

PEN 2930 NAUTICAL SCIENCE SYLLABUS

Course information

Number: PEN 2930
Title: Nautical Science
Credit hours: 3
Contact hours: 45

Course Overview:

This course consists of both theoretical and practical modules and gives a basic understanding of the knowledge that is required to be an active crew member on board a yacht, whether power or sail. More advanced modules are aimed at increasing a student's nautical knowledge sufficiently to be a watchkeeper on board a bareboat yacht, or a flotilla skipper in fair weather, in daylight hours within sight of land.

Material will be delivered through lectures, assigned reading, discussions and practical activity on the waters using both motor and sailing vessels of all sizes (10ft-112ft).

Course Objectives:

Students will become safe boaters and be prepared to meet boating challenges. With this knowledge, they will have a lifelong source of recreation with safe, environmentally-friendly activities. Specific objectives include:

- Fundamentals of small boat handling
- Chart reading
- Rules of the road
- Rigging
- Safety and regulations

Course Outcomes:

By the end of this course, students will be able to:

- a. Navigate a modern sea-going sailing vessel, using both traditional and modern methods
- b. Understand and be prepared for possible safety considerations related to ocean voyaging
- c. Show full understanding of global weather patterns, including ways to forecast and route for weather while voyaging
- d. Operate, understand, and maintain all shipboard equipment, including the auxiliary propulsion systems, electronics and sailing gear

Required Material:

(1) Chapman Piloting & Seamanship 67th Edition (Chapman Piloting, Seamanship and Small Boat Handling) by Jonathan Eaton (Sep 3, 2013) 920pp. ISBN10: 1588169618

(2) Coastal Navigation (U.S. Sailing Certification) by Tom Cunliffe (Dec 1, 1995) 126 pp. ISBN-10: 0976226162.

(3) Basic Coastal Navigation: An Introduction to Piloting for Sail and Power by Frank J. Larkin (Jan 25, 1998) 288 pp. ISBN-10: 1574090526.

Course Evaluation:

The course will consist of 100 total points, consisting of lecture quizzes, practical application of the skills learned as well as formal examinations.

Safety of self and others (20 points)

Active Participation (20 points)

Quizzes (10 points)

Oral Presentation & Command Presence (5 points)

Clean Work Habits (5 points)

Mid Term Examination (20 points)

Final Examination (20 points)

Excused absences

Given the nature of this course, we expect students to participate in 100% of the activities and make-ups will be difficult to arrange. Should a student become ill or be in any other way unable to continue participating in the activities, the instructor will evaluate options to complete the course on a case-by-case basis. Excused absences, which are acceptable reasons for requesting a make-up, normally include medical (individual or immediate family only; documented), legal (accident or court case; individual only; documented), funerary (immediate family only; documented), military (call to active duty; documented), religious (customarily-observed holidays; absence pre-arranged with instructor), and special requirements of other courses and University-sponsored events (absence pre-arranged with instructor). The reason for requesting a make-up must relate specifically to the time period of the missed coursework and must be documented in writing by an involved professional, when documentation is required. The instructor retains the right to make additional inquiries concerning the documentation.

Grade Cut-offs:

<i>Earned Points</i>	<i>Letter Grade</i>
97-100	A+
93-97	A
90-93	A-
87-90	B+
83-87	B
80-83	B-
77-80	C+
73-77	C
70-73	C-
67-70	D+
63-67	D
60-63	D-
Below 60	F

* F or FF also assigned for serious academic misconduct

There is no curve in this course and students WILL NOT be awarded a higher letter grade simply because they are close to the next highest grade. However, if the exams turn out to be more difficult than anticipated, the individual exam grades may be adjusted upwards. The absence of a curve guarantees that students who earn 94 points will receive an 'A' regardless of the grade distribution

Dishonesty Policy:

Sea|mester expects all members to behave with academic integrity. Should we find evidence of academic misconduct (cheating, or complicity in academic dishonesty) by a student, we will inform the student of the action to be taken. Cheating on an exam will result in a grade of F for the course. If the offense is extremely serious, charges against the student will be brought before the Operational Director and Sea|mester Director. Consequences can include expulsion from the program.

Students with Disabilities:

Sea|mester accommodates the special needs of students with documented disabilities. Students with special needs should meet with the instructor, preferably prior to the start of the course, to make arrangements to accommodate those needs.

Intellectual Property:

Students are not permitted to take notes or record lectures by any means for the purpose of sale.

Disruption of the Academic Process:

Students are expected to show proper respect for the Instructor and for other students. Punishment will be imposed for disruption of academic process of any kind. Guidelines for punishment are based on the Sea|mester Student Handbook. If the unacceptable conduct is serious enough to warrant dismissal from the course, then the student shall receive a final grade of “W,” if he/she is passing the course, and a final grade of “F,” if he/she is not passing the course.

General Instructional Guidelines:

This course adheres to the instructional guidelines posted in the Sea|mester Student Handbook.

Tentative Schedule (exact timing depends on semester):

Week #	Topics
1	Basic Vessel Introduction: Basic operation
	Basic Vessel Introduction: Nomenclature
	Advanced Vessel Systems: Principles of 12 volt electricity; AC electricity
	Advanced Vessel Systems: Potable water, waste water and grey water systems
2	Basic Sailing: The physics of sailing and fundamental concepts at work
	Basic Sailing: Rigging, fittings and operation of a basic keelboat.
	Basic Sailing: Standard sailing procedures explained and practiced: Tacking, jibing
	Basic Sailing: Heaving-to, docking, anchoring and person overboard
3	Basic Sailing: Advanced concepts in sailing: sail shape, weight balance
	Basic Sailing: Wind shifts, tacking angles, jibing angles.
	Basic Sailing: Marlinspike seamanship: knots, splices, lines and line handling. Rules of the road.
4	Coastal Navigation: Introduction to Navigation: charts and basic chart work
	Coastal Navigation: Chart types and corrections, and aids to navigation
	Coastal Navigation: Navigational inputs, tidal heights
	Coastal Navigation: Tidal currents, planning a course to steer.
5	Basic Seamanship: Small vessel operations, outboard motors, handling and care.

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	Coastal Navigation: Estimating your position, fixing your position.
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6	Coastal Navigation: Deriving lines of position, running fixes
	Coastal Navigation: Single point fixes.
	Coastal Navigation: Electronic aids to navigation, GPS
	Mid Term Examination
7	Coastal Navigation: Basic Radar Introduction.
	Coastal Navigation: Inshore pilotage, danger bearings
	Coastal Navigation: Clearing bearings, back bearings.
	Coastal Navigation: Navigational strategy, upwind tactics
8	Coastal Navigation: Downwind tactics and landfall.
	Coastal Navigation: Navigation in limited visibility: fog strategy, radar use and safety.
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	Advanced Vessel Systems: Principles of diesel engine combustion, operation and care.
9	Advanced Vessel Systems: Principles of diesel engine combustion, operation and care.
	Coastal Navigation: Passage planning: charts, weather
	Coastal Navigation: Tidal considerations.
	Advanced Vessel Systems: Auxiliary Machinery use: R/O water production
10	Advanced Vessel Systems: Hydraulic machinery
	Advanced Vessel Systems: Hydraulic machinery
	Coastal Navigation: Navigation in heavy weather
	Coastal Navigation: Passage Navigation
11	Coastal Navigation: Passage Navigation.
	Coastal Navigation: Review of practical chart work, conventions and practice problems.
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12	Coastal Navigation: Review of practical chart work, conventions and practice problems.
	Final Examination