

Navigation and Maritime Transport Programme

Presently the maritime transport represents the motor of the global commerce growth providing sustainable development of worldwide economy. In the past 20 years the volume of cargo carried by sea has doubled, while the number of ships has increased by almost 60%. Consequently, Constanta Maritime University has decided to develop its educational offer by providing two curricular tracks in English. As a target group it focused on foreign citizens wishing to study in English in a country member of the European Union. The university organizes students' training through the undergraduate and Master's Degrees and at present is developing a school for doctoral studies in Navigation and Naval Engineering domain.

The University provides graduates with theoretical and practical competencies so as to ensure deck watchkeeping. Apart from the basic training allowing graduates to become a maritime officer, they will have the necessary knowledge to work in a maritime company, brokerage and agent companies, international maritime related companies or port administrations.

Studies are organized in two cycles. The first one, university degree studies, takes four years and 240 ECTS, and graduates receive the Engineer title. The second cycle, master degree studies, takes 1.5 years, allowing graduates of the first cycle to continue their studies and improve their knowledge about a specific direction. When graduating, they obtain the Master's degree.

Study programmes are issued according to the European standards, combining the Romanian maritime school tradition with the present tendencies towards informatics and modern practices of higher education, the quality of the teaching personnel being approved at national and international level.

The curricula for the new study programmes have been developed according to an analysis of demands of European universities and other international maritime universities and according to the consultancy of chairs, students, graduates' representatives, employers, maritime companies and crewing agencies. The main targets have been established during meetings between the University and representatives from crewing agencies, while the faculty maintained its traditional courses, representing fundamental points of reference for the navigation and maritime engineering domain, which were part of acquiring and consolidating the faculty's recognition both nationally and internationally.

Apart from all these, there is also a number of modern, updated disciplines defining the university degree graduate's profile stated in the study programmes of the University.

Curricula harmoniously combine teaching activities with applications (tutorials, projects, and laboratory work) and practical stages in industrial units, onboard practice by means of Agreements with maritime companies and crewing agencies.

During the teaching process, in laboratories provided with complex navigation and ship's manoeuvre simulators, real scenarios can be tested and possible errors may be corrected. All laboratories have internet access, providing source for homework solving, annual projects, degree projects and dissertation thesis drawing up. Students and master's degree students are encouraged to perform scientific research activities through faculty's research contracts.

Students can participate in the mobility programme ERASMUS. Students of the university can also gain a scholarship of 100 EURO per month granted by the Japanese Company Nippon Ship management NYK, after a careful selection of best students organized by the company representatives. Apart from this scholarship, as a support for their tuition, students can also receive wages of 400-500 Euros during their onboard training as cadets.

Students' training programme develops according to the European transfer credits training programme (ECTS – European Credit Transfer System). The credit transfer system functions according to the mutual compatibility amongst academic institutions participating in this system. The three main elements of the credit transfer system are: information about teaching subjects, mutual convention between partner institutions and students, and using ECTS credits, as a measurement of student's activities.

There are 60 ECTS credits per year which means 30 credits for each semester. Therefore, the University- Bachelor degree, 4 years of study – sums up a number of 240 ECTS, while the Master's degree programme – three semesters of study- amounts to a total number of 90 ECTS.

Students are accommodated in modern hostels (of about 500 available hosting places). They have internet access, reading rooms, and modern equipped kitchens for preparing their meals.

The university also provides a canteen with good food at modest prices. In the neighbourhood there are: a commercial shopping area, modern restaurants and clubs where students spend their leisure time as pleasantly as possible.

The curriculum provides students with coherent professional training and a large knowledge spectrum by harmoniously combining fundamental disciplines, specific engineering disciplines and specialty disciplines. As a result, at the end of the 4 years of study, students will have competencies and general cognitive abilities, as well as specific abilities and competencies according to their specialization. The great majority of students are training for a maritime career, but even so, this specialization is flexible enough to provide competencies in the operation and port activities domain, for those who do not wish to embrace a seafarer's career.

General cognitive competencies and abilities for undergraduates of Navigation and Naval Transports faculty.

Undergraduates will be able to

- ✓ make use of electronic charts and complex calculi of navigation problems based on the knowledge accomplished by: Electronic Navigation, Radar Navigation, Seamanship, Theory, Construction and Vitality of Ship, Bridge Team Management, Commercial Operation of Ship, Voyage Planning and Execution, Astronomy and Celestial Navigation, Ship Handling, Navigation in Special Conditions;
- ✓ conduct and coordinate experiments, measurements, analysis and interpretation of data and use of techniques, special instruments and modern practices in the engineering activity based on the knowledge accomplished by: Electronic Aids to Navigation, Thermodynamics, Naval Engines, Electronic Transducers and Measurements, Mechanics, Electronic Devices and Circuits;
- ✓ solve managerial, communication, professional ethics, specific legislation and environment protection problems based on the knowledge achieved by: Bridge Team Management, Maritime English, International Maritime Law, Global Maritime Distress and Safety System, International Maritime Organizations;
- ✓ the ability of team working is acquired in labs held for the engineering and specialization disciplines. Skills are also improved by working in teams, by participating in scientific workshops and by performing their annual practical training.

Specific competencies and abilities on graduation of specialized courses:

Undergraduates will be able to

- use electronic charts and solving complex navigation problems by the knowledge accomplished at: Electronic Navigation, Radar Navigation, Voyage Planning and Execution, Estimated and Coastal Navigation, Ship Handling and Navigation in Special Conditions;
- draw and interpret static stability curves by the help of knowledge accomplished at: Theory, Construction and Vitality of Ship, and Maritime Transport – Technical and Operational Problems;
- solve managerial, communication, professional ethics, and specific legislation problems by the knowledge accomplished at: Ship Management and Administration, Commercial Operation Of Ships, International Maritime Law and International Maritime Organizations.

The specialization particulars are provided by competences and abilities the students acquire on completing the B. Sc. degree. They study the common core of disciplines (fundamental subjects such as Mathematics, Algebra, Physics, Chemistry a.s.o) as well as Estimated and Coastal Navigation, Seamanship, Electric Aids to Navigation, Ship Handling, Astronomy and Celestial Navigation, Theory, Construction and Vitality of Ship, Bridge Team Management, Electronic Navigation, Radar Navigation, Commercial Operation of Ships, Management and Administration of Ships, Voyage Planning and Execution, which are compulsory for all the students of Navigation and Maritime and Inland Waterways Transport track.

On graduation, after four years of study, students will have the proper skills for planning and execution of international voyages, for using the navigation equipment on board ship, for performing the loading/discharging operations, for the drawing up and interpretation of Charter Parties. Graduates will also be able to use modern management methods of personnel on board ship.

The required knowledge will be gained not only by means of theoretical courses, but also by using simulators and modern lab facilities such as: "Autolaud Software", "Autopower Software" and "Autohydro Software" for Theory, Construction and Vitality of Ships; "Software – Simulator for

handling liquid cargo”, “Laboratory of handling liquid bulk cargo”, “Software – Simulation for navigation and ship handling of TRANSAS NT PRO” type; “Software multisim education with MCU – module – 10 USERS – License”, “Soft TRANSAS NT Expert 4000”, “The laboratory of radar navigation”; “The laboratory of electronic and special conditions navigation”, “Laboratory of astronomy and celestial navigation”, “laboratory of estimated and coastal navigation”.

The inductive pedagogy will be used in classes, projects and laboratories and it will develop the taste for real facts and innovation. The abilities of analysis, conception and accomplishment will be continuously developed so that the graduate will be able to deal with complex systems of navigation.

The relationship of “Navigation and Maritime Transport” specialization with the maritime industry and the economic environment

Navigation and Naval Transport Faculty is training engineers for navigation and naval engineering field, according to the national standards developed by the Ministry of Education, Research and Innovation, and to the international standards stated by IMO (International Maritime Organization). Apart from the evaluations made by the Ministry of Education, Research and Innovation, our curricula are assessed and approved by the Romanian Naval Authority considering the legislation and recommendations of the International Maritime Organization, and of the European Agency for Maritime Safety and thus, the certificate of competency has international recognition.

The B. Sc degree graduates (four years of study and 240 transferable credits) have the advantage of a double certification. They get:

- Engineer diploma in the Naval Engineering and Navigation field (the European equivalent of Bachelor of Science diploma);
- Officer of the Watch Endorsement.

Constanta Maritime University is particularly aiming at providing training by means of delivering safety courses for the students of all maritime specializations as well as guiding students who carry out onboard training. First year students are attending four safety courses necessary to get the Seaman’s Book and Apprentice Deck Officer Certificate:

1. First Medical Aid;
 2. Basic Fire Fighting;
 3. Personal Survival Techniques;
 4. Personal Safety and Social Responsibilities on Board Ships;
- In the second year, students take part in another four safety courses:
5. Transport and Handling of Dangerous, Hazardous and Harmful Cargoes;
 6. Pollution Prevention of the Marine Environment – MARPOL 75/78;
 7. Proficiency in Survival Craft and Rescue Boats (other than fast rescue boats);
 8. Maritime English.

In the third year students attend the last package consisting of:

9. Radar Navigation, Radar Plotting and Use of ARPA – Operational Level;
10. GMDSS/GOC – Global Maritime Distress and Safety System.

All the students that have passed the safety courses and the medical tests get the Seaman’s Book and the Apprentice Deck Officer certificate from the Romanian Naval Authority. As a consequence, students can be trained on board merchant ships. This period of training (12 months) is compulsory for getting the Deck Officer Certificate of Competency. Students’ training can be performed on board merchant ships of 500 GRT or above, on international voyages. In order to ensure the onboard training and get the minimum sea service required for their promotion to OOW, Constanta Maritime University concluded Collaboration Agreements with 22 crewing agencies. The crewing agencies develop programs for monitoring the professional evolution of the deck cadets, and at present the best students of third and fourth years from all maritime specializations are on board ships engaged in international voyages.

PROGRAMMES FOR THE CONTINUOUS TRAINING OF STUDENTS.

Bridge Team Management course aims to familiarize students with the bridge systems operations considering the special conditions of ship operation and to perform teamwork procedures required on board the ships. This course consists of drills based on bridge simulation. The drills are supervised by an instructor allows the students/officers to familiarize with the instruments and controls found on the bridge of a merchant ship. The student/officer will be able to locate and use the bridge equipment under normal operating conditions.

The exercises get more and more difficult and the student/officer gets accustomed with the procedures used for turning on the navigation equipment. Every exercise is preceded by a briefing and followed by a group discussion – debriefing, in which the actions and decisions taken by the student/officer are analyzed.

During exercises, every student/officer will play different roles within the bridge team and will have the possibility to take part in all the watch activities, covering all the steps in the chain of command of the navigational bridge.

The scope of these exercises is to achieve the following goals:

- Familiarization with the use of instruments and controls from the navigational bridge;
- The ability of making decisions;
- Organizing the bridge team;
- Understanding the individual role in the chain of command while working in team;
- Understanding the specific tasks according to certain situations;
- Understanding the necessity of a good planning, following the step by step check lists, and the scheduling of each specific procedure;
- Good understanding of the watchkeeping procedures;
- Getting the expertise in identifying the operational problems and solving them;

Global Maritime Distress and Safety System Long Range Operator's Certificate Course – GMDSS LRC

This course consists of the students' familiarization with the issues considering the fundamental theoretical concepts about: maritime radio - communications and satellite equipment and systems (SMM – Maritime Mobile Service and SMMS – Satellite Mobile Maritime Service), communication techniques used in GMDSS, radio frequencies, GMDSS functions, and communication procedures etc.

The goal of training is to achieve abilities for operating, testing and maintenance of the GMDSS equipments and systems provided and set up on yachts and pleasure boats.

This course is both theoretical and practical, aiming at complying with the requirements of the curriculum for , SMMS – GMDSS – LRC Radio Operator Certificate, issued according to that specified in A IV/2 STCW Code, the CEPT ERC/REC 31 – 05 E recommendations and to IMO courses models and ITU documents.

The exercises are supervised by trained instructors, being held on the GMDSS KMSS NORCONTROL CAPELLA Simulator and on the installed communication systems which were adapted to students' training.

Each exercise is preceded by a briefing and followed by a group discussion – debriefing concerning the actions and decisions made by the student.

Exercises are complex and follow the subject taught; they are interactive and developed by the GMDSS communication network.

While solving the exercises, each student plays different roles pertaining to the scenario of the traffic exercises and SAR (Search and Rescue) exercises.

Tankers via e-learning courses:

- Tanker Familiarization;
- Gas Tanker;
- Oil-Chemical Tanker.

These courses are IMO requirement for officers and ratings on tankers. Courses are delivered in English and they are designed for the Romanian and foreign citizens. Courses consist of theoretical modules, self-assessment tests and practical exercises on the simulator.

DETAILED TEACHING SYLLABUS

COASTAL AND ESTIMATED NAVIGATION

The course's main objective is to ensure a complete volume of specialty knowledge necessary for the deck officers in charge of navigational watch to meet the standards of minimal competence as provided by Chart A-II/1 of the STCW Convention. After graduating this course, a student with an intermediate training level should gain an adequate volume of theoretical knowledge in order to: determine the ship's position by using: coastal landmarks, beacons, buoys, taking into account the effects that might be caused by wind, tides and currents; use navigational charts and maritime

publications such as: tide charts, navigation warnings, radio warnings; acquire knowledge of the main elements of earth magnetism.

SEAMANSHIP

The present course is part of the training of future deck officers and it is organized in stringent conformity with the International Convention provisions regarding the standards of training, certification and watchkeeping (STCW 95).

The main objective of this course is to provide a complete volume of specialty knowledge necessary for deck officers to meet the minimal standards of competence as provided by: chart A-II/1 of STCW Convention, SOLAS Convention (1974) and the subsequent amendments, MERSAR Manual, Resolution A. 187(VI) and A. 229(VII).

On completing this course, a student with an intermediate training level should acquire an adequate volume of theoretical knowledge necessary for getting general ship knowledge, identifying her component parts and knowing to correctly name different elements. Identifying the ship's installations and presenting their operational principles.

SHIP HANDLING

The course designed for Ship Handling aims at acquainting future deck officers with the basic principles concerning the handling of ships and crafts in narrow waterways (rivers, canals, estuaries, straits) and shallow waters, in different hydro-meteorological conditions, especially those related to search and rescue operations, voluntary grounding and un-grounding as well as those regarding the ship's specific manoeuvres- mooring, anchoring, docking, ocean, maritime and port towing, as well as cyclones avoidance. The course is based on the provisions which are mainly to be found in the International Convention STCW 1995. The model of this course attempts to meet the minimum of standards stipulated in Chart A-II/1 of STCW 1995. This course's guide book meets the requirements annexed in the resolutions: A. 160(IV), A.426(XI), A.439(XI) , A.678(16) developed by IMO .

On graduating the course on ship handling and acquiring the theoretical knowledge of ship and her installations as well as of her nautical qualities, students will be able to: analyze and describe the ship handling situations under normal meteorological conditions, but, especially under unfavourable weather conditions; take action under any circumstance and get familiar with the ship's roles in emergency cases: when the ship is offshore, in port, or when brought alongside the quay; take action in case of grounding; apply the required procedures in case of man overboard, or when assisting another vessel running into danger.

HYDROMECHANICS AND WAVES THEORY

The discipline's objectives are: Fluid Mechanics, Physical properties of fluids; general equations of ideal fluid movements; Euler equation; Bernoulli equation; Impulse theorem and impulse-momentum theorem; Potential Movement; Flow function and velocity potential function; particular cases of potential movements.

THEORY, CONSTRUCTION AND VITALITY OF SHIPS

The proposed course model meets the minimum of standards according to STCW 1995 and the IMO courses mentioned above, sometimes exceeding these standards. The basic theoretical knowledge in the present course guide comprises the following: means of generating the main forces implied (displacement and buoyancy), their equilibrium (according to the ship's floating positions, that is, upright or heeled over), time period of recovery and its variation due to the angle of loll, the ship's moving characteristics (rolling + pitching), the hydrodynamic forces acting on the hull or on different machinery (propulsive or steering) and their effect on the ship's evolutonal quality.

In the same time, the theoretical notions mentioned above, are completed by tutorial classes or within a yearly project, by practical methods of assessment or calculation, necessary aspects in the activity performed on board ship. Therefore, the following are thoroughly studied: methods for calculating ship's displacement and distribution of weights on board based on the specific documents (cargo plan or hydrostatic characteristics- the diagram of straight hulls) as well as the ways of assessing stability (both initial stability and static stability).

ASTRONOMY AND CELESTIAL NAVIGATION

On graduating this course, students with an intermediate level of training will acquire an adequate volume of theoretical knowledge of astronomy and astronomic navigation in order to accurately determine the ship's position, taking observations by day or night.

In the same manner students will be capable of determining the compass corrections taking astronomical observations of celestial bodies at sunset and sunrise or of a celestial body from a certain height so that this verification can be made at least one time during watchkeeping. The necessary practical skills comprise: verification of the sextant's adjustment, accurate determination of its index errors, accurate measurement of the vertical angles on the celestial bodies, usage of the ship's chronometer, determination of chronometer's correction, rapid and accurate astronomical calculations using the nautical publications as well as the astronomical position line's plotting and identification of the ship's position coordinates.

MARINE METEOROLOGY AND HYDROLOGY

After completing this course, a student with an intermediate training level should gain an adequate volume of theoretical knowledge necessary for:

Detecting and understanding the meteorological phenomena and prognoses; being acquainted with the characteristics of different frontal systems, the reporting and registering procedures; applying the obtained meteorological information; being knowledgeable of and studying thoroughly the oceanographic elements (marine hydrology).

TRAINING

Mastering the theoretical knowledge specific to seamanship in general and to steering oar and sailing crafts in particular; appropriately getting the driving skills for manoeuvring and maintaining steering oar and sailing crafts; correctly performing practical marine spike seamanship.

NAVAL INSTALLATIONS

The discipline's objectives are: to be able to explain the difference between fire tube, water tube and steam boilers; to be able to describe exhaust heat boilers, heat exchanger of exhaust boiler; to describe steam generators and explain their usage; to describe boiler feeding pump; to describe the effect of salts dissolved in the boiler's feed water and the way feed- water is treated; to explain the concept of priming (water loading), the concept of distillation and technical water installations.

THEORY, CONSTRUCTION AND VITALITY OF SHIPS

The proposed course model meets the minimum of standards according to STCW 1995 and the IMO courses mentioned above, sometimes exceeding these standards. The basic theoretical knowledge of the present course guide comprises the following: the means of generating the main forces implied (displacement and buoyancy), their equilibrium (according to the ship's floating positions, that is, upright or heeled over), the time period of recovery and its variation due to the angle of loll, the ship's oscillating characteristics (rolling + pitching), the hydrodynamic forces acting on the hull or on different machinery (propulsive or steering) and their effect on the ship's evolutionary quality.

ELECTRICAL AIDS TO NAVIGATION

On graduating this course, a student should possess an adequate volume of theoretical knowledge referring to: the errors' determination of the magnetic compass and gyrocompass; the control system of the ship's steering gear and automatic pilot; operational procedures, modalities of switching from manual steering to automatic pilot and vice versa; correct and adequate use of the electrical aids to navigation.

HYDROMECHANICS AND WAVES THEORY

The present course is part of the training of future deck officers on board ships employed in oceanic navigation and it is developed in strict conformity with the provisions of STCW 95 Convention.

The main objective of this course is to provide a complete volume of specialty knowledge necessary for fulfilling the standards of minimal competence.

The course structure is in compliance with the requirements included in Model Course 7.03 (AII/1) - Officer in Charge of Navigational Watch – developed by IMO and aims at acquiring basic knowledge concerning the dynamic action of marine environment on ships and port structures and developing technical thinking regarding the operation of hydraulic installations by means of understanding the theoretical phenomena.

NAVAL INSTALLATIONS

The present course is part of the training of future maritime officers and is organized in stringent conformity with the provisions of the International Convention regarding the standards of training, certification and watchkeeping (STCW 95).

The course's main objective is to provide a complete volume of specialty knowledge necessary for the deck officers to meet the minimal standards of competence.

The course structure is in accordance with the requirements comprised in Model Course 7.01 (All/1) – Master and Chief Mate – developed by IMO. On completing this course, the student will gain an adequate volume of knowledge regarding the operation of different naval installations on board ships, especially those related to the deck department.

ELECTRIC AIDS TO NAVIGATION

The course objectives are the following: to have knowledge of the echo sounder; to describe the basic principles of echo-sounding equipment; to identify the main components of a simple flow chart of an echo-sounder and to point out the accepted value of the speed of sound in the sea water and the limits by which the real value can be attained, to identify the physical factors that affect the speed of sound in the water, to operate with a representative echo sounder and illustrate the basic maintenance performed by the user – plate cleaning, paper change.

MARINE METEOROLOGY AND HYDROLOGY

The course main objectives are the following: to be knowledgeable of the meteorological instruments on board ships; the functioning principles of mercurial barometer; the functioning principles of the aneroid barometer; to read the atmospheric pressure indicated by the aneroid barometer; to read the temperature indicated by the thermometer; the functioning principles of hygrometer; the functioning principles of the wind thermometer; to read and understand the wind speed; the atmosphere's composition and its physical properties; the composition of terrestrial atmosphere (the composition of dry air, water vapours and aerosols); to represent and schematize the temperature change vertically on the first 100 km in the inner atmosphere.

COLREG

The course structure is in compliance with the requirements comprised in the Model Course 7.03 (All/1) - Officer in Charge of Navigational Watch – developed by IMO.

The course's guide drawn up for the purpose of complying with the pursued objects consists of theoretical and practical issues concerning: the specifications comprised in the regulation, their application method, definitions, lights and signals according to the regulation, their display method and signification, the regulations; addenda.

Operational objectives: on completing this course the student will be able to: have a complete and detailed knowledge of the content, of the application and signification of the Regulation for Preventing Collisions at Sea (COLREG), to know the application of the specifications contained in the Regulation, to acquire knowledge of the regulations in order to perform safe navigation, as well as to apply them.

COMMERCIAL OPERATION OF SHIPS

This course aims at teaching future deck officers the regulations and concepts concerning the commercial aspect of the carriage of goods by sea, the method for realizing International Maritime Trade. The training of students is fulfilled according to the requirements stipulated by the Convention STCW1995 and IMO Model Course 7.01- Master and Chief Mate.

At the end of this course students will be able to: know the terms that refer to lay days and demurrage; get acquainted with the problems that might arise when issuing bills of lading and delivering cargoes; make a distinction between different types of bills of lading; work out a calculation regarding voyage incomes and expenditures

BRIDGE TEAM MANAGEMENT

This course is an attempt to provide the future deck officers in charge of watch keeping activities, with the appropriate skills regarding the application of procedures during watch keeping, with a view to the insurance of ship and crew safety and marine environmental protection.

The application of STCW 95 provisions, stipulated by chapters A-VIII/2 and B-VIII/2.

The acquisition of appropriate skills concerning the application of procedures during the bridge watch keeping, the surveillance of ship handling activities, as well as of the safety procedures which are the responsibility of the Officer of the Watch during the ship's stay in the harbour, including the handling of cargoes that present a high level of risk.

At the end of the course, students will gain additional experience with a view to the handling of ship under different circumstances and will better integrate in the bridge team activity when managing the ship in normal conditions or emergency situations.

Students will particularly acquire knowledge regarding: the use of engine and steering wheel for the handling of ship; the understanding of the impacts on ship due to the wind, the currents, the shallow water, the squat effect and to the narrow waterways as well as to the conditions of ship loading.

INTERNATIONAL MARITIME ORGANIZATIONS AND CONVENTIONS

This course aims at teaching future deck officers the national and international provisions with regard to the safety of life at sea, the protection of marine environment, the navigating personnel's training requirements as well as other legislative provisions applicable to the maritime field. Students' training is carried out according to the requirements of the STCW 1995 Convention, the IMO Model Course 7.03- IMO Model Course 7.03 - Officer in charge of a navigational watch and the IMO Model Course 7.01 – Master and Chief Mate

At the end of the course students will have basic knowledge of the IMO's main conventions regarding the safety of life at sea and protection of marine environment. Students will also acquire knowledge of international legislation regarding the prevention of marine environmental pollution, the convention regarding the loading lines, the legislation and its application methods concerning the protection and safety of life at sea.

NAVIGATION IN SPECIAL CONDITIONS

To follow the routes according to weather conditions; to explain the basic principles of routes taken according to the weather; to demonstrate the use of information considering weather as shown in the route charts and the information included in the navigation rules for the route planning; to explain the way in which meteorological forecasts, synoptic and weather charts are used in order to modify the route planning according to the use of favourable conditions and the avoidance of unfavourable ones; to explain the fact that by means of the shore based services the great range of meteorological information is at the disposal of the shore personnel who offer pieces of advice(information) for the planning of route and who monitor the ship's voyage, providing forecasts and advice regarding favourable conditions and the avoidance of the unfavourable ones.

THEORY AND TECHNIQUE OF MARITIME TRANSPORT

The present course is part of the training of future Bridge Watch Officers on board different ships engaged in ocean navigation and it is organized in stringent conformity with the provisions of the International Convention regarding the standards of training, certification and 47 watch keeping (STCW 95).

The main objective of this course is to provide a complete volume of specialty knowledge necessary for fulfilling the standards of minimal competence for deck officers responsible for loading and discharging operations of ships of / and over 500 net tonnage, as stipulated in the STCW 1995 Convention, chapter II, section A-II/1.

The course structure is in compliance with the recommendations included in the Model Course 7.03 (AII/1) - Officer in Charge of Navigational Watch – developed by IMO.

INTERNATIONAL MARITIME LAW

This course is designed to teach future deck officers the national and international legal provisions regarding the protection of life at sea, marine environmental protection, training requirements for navigating personnel as well as the legal provisions applicable to the maritime field. The training of students is in accordance with the requirements of the STCW 1995 Convention and IMO Model Course 7.03 - Officer in charge of a navigational watch

At the end of this course, students will gain basic knowledge of the IMO's main conventions concerning the safety of life at sea and marine environmental protection.

Students will also acquire knowledge of international law referring to the legal status of: the territorial sea, the open sea, the continental plateau, insular archipelagos, maritime straits as well as the way in which international legislation's implementation is carried out within the scope of the national legal system.

ELECTRONIC NAVIGATION

The present course is part of the training of future Bridge Watch Officers on board different ships engaged in oceanic navigation and it is organized in stringent conformity with the provisions of the International Convention regarding the standards of training, certification and watch keeping (STCW 95).

The main objective of this course is to provide a complete volume of specialty knowledge necessary for the Officers in charge of the Navigational Watch to fulfill the standards of minimal competence on board ships of / and over 500 net tonnage, as stipulated in the STCW 1995 Convention, chapter II, section A-II/1.

The course structure is in compliance with the recommendations included in the Model Course 7.03 (AII/1) - Officer in Charge of Navigational Watch – developed by IMO.

The course guide drawn up with the purpose of complying with the pursued objectives, consists of theoretical issues and practical applications concerning: the operation of the bridge electronic navigational systems, the understanding of information supplied by them and the way in which information is applied in view of safe navigation. The practical applications aim at developing the necessary skills for the proper usage of these equipments in the navigational process.

THEORY AND TECHNIQUE OF MARITIME TRANSPORT

The teaching syllabus covers the demands of the STCW 1995 Convention, chapter II, section A-11/1 and A-11/2. At the end of this course, students will have knowledge of the following: the cargoes' effect on seaworthiness and ship's stability; safe handling and lashing of cargoes, the ability to establish and maintain efficient communication during loading and unloading operations; the ability to check the places for damages and disturbances that might have occurred during loading and unloading operations; the cargoes' operation effect on the ship's trim and stability; the use of equipments for calculating the ship's stability and stress and the understanding of cargo loading and ballasting so that the ship's stress be maintained to normal limits; the stowage and lashing of cargoes on board ships, including the handling, securing and lashing equipments; the safe accomplishment of loading and unloading operations, particularly taking into account the carriage of goods identified in the Code of Safe Practice for Cargo Stowage and Securing.

MANAGEMENT AND ADMINISTRATION OF SHIPS

The course objective is the understanding of the convention's provisions referring to: the facilitation of the international maritime traffic 1965, the protests' notification, the liabilities according to the international legislation considering the safety of ship, passengers, crew and cargo; the convention on the minimal standards of merchant ships 1976, the introduction of legislative requirements that must be agreed with by merchant vessels, the convention on seafarers' labour contracts 1926, the specification and definition of the parties that must observe the Convention and of the parties' liabilities, the convention that regulates the minimum age for employment in sea service 1936, the specification of the legal provisions referring to the minimum age for employment in the maritime field in compliance with the Convention and national Legislation.

RADAR NAVIGATION, RADAR PLOTTING, ARPA USAGE

This course has aims at teaching future deck officers in charge of the watchkeeping activities, the basic knowledge of radar and its usage. The course is based on the leading lines referring to the training of radar observations, radar plotting and ARPA usage, which are included in the STCW Convention 1995.

The course model aims at meeting the minimum of standards specified in table A-II/1 in STCW 1995. The course guide overrides the specifications annexed in the resolutions A.482 (XII) and A.483(XII) adopted by IMO in 1981.

This course seeks to fulfill the minimal compulsory requirements with reference to the minimum of knowledge provided in chart A-II/1 of STCW 1995. The aspects indicated in the present course guide encompass the following theoretical problems: how radar information is obtained and how it is displayed, the limitations of this information and its accuracy, making up and recognizing some responses to radar waves, the accurate way of using radar functions in order to obtain the radar's optimal display, as well as the way of verifying whether the display is the optimal one.

VOYAGE PLANNING AND EXECUTION

This course seeks to teach future navigation officers who will be in charge of the watch keeping activity, the basic notions of voyage planning and execution. 90% of the course practical activity is carried out by means of scenarios performed on the Complex Navigation Simulator.

The training stages combine the acquired practical knowledge with the surveillance and guidance regarding the accurate application of the watch procedures, in accordance with ISM.

MANAGEMENT AND ADMINISTRATION OF SHIP

The present course is part of the training of future Bridge Watch Officers on board different ships engaged in oceanic navigation and is organized in stringent conformity with the provisions of the International Convention regarding the standards of training, certification and watch keeping (STCW 95).

The course's main objective is to provide a complete volume of specialty knowledge necessary for the deck officers to meet the minimal standards of competence.

The main objective of this course is to provide a complete volume of specialty knowledge necessary for the Officers in charge of the Navigational Watch to fulfill the standards of minimal competence provided by chart A-II/1 and A-II/2 of STCW.

The course structure is in accordance with the specifications included in Model Course 7.03 (All/1)- Officer in Charge of Navigational Watch and in Model Course 7.01 (All/2) – Master and Chief Mate – developed by IMO.

ONBOARD TRAINING

The onboard training objectives are: to assimilate the labour protection's norms of naval, maritime and port activities; to acquire certain aspects considering the theory and technique of maritime transport; to develop some movement skills in the current maintenance of decks, installations, superstructures, ship's compartments, including the accommodation spaces; to gain knowledge of working the ship to her berth/ leaving berth; to develop the skills in making fast or casting off the mooring lines; to practice the transmission of commands and reports by means of the ship's communication systems; to acquire knowledge regarding the methodology of drawing up the ship's documents in English language.

NAVAL ENGINES

Getting acquainted with naval engines in point of structure and functioning principles; establishing the regulations concerning the correct handling of this machinery; being knowledgeable of the legislation referring to the handling of naval engines, steam generators, steam and gas turbines as well as the naval propulsion system.

THEORY AND TECHNIQUE OF MARITIME TRANSPORT

The teaching syllabus encompasses the STCW 1995 requirements, chapter II, section A-11/1 and A-11/2.

On completing the course, students will acquire: knowledge of the effect of cargoes, including the effect of the heavy ones on the ship's seaworthiness and stability; knowledge of the safe handling and lashing of cargoes, especially dangerous, hazardous and harmful cargoes and of their effect on life and ship's safety; knowledge of and ability to check the places for damages and disturbances that might occur during loading and unloading operations; knowledge of the international regulations, codes and standards regarding the safe handling, lashing, stowage and carriage of dangerous, hazardous and harmful cargoes; knowledge of the cargoes' handling effect on the ship's trim and stability; knowledge of using the equipments for calculating the ship's stability and stress and the understanding of cargo loading and ballasting so that the ship's stress be maintained to normal limits; knowledge of the stowage and lashing of cargoes on board ships, especially of the handling, securing and lashing equipments.

ALGEBRA AND SPHERICAL TRIGONOMETRY

Objectives: to develop the ability to think structurally and to abstract; to provide knowledge necessary for the specialty disciplines; to develop the ability to operate with vectors and vector spaces; to develop the ability to convert the theoretical information into intuitive image; to acquire some concepts and techniques particular to spherical trigonometry; to introduce some concepts specific to other fundamental / specialty disciplines (navigation, astronomy).

TEHNICAL DRAWING AND DESCRIPTIVE GEOMETRY

In order to achieve competent knowledge which is to be used subsequently in practice, it is necessary to get information on the technical drawing specific to naval engineering, according to the international standards and conventions in force. According to the situations that may occur on board, future officers- engineers must be able to realize a drawing at a proper standard. Of course, on condition that students have knowledge of and understand the process of technical drawing in the naval field, these principles will help them get a maximum benefit which in turn, may be rendered valuable in view of achieving a superior experience.

MARITIME ENGLISH

The discipline's objectives are: to develop students' skills in using English at an intermediate level at least; to acquire knowledge of and skills in using and understanding English according to STCW 1995 and to communicate in English both for maritime and general purpose.

Faculty facilities for navigation specialization

There are 14 laboratories for Navigation and Maritime and Inlandwaterways Transport specialization that ensure high quality training at the subjects that involve this type of didactic activity. These laboratories have been especially purchased for our students ensuring by their area (80-150 m²) and equipment, informatics equipment included, an optimum solution for the activities to be carried out.

The laboratories belonging to the Naval Engineering and Navigation domain have an important tradition, for example, for the following subjects: Navigation Simulator, Ship handling simulator,

Electrical devices, Liquid cargo simulator, Meteorological laboratory, the areas of these laboratories, as well as their equipment enable the sub-groups of students carrying out laboratory activities to better understand the studied phenomena.

Purchased software for Navigation and Maritime and Inland-waterways Transport

Constanta Maritime University has entered licensing agreements of the Academic type with Microsoft (MS Desktop School, Volume License), Mathsoft (Mathcad), Mathsoft (Mathlab), UGS/Siemens (Solid Edge), Autodesk (Autocad, Mechanical Desktop), NT PRO 4000 Full Navigation Simulator (complex navigation simulator), NT PRO 4000 shiphandling (ship handling simulator), NT EXPERT (electronic navigation simulator), GMDSS Simulator, Liquid Bulk Cargo loading/unloading simulator.

Quality management

Implementation and development of Quality Management System in CMU has been a primary preoccupation starting with 2008 on the basis of 12.12.2008 CMU Senate Decision, of the 78/15.12.2008 Rector's Decision and the decision concerning the members' nomination of CMU Quality Council, which were approved by the Senate.

Based on all these documents The Regulations for CMU Quality Management System performance has been developed.

The Assessment and Quality Committee carries out collaboration and information activities regarding CMU good practice, and other international maritime universities.

CMU organizes the following structures that focus on the development of pro-quality opinion trend:

- Quality Committee on the faculty level run by the Dean assisted by people in charge of quality assurance;
- Quality Committee on the Chair level, run by people in charge of quality assurance;

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- Assessment and Quality Assurance Committee;

- Quality Department

Quality Committees are made up of students as well as of members of the administrative staff and researchers.

For Quality Management System implementation, there were organized regular meetings of the teaching staff members with specialists and beneficiaries of the educational programs. As a result of these meetings, the standard required documents were elaborated and revised.

The reference points were ISO 9001:2000 and ISO 14001:2004 BVQI

The following documents are mentioned here:

- ▶ The Quality Book
- ▶ Regulation for Quality Management System in CMU;
- ▶ Politics, Strategies and Procedures for Quality Assurance in CMU (Quality procedures for teaching, financial and accounting activities).

Swot analysis

The strength points of the study program for ,Navigation and maritime and inlandwaterways transport derive from some internal and external elements:

- external elements that support specialization:

- country's traditions concerning navigation;
- high demand for naval officers in international and European fleets;
- international recognition and collaboration with international universities; - university (faculty)

internal elements:

- good tradition regarding teaching and training merchant ship officers;
- professionalism of the teaching staff;
- good results obtained in the field of scientific research;
- equipment of the laboratories for this specialization;
- high training quality for students;
- the majority of teaching staff are rather young;
- The instructors for the simulators have certificates and international recognition;
- Existence of an accredited master's studies programme, which contributes to the graduates' upgrading process.

Weak points of this specialization are due to the elements that depend only on the university (faculty):

- Necessity of the existence of laboratories for some subjects;
- Insufficient correlation of the curriculum for different subjects;
- Discontinuous monitoring of the activities carried out by students;
- The students' contribution to the scientific research is relatively reduced;
- Lack of practical experience for some young members of the teaching staff

Opportunities of the program derive from the external positive circumstances for the project:

- There are enough requirements from the students for BS degree and master studies;
- There are enough funds for the PhD scholarships which encourages people to apply for a 75 doctor's degree;
- The shortage of labour force (officers) in the international fleet favours the attractiveness of the program;
- The graduates of this specialization benefit from a double qualification; this fact enables them to find a job more easily both at sea or on land;
- The University has established partnerships with some of the most important crewing companies of this sector. Thus students of this specialization have the possibility to perform/fulfil the onboard training stage on very modern ships. Later, they have the possibility of being employed as officers by these companies;
- The University has human resources who ensure both the professional training and the abilities of communicating in English, managerial and ITC competences;
- The conditions of the present crisis also offer the possibility of reforming the system and of a 12-18 delay of entering the labour market.

Threats:

- The present crisis may reduce the number of students;
- Demographical decrease may diminish the number of candidates;
- Loss of students' interest for some subjects which contain too much theoretical knowledge and which are not adapted to the present day realities.

Curriculum for „Navigation and Naval Transport" study programme