LLOYD'S MARITIME ACADEMY

DIPLOMA IN DIGITAL SHIPPING

Study the impact of emergent technologies on the shipping industry

Assessed and Awarded by

NKC NORTH KENT COLLEGE

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DIPLOMA IN DIGITAL SHIPPING
ABOUT THIS COURSE

Through the study of emergent technologies the Diploma in Digital Shipping equips shipping professionals with the knowledge, management skills and digital competencies required to enhance a successful career in ship operations and maritime management.

The objectives of the course include:

1. To develop a holistic corpus of knowledge of new technologies shaping the current business landscape in general and how they affect the shipping industry in particular.
2. To provide global insights and interdisciplinary understanding of technologies in the maritime industries and thus enable participants to apply the advanced knowledge gained.
3. To develop the expertise and professional outlook required to foster a successful career in international shipping.

The course is focused on providing in-depth technology education for the shipping industry, as reflected in the modules and their content.

Diploma in Digital Shipping also provides opportunities for participants to develop a deep understanding of issues in professional practice with a particular focus on shipping data analytics, cybersecurity, blockchain technologies, Internet of Things (IoT) and Artificial Intelligence (AI), all within the legal and ethical contexts of the shipping industry. Such innovative shipping-specific modules provide clear benefits for students.

The modules comprising the course are carefully designed based on present and future needs of the shipping industry, while providing cutting edge knowledge at the forefront of international shipping. The program is unique because it is designed to address the needs of both participants and employers.

Course highlights:

- Delivered by experts in the field – Course Director: **Theodosis Mourozis and Dr. Kyriacos (Kyri) Pavlou**
- Duration: **12 Months**
- Delivery: **Distance Learning**
- Award: **Diploma**

Ideal for:

The course is ideal for all professionals in the shipping industry working at operational and managerial levels, including seafarers, analysts, lower management and department managers.

DIPLOMA IN DIGITAL SHIPPING
OUTCOMES

At the end of the course participants will be able to:

1. Demonstrate understanding of the value of (Big) data, the probabilistic nature of data-driven decision making and the challenges involved in using data analytics to improve business decisions, as well as the ethical and social responsibilities related to the shipping industry.
2. Identify the basic concepts that underpin current shipping IT infrastructures like databases, information systems, operations and processes, IoT, cloud computing, and enterprise resource planning.
3. Demonstrate understanding of information security concepts and challenges, including ethical hazards and techniques on how to mitigate them.

Intellectual Skills

1. Integrate concepts and theories behind data mining/analytics, security, IoT and tech in general.
2. Assess the applicability of business intelligence and data analytics techniques used to collect, process, analyse, and interpret data in the shipping industry.
3. Develop skills related to the. data analytics pipeline from collection, processing, analysis and interpretation of data.
4. Utilise critical thinking and abstract reasoning skills in data-driven decision making in the management of ships and in maritime logistics transportation.

Practical Skills

1. Apply data analytics concepts, theories and techniques to enhance the decision-making capabilities.
2. Develop critical thinking skills by conducting introductory research in the areas of data analytics, IoT and cybersecurity. This will instill and foster academic and practical approaches to solving problems in shipping operations.
3. Develop effective communication skills through written assignments requiring application of acquired knowledge to novel problems, contextual analysis of the relevant bibliography, and critical assessment of solutions proposed.

DIPLOMA IN DIGITAL SHIPPING
COURSE LEADERS

Theodosis Mourozis

Dr Theodosis (Theo) Mourouzis is a cryptologist and information security professional with strong interests in both academia and industry.

He holds a BA/MA in Mathematics and a MSc in Pure Mathematics (PART III - Number Theory Group) from University of Cambridge, a MRes in Security Science and a PhD in Information Security with Specialisation in Cryptography from University College London.

Theodosis is a recipient of the 1st award in the UK Cyber Cipher Security Challenge in 2013 and he has represented Cyprus four times in Balkan & International competitions in Mathematics.

Dr. Kyriacos (Kyri) Pavlou

Dr. Kyriacos (Kyri) Pavlou is a researcher and lecturer in Database Design, Security and Blockchain Technologies. He holds a MA (Cantab) in Genetics from the University of Cambridge and a double BSc in Computer Science and Mathematics from the University of Arizona. He completed his PhD on Database Forensics and Information Accountability at the University of Arizona. He has also worked as a postdoctoral research associate in the Computer Science department of the University of Illinois at Urbana-Champaign.

Dr. Pavlou currently serves as the Director of Executive Education at Electi Consulting and is laso a Research Associate at the UCL Centre for Blockchain Technologies (UCL CBT). He has been a member of the Republic of Cyprus blockchain working group tasked with the formulation of the country's national strategy on blockchain. He has collaborated with several academic institutions working on EU-funded projects and has provided consulting services to a variety of major organizations including EY Cyprus, MSC Shipmanagement and the ECB.

HOW YOU WILL LEARN

Every course is broken down into manageable modules, designed to accelerate your learning process through diverse learning activities:

- Work through your instructional material online
- Interact with your peers and learning facilitators through the online forum to discuss subject related issues and to network with your fellow learners
- Investigate relevant, real-world case studies
- Apply what you learn each week to ongoing project submissions

KEY INFORMATION

When does it start and how long is the course?

05 October 2022 | 12 months

What are the entry requirements?

Participants should be able to prove a minimum achievement of A-Level or equivalent (High School) or those who demonstrate a number of years of relevant industry experience are welcome to apply. You must have an adequate command of English in order to meet the demands of the course.

How is the course assessed?

The course is assessed through a mixture of written course work and online tests. Written assignments are submitted online and written feedback is provided by the marker.

How much does it cost?

Please go online to
www.lloydsmaritimeacademy.com/dds
and see the Fees page for full details.
An interest-free instalment plan is available.
Please contact us for more details.

INTRODUCTION TO DIGITALISATION AND EMERGING TECHNOLOGIES

Module 1

Module 1 introduces the fundamentals of emergent technologies that will be studied in the course. The module lays the groundwork which students can build on when engaging subsequent material and defines each of the tech, provides an overview of their evolution, their interrelation, as well as their immense socioeconomic impact.

Learning Outcomes:

- Identify and describe emergent tech covered in the course.
- Acquire a historical appreciation of how these technologies have evolved.
- Understand how traditional businesses (organisational structures, decision making, processes etc.) have been transformed/ disrupted by digitisation and technology.
- Explain the business risks associated with technology.

ADDED VALUE OF DIGITALISATION IN MARITIME APPLICATIONS

Module 2

This module introduces how digitalisation and information systems can transform the shipping industry. It revisits the technologies introduced in Module 1 and analyses the prospects, opportunities and risks of each one as they relate to the shipping industry.

Learning Outcomes:

- Identify and describe potential applications of emergent tech in the shipping industry.
- Examine the value added from their adoption.
- Analyse future prospects and risks.

DATA MANAGEMENT AND ANALYTICS

Module 3

This module introduces students to the data management lifecycle. The processes of collecting, cleaning, integrating, retaining and analysing data are examined.

Learning Outcomes:

- Describe the data management lifecycle.
- Analyse the challenges in data management and evaluate possible solutions.
- Utilise commercial software to analyse and create data visualizations and dashboards.
- Recognise and classify database systems.

CYBERSECURITY

Module 4

The module introduces key concepts in cybersecurity so that students are prepared to tackle subsequent modules.

Learning Outcomes:

- Understand key concepts of cybersecurity as they relate to software, systems and wetware.
- Create a threat model for simple computer systems in the shipping industry.
- Discuss basic principles and best practices of cybersecurity.

BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGIES

Module 5

The module introduces distributed ledgers and blockchain technologies. It investigates the background of the evolution of blockchain platforms, their properties and attendant regulatory challenges.

Learning Outcomes:

- Discuss the background to blockchain.
- Describe the technologies, its properties and guarantees.
- Explain the use of smart contracts and distributed applications.
- Assess blockchain's applicability to different scenarios.
- Analyse specific use cases of blockchain in the shipping industry.

AUTOMATED DECISIONS AND SMARTER SHIPPING

Module 6

The module delivers an introduction to cloud technologies and data analytics. The Python programming language is introduced followed by a discussion of the main types of analytics algorithms.

Learning Outcomes:

- Explain the meaning of virtualisation, virtual machines and containers.
- Explain cloud computing, its advantages and disadvantages, deployment and service models.
- Understand basic Python scripts.
- Interpret results obtained from executing more complex analytics algorithms.
- Discuss the value of data-driven decision making via mining/analytics and how this improves specific sectors of the shipping industry.

UNMANNED VESSELS AND AUTOMATED SHIPPING

Module 7

In this module we use automated shipping and unmanned vessels as a motivating example to introduce the concepts of AI, IoT and Big data.

Learning Outcomes:

- Understand and discuss the meaning of automated shipping and unmanned vessels.
- Discuss what Big Data are and what unique tech challenges they present.
- Discuss what Cyberphysical Systems and IoT are and how they relate to Big Data.
- Discuss the importance of Artificial Intelligence in shipping.

CHALLENGES, REGULATIONS AND ETHICAL ASPECTS OF EMERGING TECHNOLOGIES

Module 8

This module considers the legal framework of new technologies and the ethical ramifications stemming from their adoption. Issues of anonymity, data ownership, privacy, and ethical decision-making are presented and analysed. The general challenges of AI and ML not addressed by existing laws and regulations are also discussed. The module also identifies recent and future regulations and how emergent technologies can assist with compliance.

Learning Outcomes:

- Define the different laws and regulations that affect shipping and the adoption of new technologies in the industry.
- Explain the ethical challenges presented by the adoption of AI and ML.
- Analyse the trade-offs between employing new tech to solve existing problems and how this can create new challenges.
- Assess the effects of a technology-driven business operations and strategy on economic, social, and environmental sustainability and propose remedial measures.

MANAGING A DIGITAL LANDSCAPE

Module 9

The module discusses the training, investment, maintenance and best practices required for managing the digital infrastructure of a company. Key concepts of the systems development lifecycle are introduced and analysed.

Learning Outcomes:

- Understand issues related to the maintenance of digital infrastructure.
- Analyse the challenges businesses face when undergoing a digital transformation.
- Describe the different phases of systems development.
- Analyse different types of network effects and how these can capture value for a company.
- Explain how technology can facilitate the creation of value.

SHIPPING OF THE FUTURE: THE 4TH INDUSTRIAL REVOLUTION

Module 10

This module revisits some of the main emergent technologies studied previously and examines their relation to 3D printing, robotics, green energy, augmented and virtual reality in an attempt to foresee what the future may hold for the shipping industry.

Learning Outcomes:

- Discuss technologies including 3D printing, robotics, green energy and AR/VR.
- Appraise the importance of new technologies and conjecture about the future of shipping.

DECENTRALISED SEAFARER CERTIFICATION

CASE STUDY

The case study modules employs aspects from prior modules and applies them to pain points currently faced by the industry. Students are expected to draw from the knowledge acquired to develop a decentralised, blockchain-based solution to seafarer certificate management required during the crewing process.

Learning Outcomes:

- Discuss the business logic of the problem, the client requirements and the identification of the relevant stakeholders.
- Perform process mapping and design a new To-Be business process that solves the problem with minimal disruption to the shipping company.
- Evaluate the solution and argue how the several emergent technologies employed by the proposed solution meet client specs and create value for the company.
- Appraise other similar solutions implemented by competitors.
- Analyse the risks of failing to move beyond the Proof-of-Concept (PoC) stage or failing to scale up the network.

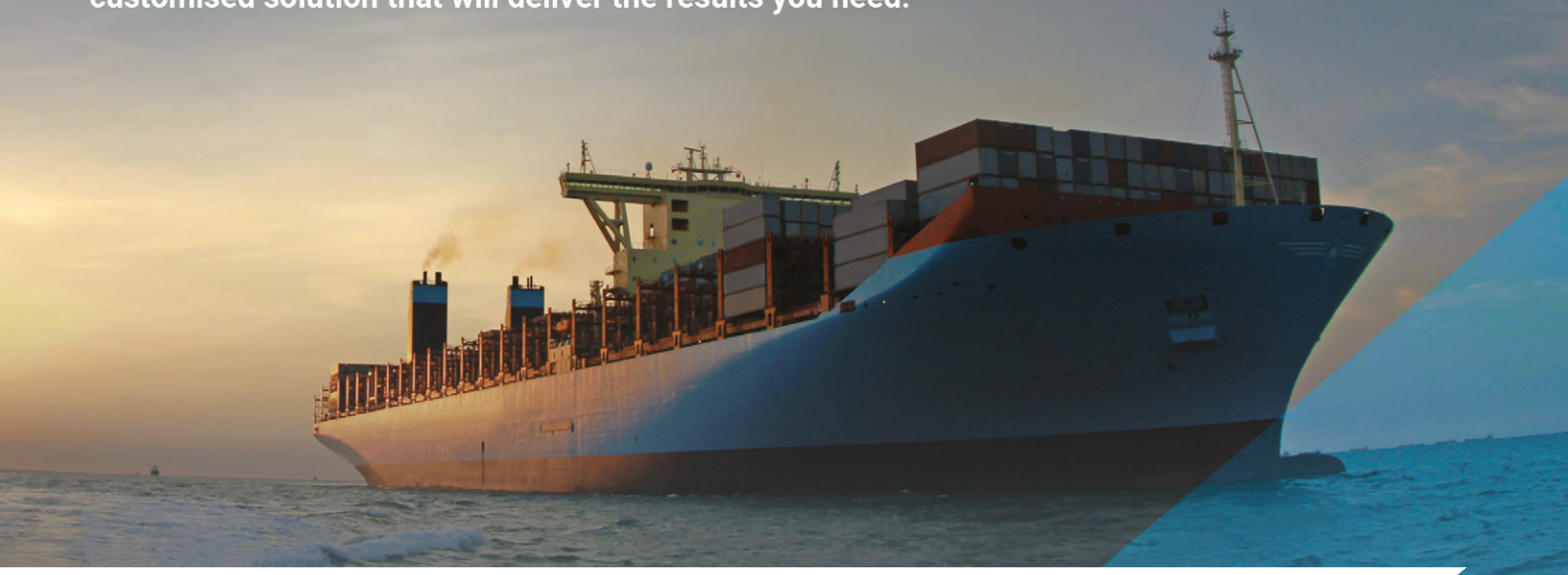
LLOYD'S MARITIME ACADEMY

IN-COMPANY TRAINING SOLUTIONS

WE PROVIDE THE SKILLS AND KNOWLEDGE TO EDUCATE TEAMS AND ENHANCE PERFORMANCE IN YOUR COMPANY

Development for the Shipping, Logistics, Ports & Terminals and Offshore Oil & Gas Sectors - from our experts to wherever you are in the world.

Whatever your plans or challenges, talk to us and we'll develop a customised solution that will deliver the results you need.



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LLOYD'S MARITIME ACADEMY

TOGETHER IS BETTER!

- Learn with your colleagues or team members to build on your knowledge together
- Investing in training for your employees is a proven way to increase retention
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DIPLOMA IN DIGITAL SHIPPING
WHO WE ARE

LLOYD'S MARITIME ACADEMY

ABOUT LLOYD'S MARITIME ACADEMY

Lloyd's Maritime Academy was born from Lloyd's List.

Lloyd's Maritime Academy is the trusted brand for professional development, working with leading academic and industry bodies to provide accredited education and training where it is much needed.

We are stepping up investment in new learning management platforms, improved content and learner resources to enhance your experience and ensure maximum reward for the investment you make in your future.

We continue to research new topics to provide you with the qualifications needed for a successful career; supporting a safer, cleaner and more efficient shipping industry for decades to come.

We look forward to welcoming you onto one of our programmes.

WHY TAKE A LLOYD'S MARITIME ACADEMY COURSE?

- **Accessible** – 24/7 availability from wherever you have an internet connection
- **Flexible** – take control of where, when, how and the rate at which you study
- **Professional** – industry leading course directors and tutors
- **Quality** – study the same course used by corporations for internal training
- **Network** – with tutors and like-minded professionals from around the world. Use our online tutorial forum to ask questions and share knowledge
- **Save money** – no additional travel or accommodation costs

NKC NORTH KENT COLLEGE

ASSESSED AND AWARDED BY NORTH KENT COLLEGE

North Kent College is a major UK college based on the River Thames providing further and higher education in the south east of England. The College caters for more than 4,500 students across two main campuses, with a wide variety of academic and vocational courses, as well as professional education and training via short courses, part-time study or distance learning. Full-time and part-time higher education programmes and foundation degrees are delivered via a partnership with the University of Greenwich.

The National Maritime Training Centre at North Kent College is widely recognised within the maritime industry for providing sector-specific training within high quality industry-standard facilities.

The College is committed to helping students to achieve their ambition – whether they wish to gain their first job, achieve high-level professional qualifications, change career or prepare for their next promotion. The College takes pride in working in partnership with industry to provide the correct mix of knowledge and practical skills that are required to sustain the workforce.

North Kent College is a partner of Lloyd's Maritime Academy in delivering this course and manages assessment, quality assurance and the award of the professional development Diploma.

www.northkent.ac.uk/nmtc

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If you have any questions about the course or applying, please contact us on:

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