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Fall 2015

NAME 4097

Nikolas Xiros
University of New Orleans

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NAME 4/5097

Special Topics in Marine Engineering – Electrical System Design for Ship Power and Propulsion

Fall 2015

COURSE DESCRIPTION & OBJECTIVES

The course covers subjects of contemporary interest in marine engineering. Topics to be addressed include:

1. AC power and shipboard power system architecture
2. Power equipment and power electronics devices
3. Shipboard power generation and conversion
4. AC and DC motors and motor drives applied shipboard with emphasis on marine propulsion
5. Shipboard power distribution technologies and components

Upon completion of this course students should be able to:

1. Understand the fundamentals of AC power
2. Identify and evaluate different ship power system architectures
3. Define major power equipment and power electronics devices used onboard ship
4. Explain the processes of electric power generation and conversion as applied shipboard
5. Analyze AC and DC motor operation with or without power electronic motor drives with emphasis on ship propulsion applications
6. Define and explain shipboard power distribution technologies and components as well as perform associated calculations

PREREQUISITES

Consent of School.

CLASSES & ATTENDANCE

Location: EN 316

Hours: Tue & Thu 3:30 pm – 4:45 pm US Central Time

Classes will be taught in an interactive manner. Therefore your attendance is very important. Penalty for inadequate class participation can be applied; your final grade could be decreased up to 5% for each absence exceeding two. Study over the entire semester in a session-to-session manner rather than just before the midterm or the final.

INSTRUCTOR

Nikolas Xiros, EN 914, nxiros@uno.edu, 504-280-3130

Office hours: Mon 6 pm – 8 pm, Wed 4:30pm – 6 pm, Thu 9 am – 10:30am or by appointment

REFERENCES

Students are strongly advised to ensure access to references 1 or 2 given in the list below; also, to take notes in class systematically. Lecture notes will be handed out during class hours.

- 0) Lecture Notes (attendance required)
- 1) Patel MR (2011) Shipboard Electrical Power Systems. CRC Press, ISBN: 978-1439828168.
- 2) Patel MR (2012) Shipboard Propulsion, Power Electronics, and Ocean Energy. CRC Press, ISBN: 978-1439888506.
- 3) Kraal E (2005) Basic Electro-technology for Engineers. In: Reed's Marine Engineering Series, Vol. 6; AAandC Black, UK, ISBN: 978-0713668384.
- 4) Kraal E (2006) Advanced Electro-technology for Engineers. In: Reed's Marine Engineering Series, Vol. 7; AAandC Black, UK, ISBN: 978-0713676846.
- 5) McGeorge HD (1993) Marine Electrical Equipment and Practice. In: Marine Engineering Series; Butterworth-Heinemann, ISBN: 978-0750616478.

HOMEWORK

The following four (4) homework sets evenly distributed over the semester will be given:

1. Shipboard electrical system fundamentals and architecture
2. Shipboard power generation and conversion / power electronics
3. Electric motors and motor drives
4. Shipboard power distribution

Each assignment will count equally toward your final course percentage grade.

The exact submission date of each assignment will be specified on the problem sheet; generally plan to have one to two weeks available for each assignment. Late submission will not be accepted without prior consent of the instructor.

EXAMS

There will be a midterm exam (75 min long tentatively on Thu, OCT 8 2015 during class hours). The final exam per <http://www.uno.edu/registrar/bulletin/finals.aspx> is scheduled for Tue, DEC 8 2015, 3 pm – 5 pm.

EXTRA WORK FOR RECEIVING GRADUATE CREDIT IN 5000-LEVEL CLASSES

In addition to meeting general class requirements, graduate students in this course must prepare an 8-12 page research paper that synthesizes critical literature associated with one topic addressed in this class. The topic will be agreed between the instructor and each student individually before the student can start working on their project.

GRADING

Grading Distribution: Homework 40%, Midterm 25%, Final 35%

Grading Scale – Course letter grade will be assigned based on the percentage as follows

91 <= A < 100; 79 <= B < 91; 67 <= C < 79; 52 <= D < 67; F < 52

ACADEMIC INTEGRITY

Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the UNO Judicial Code for further information. The Academic Dishonesty Policy is available online at: <http://www.uno.edu/student-affairs-enrollment-management/documents/academic-dishonesty-policy-rev2014.pdf>

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Students who qualify for services will receive the academic modifications for which they are legally entitled. It is the responsibility of the student to register with the Office of Disability Services (UC 260) each semester and follow their procedures for obtaining assistance.

CLASSROOM CONDUCT

1. Be in class on time. Please do not come five, ten, or twenty minutes late. Distracting interruptions are inconsiderate, disrespectful, and time-wasting. There is no excuse for repeatedly arriving late. Parking is often a hassle; allow enough time for it.
2. Cell phones should be turned off before class begins and remain switched off during class. Under no circumstances, your cell phone should ring in the class.
3. Sexual harassment as defined in UNO document <http://www.uno.edu/president/administrative-policies/documents/AP-BA-32.2-Discrimination-Harassment-and-Retaliation-4-29-14.pdf> is unacceptable behavior and will not be tolerated. Sexual harassment is a violation of state and federal law. Sexual harassment has a negative impact on the functioning of the University. Consequently, all members of the University community must be sensitive to the possibility of sexual harassment whether intended or inadvertent. Individuals must recognize this potential and act to prevent it. When sexual harassment has occurred, the University shall take effective and expeditious action.
4. Keep weapons out of the classroom.
5. Feel free to ask questions of the instructor during class. But please do not ask other students, as talking disturbs my concentration and the concentration of other class members.
6. Students are expected to treat faculty and fellow students with respect. Any actions that purposefully and maliciously distract the class from the work at hand will not be allowed.
7. Civility in the classroom and respect for the opinions of others is very important in an academic environment. It is likely you may not agree with everything that is said or discussed in the classroom. Courteous behavior and responses are expected.

More at:

http://sacs.uno.edu/compliance-certification/docs%5CUNO_Student_Handbook.pdf