

Introduction

by

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Motivation

- Successful ship and maritime systems design depends on the collaborative application of a broad range of engineering competences as the drive for improved efficiency and environmental performance places greater demand on the design community.
- The education of naval architects, marine engineers and others who are the active contributors to the ship design processes needs to be broadened from a focus purely on engineering fundamentals to other disciplines in sciences, social sciences, human sciences, humanities, etc.
- The LRET Research Collegium addresses this latter aspect.

Aim

- The aim of the research programme is to provide an environment where scholarly young people in their formative post-graduate years can learn and work in a small, mixed discipline group drawn from the maritime community to develop their skills whilst completing a project in advanced maritime systems design.
- The project brief will set challenging user requirements which will encourage each team of Scholars to develop an imaginative solution, using their individual knowledge and experience, together with learning derived from teaching which will form a common element of the early part of the programme.

Format

- The programme format provides adequate time for Scholars to enhance their knowledge through a structured programme of taught modules which will focus on the design process, advanced technologies, emerging technologies and novel marine solutions, regulatory and commercial issues, design challenges (such as environmental performance and climate change mitigation and adaptation) and engineering systems integration.
- Guest Lecturers will be drawn from academic research and industry to provide a mind-broadening opportunity for the Scholars, whatever their original specialisation.

Outputs

- A group report for free circulation to The LRET's contacts, all interested universities through, for instance WEGEMT, to all shipyards through international, European and UK trade associations such as CESS, CESA, SSA; EMEC, SMI; ICOMIA, BMF; Intercargo, Intertanko, BIMCO, ECSA, ICS, etc
- A technical paper from each group suitable for publishing in a reputable, peer reviewed journal, for dissemination internationally amongst scholarly technical and scientific audiences
- A group presentation to an invited audience of academics, industrialists, young engineers and students, in Southampton
- Individual presentations by attendees in their respective institutions and countries
- A factual report to magazines such as Professional Engineer, The Naval Architect, Marine Technology, Marine Engineers Review, Ingenia, LR Insight etc.

Outcomes

- World wide exposure of The LRET championing the dissemination of marine science and engineering underpinning advanced marine design issues
- Trained and skilled young engineers in shipyards, shipping companies and allied support services' organisations
- Enhanced understanding of the importance of marine issues by wider public audiences
- Contribution to and influencing policy making/forming forums

The Subject of the Collegium

- With growing human population and the rapid consumption of natural resources on the land mass, the land-based natural resources are fast dwindling. Mining of metals and stones has steadily declined in the last few decades from land based sources. Mines have been exploited to their fullest potential and a vast number of mines are being abandoned due to the fact they are now exhausted.
- Oceans occupy approximately 71% of the earth's surface. It is estimated that the reserves of minerals and metals on the ocean bed is large enough to sustain the energy requirements of the still growing human population for the next few centuries.

Project Brief

- (a) quantification of the environmental challenge;
- (b) understanding of the geo-political legal-social context;
- (c) possible techniques for sequestration;
- (d) one engineering system to exploit seabed resources;
- (e) Economics, financial and logistics challenges.

While all the groups/teams (see next slide) will wish to examine the items (a) to (c), each team should focus on just one (engineering) system in dealing with items (d) and (e).

Project Teams

Group A	Group B	Group C	Group D	Group E
Musa Bashir	Baivau Agarwal	Xiangbo Feng	Lev Egorov	Warren Flentje
Sung Hee Kim	Pan Hu	Jorge Eduardo Parada Puig	Hany Elostá	Sang Eui Lee
Evangelia Kiosidou	Marco Placidi	Elena Shcherbakova	Nicole Luisa Kudla	Anastasia Virnovskaia
Hugh Wolgamott	Harrif Santo	Ryosuke Suzuki	Shiliang Shan	Ping Shi Wang
Wei Zhang	Jin Jenny Zhou	Abubaker Usman	Kyung-Kyu Yang	Suraiya Zabeen

Educational Aims of Project

- Gaining experience of working as part of a team with different experiences and skills
- Tackling a new subject and finding a solution to a problem within a time-, human resource- and finance-constrained situation
- Tackling a real need/problem with industrial and commercial links
- Learning to meet both personal and group objectives
- Working and dealing with people from different cultural, social and educational skills backgrounds
- Handling organisation and administration for a project
- Developing communications and presentation skills

Running the Project

There are no hard and fast rules about conducting such projects but listed below are a few important issues.

- Roles for individuals within the group must be clearly decided; these would be along discipline or subject lines as well as for administrative roles
- Paperwork should be organised well so that records of all work, proceedings of meetings and actions agreed are carefully recorded
- Establish good communication amongst the group and with your project advisors and mentors
- Draw up a programme of work with staged targets and try to work with this programme. Monitor the progress and refine the programme regularly on the basis of lessons learnt in the preceding period
- Keep a central record of all the literature and material related to your project