Course Syllabus

1. Class Information

- **Class Title**: Naval Architectural Calculation
- **Class Number**: 414.261 (3 Credits)
- **Semester**: Spring, 2016
- **Level of Course**: Undergraduate / Sophomore
- **Class Time**: Tue. 11:00 a.m -12:15 p.m., Thu. 11:00 a.m. -12:15 p.m.
- **Location**: Room 211, Bldg. 36
- **Instructor**: Prof. Myung-Il Roh
  Office: Room 308D, Bldg. 36
  E-mail: miroh@snu.ac.kr
  Phone: (02)-880-7328
  Office Hours: Available before school and after school by appointment.
- **Teaching assistants**: Ju-Sung Kim, Seung-Ho Ham
  E-Mail: wntjd112@snu.ac.kr, hsh0930@snu.ac.kr
  Office: Room 206, Bldg. 36
  Phone: (02)-880-8378
- **Language of Instruction**: English

※ **Announcement:** Please note that all lectures, assignments, exams, and term projects for this course are in English.

2. Course Topics and Description

The course deals with 'Ship Stability' in ocean environment

1) Based on the fluid mechanics, position and orientation of a ship in calm water such as immersion, heel, and trim are introduced.
2) Then the students learn how to evaluate the required intact and damage stability of IMO regulations.
3) Also students have to work in team, consisting of 2 students, on a term project to calculate the hydrostatic values of a floating body, such as its volume and water plane area.

Term Project: Development of a program for generating hydrostatic tables and plotting hydrostatic curves after calculating hydrostatic values for the given offsets table of a ship or an offshore plant

3. Textbook and Reference

(1) Textbook

- Roh, Myung-Il, Ship Stability, Lecture Note for Naval Architectural Calculation, Seoul National University, Spring, 2016

(2) Reference

- 대한조선학회, "선박계산", 텍스트북스, 2012.11.
- Roh, Myung-Il, Lecture Note for "Innovative Ship and Offshore Plant Design", Seoul National University, Spring, 2016
- Letcher, John S., "The Principles of Naval Architecture: The Geometry of Ships", SNAME, 2009
- Moore, Colin S., "The Principles of Naval Architecture: Intact Stability", SNAME, 2010

4. Grade Computation

Weighted system is as follows:

- Two Exams: 60%
- Term Project : 30%
- Attendance: 10%

In case of an excused absence, the student must make-up any missed test, quiz or homework the following day during a free period, before or after school. Unexcused absences will result in a zero.

5. Website: http://etl.snu.ac.kr

Most assignments, instructions and notice for supplementary lecture will be made only on the website, so check it frequently.

6. Class Expectation

- All lectures, assignments, exams and term projects for this course are presented in English.
- Late work will be not accepted.
- Show respect to others and their property.
- Come prepared to class.
- It is required to make appointments to see instructor during office hours. Send email for an appointment at least one day in advance.
- No cell phone on the desk.

7. Exam Schedule

	Mid-term Exam	Final Exam
Date	April 21st, 2016 (Thursday), 11:00~12:15	June 9th, 2016 (Thursday), 11:00~12:15
Range of Exam	- Restoring force and moment - Hydrostatic pressure, and buoyant force on a floating body - Transverse stability due to cargo movement - Initial transverse stability - Initial longitudinal stability - Free surface effect - Inclining test - Curves of stability and stability criteria	- Numerical integration method in naval architecture - Hydrostatic values and curves - Static equilibrium state after flooding due to damage - Deterministic damage stability - Probabilistic damage stability

8. Course Schedule

Week	Regular Lecture				Term Project
	Tuesday		Thursday		
	Date	Time : 11:00-12:15	Date	Time : 14:00-15:15	
1	03/01	-	03/03	Introduction to Ship Stability, Restoring Force and Moment	**Programming Assignments: According to the Notice**
2	03/08	Hydrostatic Pressure, and Buoyant Force on a Floating Body (1)	03/10	Hydrostatic Pressure, and Buoyant Force on a Floating Body (2)	
3	03/15	Transverse Stability Due to Cargo Movement (1)	03/17	Transverse Stability Due to Cargo Movement (2)	
4	03/22	Transverse Stability Due to Cargo Movement (3)	03/24	Initial Transverse Stability (1)	
5	03/29	Initial Transverse Stability (2)	03/31	Initial Longitudinal Stability (1)	
6	04/05	**Holiday**	04/07	Initial Longitudinal Stability (2)	
7	04/12	Free Surface Effect, Inclining Test	04/14	Curves of Stability and Stability Criteria (1)	
8	04/19	Curves of Stability and Stability Criteria (2)	04/21	**Mid-term Exam**	
9	04/26	Numerical Integration Method in Naval Architecture (1)	04/28	Numerical Integration Method in Naval Architecture (2)	**Term Project** - Due date: May, **29(Sun), 23:00**
10	05/03	Hydrostatic Values and Curves (1)	05/05	**Holiday**	
11	05/10	Hydrostatic Values and Curves (2)	05/12	Static Equilibrium State after Flooding Due to Damage	
12	05/17	Deterministic Damage Stability (1)	05/19	Deterministic Damage Stability (2)	
13	05/24	Deterministic Damage Stability (3)	05/26	Probabilistic Damage Stability (1)	
14	05/31	Probabilistic Damage Stability (2)	06/02	Probabilistic Damage Stability (3)	
15	06/07	Probabilistic Damage Stability (4)	06/09	**Final Exam**	