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The Institute of Marine Engineering, Science & Technology

EDUCATION & PROFESSIONAL DEVELOPMENT OF ENGINEERS IN THE MARITIME INDUSTRY

14-15 November 2012, Southampton, UK



Seminar Overview

Graduates' views

- How Should Industry Achieve the Right Skill Set In Developing Engineers
- A Graduate's View: Student Internships and Placements
- Experience from my M.Eng Course and Preparing my Individual Project

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IMAR-EST

Academics' Stream

- The basis of the Systematic Management of Engineering Projects (SMEP) Approach and its Maritime Educational Usage
- Group working and Project Assessment in Undergraduate Ship Design Assignments
- A Review on the Safety Culture for Developing Maritime Safety
- The Design and Development of a Blended Learning Module in Marine Materials & Production Technology
- Teaching Naval Architecture and Ocean Engineering in Cooperation with Industry
- Ensuring Future Yacht Design and Production Graduates Are Suitably Equipped For the Modern Yacht Design & Manufacturing Industry
- Development of Unified Undergraduate Curriculum for Maritime Engineering
- Delivering Ship Design Education at a Distance

Industry's Track

- Bridging The Gap Between Research and Industry
- Roles of Alumni Associations in Professional Development of Engineers in Maritime Technology
- Four decades of learning, teaching and doing; but can it be transferred?
- Engineering: Our Maritime Future
- Risk based methodologies used in design submissions to Classification Societies - the challenges for the professional development of engineers



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www.rina.org.uk/Education2012

Wednesday 14th November

First Session

9h00-12h40

BRIDGING THE GAP BETWEEN RESEARCH AND INDUSTRY

A. Shetty, Bureau Veritas, India

Universities across the globe are involved in ground breaking research. But how much of this research is being applied in the industry? The paper is divided into two parts. The first part will provide an understanding of how the industry and universities interact with each other. This is done by looking at the areas on which universities are concentrating their research towards and then analyze their contribution to the current and future industry needs and practices. In the second part, the paper will look at the concept of having a centralized database for the exchange of ideas. The paper aims to provide an understanding of how better means of interaction can lead to the mutual growth of both the industry and future researchers.

ROLES OF ALUMNI ASSOCIATIONS IN PROFESSIONAL DEVELOPMENT OF ENGINEERS IN MARITIME TECHNOLOGY

K. Sivaprasad, Cochin University of Science & Technology & A.A Kumar, IACS

In modern professional education and training system, alumni associations are identified as one of the potentially active element. The role of alumni associations in the holistic development of engineering professionals through their parent institution has been considered as one of the emerging orders in the engineering education. Alumni associations present first-hand opportunities for educational institutions to understand the ever-changing demands and expectations of the Industry and develop their curriculums accordingly. By effectively exploiting the everlasting nostalgic feeling of their graduates engineering institutions can come up with various curricular and co-curricular activities which can attract responsible alumni members to actively participate in the overall development of the institutes. This paper explores potential alumni sponsored programmes that can be implemented in the maritime engineering institutes.

A GRADUATE'S VIEW: STUDENT INTERNSHIPS AND PLACEMENTS

A. Watt, Lloyd's Register, University of Strathclyde Graduate, UK

With the increasing demand for young engineers in the maritime industry coinciding with the tight financial times in the economic recession, the common goal for industry, universities and undergraduates is the enhanced academic and professional development of young engineers to maximise the skills developed in order to benefit engineering and the maritime business in the most effective way possible. This presentation will discuss a method to help bridge the gaps between employers, universities and students to produce the results required, in a way that benefits all, through student internships/placements in industry. These opportunities can allow students to develop and apply their engineering knowledge, provide organisations an effective method to find and recruit future graduates and also enhance a university's connections to industry.

TEACHING NAVAL ARCHITECTURE AND OCEAN ENGINEERING IN COOPERATION WITH INDUSTRY

Prof. Dr. Ing. A. Kraus, Hochschule Bremen, Germany

Some twenty years ago typically a large portion of the students at the Bremen University of Applied Sciences had finished an apprenticeship as skilled worker before they started to study Naval Architecture. This situation has changed, more students have entered university directly after school without practical experience. Due to this fact companies asked and still ask for university graduates with additional practical qualifications. So in 2004 Bremen University of Applied Sciences (Hochschule Bremen) introduced an Integrated Degree Course in Naval Architecture and Ocean Engineering in cooperation with regional maritime industry. One year before entering the Bremen University of Applied Sciences students start with an apprenticeship as skilled worker on a partner shipyard. During their time at university the students are still member of the staff of the company and continue their apprenticeship during semester breaks. The paper starts with an introduction and presentation of industry partners. It gives an overview of the course contents and of the experience gained within the last years including feedback from graduates.

Second Session

13h40-16h50

FOUR DECADES OF LEARNING, TEACHING AND DOING; BUT CAN IT BE TRANSFERRED?

B. Boon Research and Consultancy, Aerdenhout, the Netherlands

Two topics for professional development are knowledge transfer between generations and lifelong education. Both are more difficult to apply than commonly thought. Greying generations hold extensive experience that should contribute to innovative capabilities of new generations. Transferring is difficult due to limited capabilities of the older generation to define their knowledge in adequate terms. Bridging this generation gap is essential for a successful knowledge transfer. Lifelong education generally consists of post-academic courses provided by universities. Recent research results and related analysis tools are taught to those working in industry. Unfortunately such knowledge in many cases runs ahead of the needs felt by practising naval architects.

ENGINEERING: OUR MARITIME FUTURE

N. Desty, Matchtech, UK

Whilst it is widely accepted that a consistent flow of highly trained and competent engineers are required to provide the anticipated growth of UK marine plc I will suggest that as an industry we are not doing enough to sustain its future. By analysing current trends, future projects and recruitment forecasts I will seek to summarise the key challenges facing the marine industry and make recommendations on how individuals, industry and academia can work together to create a marine industry that is sustainable for the future. If UK marine industry gets this right it isn't only great news for the companies involved but it will also safeguard the ability of the UK economy to continue competing internationally in this market. This paper will seek to engage industry, academia and stakeholders to turn potential growth in to a reality and increase market share for UK companies.

HOW SHOULD INDUSTRY ACHIEVE THE RIGHT SKILL SET IN DEVELOPING ENGINEERS

R. Ilyat, Graduate Trainee Surveyor, Lloyd's Register, UK

The ultimate aim of any aspiring engineering undergraduate is to graduate with a respected and recognised degree coupled with the kind of skills and experience which makes them attractive to a world renowned and industry Leader. But how does the undergraduate know what Industry is looking for in them? How do they choose which industry, let alone which market area they might wish to specialise in or would most suit them? This presentation will aim to identify the role that industry can play in not only gaining the enthusiasm of a recent graduate, but ensuring that they enter industry with the right skill set. Thus enabling the developing engineer to gain and build on the development of skills and experiences to become a professional engineer. In turn the company achieving future success through change, innovation and therefore increased competitiveness within the Maritime Industry.

GROUP WORKING AND PROJECT ASSESSMENT IN UNDERGRADUATE SHIP DESIGN ASSIGNMENTS

G.Keane, D.J. Taunton, S.R. Turnock, D.A.Hudson

University of Southampton, UK

Practicing engineers work in groups, so team working skills are an area which needs to be developed whilst studying at University and makes an important contribution to their overall employability. At the University of Southampton we offer a group assignment or project to the undergraduate Ship Science students in each of the four years of their degree. These increase in length and complexity over the four years at of the MEng degree starting with a short 1 week project in the first year, to a 4 week design assignment in the second year, then a 10 week design project in the third year and finally a 30 week group design project in the 4th year. In order for group work to be rewarding the task has to be suitable to be tackled by a group, in that it can be broken down into a number of parts with a suitable level of interaction. Groups may be selected in a numbers of ways: student choice, ranking of ability or random. However they are chosen the key aspect seems to be that a group needs a leader to succeed - this is not dissimilar to the experience of industrial design teams. Haavard HOLM, NTNU on day 1

Panel Discussion Followed by a Drinks Reception

Panel Discussion Followed by a Buffet Lunch

This represents a preliminary program

OF ENGINEERS IN THE MARITIME INDUSTRY

2, Southampton, UK

Thursday 15th November

Third Session

9h00-12h40

DELIVERING SHIP DESIGN EDUCATION AT A DISTANCE

Ms E. Muk-Pavic, UCL, UK

The Marine Technology Education Consortium (mtec@work) is a group of four UK universities recognised for their excellence in marine technology education and research: Newcastle, Strathclyde, Southampton and UCL. The consortium offers a flexible postgraduate training program for an MSc degree in Marine Technology, designed specifically for graduates working in the marine industry. As part of their contribution to "mtec@work", UCL provides a long-distance module on Warship Concept Design. The module is design-based which presents a challenge in a long-distance format with limited opportunities for staff-student interaction. This paper reviews the challenges inherent in teaching a design-based subject via long-distance learning. Nowadays a "Virtual Learning Environment" (VLE) is widely accepted in higher education to enhance learning experience. In particular long-distance learning is taking a new turn, as VLE allows the student a very interactive and personal experience.

THE BASIS OF THE SYSTEMATIC MANAGEMENT OF ENGINEERING PROJECTS (SMEP) APPROACH AND ITS MARITIME EDUCATIONAL USAGE

Prof C. Kuo, University of Strathclyde, UK

There are various ways of guiding students to tackle a project but their educational value and effectiveness vary considerably and, in particular, with a large group of students. For this reason a method is needed for students to address key issues associated with both systematic thinking and task organisation, so that they become a life long skills. The SMEP (Systematic Management of Engineering Project) approach has been devised to meet this need. This paper will provide the basis of the approach and how it is applied. The practical implementation of SMEP is given in the paper by Peter Dow who shares his experience on the M Eng degree course at Strathclyde University and how he implemented the SMEP approach in his project which led him winning the top SET award for 2011 (SET stands for Science Engineering Technology).

EXPERIENCE FROM MY M.ENG COURSE AND PREPARING MY INDIVIDUAL PROJECT

P. Dow, University of Strathclyde, UK

The paper gives the experience gained during the five years of study on the M Eng Naval Architecture and Marine Engineering at the University of Strathclyde. The first part will outline key topics covered in each year of study and what aspects were found to be most interesting and stimulating. In addition, the benefits of summer internships and how they interfaced with my studies are highlighted. The major lessons learned would then be summarised. The second part will consider the preparation of the individual project using the SMEP (Systematic Management of Engineering Project) approach and the basis of the approach is outlined in the paper given by Professor C.Kuo. It is hoped that by sharing the experience, an understanding of what the M Eng course can offer along with how the preparation of an individual project can be improved. The key conclusions from the M Eng course are that motivation is key in order to gain maximum benefit from the studies and preparing an individual project has enabled me to acquired skills that would be serve me well in the future.

THE DESIGN AND DEVELOPMENT OF A BLENDED LEARNING MODULE IN MARINE MATERIALS & PRODUCTION TECHNOLOGY

G.R Firth, Senior Lecturer Yacht Technology Southampton Solent University

The intention of the presentation to the RINA Seminar is to summarise an ongoing programme of work in developing a new and innovative Learning Unit Design to shift Tutorial aspects in particular from Face to Face to an On-Line Blended Learning approach within a three Full-Time Bachelor of Engineering degree in the Marine Design and Production field. The context is delivering an undergraduate degree Experimental Learning Unit (ELU) in Marine Craft Materials and Production Technology (MCMP), within the B Eng Yacht & Powercraft Design (Hons) and B Eng Yacht Production and Surveying (Hons) degrees at Southampton Solent University.

Fourth Session

13h40-16h50

DEVELOPMENT OF UNIFIED UNDERGRADUATE CURRICULUM FOR MARITIME ENGINEERING

I. Douglas, Rivers State University of Science and Technology, Nigeria

The paper presents an undergraduate curriculum that is aimed at providing engineering education that constitutes common foundation for the various disciplines of engineering for the maritime environment. The curriculum is structured as a five-year Bachelor's degree programme that is in line with undergraduate engineering programmes in Nigerian Universities. The first three years are dedicated to general and basic engineering science courses as well as courses that are common to the considered maritime disciplines. In the second phase of the programme constituting the last two years, specialized courses that are specific to the individual disciplines will be offered in addition to the more advanced analytical courses.

RISK BASED METHODOLOGIES USED IN DESIGN SUBMISSIONS TO CLASSIFICATION SOCIETIES - THE CHALLENGES FOR THE PROFESSIONAL DEVELOPMENT OF ENGINEERS

V Jenkins, Lloyd's Register, UK

Whilst risk assessment has been used for over 50 years in the nuclear industry, it has only recently been used in the marine industry. Typically this has been from an operational perspective by the use of qualitative risk assessment. The requirements for the use of risk assessment in design can be quite different. Classification Society's plan approval engineers have almost exclusively been involved in the approval of designs using prescriptive classification requirements. The requirement to now review and approve a design which also involves risk based methods is fundamentally different. Lloyd's Register have established a global training and qualification program to ensure that design submissions involving risk based methodologies can be assessed to the same level as that of prescriptive rules.

ENSURING FUTURE YACHT DESIGN AND PRODUCTION GRADUATES ARE SUITABLY EQUIPPED FOR THE MODERN YACHT DESIGN & MANUFACTURING INDUSTRY

G Barkley, Southampton Solent University, UK

In order for Southampton Solent University to stay at the forefront of yacht design and production graduate employability, SSU recently commissioned a survey with managers and employers, working in the worldwide yacht design and manufacturing industry. The survey effectively asks a series of questions as to what they see as the important skills newly qualified graduates should bring with them to their new workplace and to what level should graduates be qualified. The final part of this paper addresses how SSU's two Yacht Engineering courses are responding to these changes in terms of delivery style as well as content to reflect the concerns of both future graduates and employers alike. Various units from the course will be used as case studies to illustrate how students gain valuable employability skills. Finally this paper comments on how the Yacht Design and manufacturing industry can and are working closer with SSU to ensure that the industry is furnished with a steady stream of appropriately equipped and very employable graduates in the future.

REVIEW ON THE SAFETY CULTURE FOR DEVELOPING MARITIME SAFETY

Dr Y. Kwon, Chosun University, Korea

Safety, along with the issue of security, is the most substantial and critical issue to any society or nation of the mankind. The fact that human elements contribute dominantly to the core of maritime accidents, requires not only the technological approaches, but also cultural configuration inherent to the accidents to tackle and shed light on safer and cleaner seas. In the context, comparative study about difference between western and oriental culture bases, such as ontology and relationism, as suggested by Professor Youngbok Shin, has been conducted to see possible incorporation to give effects fully of safety measures to the corresponding societies. For this, current situation of the safety culture of Korea is scrutinized with examples of road traffic safety, then broadly applied to that of maritime safety in order to promote due safety culture. Rod Passingham, BAE system

Panel Discussion

Panel Discussion Followed by a Buffet Lunch

amme and may be subject to change

