



**AMET**  
**UNIVERSITY**  
(Deemed to be University Under Section 3 of UGC Act 1956)

**(Applicable to all students registering from the academic year 2024 onwards)**

**FACULTY OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF NAVAL ARCHITECTURE AND OFFSHORE ENGINEERING**

**UG ENGINEERING CURRICULUM**

**ACADEMY OF MARITIME EDUCATION AND**

**TRAINING DEEMED TO BE UNIVERSITY**

**135, EAST COAST ROAD**

**KANATHUR,**

**CHENNAI-603112**



## **Vision Mission of the Department**

### **Vision**

To educate and train professionals in Naval Architecture and Offshore Engineering who are academically bright, technically creative, ethically sound, emotionally strong, and valuable to society through innovative teaching, learning and research.

### **Mission**

1. Produce job ready Engineers in the field of Naval Architecture and Offshore Engineering by imparting knowledge in basic sciences and engineering.
2. Inspire students to pursue higher education in Naval Architecture and Offshore Engineering and other allied fields in the maritime sector.
3. Nurture students so that they are innovative, creative, and possess entrepreneurship skills to meet the needs of the industry and society.
4. Establish high quality teaching and research environment to offer state-of-the-art undergraduate, graduate and doctoral programs.
5. Exhibit world-class research capabilities in the field of Naval Architecture and Offshore Engineering.



**Program Educational Objectives (PEO's)**

<b>PEO 1</b>	Become successful Naval Architects and Offshore Engineers with breadth and depth of knowledge who are competent, innovative and productive in addressing the needs of the industry
<b>PEO 2</b>	Pursue higher education and research in Naval Architecture and Offshore Engineering, and other allied disciplines
<b>PEO 3</b>	Develop innovative thinking skills and pursue a life-long learning process to augment professional growth.
<b>PEO 4</b>	Exhibit high standards of ethical conduct, positive attitude and societal responsibility

**Program Outcomes (PO's) & Program Specific Outcomes (PSO's)**

<b>Program Outcomes (PO's)</b>	
<b>PO 1</b>	<b>Engineering Knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem Analysis:</b> Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of Solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.



<b>PO 4</b>	<b>Conduct Investigations of Complex Problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>PO 5</b>	<b>Modern Tool Usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
<b>PO 6</b>	<b>The Engineer and Society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
<b>PO 7</b>	<b>Environment and Sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and Team Work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
<b>PO 11</b>	<b>Project Management and Finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO 12</b>	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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<b>Program Specific Outcomes (PSOs)</b>	
<b>PSO 1</b>	Develop innovative and contemporary designs of ships and offshore structures to meet the challenges of demanding marine operations, thereby advancing the level of shipbuilding, offshore, and other industries in the maritime sector.
<b>PSO 2</b>	Apply engineering design and construction concepts to produce solutions in the field Of Naval Architecture and Offshore Engineering.
<b>PSO 3</b>	Develop technological and scientific competence at the highest level; excel in state-of-the-art research and development in Naval Architecture, Offshore Engineering, and other allied areas that require multidisciplinary outlook at world-class R & D facilities and organizations.



**DEPARTMENT OF NAVAL ARCHITECTURE AND OFFSHORE  
ENGINEERING  
CURRICULUM 2024-25**

**GENERAL COURSE STRUCTURE**

**A. Definition of Credit:**

1 Hr. Lecture (L) per week	1 Credit
1 Hr. Tutorial (T) per week	1 Credit
1 Hr. Practical (P) per week	0.5 Credit
2 Hours Practical (P) per week	1 Credit

**B. Range of Credits:** In the light of the fact that a typical Model Four-year Under Graduate degree program in Engineering has about 160 credits, the total number of credits proposed for the four-year B. Tech/B.E. in Engineering (Engineering & Technology) is kept as 160



**SEMESTER: I**

S. N	Course Code	Category	Course Title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	246PH1A01TD	Basic Science Course	Engineering Physics	3	3	0	0	3
2	246MA1A11TE	Basic Science Course	Calculus and Linear Algebra	4	3	1	0	4
3	242CS1A13TB	Engineering Science Courses	Python for problem solving	3	3	0	0	3
4	242NA1A14TA	Professional Core Course	Mechanics of Ships	3	3	0	0	3
5		Mandatory Course	Induction Program UHV-I					
6	242NA1A19PA	In-House Program	Value Added Training Program-1					
<b>PRACTICAL</b>								
7	246EN1A12PF	Humanities and Social Sciences including Management	Communication Skills Laboratory- I	2	0	0	2	1
8	246PH1A01PD	Basic Science Course	Engineering Physics Laboratory	2	0	0	2	1
9	242CS1A23PB	Engineering Science Course	Python for problem solving Lab	2	0	0	2	1
10	242MC1A13PA	Engineering Science Course	Engineering Drawing and Graphics	4	1	0	4	3
<b>TOTAL</b>				<b>23</b>	<b>13</b>	<b>1</b>	<b>10</b>	<b>19</b>

**Note: L - Lecture T- Tutorial P- Practical C – Credit**



**SEMESTER: IIII**

S. N	Course Code	Category	Course Title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	246EN1A12TE	Humanities and Social Sciences including Management	Technical English	2	2	0	0	2
2	246CH1A01TA	Basic Science Course	Engineering Chemistry	3	3	0	0	3
3	242MA1A21TF	Basic Science Course	Transforms and differential equations	4	3	1	0	4
4	242EE1A03TA	Engineering Science Course	Basic electrical and electronics engineering	3	3	0	0	3
5	242MC1A23TA	Engineering Science Course	Engineering Mechanics	3	3	0	0	3
6	242NA1A24TB	Professional Core Course	Elements of offshore engineering	3	3	0	0	3
7	243MG1A22TG	Humanities and Social Sciences including Management	Universal Human Values II- Understanding Harmony	2	2	1	0	3
8	242MC1A28TD	Mandatory Course	Gender Sensitivity	2	2	0	0	0
	242NA1A29PB	Industry Connect Program	Value Added Training Program -II					
<b>PRACTICAL</b>								
9	246EN1A22PG	Humanities and Social Sciences including Management	Communication Skills Laboratory II	2	0	0	2	1
10	246CH1A01TA	Basic Science Course	Engineering Chemistry Lab	2	0	0	2	1
11	242EE1A03PA	Engineering Science Course	Basic Electrical and Electronics Engineering Laboratory	2	0	0	2	1
<b>TOTAL</b>				<b>28</b>	<b>21</b>	<b>2</b>	<b>6</b>	<b>24</b>





**SEMESTER: III**

S.N	Course Code	Category	Subject title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	246MA 1A 31TG	Basic Science Course	Probability and Statistics	4	3	1	0	4
2	242NA1A33TE	Engineering Science Course	Engineering Fluid Mechanics	3	3	0	0	3
3	242NA1A34TC	Professional Core Course	Introduction to Marine Engineering	3	3	0	0	3
4	242NA1A34TD	Professional Core Course	Introduction to Naval Architecture	3	3	0	0	3
5	242NA1A34TE	Professional Core Course	Marine Materials and Welding Technology	3	3	0	0	3
6	242MC1A38TE	Mandatory course	Indian Constitution					
7	242NA1A49PD	In-House Program	Value Added Training Program - IV	-	-	-	-	-
8	248NA1A38PE	Industrial Visit	Industrial Visit – I	-	-	-	-	-
<b>PRACTICAL</b>								
9	246EN1A42PI	Humanities and Social Sciences including Management	Interpersonal Communication	2	0	0	2	1
10	242NA1A33PA	Engineering Science Course	Fluid Mechanics Laboratory	2	0	0	2	1
11	242NA1A34PF	Professional Core Course	Ship drawing lines plan.	4	0	0	4	2
12	242NA1A34PG	Professional Core Course	CAD Software Laboratory	2	0	0	2	1
<b>TOTAL</b>				<b>26</b>	<b>15</b>	<b>01</b>	<b>10</b>	<b>21</b>

**Note: L - Lecture T- Tutorial P- Practical C – Credit**



**SEMESTER: IV**

S. N	Course Code	Category	Subject title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	242MC1A33TB	Engineering Science Course	Mechanics of materials	3	3	0	0	3
2	242MC1A44TJ	Engineering Science Course	Applied Thermodynamics	3	3	0	0	3
3	242NA1A44TH	Professional Core Course	Marine Production Technology	3	3	0	0	3
4	242NA1A44TI	Professional Core Course	Marine Hydrodynamics	3	3	1	0	4
5	242NA1A44TJ	Professional Core Course	Theory of Ships	3	3	0	0	3
6	242NA1A59PE	Industry Connect Program	Value Added Training Program - V	-	-	-	-	-
7	248NA1A48PF	Industrial Visit	Industrial Visit – II	-	-	-	-	-
<b>PRACTICAL</b>								
8	246EN1A42PJ	Humanities And Social Sciences including Management	Professional Communication	2	0	0	2	1
9	242NA1A33PB	Engineering Science Course	Mechanics of Materials Lab	2	0	0	2	1
10	242NA1A44PK	Professional Lab	Hydrostatics & Stability Laboratory	2	0	0	2	1
11	242NA1A44PL	Professional Lab	Surface Modelling and Analysis - Software Laboratory	2	0	0	2	1
<b>TOTAL</b>				<b>23</b>	<b>15</b>	<b>01</b>	<b>08</b>	<b>20</b>

**Note: C- Credit L- Lecture T- Tutorial P – Practical**



**SEMESTER: V**

S. N	Course Code	Category	Subject title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	243MG1AX2TI	Humanities and Social sciences including management	Project Management	2	2	0	0	2
2	242NA1A54TM	Professional Core Course	Ship Construction	3	3	0	0	3
3	242NA1A54TN	Professional Core Course	Ship System Engineering	3	3	0	0	3
4	242NA1A54TO	Professional Core Course	Strength of Ships	3	3	1	0	4
5	242NA1A54TP	Professional Core Course	Ship Resistance and Propulsion	3	3	1	0	4
6		Professional Core Elective	PEC – I	3	3	0	0	3
7		Open Elective Course	OEC – I	3	3	0	0	3
8	242NA1A49PD	In-House Program	Value Added Training Program – VI	-	-	-	-	-
9	248NA1A58PG	Industrial Visit	Industrial Visit - III	-	-	-	-	-
<b>PRACTICAL</b>								
10	242NA1A54PQ	Professional Lab	Ship Strength Laboratory	2	0	0	2	1
11	242NA1A54PR	Professional Lab	Structural Modelling - Software Laboratory	2	0	0	2	1
12	242NA1A67PA	Project	Internship - I	0	0	0	0	1
<b>TOTAL</b>				<b>25</b>	<b>20</b>	<b>02</b>	<b>04</b>	<b>25</b>

**Note: C- Credit L- Lecture T- Tutorial P – Practical**



**SEMESTER: VI**

S. N	Course Code	Category	Subject title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	242NA1A64TS	Professional Core Course	Design of Offshore Structures/	3	3	0	0	3
2	242NA1A64TT	Professional Core Course	Ship Motion and Control	3	3	0	0	3
3	24NA1A64TU	Professional Core Course	Ship Design	3	3	0	0	3
4		Professional Core Elective	PEC – II	3	3	0	0	3
5		Professional Core Elective	PEC – III	3	3	0	0	3
6		Open Elective Course	OEC – II	3	3	0	0	3
7		Employment Opportunity course	Finishing School Training – I	-	-	-	-	-
9	248NA1A68PH	Industrial Visit	Industrial Visit – IV	-	-	-	-	-
<b>PRACTICAL</b>								
10	242NA1A67PB	PROJ	Mini Project Model development	4	0	0	4	2
11	242NA1A64PV	Professional Lab	Marine Hydrodynamics Laboratory	2	0	0	2	1
12	242NA1A64PW	Professional Lab	Offshore Structure Design - Software Laboratory	2	0	0	2	1
13	242NA1A64PX	Professional Lab	Seamanship Lab	2	0	0	2	1
<b>TOTAL</b>				<b>26</b>	<b>18</b>	<b>00</b>	<b>08</b>	<b>23</b>

**Note: C- Credit L- Lecture T- Tutorial P – Practical**



**SEMESTER: VII**

S.N	Course Code	Category	Subject title	Contact Hours	L	T	P	C
<b>THEORY</b>								
1	242NA1A64TY	Professional Core Course	Advanced Ship Technology	3	3	0	0	3
2		Professional Core elective	PEC – IV	3	3	0	0	3
3		Professional Core elective	PEC – V	3	3	0	0	3
4	242NA1A64TZ	Professional Core elective	Theory and practices in Marine CFD	3	3	0	0	3
5		Open Elective Course	OEC – III	3	3	0	0	3
6		Employment Opportunity course	Finishing School Training – II	-	-	-	-	-
7		Industrial Visit	Industrial Visit – V	-	-	-	-	-
<b>PRACTICAL</b>								
9	242NA1A74PZ	Professional Lab	Ship System Drawing & Launching Calculations Laboratory	2	0	0	2	1
10	242NA1A74PA	Professional Lab	Numerical Ship Hydrodynamics – Software Laboratory	2	0	0	2	1
11	242NA1A77PB	PROJ	Ship Design Project	8	0	0	8	2
12	242NA1A77PC	PROJ	Internship – II	0	0	0	0	1
<b>TOTAL</b>				<b>23</b>	<b>15</b>	<b>0</b>	<b>12</b>	<b>20</b>

**Note: C- Credit L- Lecture T- Tutorial P – Practical**



**SEMESTER: VIII**

S.No.	Course Code	Category	Subject title	Contact Hours	L	T	P	C
1	242NA1A87PC	PROJ	Major Project	16	-	-	16	8
<b>TOTAL</b>				<b>16</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>8</b>



**List of professional elective courses (PEC) offered by the Department**

S. No	Course Code	Course Title	L	T	P	C	Prerequisite
<b>Marine Engineering</b>							
1	242NA1A55TA	Marine Engineering –I	3	0	0	3	
2	242NA1A65TB	Marine Pollution	3	0	0	3	
3	242NA1A75TC	Marine Engineering-II	3	0	0	3	

<b>Offshore Engineering</b>							
4	242NA1A55TD	Ocean Data Analysis	3	0	0	3	
5	242NA1A45TE	Renewable Energy Sources	3	0	0	3	
6	242NA1A75TF	Dynamics of Offshore Structures	3	0	0	3	
7	242NA1A55TG	Subsea Pipeline and Risers	3	0	0	3	
8	242NA1A65TH	Coastal Disaster Management	3	0	0	3	
9	242NA1A55TI	Wave Mechanics	3	0	0	3	
10	242NA1A65TJ	Dredging Technology	3	0	0	3	
11	242NA1A75TK	Advanced Offshore Engineering	3	0	0	3	
12	242NA1A75TL	Offshore Renewable Energy	3	0	0	3	
13	242NA1A75TM	Offshore Environmental Impact Assessment	3	0	0	3	
14	242NA1A75TN	Estuarine and Coastal Hydrodynamics	3	0	0	3	
15		SWAYAM / MOOC Courses	3	0	0	3	
<b>Ship Design</b>							
16	242NA1A55TL	Lifting Surfaces for Marine Applications	3	0	0	3	
17	242NA1A65TM	Fishing Vessel Technology	3	0	0	3	
18	242NA1A65TN	Inland Water Transportation	3	0	0	3	
19	242NA1A75TO	Warship Technology	3	0	0	3	
20	242NA1A75TP	Advanced Fluid Dynamics	3	0	0	3	
21	242NA1A75TQ	Guidance and Control of Marine Vehicles	3	0	0	3	
22	242NA1A75TR	Computer Aided Structural Design	3	0	0	3	
23	242NA1A75TS	Advanced Ship Design	3	0	0	3	
24	242NA1A65TT	Ship Vibration and Noise	3	0	0	3	



**Ship Construction**

S. No	Course Code	Course Title	L	T	P	C	Prerequisite
25	242NA1A75TU	CAD/CAM in Ship Building	3	0	0	3	
26	242NA1A75TV	Statutory Regulations and Classification Rules	3	0	0	3	
27	242NA1A75TW	Shipyards Practices and Project Management	3	0	0	3	
28	242NA1A65TX	Non-Destructive Testing	3	0	0	3	
29	242NA1A75TY	Advanced Ship Technology	3	0	0	3	

**B.E NA&OE CURRICULUM – CREDIT SHARE**

Semester	Contact Hours	Lecture	Tutorial	Practical	Credit
1	23	13	1	10	19
2	28	21	2	6	24
3	26	15	1	10	21
4	23	15	2	8	20
5	25	20	3	4	25
6	26	18	0	8	23
7	23	15	0	8	20
8	16	0	0	16	8
<b>Total</b>	<b>204</b>	<b>113</b>	<b>11</b>	<b>82</b>	<b>160</b>



