1. Course title/number, number of credit hours					
<u>EOC 4124 – Ship Hyd</u>	3 credit hours				
2. Course prerequisites, corequisites, and where the course fits in the program of study					
Prerequisites: EOC 4422 (Ocean Wave Mechanics) and EOC 3123 (Ocean Engineering Fluid Mechanics) (both with a grade of C or above).					
3. Course logistics					
<i>Term</i> : Spring 2020					
Class location and time: SeaTech 209 / Computing Bldg 130/ Distance Learning Wednesday / Friday 09:30am-10:50am					
4. Instructor contact information					
Instructor's name Office address Office Hours Contact telephone number Email address	Siddhartha Verma Seatech 235 Wednesdays 01:00PN 954.924.7202 vermas@fau.edu	A – 02:00 PM (or by Appointment)			
5. TA contact information					
TA's name Office address Office Hours Contact telephone number Email address	N/A				
6. Course description					
The course deals with incompressible-fluid flow and its application to ocean engineering with emphasis on: fluid properties, hydrostatic forces, buoyancy and stability of floating bodies, fluid dynamics, dimensional analysis, modeling, real flows in closed conduits and open channels, boundary-layers, lift and drag, turbo-machines, computational and experimental methods, resistance and propulsion of marine vehicles, and design problems.					
7. Course objectives/student learning outcomes/program outcomes					
Course objectives	The objective of the c and applied knowled design of efficient occ	ourse is to provide the students with a basic ge of fluid mechanics as required in the ean vehicles.			

Student learning outcomes & relationship to ABET 1-7 objectives	 An abi mechan (e/1) A thon mechan probler ocean e An abil fluid m A basic utilize probler 	 An ability to solve the wide range of problems in fluid mechanics that are encountered as a working ocean engineer. (e/1) A thorough knowledge of the basic principles of fluid mechanics to provide a basis for the solution of advanced problems as encountered in graduate school or as a working ocean engineer. (a/1) An ability to formulate creative design solutions in the area of fluid mechanics. (c/2) A basic knowledge of numerical algorithms and an ability to utilize software packages for the solution of complex flow problems. (k/1.2,6) 			
	5. Recogr long le	nition of the need for, a arning. (i/7)	and an ability to engage in life-		
	6. Knowle	edge of contemporary i	ssues. (j/4)		
8. Course evaluation method					
Homework15%Quizzes20%Midterm20%Group Project20%Final Exam25%		Weekly homework Canvas, graded on a quizzes will be adm two to three weeks (will be a mid-term course. A group analysis of an ur design will be due the project grade will	to be submitted online on a scale of 0 to 2. Short in-class inistered approximately every announced in advance). There a exam halfway through the project involving numerical acconventional ocean vehicle before the final exam. Part of ll be based on peer-evaluation.		
9. Course grading scale					
A > 95% A- 90 - 94 B+ 85 - 89 B 80 - 84 B- 75 - 79	9 9 9	C+ C C- D F	70 - 74.9 65 - 69.9 60 - 64.9 50 - 59.9 < 50		
In case the final class average is lower than a 'B-', all grades will be adjusted upward.					
10. Policy on makeup tests, late work, and incompletes					
Late work will not be accepted unless there is solid evidence of a medical or otherwise serious emergency that prevented the student from completing the assignments on time. Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation, incomplete grades will not be given. 11. Special course requirements					

This course contains no special requirements. **12. Classroom etiquette policy**

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

13. Attendance Policy Statement

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of Universityapproved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

14. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/

15. Counseling and Psychological Services Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

16. Code of Academic Integrity policy statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which

no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

17. Required texts/reading

Introduction to naval architecture, by E.C. Tupper, Butterworth-Heinemann, 4th edition Available as <u>free</u> ebook from the FAU library: https://fau.catalog.fcla.edu/fa.jsp?st=036764685&ix=pm&I=0&V=D&pm=1&fl=ba

18. Supplementary/recommended readings

None

19. Course topical outline, including dates for exams, papers, completion of reading

Topics:

- 1. Categorization of marine vehicles
- 2. Geometry of ships
- 3. Irregular shapes and numerical methods
- 4. Buoyancy and stability
- 5. List and ballast, free-surface and density effects
- 6. Stability at large angles of inclination
- 7. Longitudinal stability, trim, and hydrostatic curves
- 8. Dry docking and grounding
- 9. Stability in damaged condition (or bilging)
- 10. Dimensional analysis and similitude
- 11. Drag and Lift; Ship resistance
- 12. Dynamics of marine vehicles directional stability and maneuverability
- 13. Response of marine vehicles to surface waves sea keeping
- 14. Marine Propellers

Exam dates:

Mid-term Exam:February 28^{th} , 2020 (09:30am - 10:50am) - in classFinal Exam:May 6^{th} , 2020 (07:45am - 10:15am) - in class