

Fall 2015

NAME 4162

Xiaochuan Yu
University of New Orleans

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Offshore Structures and Ship Dynamics II

Dr. Xiaochuan(Vincent) Yu
MW, 3:30pm - 4:45pm

Email: xyu5@uno.edu; Tel: 504-280-7158; EN935(O)
Classroom: EN 316

COURSE INFORMATION

OBJECTIVES:

The objective of this course is to introduce the dynamics of offshore platforms and ship motions. Some topics may be covered, including fundamentals of vibrations, offshore structures and ship motions, ship maneuvering and control, etc. Through this course, students should understand the basic principles of calculating dynamics of offshore platforms and ship motions. The importance of motion estimation for offshore drilling and operations will be addressed.

SYLLABUS:

The tentative topics include

- Equation of motion
 - Moving coordinates
 - Motion of a rigid body in space
- Fundamental of vibrations
- Hydrodynamic forces
- Dynamics of offshore structures
 - Uncoupled motions
 - Coupled motions in regular waves
 - Nonlinear coupling and instability
 - Maneuvering and control
 - Motion in irregular seas
- Introduction of maneuvering and control, ship motion simulation
- Static stability
 - Elementary principles
 - Submerged equilibrium
- Maneuvering and control
 - Path keeping – straight-line, directional and positional stability
 - Criteria for dynamic stability
 - Maneuvering and control
 - The turning path

Note: The topics may be deleted or added depending on the interest of the class and schedule.

REFERENCES AND TEXTBOOKS:

- Lewandowski .*Dynamics of Marine Craft*,
- Abkowitz, *Stability and Motion Control of Ocean Vehicles(Out of print)*
- Perez,*Ship Motion Control*
- Falzarano, J. *Class Notes for OCEN 630*, Texas A&M University.

PREREQUISITES:

MATH 2134 (or MATH 2115) and NAME 3160, all with a grade of C or better.

ASSIGNMENTS, EXAMS AND GRADES:

There will be 5-6 home assignments. Normally the assignments will be distributed every two weeks and must be handed in by the due date before the end of the class. Late homework will be penalized 10% each day it is late unless you have an excuse recognized by the university rule and then, only with advance notice (with the exception of emergencies). In addition, 2-3 classes will be scheduled in computer lab EN209, in order to for you to get familiar with the engineering softwares. Meanwhile, you are highly encouraged to use or operate them in your own time.

There will be a mid-term exam on October.5th (Monday) and a final exam in December.

Grading policy: assignments - 30%, computer lab - 15%, mid-term exam-20%, final exam -35%.

Graduate Students:

Graduate students will be assigned one additional project. Through graduate student projects, additional learning outcomes may be achieved:

- The graduate students need to show their independent capability to search the related papers or reference in order to solve their engineering problems in a limited time
- They need to meet with the instructor every two weeks to discuss their projects
- A detailed derivation or calculation about the selected problems will be required to show their understanding
- It is anticipated that they can solve the similar problems independently in their future work
- All the results will be presented in Decemeber.

However, the undergraduate students are required to complete the problems given in the assignments.

OFFICE HOURS:

Monday 7:00pm - 9:00pm; Tuesday 10:00 - 12:00am; Wednesday 1:30 - 3:30pm
Or, send me an email to schedule an appointment.

AMERICANS WITH DISADIBILITIES ACT(ADA) POLICY STATEMENT:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. If you have a disability requiring an accommodation, please contact the Office of Disability Services.

ACADEMIC INTEGRITY STATEMENT AND POLICY:

Students are expected to understand and abide by the UNO Judicial Code. For more details, please visit:
<http://www.uno.edu/studentaffairs/student-policies/>.

OTHER REQUIREMENTS:

- According to university policy, you are required to attend every class. The attendance sheet may need to be signed! If you are unable to attend class for some reasons, please inform me by e-mail in advance.
- The mobile must be turned off in class.