maintain a safe navigational watch**

| General and Transferable skills |
|:---:|

**At the end of the course, students should be able to:**

**d.1 Operate navigational instruments according to manufacturer provide procedures**

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| Course content | | | |
|:---:|:---:|:---:|:---:|
| **Lect. #** | **Topic** | **Hrs#** | **Practical** |
| 1 | Magnetic compass | 9 | 9 |
| 2 | Gyro compass | 9 | 9 |
| 3 | Demonstrate an understanding of AIS operation | 9 | 9 |
| 4 | The Auto Pilot and Rate of turn indicator | 9 | 9 |
| 5 | Demonstrate a knowledge and understanding of ECDIS (IMO Model course 1.27) | 9 | 9 |
| 6 | Demonstrate understanding of and operate a GPS receiver | 9 | 9 |
| 7 | Assessmentt | 9 | 9 |
| 8 | Operate the echo sounder and demonstrate basic maintenance | 9 | 9 |
| 9 | Operate speed logs and demonstrate understanding of types | 9 | 9 |
| 10 | Set up and operate Radar in Accordance with Manufacturer's instructions | 9 | 9 |
| 11 | Perform Manual Radar Plotting | 9 | 9 |
| 12 | Assessment | 9 | 9 |
| 13 | Use Radar to Ensure Safe Navigation | 9 | 9 |
| 14 | Demonstrate a knowledge and understanding of ECDIS | 9 | 9 |
| 15 | Use Radar to Ensure Safe Navigation | 9 | 9 |
| 16 | Use Radar to Avoid collisions or Close Encounters | 9 | 9 |
| 17 | Use Radar to Avoid Collisions or Close Encounters | 9 | 9 |
| 18 | Describe and operate an ARPA system (IMO Model courses 1.07 and 1.34) | 9 | 9 |
| 19 | Demonstrate proper operation of an ARPA system | 9 | 9 |
| 20 | Final Assessment | 9 | 9 |

| Teaching & learning methods |
|:---:|

Practical Work , Group Work , Individual Study and Problem Study

| Facilities required for Teaching & learning methods | | | | |
|---|---|---|---|---|
| ☐ **Computer Lab** | ☐ **Overhead Slide** | ☐ **Guided Sea Training work Book** | ☐ **guide to ENC symbols used in ECDIS NP 5012** | ☐ **Bridge instruments** |
| **Students Assessment Methods** | | | | |

| Assessment submission Schedule | |
|---|---|
| Assessment#1: Direct observation of work activities | Continuous |
| Assessment#2: Skills and competency tests | Post voyage 4 |
| Assessment#3 : Practical examination | During Final Training voyage |

| Grading Method | | |
|---|---|---|
| Attendance | | **Non** |
| Practical watch evaluation | ☐ | **Continuous 30 Marks** |
| Presentations | | **Non** |
| Practical Assignments | ☐ | **20 Marks** |
| Projects | | **Non** |
| Participation | | **Non** |
| Oral Examination | ☐ | **10 Marks** |
| Final Examination | ☐ | **40 Marks** |
| | | **Total 100%** |

*Assessment criteria shall meet the standards of the STCW 78 convention "as amended""; and in the light of the related IMO model courses

| List of References | | |
|---|---|---|
| **Course Notes** | | |
| Description | : | • Guided Sea Training Book (Part 2) |
| **Essential Books** | | |
| Description | : | • TB Electronic Navigation System, L.Tetley , D.Calcutta 3rd edition<br>• THE SHIP'S COMPASSS, G.A.A GRANT and J.KLINKERT<br>• Notes on compass Work,Kemp & Young<br>• Marine Gyro compass for ship's officers.<br>• GPS satellite Navigation, Stovering |
| **IMO** | | |
| Description | : | • R1 STCW convention as amended, resolution A.917(22),STCW 95(IMO-938)<br>• ,R2  1974 SOLAS convention, resolution MSC.74(69),Annex 3,STCW convention(IMO-972)<br>•  R6 SN/Circ.227,resolution A.242(XI)<br>• R7 IMO Res.A.893(21),RESOLUTION MSC.192(79)resolution A.478(XII)<br>• R8 COLREGS, SN/Circ.243, resolution A.824(19)<br>• STCW code, resolution A.422(XI)<br>• R10 ISM code<br>• R11 SN/Circ.244<br>• R12 SN/Circ.277<br>• R13 SN/Circ.222<br>• R14 SN/Circ.245 |
| **Periodicals and publications** | | |
| Description | : | • Symbol and abbreviation for ECDIS 5012<br>• INSTRUMENTS CATALOUGE |
| **Others (websites, e-books…etc)** | | |
| Description | : | • International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW), with Amendments. |

# Matrix of knowledge and skills of the Educational Course

| University/ Academy | : | AASTMT | Course name: Operative electronic navigation systems |
|---|---|---|---|
| College/ Institute | : | Sea Training Institute | Course code: TI 364 |
| Department | : | Marine Department | |

| Week | Content | Knowledge | Intellectual Skills | Professional Skills | General Skills |
|---|---|---|---|---|---|
| 1 | Magnetic compass | a.1 | | c.1 | |
| 2 | Gyro compass | a.1 | | c.1 | |
| 3 | Demonstrate an understanding of AIS operation | a.5 | | c.6 | d.1 |
| 4 | The Auto Pilot and Rate of turn indicator | a.5 | | c.2 | |
| 5 | Demonstrate a knowledge and understanding of ECDIS (IMO Model course 1.27) | a.6 | | c.7 | |
| 6 | Demonstrate understanding of and operate a GPS receiver | a.4 | b.3 | c.5 | |
| 7 | Assessmentt | | | | |
| 8 | Operate the echo sounder and demonstrate basic maintenance | a.5 | | c.6 | |
| 9 | Operate speed logs and demonstrate understanding of types | a.5 | b.2 | c.6 | |
| 10 | Set up and operate Radar in Accordance with Manufacturer's instructions | a.7 | | | d.1 |
| 11 | Perform Manual Radar Plotting | a.7 | b.2 | c.3 | |

| 12 | Assessment | | | | |
|---|---|---|---|---|---|
| 13 | Use Radar to Ensure Safe Navigation | **a.3** | **b.1** | **c.8** | |
| 14 | Demonstrate a knowledge and understanding of ECDIS | **a.6** | | **c.7** | |
| 15 | Use Radar to Ensure Safe Navigation | **a.3** | | **c.8** | |
| 16 | Use Radar to Avoid collisions or Close Encounters | **a.2 , a.3 , a.7** | | **c.3** | |
| 17 | Use Radar to Avoid Collisions or Close Encounters | **a.2 , a.3 , a.7** | | **c.3** | |
| 18 | Describe and operate an ARPA system (IMO Model courses 1.07 and 1.34) | **a.7** | | **c.8** | **d.1** |
| 19 | Demonstrate proper operation of an ARPA system | **a.7** | | **c.8** | **d.1** |
| 20 | Final Assessment | | | | |

**Instructor**                                                                                          **Dean**