

ITU MARITIME FACULTY
MARITIME TRANSPORTATION AND MANAGEMENT ENGINEERING
COURSE INTRODUCTION FORM

Course Name	Code	Course Type	Semester	Credit	Theoretical	Tutorial	Laboratory
					(hour/week)		
Electronic Navigation	GUV 232E	Compulsory	4YY	2	2	0	0
Department/Program	Maritime Transportation and Management Engineering						
Lecturer and Meeting Date	Assistant Prof. Dr. Serdar KUM Wednesday, 09:00 – 11:29						
Alternative Lecturer and Meeting Date							
Course Language	English						
Compulsory/ Voluntary	Compulsory						
Class and Hour	Hamit Naci; Tuesday, 08:30 – 10:29						
Course Description	Gyro Compass, fundamental principles of a free gyroscope, the apparent movement of the free gyroscope, how a free gyroscope can be made a gyro compass, the compass errors and corrections, the starting of gyro compass, the repeater system of master gyro compass, the main types of gyro compass in use at sea, the maintenance of gyro compass. Echo sounders, the physical factor which affect the sound in water, the basic principles of marine echo sounders, the block diagram of an echo sounder, recorders and echo-meters of an echo sounders, the controls of an echo sounder, the operation of an echo sounder, false echoes, instrument and scale errors, draught and trim corrections, basic user maintenance and change paper. Speed log, types of speed using in navigation, the electromagnetic seed logs, the propeller type of speed logs, pressure type of speed logs, the basic theory of Doppler event, the operational principles of the doppler speed log, the control of acoustic logs. The GPS and DGPS, basic principles of GPS and DGPS, units of GPS (satellites, LES, receivers), The hyperbolic navigation systems, type of system hyperbolic navigation, principles of systems. Electronic chart, principles of electronic chart, ECDIS system, International Standards for ECDIS, operational functions of ECDIS and databases, electronic chart correction, use of ECDIS with Radar, planning of navigation using ECDIS, Automatic Identification System (AIS); components of AIS, AIS transponders, Dynamic and static data transmission in AIS. Voyage Data Recorders (VDR); operational principles of VDRs, information can be recorded by VDRs.						
Course Objectives	Having knowledge about the electronic equipment to use in navigation, learning the fundamental principles of the navigational equipment, enhancing usage of those equipment for safe navigation.						
Course Outcomes	Thorough knowledge of and ability to principle operation of electronic aids (navigation systems such as: gyro compass, echo sounders, logs, GPS, DGPS, hyperbolic navigation systems, electronic charts, ECDIS, AIS and VDR).						
Course Contents and their dates	<p>Fundamental principles of a free gyroscope, the apparent movement of the free gyroscope, the ballistic elements, how a free gyroscope can be made a gyro compass. 07.02.2012</p> <p>Top and Gravity control, oscillation and damping, north seeking, Gyro errors and their corrections. 14.02.2012</p> <p>Echo-Sounders basic principles of echo-sounder and its block diagram, Recorders, echo-meters and controls of an echo sounder. 21.02.2012</p> <p>Speed logs; Types of speed logs. The basic theory of Doppler event, sonar, propagation of electromagnetic waves, the control of acoustic logs. 28.02.2012</p> <p>Automatic pilot. Hyperbolic Navigation System, type of system hyperbolic navigation, principles of RDF systems. 06.03.2012</p> <p>Midterm Exam 13.03.2012</p> <p>GPS; basic principles of GPS, satellites, LES, receivers, 20.03.2012</p> <p>GPS codes, principles of operation of DGPS. 27.03.2012</p> <p>Electronic Charts; ECDIS, International Standards for ECDIS, principles and operational functions of ECDIS and databases. Planning of navigation using ECDIS. 03.04.2012</p> <p>Automatic Identification System (AIS); principles of AIS, rules of AIS, 10.04.2012</p> <p>Voyage Data Recorders (VDR); principles of VDR, rules of VDR. 17.04.2012</p> <p>Assignments and overview. 24.04.2012</p> <p>01.05.2012</p> <p>08.05.2012</p>						
Pre-requisite (s)	-						

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Textbook	Gemi Elektroniği, Belirdi, N., 2003.		
Other References	Marine Gyro Compasses for Ships' Officer, Frost, A., Glasgow: Brown, Son & Ferguson, 1982. Marine Electronic Navigation, Appleyard, S.F., Routledge & Kegan Paul, 1997. The Marine electronics handbook: choice, installation and use, Jones, C., Shrewsbury: Waterline, 1997. The Navigation Control Manual, Bole, A. G., Dineley, W. O. and Nicholls, C. E., Butterworth Heinemann, 2001 Electronic Navigation Systems, (3rd Ed.), Laurie Tetley, David Calcutt, 2001.		
Laboratory Work	-		
Usage of IT	Using Microsoft Power Point and demonstration on models		
Others	Lowest score for success: 50 Assign one of the electronic equipment (e.g. Gyro, echo sounder, speed log, GPS, DGPS, ECDIS, AIS, VDR, etc.)		
Assessment Criteria		Number	Ratio (%)
	Midterm Exams	1	30
	Quizzes	1	10
	Homework	1	10
	Projects		
	Term Paper/Project		
	Laboratory Work		
	Other Activities		
	Final Exam	1	50

Prepared by (Name, Surname): Assistant Prof. Dr. Serdar KUM

Date: 23.02.2012 