

**CHOICE BASED CREDIT SYSTEM**

**DEPARTMENT OF NAUTICAL SCIENCE**

**(2021-2022)**

**CURRICULUM AND SYLLABI**

**OUTCOME BASED  
EDUCATION SYSTEM**

**ACADEMY OF MARITIME EDUCATION AND TRAINING (AMET)**

**DECLARED AS DEEMED TO BE UNIVERSITY**

**135, EAST COAST ROAD**

**KANATHUR, CHENNAI - 603112**

## **AMET UNIVERSITY**

### **VISION AND MISSION OF THE UNIVERSITY**

#### **Vision**

To sustain identity as a World Class Leader in Maritime Education and empower learners with wholesome knowledge through progressive innovation in training, research and development which will render students a unique learning experience and a transformation impact on the Global Society.

#### **Mission**

##### **AMET Will Strive Continuously To:**

- Impart value-based higher education and technical knowledge with uncompromising strides of an outstanding quality.
- Be a Centre of Excellence in skill development in emerging technologies in accordance with industrial trends.
- Create World class research capabilities on par with the finest in the world and broaden student's horizons beyond classroom education.
- Nurture talent and entrepreneurship and enable all round personality development in students.
- Empower students from across socio economic strata.
- Make a positive difference to society through technical education.

## **VISION AND MISSION OF NAUTICAL SCIENCE DEPARTMENT**

### **Vision**

To keep the curriculum updated with the latest international and national requirements as well as meet the requirements of standards for training certification and watch keeping (STCW) convention as amended.

### **Mission**

- To be a source of best practices that will deliver uncompromising technical competency and professional excellence.
- To embrace emerging technologies in a seamless manner and integrate it progressively to our curriculum.
- To develop and sustain our research capabilities par excellence in order to create ideas that can propagate the required knowledge understanding and proficiency to meet the expectation of future shipping.
- To reach out and train beyond conventional domain that will instill confidence and nurture entrepreneurship.
- To empower the students to accept and adapt to the constant demands of progressively changing socio cultural economic and environmental aspects that will influence their growth and development.
- To enable the students with the academic and ethical rigor that will make them to be a source of positive energy creativity and an icon of ethical practices.

### **PROGRAM EDUCATIONAL OBJECTIVES( PEO'S)**

The Program Educational Objective of the Bachelor of Nautical Science is to facilitate the students to:

PEO	Description
<b>PEO 1</b>	Become successful navigating officer as a ‘Seafarer’ who is able to be competent, innovative and productive in addressing the needs of the Shipping Industry such as: Maritime Education and Research, Maritime Law, Port Agency and Harbor Pilot.
<b>PEO 2</b>	Grow professionally with the knowledge and proficiency skills throughout the career.
<b>PEO 3</b>	Acquire high standard of ethical conduct, safety culture, positive attitude, societal responsibilities

### **PROGRAM OUTCOMES (POS)**

PO	Description
<b>PO1</b>	Apply knowledge of Maritime courses and analyse a problem, identify, formulate and solve nautical problems using basic fundamental principles of mathematics and science.
<b>PO2</b>	Communicate effectively with shipping community for presentation, documentation of reports adopting the new design standards.
<b>PO3</b>	Assess the local and global impact of maritime situations on individuals, organization and society and the consequent responsibilities relevant to their professional nautical practice.
<b>PO4</b>	Comprehend safety, security and management principles and apply these to one’s own work, as a member and leader in a team, to efficiently carry out shipboard operation
<b>PO5</b>	Apply the professional and ethical responsibilities and norms of shipping practice.
<b>PO6</b>	Relate the impact of the maritime situations in various environmental contexts and demonstrate the knowledge of, and need for sustainable development.
<b>PO7</b>	Use and learn the limitations involved in recent techniques, skills and modern nautical equipment necessary for shipping industry and to be engaged in lifelong learning to meet these contemporary issues.

### PROGRAM SPECIFIC OUTCOMES

PSOs	Description
<b>PSO1</b>	Attain proficiency in all aspects of ship board operations and excel in problem solving by operating as a team to find solutions of various issues in that may arise onboard the ship.
<b>PSO2</b>	Operate effectively in a professional environment by providing knowledge and skill in ship handling, voyage planning, navigation, cargo operation, collision avoidance, maintenance, safe working practices on a stable ship by applying available modern tools and techniques.
<b>PSO3</b>	Achieve excellence in outstanding leadership in the nautical field and develop a passion for lifelong learning and research in advance fields.

### MAPPING OF PEO'S WITH PO's AND PSO's

MAPPING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
<b>PEO 1:</b> Become successful navigating officer as a 'Seafarer' who is able to be competent, innovative and productive in addressing the needs of the Shipping Industry such as: Maritime Education and Research, Maritime Law, Port Agency and Harbour Pilot.	√	√	√	√	√	√	√	√	√	√
<b>PEO 2:</b> Grow professionally with the knowledge and proficiency skills throughout the career.	√	√	√	√		√	√	√	√	√
<b>PEO 3:</b> Demonstrate high standard of ethical conduct, safety culture, positive attitude, societal responsibilities.		√	√	√	√			√	√	√

**CBCS CURRICULUM FOR THE ACADEMIC YEAR 2021-22**

COURSE NAME		B.SC - NAUTICAL SCIENCE							
SEMESTER		FIRST							
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hr	C	L	T	P	M
1	UELE101	Communicative English –I	HS	2	2	2	0	0	100
2	UEMT101	Nautical Mathematics – I	BS	3	3	3	0	0	100
3	UEPH101	Nautical Physics– I	BS	3	3	3	0	0	100
4	UENS101	Ship Construction -I	PC	2	2	2	0	0	100
5	UENS102	Ship Operation Technology – I	PC	2	2	2	0	0	100
6	UENS103	Cargo Handling and Stowage – I	PC	3	3	3	0	0	100
<b>PRACTICALS</b>									
7	UEITPA1	Foundation of Information Technology - Laboratory	ES	4	2	0	0	4	100
8	UENSPR1	Rules of the Road – I	PC	2	1	0	0	2	100
9	UENSPTS1	Ship Operation Technology Laboratory – I	PC	2	1	0	0	2	100
10	UEPHPA1	Nautical Physics Laboratory – I	BS	2	1	0	0	2	100
11	UENSPD1	Personality development program-I	EEC	2	1	0	0	2	100
<b>TOTAL</b>				<b>27</b>	<b>21</b>	<b>15</b>	<b>0</b>	<b>12</b>	

**LEGEND:**

L	Lecture
T	Tutorial
P	Practical/laboratory
C	Credit
M	Marks

**CATEGORY:**

HS	Humanities Course
BS	Basic Science
ES	Engineering Science
PC	Professional Core
PE	Professional Elective
EEC	Employment Enhancement Course



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COURSE NAME		B.SC - NAUTICAL SCIENCE							
SEMESTER		SECOND							
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hr	C	L	T	P	M
1	UELE201	Communicative English – II	HS	2	2	2	0	0	100
2	UEMT201	Nautical Mathematics – II	BS	3	3	3	0	0	100
3	UEPH201	Nautical Physics – II	BS	3	3	2	0	0	100
4	UENS201	Navigation – I	PC	3	3	3	0	0	100
5	UENS202	Bridge Equipment & Bridge Resource Mgmt-I	PC	2	2	2	0	0	100
6	UENS203	Ship Construction – II	PC	2	2	2	0	0	100
		<b>PRACTICALS</b>							
7	UENSPR2	Rule of the Road- II	PC	2	1	0	0	2	100
8	UENSPC1	Chart Work and Voyage Planning I	PC	3	2	0	0	3	100
9	UENSPS2	Ship Operation Technology Laboratory – II	PC	2	1	0	0	2	100
10	UEPHPA2	Nautical Physics Laboratory – II	BS	2	1	0	0	2	100
		<b>TOTAL</b>		<b>24</b>	<b>20</b>	<b>14</b>	<b>0</b>	<b>09</b>	



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COURSE NAME		B.SC - NAUTICAL SCIENCE													
SEMESTER		THIRD													
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hr	C	L	T	P	M						
1	UENS301									Navigation – II	PC	3	3	3	0
2	UENS302	Bridge Equipment & Bridge Resource Mgt-II	PC	2	2	2	0	0	100						
3	UENS303	Ship Stability – I	PC	3	3	3	0	0	100						
4	UENS304	Ship Operation Technology – II	PC	2	2	2	0	0	100						
5	UENS305	Cargo Handling and Stowage – II	PC	3	3	3	0	0	100						
6	UENS306	Maritime law-I	PC	2	2	2	0	0	100						
7	UEMECSI	Marine Engr. Automation Control System-I	ES	2	2	2	0	0	100						
		<b>PRACTICALS</b>													
8	UENSPC2	Chart Work and Voyage Planning-II	PC	3	2	0	0	3	100						
9	UENSPR3	Rules of the Road-III	PC	2	1	0	0	2	100						
10	UENSPS3	Ship Operation Technology Laboratory-III	PC	2	1	0	0	2	100						
11	UEMWPS1	Marine Workshop Practice – I	ES	2	1	0	0	2	100						
12	UELEIC1	Interpersonal Communication	EEC	2	1	0	0	2	100						
		<b>TOTAL</b>		<b>28</b>	<b>23</b>	<b>17</b>	<b>0</b>	<b>11</b>							



COURSE NAME		B.SC - NAUTICAL SCIENCE							
SEMESTER		FOURTH							
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hr	C	L	T	P	M
1	UENS401	Navigation – III	PC	3	3	3	0	0	100
2	UENS402	Bridge Equipment & Bridge Resource Mgt-III	PC	2	2	2	0	0	100
3	UENS403	Ship Stability – II	PC	3	3	3	0	0	100
4	UENS404	Ship Operation Technology – III	PC	2	2	2	0	0	100
5	UENS405	Cargo Handling And Stowage – III	PC	3	3	3	0	0	100
6	UENS406	Meteorology – I	PC	3	3	3	0	0	100
7	UENS407	Marine Law II	PC	2	2	2	0	0	100
8		Core Elective Course-I	PE	2	2	2	0	0	100
		<b>PRACTICALS</b>							
9	UENSIP1	Integrated Projects-I	PC	2	1	0	0	2	100
10	UEMWPS2	Marine Workshop Practice – II	ES	2	1	0	0	2	100
11	UELEPC1	Professional Communication	EEC	2	1	0	0	2	100
		<b>TOTAL</b>		<b>26</b>	<b>23</b>	<b>20</b>	<b>0</b>	<b>6</b>	
		<b>PROFESSIONAL ELECTIVE COURSES-I:</b>							
1	UENSE01	Shipboard communication and Procedures –I	PE						
2	UENSE02	Polar Navigation	PE						

COURSE NAME		<b>B.SC - NAUTICAL SCIENCE</b>							
SEMESTER		<b>FIFTH</b>							
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hr	C	L	T	P	M
1	UENS501	Navigation – IV	PC	3	3	3	0	0	100
2	UENS502	Bridge Equipment & Bridge Resource Mgt-IV	PC	2	2	2	0	0	100
3	UENS503	Ship Stability – III	PC	3	3	3	0	0	100
4	UENS504	Ship Operation Technology – IV	PC	2	2	2	0	0	100
5	UENS505	Cargo Handling and Stowage – IV	PC	3	3	3	0	0	100
6	UENS506	Meteorology – II	PC	3	3	3	0	0	100
7	UENS507	Maritime law-III	PC	2	2	2	0	0	100
9		Core Elective Course-II	PE	2	2	2	0	0	100
10		Open Elective Course-I	ES	2	2	2	0	0	100
		<b>PRACTICALS</b>							
11	UENSPR4	Rules of the Road –IV	PC	2	1	0	0	2	100
12	UEMWPS3	Marine Workshop Practice – III	ES	2	1	0	0	1	100
		<b>TOTAL</b>			<b>26</b>	<b>24</b>	<b>22</b>	<b>0</b>	<b>3</b>
		<b>PROFESSIONAL ELECTIVE COURSES-II:</b>							
1	UENSE03	Shipboard Communication and procedures II	PE						
2	UENSE04	Marine Accident Investigations	PC						
		<b>OPEN ELECTIVE COURSES – I</b>							
1	UENSO01	MOOC/NPTEL Program	ES						
2	UENSO02	Pump Operation & Maintenance	PE						



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COURSE NAME		B.SC - NAUTICAL SCIENCE								
SEMESTER		SIXTH								
Sl. No	SUB CODE	SUBJECT TITLE	Category	Contact Hrs	C	L	T	P	M	
1	UENS601	Maritime Commerce	PC	2	2	2	0	0	100	
2	UENS602	Bridge Equipment & Bridge Resource Mgt-V	PC	2	2	2	0	0	100	
3	UENS603	Ship Operation Technology – V	PC	2	2	2	0	0	100	
4	UENS604	Maritime Management	PC	2	2	2	0	0	100	
5	UENS605	Ship Stability-IV	PC	3	2	2	0	0	100	
6	UENS6ES	Environmental Studies	PE	2	2	2	0	0	100	
7	UEMECS2	Marine Engr. Auto. Control Systems – II	ES	2	2	2	0	0	100	
<b>PRACTICALS</b>										
8	UENSPC3	Chart work and Voyage Planning -III	PC	3	2	0	0	3	100	
9	UENSPD2	Personality Development Programme – II	EEC	2	1	0	0	2	100	
10	UENSTO1	Shipboard Task Orientation	PC	3	2	0	0	3	100	
11	UENSIP2	Integrated Projects II	PC	2	1	0	0	2	100	
12	UENSPS4	Ship Operation Technology Laboratory – IV	PC	2	1	0	0	2	100	
<b>TOTAL</b>				<b>27</b>	<b>21</b>	<b>14</b>	<b>0</b>	<b>12</b>		

**BSC NAUTICAL SCIENCE – CURRICULUM – CREDIT SHARE**

<b>SEMESTER</b>	<b>CONTACT HRS</b>	<b>CREDITS</b>	<b>LECTURE</b>	<b>PRACTICAL</b>
<b>I</b>	<b>27</b>	<b>21</b>	<b>15</b>	<b>12</b>
<b>II</b>	<b>24</b>	<b>20</b>	<b>14</b>	<b>09</b>
<b>III</b>	<b>28</b>	<b>23</b>	<b>17</b>	<b>11</b>
<b>IV</b>	<b>26</b>	<b>23</b>	<b>20</b>	<b>06</b>
<b>V</b>	<b>26</b>	<b>24</b>	<b>22</b>	<b>03</b>
<b>VI</b>	<b>27</b>	<b>21</b>	<b>14</b>	<b>12</b>
<b>TOTAL</b>	<b>158</b>	<b>132</b>	<b>102</b>	<b>53</b>

<b>Humanities</b>	<b>Basic Science</b>	<b>Engineering Science</b>	<b>Professional Core</b>	<b>Professional Elective</b>	<b>Open Elective</b>	<b>Project/ Internship</b>	<b>EEC</b>	<b>Total</b>
<b>4</b>	<b>14</b>	<b>9</b>	<b>90</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>132</b>