Bachelor of Science in Marine Engineering
INSTRUCTOR'S DAILY TIMETABLE

Course Title:	Basic Control Engineering	Date created: 20 June, 2019
Course Code:	Auto 1	
Effective Date:	xxxxxx	Revision No.: 0
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By the end of this course, the students will be able to demonstrate knowledge, understanding and proficiency of the:

CO1: Differentiate basic construction and principles in automation regarding various measuring instruments and automation devices used onboard ships.

CO2: Interpret process and instrument diagrams of automation system based on the industry standards

CO3: Demonstrate performance test in accordance with the manufacturer's standards for the: Monitoring systems; Automatic control devices; and Protective devices

SUGGESTED DAILY TIME TABLE:

W#-D#	Time (min)	Est. (min)	Activities
1-1	90	10	Roll call
		10	Rationale
		15	Motivation (Film Showing V1): Automation Alert Maritime Education (6:20)
		5	Grading System
		40	Core Topic: A1: Fundamentals of Automatic Control
		10	Summary / announce weekly quiz
1-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic "Automatic Control Fundamentals"
		25	Core Topic: A2: Various Automatic Control
		10	Film Showing V2: Basics of Automation (2:09)
		10	Recapitulation
		15	Quiz #1

		10	Checking/recording of Quiz result
1-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the expected outcome of activity
		5	Preparation
		120	WSA 1: Block Diagram of an Automatic Control System
		15	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing/dismissal
2-1	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		10	Film Showing V3: Feedback Control Systems (5:56)
		50	Core Topic: A3: Control Methodology
		10	Summary/Assign Advance reading about Types of Control Strategy
2-2	90	5	Prayer and meditation
		5	Roll Call
		5	Recall of previous topic
		15	Core Topic: A4: Types of Control Strategy
		30	Film Showing V4: Feedback & Feed-forward (27:35)
		5	Recapitulation
		15	Quiz #2
		10	Checking/recording of Exam
2-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of the activity
		10	Preparation
		120	WSA 2:Feedback Control Systems
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
3-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection
		10	Film Showing V5: What is a pressure switch (3:49)
		45	Core Topic: A5: On-Off Controls
		10	Summary
		5	Assign Advance reading about Types of Control Strategy
3-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		20	Core Topic: A6: On-Off Controls contd.
		10	Film Showing V6: How to adjust a pressure switch (7:57)
		5	V7: Hydrophore unit (1:22)
		10	Recapitulation

		15	Quiz #3
		10	Checking/recording of Exam
3-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		10	Preparation
		120	WSA 3: ON-OFF Control
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
4-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection
		10	Film Showing/discussionV8: Sequential Control of motors (1:59)
		50	Core Topic: A7: Sequential Control
		10	Summary/reminders to study for prelim exam
4-2	90	5	Roll call and checking of permits
		5	Distribution of Test questionnaires
		75	Prelim Exam proper
		5	Collection of test questionnaire
4-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of activity
		10	Preparation
		120	WSA 4: Sequential Control
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
5-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection
		50	Core Topic: A8: PID Control
		10	Film Showing/discussion V9: PID Controller (5:38)
		10	Summary/reminders to study for weekly quiz
5-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		25	Core Topic: A9: PLC and PID Controller
		10	Film Showing/Discussion V10: Proportional Gain (3:55)
		10	Recapitulation
		15	Quiz #4
		10	Checking/recording of Exam
5-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity

		10	Demonstration how to use the PID Simulator
		120	WSA 5: Performance Check of a PID Controller
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
6-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		15	Film Showing: V11: PIDs Simplified (13:06)
		45	Core Topic: A10: Characteristics of PID control
		10	Summary/reminders to study for weekly quiz
6-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		25	Core Topic: A11: PID Controller Actions
		10	Film Showing/Discussion V12: Understanding PID in 4 minutes
		10	Recapitulation
		15	Quiz #5
		10	Checking/recording of Exam
6-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of activity
		10	Demonstration how to use the PID simulator in tuning
		120	WSA 6: Controller Tuning
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
7-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		15	Film Showing V13: How Bimetallic Thermometer Works (6:20)
		45	Core Topic: A12: Temperature Measurement
		10	Summary/reminders to study for weekly quiz
7-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		25	Core Topic: A13: Mechanical Thermometers
		10	Film Showing/Discussion V14: How Bulb Thermometer Work(4:05)
		10	Recapitulation
		15	Quiz #6
		10	Checking/recording of Exam
7-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		10	Demonstration how to use the temperature calibrator

		60	WSA 7: Performance Test of a Pt100 (RTD) Sensor
		5	debriefing
		60	WSA 8: Calibration of a PT100 (RTD) Transmitter
		10	Collection/checking of outputs
		10	Housekeeping
		5	Debriefing
8-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		10	Film Showing/discussion V15: Types of Temperature Sensors(4:27)
		50	Core Topic: A14: Electrical Thermometers
		10	Summary/reminders to study for midterm exam
8-2	90	5	Roll call and checking of permits
		5	Distribution of Test questionnaires
		75	Midterm Exam proper
		5	Collection of test questionnaire/answer sheet
8-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of the activity
		10	Demonstration how to use the temperature calibrator
		60	WSA 9: Performance Test of TC “K” Sensor
		5	Debriefing
		60	WSA 10: Calibration of a TC” K” Transmitter
		10	Collection/checking of outputs
		10	Housekeeping
		5	Debriefing
9-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		15	Film Showing V16: How Fluid Pressure is Measured (11:10)
		45	Core Topic: A15: Pressure Measurement
		10	Summary/reminders to study for weekly quiz
9-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		25	Core Topic: A16: Bourdon Tubes
		10	Film Showing V17: How a Bourdon Type pressure gauge work (7:33)
		10	Recapitulation
		15	Quiz #7
		10	Checking/recording of Exam
9-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of thwe activity
		10	Demonstration how to adjust pressure switch
		120	WSA 11: Performance Test of a Pressure Switch

		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
10-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		10	Film Showing: V18: Ball Float Liquid Level Sensor (4:20)
		50	Core Topic: A17: Level Measurement-Direct
		10	Summary/reminders to study for weekly quiz
10-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		25	Core Topic: A18: Level Measurement-Inferential
		10	Film Showing: V19: Level Measurement Using DP Transmitter (6:14)
		10	Recapitulation
		15	Quiz #8
		10	Checking/recording of Exam
10-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the objective of activity
		10	Demonstration how to test float switch
		120	WSA 12: Performance Test of a Float Level Sensor
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
11-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		5	Film Showing/discussion V20: DP Flow Measurements venturi (4:49)
		5	V21: DP Flow measurement Pitot (4:36)
		50	Core Topic: A19: Flow Measurement
		10	Summary/reminders to study for weekly quiz
11-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		30	Core Topic: A20: Flow Measurement contd.
		5	Film Showing/Discussion V22: Rotameter Working Principle (3:24)
		10	Recapitulation
		15	Quiz #9
		10	Checking/recording of Exam
11-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		10	Demonstration how to test performance of dp transmitter
		120	WSA 13: Performance Test of a DP Transmitter

		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
12-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		10	Film Showing V24: Inductive Type Tachometer (5:39)
		50	Core Topic: A21: General Measurement of Process
		10	Summary/reminders to study for semifinal exam
12-2	90	5	Roll call and checking of permits
		5	Distribution of Test questionnaires/answer sheets
		75	Semifinals Exam proper
		5	Collection of test questionnaire/answer sheet
12-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		10	Demonstration how to set up calibration
		120	WSA 14: Boiler flame scanner (photo cell)
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
13-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		20	Film Showing V24: Vibration monitoring (16:27)
		40	Core Topic: A22: General Measurement of Process contd.
		10	Summary/reminders to study for weekly quiz
13-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		20	Core Topic: A23: Transmitters
		20	Film Showing V25: Open Tank Level Measurement (17:29)
		5	V26: Why 4 to 20 mA (3:38)
		10	Recapitulation
		15	Quiz #10
		10	Checking/recording of Exam
13-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		10	Demonstration how to set up calibration
		120	WSA 15: Performance Test of a Pneumatic Pressure Transmitter
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
14-1	90	5	Prayer and meditation

		5	Roll call
		10	Recollection of previous topic
		10	Film Showing V27: 3 basic Pneumatic mechanism for pneumatic controller (4:40)
		50	Core Topic: A24: Pneumatic Controlling Elements
		10	Summary/reminders to study for weekly quiz
14-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		30	Core Topic: A25: Receivers
		5	Film Showing V28: Servo motors (2:27)
		10	Recapitulation
		15	Quiz #11
		10	Checking/recording of Exam
14-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		130	WSA 16: AC and DC Servomotors
		10	Collection/checking of outputs
		10	Housekeeping
		10	Debriefing
15-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		45	Core Topic: A26: Pneumatic Manipulating Element
		5	Film Showing V29: Control valves (1:41)
		10	V30: How Diaphragm Control ValvesWork (5:28)
		10	Summary/reminders to study for midterm exam
15-2	90	5	Prayer and meditation
		5	Roll Call
		10	Recall of previous topic
		15	Core Topic: A27: Valve Positioner
		5	Film Showing V31: What are valve positioner (3:41)
		15	V32: Calibration of positioner (11:28)
		10	Recapitulation
		15	Quiz #12
		10	Checking/recording of Exam
15-3	180	5	Prayer and meditation
		5	Roll Call
		10	Briefing/Discussion of the Objective of activity
		130	WSA 17: Diaphragm Operated Control Valve
		10	Collection/checking of outputs
		10	Housekeeping
		5	Debriefing
		5	Announce compilation of activities (WSA 18) pass next lab meeting

16-1	90	5	Prayer and meditation
		5	Roll call
		10	Recollection of previous topic
		50	Core Topic: A28: Electrical Servomotors
		10	Film Showing V33: Swash plate pump (5;27)
		10	Summary/reminders to study for midterm exam
16-2	90	5	Roll call and checking of permits
		5	Distribution of Test questionnaires
		75	Final Exam proper
		5	Collection of test questionnaire
16-3	180	5	Prayer and meditation
		5	Roll Call
		10	Submission of compiled workshop activities
		10	Briefing/Discussion/assignment of slots/house rules for final practical evaluation
		120	Final Practical Evaluation (individual)
		10	checking of outputs
		10	Housekeeping
		10	Debriefing