UG-7

海事科学部　特別講義　－　海事を科学するⅠ

Special Lecture in Undergraduate Course: Introduction to Maritime Sciences, I

Dates & Venue

August 5 (TUE)　1st – 4th Periods　Room 4303 (Fukae Campus)

August 6 (WED)　1st – 4th Periods　Room 4303 (Fukae Campus)

中澤　武　Takeshi NAKAZAWA (International Association of Maritime Universities)

Lecture topic: Energy Efficient Operation of Ships

Aims: To provide a foundational level understanding of the relationship between energy used for shipping and generation of carbon dioxide(CO2); to emphasize importance of IMO's approaches to reduce CO2 generated from shipping and technology to support those approaches; and to provide contemporary issues on marine engineering related to the development of merchant vessels.

Contents: IMO's Studies of GHG Emissions from ships; IMO's approaches to reduce CO2; EEDI, EEOI and SEEMP; Cost of energy to operate ships; Basic facts about ship propulsion; Type of engine and their merits; Technical development of merchant vessels

References and Recommended Reading:

IMO (2000), Study of Greenhouse Gas Emissions from Ships

IMO (2009), MEPC 59/INF.10, Second IMO GHG study 2009

Lloyd's List, Future of Shipping, December 2009

Other IMO documents related to the reduction of GHG

Special Lecture for BSc in Maritime Sciences,
Kobe University

Subject: **Introduction to Maritime Sciences I Energy**
Lecture topic: **Efficient Operation of Ships**
Lecturer: **Takeshi Nakazawa**

Aims:
To provide a foundational level understanding of the relationship between energy used for shipping and generation of carbon dioxide(CO_2); to emphasize importance of IMO's approaches to reduce CO_2 generated from shipping and technology to support those approaches; and to provide contemporary issues on marine engineering related to the development of merchant vessels.

Learning outcomes:
The student will be able to describe/identify/explain:
- Issues on global warming and IMO's approaches to reduce CO_2
- Demand of shipping industry and development of propulsion system on board
- Effective use of energy for operating ships
- Technical development of merchant vessels

Syllabus Contents:
IMO's Studies of GHG Emissions from ships
IMO's approaches to reduce CO_2
EEDI, EEOI and SEEMP
Cost of energy to operate ships
Basic facts about ship propulsion
Type of engine and their merits
Technical development of merchant vessels

References and Recommended Reading:
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June 2014, Prepared by TN

神戸大学海事科学部特別講義

講義名称：　海事を科学するⅠ

講義内容：　エネルギー効率を考えた船舶の運航

講師：　　中澤　武

講義の目的：
海運で利用されるエネルギーと CO_2 の発生に関する基本レベルの理解を提供し；海運により発生する CO_2 の削減のための国際海事機関の取組みとそれらを支援する技術の重要性を強調し；商船の発展に関与する舶用機関学の現代の問題点を提供する。

学習の成果：
学生は、以下について、記述/理解/説明することができる：
- 地球温暖化の問題と CO_2 削減のための IMO のアプローチ
- 海事産業の要望と船舶の推進システムの発展
- 船舶運航に対するエネルギーの有効利用
- 商船の技術進展

講義の要目：
船舶から発生する温室効果ガスに関する IMO の調査
CO_2 削減のための IMO のアプローチ
EEDI, EEOI および SEEMP
船舶運航に要する費用
船舶の推進に関する基礎事項
機関の種類と利点
商船の技術進展

推奨する参考資料：
IMO (2000), Study of Greenhouse Gas Emissions from Ships
IMO (2009), MEPC 59/INF.10, Second IMO GHG study 2009
Lloyd's List, Future of Shipping, December 2009
温室効果ガスの削減に関する他の IMO 文書

2014 年 6 月作成

J. Paul MARLOWE (Graduate School of Maritime Sciences, Kobe University)

Lecture topic: Authentic maritime role-play in English

Seminar Description: This seminar is designed to provide you practice in using English in situational contexts. The course will revolve around role-play situations that represent authenticate situations in which English is used in Maritime related contexts. We will first examine an example role-play situation, then practice in pairs or group, and finally perform. The rest of the day will be devoted to working in groups with students with related Maritime career interests, brainstorming an authentic situation in which English is used in that circumstance, researching useful language for that situation, developing a role play, practicing that role play, and finally performing the role play for the class.

Seminar Goals: Students will…

Examine, practice, and perform an example authentic maritime role-play situation

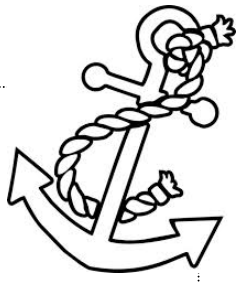
Design, research, and develop an authentic maritime role-play to perform in pairs or groups

Assessments:

Participation (30%) + Group Work (30%) + Performance (40%) = 100%

Maritime English Seminar (Summer 2014)

Kobe University - School of Maritime Sciences



Instructor: Paul Marlowe
Day: Wednesday, August 6
Time: 8:50 –
Location: Room4303
Email: jpmarlowe@gmail.com

SEMINAR DESCRIPTION:

This seminar is designed to provide you practice in using English in situational contexts. The course will revolve around role-play situations that represent authenticate situations in which English is used in Maritime related contexts. We will first examine an example role-play situation, then practice in pairs or group, and finally perform. The rest of the day will be devoted to working in groups with students with related Maritime career interests, brainstorming an authentic situation in which English is used in that circumstance, researching useful language for that situation, developing a role play, practicing that role play, and finally performing the role play for the class.

SEMINAR GOALS:

Students will…

- Examine, practice, and perform an example authentic maritime role-play situation
- Design, research, and develop an authentic maritime role-play to perform in pairs or groups

ASSESSMENTS:

Participation (30%) + Group Work (30%) + Performance (40%) = 100%

Schedule of Instruction*

Period	Time	In Class
1	8:50 ~ 10:20	• Introduction to role-play • Role-play Example • Language Analysis • Practice role-play
2	10:40 ~ 12:10	• Perform role-play • Role-play groups • Brainstorm role-play ideas • Research role-play language
3	13:20 ~ 14:50	• Research role-play continued • Practice role-play
4	14:50 ~	• Role-play performance • Final comments

*Course content may vary from this syllabus to meet the needs of the class. Students will be notified in class by the instructor when adjustments to this syllabus are required.

UG-8　海事科学部　特別講義　－　海事を科学するⅡ

Special Lecture in Undergraduate Course: Introduction to Maritime Sciences, II

Dates & Venue

August 7 (THU)　1st – 4th Periods　5F Meeting Room (Fukae Campus)

August 8 (FRI)　2nd – 5th Periods　5F Meeting Room (Fukae Campus)

川口　明　Akira KAWAGUCHI (The City College of New York, U.S.A.)

Lecture topic: Introduction to dynamic programming

Abstract: Dynamic programming solves complex problems in way of breaking down into much simpler subproblems and then combining the solutions to subproblems. Note that "Programming" refers to a tabular method, not to writing computer code. Hence, attending this lecture requires no skills for advanced mathematics or computer programming. We typically apply dynamic programming to optimization problems (minimization or maximization) that may have many possible solutions. There is a close relationship to well-known divide-and-conquer solutions that partition the problem into disjoint subproblems, solve the subproblems recursively, and then combine their solutions to solve the original problem. In contrast, dynamic programming applies when the subproblems "overlap," that is, when subproblems share subsubproblems. Dynamic programming solves each subsubproblem just once and then saves its answer in a table, thereby avoiding the work of recomputing the answer every time it solves each subsubproblem. Tailored for the Kobe University's maritime sciences, this lecture will open your eyes to this important subject, from optimization techniques to an interesting world of algorithmic computations, and power up your skill training in general sciences.

Michael WOODWARD (Newcastle University, U.K.)

Lecture topic: Dynamic response of ships including Maneuvering, Seakeeping and Stability

Overview of English language lectures on Ship Stability

The following report gives an overview of the intended aims and objectives of the lecture series.

About the Lecturer

Dr. Michael D. Woodward is a lecturer in Marine Technology and Director of the Newcastle University Hydrodynamic Laboratory - within the School of Marine Science and Technology at Newcastle University, UK. Dr. Woodward is a member of the Royal Institution of Naval Architects, a member of the International Marine Simulation Forum and chairman of the next MARSIM conference. He contributes to the ITTC as a member of the QSG committee, specialising in experimental uncertainty analysis and is chair of the HTA committee on hydrodynamic measurement and experimental uncertainty.

Background information for the lecture structure

All lectures will be conducted in English language and have a duration of 1.5 hours each. Similar subject areas will be covered for both the undergraduate and graduate lectures. However undergraduate lectures will take a more introductory approach while the graduate lectures will use more advanced terminology and concepts. The subject content is generic and is suitable for either students of Naval Architecture or Maritime Cadets.

The lecture will be structured in such a way as to modify the content as necessary depending on the ability of the students. If the students are having difficulty with spoken English, then the 'Section A' subject will be covered more slowly. If the student's make good progress then 'Section-B' will be added.

Undergraduate Lecture 1

Section-A

The lecture will introduce general terminology for ships and ship stability. The first section address ship terminology and introduces key words needed for the study of ships. This includes an animation of the ship together with itemised terms; to help students relate words to objects.

Key words include: *forward; aft; bow; stern; amidships; rudder; propeller; transom; parallel mid-body; aft perpendicular; forward perpendicular; length between perpendiculars; length over all; draught; freeboard; height.*

The second section introduces ship stability terminology and introduces key words needed for the study of ship stability. Again, this includes an animation of the ship together with itemised terms; to help students relate words to objects.

Key words include: *length; breadth; draught; area; volume; block coefficient; centre of buoyancy; centre of gravity; longitudinal; transverse; water-plane area; longitudinal centre of flotation; Second moment of water plane area; keel; metacentre.*

The third section introduces technical subjects. The aim is to talk through very simple (and familiar) derivations for the shift in the ships centre of gravity. The objective in to enable students to listen to the spoken words, while already being familiar with the general meaning. Technical subjects covered should be equally applicable to and engineering student study naval architecture or maritime cadets. The technical subjects covered include the movement of weights inside the ship.

Key words include: *stability; stable; unstable; mass; vertical; horizontal; diagonal; distance; crane; suspended; heel angle; roll; free-surface.*

Section-B

Additional technical subjects covered include, the addition and removal of weights; effects of suspended loads and the effects of a free-surface.

Undergraduate Lecture 2

Section-A

This lecture will cover the subject of the Inclining Experiment. All vessels have to undergo an inclining experiment (or stability survey) on completion. The experiment allows the KG of the ship to be determined for the 'as built' condition. This is important with respect to meeting formal stability criteria. It also needed after ships are extensively modified or repaired. The objective is to be familiar with the practical procedures used to establish the KG of a vessel by undertaking an 'inclining experiment'.

Key words include: *inclining experiment; light ship; deadweight; criteria; displacement; inclining masses; angle-of-heel; draught measurement; hydrostatic particulars; pendulum; deflection; moored/mooring lines; gangways; tide; waves; wash.*

Section-B

The lecture will also consider the subject of draught measurement. The objectives are: to be familiar with the way a ship's draught is indicated; to be aware of the difficulties inherent in taking a ship's draught; to be able to calculate a ship's true draught from draught mark measurements.

Key words include: *draught marks; loading condition; Hydrostatic Particulars; hogging; sagging; layer correction; trim; trimmed; Load Lines; freeboard; fresh water; brackish water; longitudinal center of flotation.*

Undergraduate Lecture 3

Section-A

The objective of the lecture is to help students be aware of alternative measures of stability and to understand the concept of static stability. Also, students will be able to calculate static stability from the Wall Sided Formula and be aware of the curves that are used to present static stability. Students will be able to calculate static stability from the cross curves of stability and be able to evaluate static stability from the IMO criteria.

Key words include: *metacentric theory; metacentric height; static stability; initial stability; cross-curves of stability; dynamic; dynamic stability; GZ-curve; inflection; maximum; minimum; range-of-stability; angle of vanishing stability; parallel mid-body; KN-curves; departure; ballast; arrival; stability booklet; loading; discharging; stability criteria; equilibrium; righting lever; righting moment; distance; shift; result; moving.*

Section-B

The objective are to understand the safety implications of a compartment being flooded and to be able to evaluate the condition of a vessel after flooding.

Key words include: *flooding; damage; permeability; stowage factor; bilged; compartment; collision; grounding; water-line; reserve buoyancy; foundering; capsize; plunging; added-mass (method); lost buoyancy (method).*