CITY UNIVERSITY LONDON
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School of Mathematics,
Computer Science & Engineering

Making Waves

Newsletter for Maritime Studies Students and Graduates

No. 5 July 2016

In Search of Parameters for Silencing Singing Propellers

City University London with sponsorship from Finnish engineering firm Wärtsilä has conducted a research project to identify the specific design parameters that create the risk of 'singing' with propellers and delivered a new methodology for design stage risk detection of the singing propeller phenomenon.

Some propellers in service produce a periodic tonal noise, often referred to as singing. The noise has been reported to be of a both harmonic and non-harmonic nature. The phenomenon rather than being anything harmful is a matter of annoyance to the human ear and so has a negative effect on comfort levels onboard operating vessels.

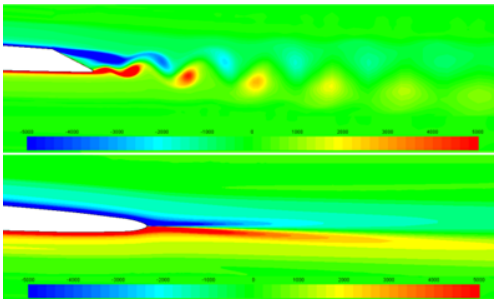


Figure 1. Stream-wise vorticity contour of a profile with a conventional ASE (top) and after modification of the trailing edge (bottom)

There have been many exploratory studies on the origins of this singing and how to prevent it. For most propellers when they have a tendency to sing, conventional remedies such as, single or double chamfers to the tips and trailing edges of propeller blades have shown themselves to be effective in curing the problem. However this does not always cure the singing in a direct or tractable way for some advanced propeller designs.

The propeller singing phenomenon is a complex and sensitive problem in that, for example, from series of nominally identical propellers that has been produced from a common design perhaps only one member of the series will sing.

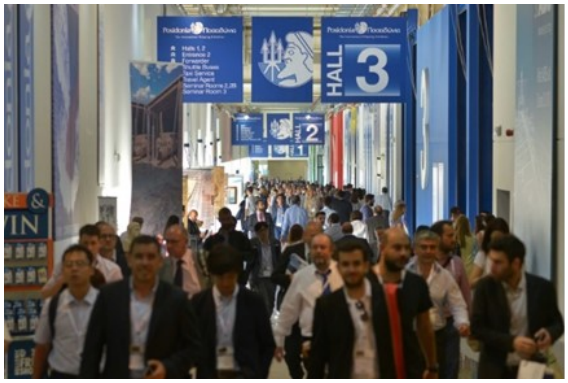
The new research began in 2011 and set out to investigate the range of parameters governing the phenomena of singing, and included analysis of more than 55 Wärtsilä records, and a literature review. The research added significantly to Wärtsilä own internal investigations and was undertaken by Saeed Javdani Zaman as part of a PhD project that was supervised by Professor John Carlton (FREng.) .

This new research conducted at City University London, showed that the singing problem can be controlled by altering the propeller main design parameters, paying careful attention to the vibration modes of the blade, and modifying the trailing edge of the blade to eliminate the shedding vortices and, therefore, also the excitation forces (Figure 1). The results have led to a method by which vessels at risk for 'singing' are identified in the design process. Along with the existing Wärtsilä propeller design features, the avoidance of 'singing' has now been added as a standard Wärtsilä design feature and incorporated into the company's OPTI-Design.

Content

Maritime Business Ahoy following Posidonia 2016 reports Marilena Kokonaki from Greece

Posidonia is a firm fixture for the global shipping industry. Every two years it is an essential place for maritime businesses at the largest gathering in the shipping calendar. Posidonia 2016 was organised under the auspices of the Greek shipping community and the five major associations representing Greek shipping interests: Ministry of Maritime Affairs & Insular Policy, Municipality of Piraeus, Hellenic Chamber of Shipping, Union of Greek Shipowners, Greek Shipping Cooperation Committee, Hellenic Shortsea Shipowners Association and Association of Passenger Shipping Companies.



Posidonia 2016 was held from June 6 – 10 at the Athens Metropolitan Expo.

Left: Ms Marilena Kokonaki, Programme Officer in Greece talking to potential new students. Right: Professor John Carlton FREng, presenting to a packed audience .

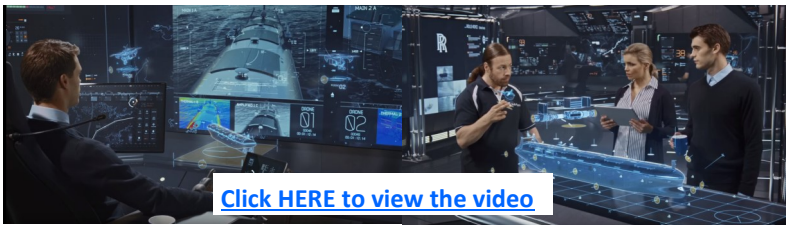
This year over 22,000 shipping industry professionals visited the world's most prestigious maritime event to meet, network and do business with more than 1,800 exhibitors from 90 countries deployed across 40,000 sqm at Athens Metropolitan Expo. City University Staff engaged with maritime professionals and handed out information on our 'Masters course in maritime operations and management', (MOaM) and the 'Master of Laws' (LLM) which is also taught in Piraeus.

Posidonia week included a programme of seminars, technical workshops and lectures. At one of these scheduled seminars Prof. John Carlton FREng. presented some ground breaking research in a lecture entitled "Ship Propulsion Research at City University London"; and Prof. Jason Chuah spoke on maritime laws in a presentation entitled "Disruptive Innovation vs. the Law ". At the end of the seminar there was a press conference for the official announcement of cooperation between City University London and the Hellenic Lloyd's Register in Greece. Mr Theodosis Stamatellos, Regional Manager Marine and Offshore for Greece, East Mediterranean & Adriatic (GEMA) represented Lloyd's on this occasion.

For more information see: Posidonia 2016 , HELLENICSHIP News , A Seatrade Maritime Special Publication HELLAS maritime

Human Factors in Marine Autonomous Systems

In 2016 Rolls-Royce presents a vision of a future land-based control centre in which a small crew of 7 to 14 people monitor and control a fleet of remote controlled and autonomous vessels across the world. The crew uses interactive smart screens, voice recognition systems, holograms and surveillance drones to monitor what is happening both on-board and around the ship.



The vision is based on research that explores the lessons learned from other industries where remote operation is commonplace, such as aviation, energy, defence, and space exploration. (World Maritime News 23rd March 2016)

What are the maritime prospects for this brave new world? Sir Alan Massey, Chief Executive of UK Maritime and Coastguard Agency writing about Marine Autonomous Systems (MAS) notes that "…..we must not forget that shipping is a fundamentally international business, and the seas are global. It is imperative that an emerging sector like MAS is not over-localised in scope." (Seaways November 2015). **We asked module leaders (MSc Maritime Operations and Management) for their reflections.**

Steven Gosling 29/3/2016

Talk of "autonomous", "driverless", "unmanned" and "remotely controlled" ships is certainly a hot topic and I see that one or two students have taken this as their research topic this year.

As with all else in shipping we may see a very slow evolution (rather than revolution) towards autonomous shipping as technology proves itself and political will mounts. I think we will certainly witness much greater remote controlling and monitoring of ships (from shore) where, for example, planned maintenance and condition monitoring will get much 'smarter' and manning levels on-board reduced as a result. Here there would be an economic case to make.

However I cannot foresee anytime soon a totally unmanned, autonomous ship sailing upon the high seas. Finally, I say high seas because smaller vessels on domestic voyages (and the national laws that govern them) is an altogether very different matter. We may see certain Flag States push ahead with their own concessions for their own territorial waters.

John Carlton 30/3/2016

I think it is possible and the idea has been around since I first entered the marine industry. The problems as I see them are principally how IMO, Flag and Port States will view the idea. Their concerns will obviously be around safety, pollution, cyber and other forms of security, piracy and the port management of such ships.

The technology is there to design such ships and operate them: think of the parallels in the aviation industry where if you take an aeroplane to the end of the runway at Heathrow, actuate the appropriate controls it will fly itself to Vancouver and land there. The difference is that the aeroplane still has two, at least, qualified pilots sitting on the flight deck who are there in case anything goes wrong. However, because sea voyages are rather longer than flights to have a minimum of two or three people on a ship may cause psychological and interaction problems and, moreover, at times one needs a number of people to undertake emergency maintenance or repair.

With an aeroplane it is possible to change an engine on the ground at the end of 6 or 12 hours or make an emergency landing, on a ship maintenance and emergency docking can take days if not weeks and months. It is these sorts of issues that will need to be thought through before the idea becomes a reality.

Simon Culshaw 30/3/16

I have sailed with unmanned engine rooms in the early 70s, followed by automatic Catena re-adjustment against water depth and weather conditions. In the 80s and 90s I was heavily involved in Automated Underwater Vehicles (AUVs) that could be programmed to fly at a water depth, course, and respond to alterations. These vehicles are the main instruments used for gathering oceanographic data. Some of these vehicles detect obstacles and will manoeuvre around them (with luck). AUVs can operate for many days, although the only ones I have experience with are 24-hour operating vehicles. Automation is well on the way to becoming a reality. However, consider for example the United Nations Convention on the Law of the sea - UNCLOS 1982, There are quite a few countries who will not allow AUVs into their exclusive economic zone (EEZ). I wonder if this might also be the case with surface vessels. There are several court cases in progress worldwide regarding AUVs but unfortunately as yet there are no clear precedents that can chart the future.

Anthony Rogers 2/4/16

Colregs, the seagoing Rules of the Road, assume that there is a human being, physically on the bridge, with eyes and ears definitively open. Anthony Rogers notes rather enigmatically "..... where is the non-electronic look out?" One should not underestimate the challenge ahead to reframe Colregs in light of emergent MAS systems.

Master of Science in Coastal and Marine Engineering and Management

Application Opening Periods	Opens	Closes
Erasmus Mundus Partner Country Scholarship Applicants	1 Oct 2016	1 Dec 2016
Erasmus Mundus Programme Country Scholarship Applicants	1 Oct 2016	1 Jan 2017
General Admission / Self-funded Applicants 1	Oct 2016	1 Mar 2017

After the first year at NTNU the curriculum is organised into tracks to accommodates student preferences ad interests. Tracks are designed to build a balanced set of courses. CoMEM students will follow established courses by joining national and international students from other MSc programmes. The student builds the specific knowledge required for the MSc track and profile through courses, practical assignments and projects, complemented by internships and the supervised final MSc dissertation project. To expose the student to new challenges and state-of-the-art research in coastal and marine engineering and management, the programme is complemented by visits to on-going project sites and consultancy companies, and by guest lecturers from associated partners and experienced scholars.

TRACK 1 (NTNU): The Arctic Marine Coastal Engineering track

TRACK 2 (City): The Marine Operations and Management track

TRACK 3 (SOTON): The Environment and Management track

TRACK 4 (TUD): The Coastal Engineering track

To find out more visit:

CoMEM
https://www.ntnu.edu/studies/mscomem/programme-content

Erasmus Mundus
http://www.em-a.eu/

Study in Europe
http://ec.europa.eu/education/study-in-europe/

New Horizons at Nautilus International

Steven Gosling, MOaM Operations Module Leader and Lecturer takes up new challenges

Steven Gosling

Nautilus International is a trade union and professional organisation representing more than 22,000 maritime professionals in the UK, Netherlands and Switzerland.

The day-to-day activities of Nautilus International are highly varied as it pursues every possible avenue to improve the working lives of its members. This includes collective bargaining and individual representation as well as work to influence national, European and global policy-makers. It also serves to inform the public about the maritime industry and to ensure that the highest possible safety and training standards are in place.

New to the team at the Nautilus' Head Office (in London) is Steven Gosling, UK Operations Manager, who will support the Strategic Management Team in delivering the Union's strategic objectives and report directly to the General Secretary. He will initially assist in the further development, implementation and promotion of the Nautilus strategic plan and departmental plans. He will also work with Union delegations in preparing for meetings with government, statutory bodies, NGO's and other organisations as well as assisting in the administration of the Union's structures e.g. Committee work and fulfilling regulatory commitments.

Click the title for more information on Nautilus International Campaigns

Smart Information Sharing – is Good for Business writes Philip Martin of MAN Diesel & Turbo SE

Martin Phillip

Education style has undergone distinct change in the last 50 years due to the availability of communication media and the sheer mass of information that is relatively easy to access. In the past reference books and papers were the main source of information and knowledge. With the acceleration of the internet and the "world wide web" both in speed and content, it is possible to find almost anything very quickly.

Humans are basically "lazy" with a fast pace of life and thought process, and will find the path of least resistance to search information to answer immediate questions. In this regard, it is logical that companies should make proprietary information available either on an open web site, or via a protected extranet for specific users.

MAN Diesel & Turbo SE, like other manufacturers, use both open and registered platforms (Nexus extranet) as well as "U Tube" and other social media, thus allowing access to technical information and instructions (written and videos) relating to their Diesel Engine and Propulsion products.

When customers and students (who may be future customers) are researching for projects and dissertations, it is essential that they can quickly search and find the required data and download in the right format.

Knowledge is power but only when it is in the right location: this is not sitting in somebody's filing cabinet or computer memory! Our task is to communicate effectively to anybody who wants this knowledge. If our product shows up first after an internet search, or the researcher knows where to find the data it is likely this product will go into the specification or concept drawing and maybe stay there until contracted?

" Knowledge is of two kinds. We know a subject ourselves or, we know where we can find information upon it" – Samuel Johnson

For these reasons – Smart Information Sharing is really good for Business.

Reference: MAN Marine web site: http://marine.man.eu

For Nexus Extranet access contact: Philip.martin@man.eu Telephone: 01737 781286

City University London Welcomes CoMEM Scholar Dr Jasmine Siu Lee Lam

Jasmine Siu Lee Lam

Dr Jasmine Siu Lee Lam is an Associate Professor and Programme Director at Nanyang Technological University, Singapore. Her research areas are maritime and port economics, logistics, and sustainable development. During her visit to London in April 2016 Dr Lam addressed Maritime Operations and Management students on the topic of **Port Competitiveness and Port Choice**.

Dr Lam's public lecture address was entitled **Business Models and Development Policies for Maritime Clusters**. The lecture presented the corresponding mechanisms, originating from diverse modes of regional economic development, for maritime cluster evolution. Dr Lam discussed business models suitable for each mode of maritime cluster and proposed developmental possibilities in relation to maritime production clusters, maritime service clusters and all-in-one maritime clusters. In addition, real-life case studies were presented for each mode of maritime cluster. The lecture was informative in providing practical strategic recommendations for policy makers and market players on how maritime clusters should be developed with a systematic plan and mapping, en route to higher value-added maritime clusters. Current and future students can access this lecture via Moodle.

Dr Lam is Associate Editor, Maritime Policy & Management, and an editorial board member for the Journal of Supply Chain Management. To learn more about her work go to:

Faculty Webpage http://www.cee.ntu.edu.sg/aboutus/FacultyDir/Pages/csllam.aspx
Research Gate https://www.researchgate.net/profile/Jasmine_Siu_Lee_Lam

Networking Opportunities 2015

6th April 2016. Programme Dinner on-board the HQS Wellington, Temple Stairs, Victoria Embankment London. HQS Wellington is the Livery Hall of the Honourable Company of Master Mariners.

26th February 2016. In the Boardroom at the International Maritime Organisation (IMO) Headquarters in London. IMO is a specialist agency of the United Nations responsible for regulating shipping. The IMO has 171 Member States and three Associate Members.

Site Visit to Shoreham Port UK

story by Valerie Stringer

On a cold windy day in February, twenty postgraduate students and two lecturers from City University London, made an enlightening visit to Shoreham Port on the English Channel close to Brighton.

Valerie Stringer

The two-hour tour around Shoreham port provided a most useful insight into the workings of a thriving 'small' port and its diversified facilities for handling bulk cargoes of various types. We were given a fascinating commentary about the history, development and current activities of the port.

Inevitably, maritime studies often focus on well-known major ports handling the larger vessel sizes and huge volumes of containers. It is easy to overlook the valuable contribution to the international sea transport network made by ports such as Shoreham. The scale of activities here proved to be rather larger than some had anticipated, with an extensive range of berths and cargo-handling provided, using advanced technology as well as addressing environmental issues.

Maritime Operations and Management Students at Shoreham Port, February 2016

Shoreham Facts & Figures

6 KNOTS HARBOUR SPEED LIMIT

844	Commercial Calls
1294	Fishing Vessels
1.8	Million Tonnes Cargo
11047	Leisure Vessels Set To Sea
1	TUG Boat

Information from 2015 Annual Report

Student Employment Update

Union Marine Ltd. works in conjunction with the MOaM course in offering each year two paid internships. The first two students to win these internships are Saeed Javdani Zaman Sagheb and Sindre Lilledahl. If successful at the end of the internship then there is the possibility of conversion to full time paid employment (see Making Waves Newsletter No. 4 January 2016, page 5).

Additionally, our connections with Riviera Maritime and Spinnaker Global (a marine recruitment agency), are helping MOaM and CoMEM students to find work in the Maritime Industries.

Looking ahead Guest Lecture Series 2017

Maritime Security Issues	Mr Peter Cook
Marine Diesel Engines and Equipment	Mr Philip Martin
Ship Operations	Mr Malcolm Parrott
Managing a Shipping Company	Mr Michael Everard
Insurance Broking and Setting Insurance Rates.	Mr Philip Armstrong

For more information email Lucyna.Piechnik@city.ac.uk

Lectures series open to Alumni and postgraduate students

Critical Thinking in Action: A Case study of a Proposal for IMO Unified Interpretation

David Appleton works for Nautilus International a professional trade union organisation for seafaring and shore-side maritime professionals (see page 4). His work in the Professional & Technical Department deals with enquiries of a technical nature to represent members' interests at a range of meetings, committees, and industry bodies. The following is an abridged version of a case study in which David Appleton demonstrates critical thinking in action.

David Appleton

"By studying on the Maritime Operations and Management (MOAM) MSc, I have developed skills knowledge and understanding that involves formulating arguments and proposals and being in a position to defend these arguments. Hunter (2014) defines critical thinking as "reasonable reflective thinking that is aimed at deciding what to believe or do" (Hunter 2014, p3). This can be broken in to two parts i.e. deciding what to believe and what to do. I have now began to implement these practices more consciously into my assessment of propositions and arguments that I have to evaluate.

In evaluating a proposition, I will first consider who is making the proposition. How does this relate to their goals? What do they stand to gain if the proposition is accepted? What do they stand to lose if an alternative proposition is accepted in place of their own? In other words what is the motivation for their argument? Secondly I will consider if their proposition is justified. Is the proposition a reasonable and justified solution to the problem? Is there a simpler solution or, does the problem justify any action at all? Are there any possible unintended consequences? Next I would consider the line of reasoning within the argument. Is there any flawed reasoning or have false causal connections been assumed? (Cottrell 1999)

An applied example of this is in my recent evaluation of a proposal put forward to the IMO by a representative body of the sub-sea cable laying industry. The proposal was that due to problems that had been encountered with small vessels ignoring the requirements to keep a safe distance from a vessel that is engaged in cable laying operations, a "unified interpretation" of the collision regulations was required stating a minimum mandatory distance that must be kept. **A Unified Interpretation is an official clarification as to the meaning of a rule or regulation.**

Following the process of critical analysis here are some of my conclusions:

- The organisation submitting the proposals is a representative body of the cable laying industry and their purpose is to protect the economic interests of their members. This is entirely reasonable as if there was no profit then there would be no shipping industry so it does not automatically mean that their proposals have no merit, but it must be borne in mind.
- In analysing if their proposal was justified, I first considered what alternative solutions were available and identified the fact that cable laying vessels already have the facility to broadcast local warnings advising minimum distances that should be kept and, that coastal states have the authority to take action against vessels who do not comply.
- Considering unintended consequences, I noted that it is a very long standing principle in the collision regulations that minimum distances are not stated and that the skill and judgement of the mariner is relied upon to make the correct decision based on the situation. Stating minimum distances would be a fundamental change that would incur significant cost in training and other associated costs.
- In considering the line of reasoning, I evaluated the supporting evidence submitted which consisted of photographs of fishing vessels operating dangerously close to cable laying vessels and in some cases deliberately blocking them. In making the proposal the organisation had assumed that there was a causal connection between the fishing vessels behaviour and their lack of understanding about what constitutes a safe distance under the collision regulations. My interpretation of the evidence is that the behaviour was deliberate and that it would have been carried out regardless of the understanding of the regulations.

It would have been tempting to use the argument that as it was an industry body putting the proposal forward, that their motivation was protection of profit over safety and they should not be believed, but this would have been a weak argument that did not rely on evidence.

Murray & Kujundzic (2005) held that an argument is a conclusion (or claim) backed by a premise or number of premises. In order to reject an argument it is necessary to find something wrong with either the premise(s) or the link between the premises and the conclusion, or both.

In my opinion, the above observations find sufficient fault with both the premises and the conclusion that I was justified in deciding not to support the proposal. "

References

Cottrell, S., (2013), *The study skills handbook*, Palgrave Macmillan.
Hunter, D.A., (2014), *A practical guide to critical thinking: Deciding what to do and believe*, John Wiley & Sons.
Murray, M. and Kujundzic, N., (2005),*Critical reflection: A textbook for critical thinking*, McGill-Queen's Press-MQUP.

Campus in Piraeus Greece[1] where MOaM[2] joins forces with LLM[3]

[1]Hellenic Lloyd's Register Building, 87 Akti Miaouli, Piraeus Greece
[2] MSc in Maritime Operations and Management
[3] Master's Degree in Maritime Law (LLM)

LLM Programme Director Anna Katsoulaki writes: "For some time now City University London has been welcoming Greek shipping professionals to study law, and business. In the second decade of the 21st century it was clear that market needs were changing. Some shipping professionals were finding it difficult to take an extended break for a year to study for a Master's degree in London. For the past six years the Law School has offered the LLM Programme in Greece. It is the same course as in London but taught in Greece. Today LLM has an alumni of over a hundred prominent shipping professionals in Greece. LLM led the way in pioneering distance learning where the course and the lecturers travel to the students!"

In 2015 LLM joined forces with the City University London's MSc in Maritime Operations and Management. Delivered in the Lloyd's Register building in Piraeus, Greece; and with access to the exceptional Laskaridou Library, both course are taught in English in weekend blocks by British academics, and specialist lecturers from around the world."

12th December 2016 Christmas parties. LLM and MOaM students join forces to double the fun.

Joining forces has marked benefits.

Both programmes are supported by Marilena Kokonaki our Postgraduate Officer in Piraeus Greece. LLM and MOaM students have access to City University online facilities and are invited to attend London classes. In the future there will be joint open days and other events.

Other updates from Greece writes Marilena Kokonaki our Postgraduate Office:

- The first open evening for MOaM was held on 2nd June and it was a great success. Next year this will be a joint event with LLM.
- Captain Simon Culshaw donated books for the City University London Library in Greece and these have now been catalogued.

City University London Staff Profile

Anna Katsoulaki

Anna Katsoulaki joined The City Law School in September 2008. In addition to her responsibilities as Programme Director of the LLM in Maritime Law, she teaches Carriage of Goods by Sea and International Trade Law for the LLM and Tort Law for the LLB.

Before joining The City Law School, Anna was an in-house legal advisor for shipping companies for 10 years.

Anna is a member of HAME (Hellenic Association of Maritime Economists) and Supporting Member of the LMAA.

A Maritime Career can Start with a Degree in English Literature writes Kim-Trang Ngo

Kim-Trang Ngo

Ships have always indirectly been part of my life, as my father is Vietnamese and I spent many of my summer holidays in Nha-Trang and Saigon watching the ships sail by. After completing my BA in English Literature, I wanted to a career in the maritime industry but did not know where to start. A professional within the maritime industry suggested I apply for the MSc in Maritime Operations and Management at City University, London. To me this felt out of reach but I now understand that the programme welcomes people with proven ability in other disciplines as a way of enriching the pool of future maritime professionals. I was pleased to be accepted and also apprehensive as to how I would survive.

Sometimes survival can turn into thriving. Nearly 20 years ago Leonard and Straus wrote in the Harvard review: "To innovate successfully, you must hire, work with and promote people who are unlike you". While I am from a different background to most young maritime professionals I found myself intrigued by questions that were not even on my radar before September 2015. How does a broker bring together a ship owner and cargo owner to make a profit? How do you prepare a cash flow statements and from this understand whether a company is doing well or not? In Law, why has the idea of 'collision at sea' evolved from the concept of negligence while the idea of 'salvage' is contractually founded? In a global maritime environment how can models of cultural diversity help with international communications? My fellow students and I were challenged by these and many other questions around maritime technology, operations, environment, management, risk management and marketing. Never in my life have I worked so hard and literally learnt so much or indeed felt so motivated to do so.

During the course Prof. John Carlton was a motivating mentor and his wealth of experience and knowledge within the industry was inspiring. The friends I have made on this course (all from different cultures) have not only been supportive but have helped me become the individual I am today. Before I started this course I was told that the maritime industry would be difficult for me as it is predominantly male dominated. However based on work experience at W. R. Berkley and shadowing Louise Nevill, Director of Marine Underwriting, I believe that women are as welcome as men into this industry. This Masters has given me a solid foundation to start work within this field. I thank all the Professors, friends and future colleagues from the class of 2016.

STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS

City University London is to join the University of London (UOL) following the UOL Board of Trustees agreeing this on Wednesday 15th July 2015 (Full story)

At the School of Mathematics, Computer Science and Engineering - Staff-Student Liaison Committee Meeting held on 10th August 2016, student representatives asked questions about the transition from City University London **to** City, University of London and specifically what would appear on the certificates and transcripts of graduating students.

It has been confirmed that any student awarded before 1 September 2016 will receive a City University certificate. Any student awarded from 1 September 2016 will receive a **City, University of London** certificate.

Research and Programmes in Maritime Studies

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