COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF BUSINESS
ACADEMIC UNIT	DEPARTMENT OF SHIPPING, TRADE AND TRANSPORT
LEVEL OF STUDIES	POSTGRADUATE (MSc) "MBA in Shipping"

COURSE CODE	**12051-11**		**SEMESTER**	**2nd Semester (Spring)**
COURSE TITLE	**DIGITALIZATION, AUTOMATION AND BLOCK CHAIN IN SHIPPING AND SUPPLY CHAINS**			

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	*English*
IS THE COURSE OFFERED TO ERASMUS STUDENTS	*Yes*
COURSE WEBSITE (URL)	https://www.stt.aegean.gr/mba-in-shipping/programma-mathimaton/

(2) LEARNING OUTCOMES

Learning outcomes *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.* *Consult Appendix A*   • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*   • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*   • *Guidelines for writing Learning Outcomes*
After successfully completing this course, the students will be able to: 1. Understand the impact of digitalization, automation and blockchain in shipping.   2. Identify and use reliable sources of information on the subject in English.

General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- Search for, analysis and synthesis of data and information
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

DEFINITION, DESCRIPTION, AND IMPACT ON SHIPPING OF
- 4IR
- Artificial Intelligence
- Virtual Reality and Augmented Reality
- Machine Learning
- Big Data Analytics
- Internet of Things

SPECIFIC APPLICATIONS IN
- Cybersecurity
- Ship to shore communication
- Digital twins
- Automation - Autonomous Ships
- Ship Management and Operation
- Voyage efficiency
- Safety
- Predictive Maintenance

BLOCKCHAIN KNOWLEDGE, SKILLS, AND ATTITUDES REQUIRED IN DIGITAL SHIPPING

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face and distance synchronous transmission of lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Lectures using computer presentations and video, • Support of learning and communication with the students using the e-learning platforms e-class and Big Blue Button
TEACHING METHODS *The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art*	

Activity	*Semester workload*
Lectures (including industry speaker short presentations)	18 hours
Study and analysis of bibliography	36 hours

workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	Homework/assignments/ Teamwork	18 hours	
	Non-directed study	28 hours	
	Course total	100 hours	

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Language of the evaluation: English • At the fourth lecture, the students will write a midterm exam (40% of the rating) and after the six lectures will write the final exam (40% of the rating). • Types of questions: multiple choice questionnaires, short-answer questions, open-ended questions. • In-class participation, interaction, and teamwork (20% of the rating)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Enna Hirata, Maria Lambrou, Daisuke Watanabe, "Blockchain technology in supply chain management: insights from machine learning algorithms", Maritime Business Review, https://doi.org/10.1108/MABR-07-2020-0043, 2020.
- Maria Lambrou, Daisuke Watanabe, Junya Iida, "Shipping digitalization management: conceptualization, typology and antecedents", Journal of Shipping and Trade, Vol. 4, Issue 11, 2019.
- Maria Lambrou, Daniel Samson, Masaharu Ota, "Shipping innovation orientation and capabilities in the digital era", International Journal of Business Innovation and Research, Vol. 17, Issue 1, pp. 1-22, 2018.
- M.A. Lambrou, "Innovation Capability, Knowledge Management and Big Data Technology: A Maritime Business Case", International Journal of Advanced Corporate Learning, Vol. 9. No2, pp. 40-44, 2016.
- IMAREST, "Autonomous shipping – Putting the human back in the headlines", Singapore, April 2018
- Lloyd's Register, "Digital Ships for autonomy and remote access/control", December 2018
- Lloyd's list, "Digitalization uncovered: what's next for shipping?", 2020