Republic of the Philippines
BATANGAS STATE UNIVERSITY
BatStateU Alangilan
Alangilan, Batangas City
College of Engineering, Architecture and Fine Arts
https://batstate-u.edu.ph, Tel. No. (043) 425-0139 loc. 0118/2121

CURRICULUM
Bachelor of Science in Naval Architecture and Marine Engineering (BSNAME)

Academic Year: 2021-2022
Reference CMOs: CMO No. 28 s. 2015, CMO No. 67 s. 2017 (Allied),
CMO No. 4 s. 2018 and CMO No. 20 s. 2013

Curriculum Description

The archipelagic nature of the Philippines shows great potential of developing the maritime industry. Naval Architecture and Marine Engineering deals with the science and engineering of the conceptual design, manufacture and life cycle management of marine vehicles, structures and complex systems. The program provides leadership and service to the state, national and international marine community. It also provides the technical expertise and world-class facilities necessary to perform research and development, test and evaluation, technology and acquisition management in the areas of ship hydromechanics, system design, concept development, and integration analysis throughout the lifecycle of surface ships, submarines, unmanned vessels, and other classified watercraft.

Program Educational Objectives of Naval Architecture and Marine Engineering

The Naval Architecture and Marine Engineering alumni three to five years after graduation shall:

1. **Specialist.** Practiced as specialist in solving complex naval architecture and marine engineering problems leading to improvements and innovations, while taking into consideration the environmental, social, and economical requirements.

2. **Professionalism and Leadership.** Assumed leadership position in industry, academe, government, or private sector whit consideration to social and ethical responsibility.

3. **Lifelong Learning.** Engaged in lifelong learning through further studies, research, certifications, promotions, and other personal and professional development activities.

Institutional Graduate Attributes

The student should achieve at least 75% for each IGA upon graduation.

1. **Knowledge Competence.** Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.

2. **Creativity and Innovation.** Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.

3. **Critical and Systems Thinking.** Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.

4. **Communication.** Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.

5. **Lifelong Learning.** Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.

6. **Leadership, teamwork, and Interpersonal Skills.** Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.

7. **Global Outlook.** Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.

8. **Social and National Responsibility.** Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.

Student Outcomes

The following skills, knowledge, and behaviors are expected to be attained by students a they progress through the program:

1. **Discipline Knowledge.** Ability to apply mathematics, sciences and principles of engineering to solve complex naval architecture and marine engineering problems;

2. **Investigation.** Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;

3. **Design/Development of Solutions.** Design solution, system, components, processes, exhibiting improvements/innovations, that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues.

4. **Leadership and Teamwork.** Function effectively as a member of a leader on a diverse team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

5. **Problem Analysis.** Identify, formulate, and solve complex naval architecture and marine engineering problems by applying principles of engineering, science, and mathematics;

6. **Ethics and Professionalism.** Apply ethical principles and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, environmental, and societal contexts.

7. **Communication.** Communicate effectively on complex engineering activities with the community, and the 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;

8. **Environment and Sustainability.** Recognize the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development;

9. **Lifelong Learning.** Recognize the need for, and ability to engage in independent and life-long learning in the broadest context of technological change.

10. **The Engineer and Society.** Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.

11. **Modern Tool Usage.** Apply appropriate techniques, skills, and modern engineering and IT tools to complex naval architecture and marine engineering activities;

12. **Project Management and Finance.** Demonstrate knowledge and understanding of engineering management and financial principles as member or a leader of a team to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship.

13. **Social and National Responsibility.** Apply acquired naval architecture and marine engineering knowledge and skills in addressing community problems that contributes to national development.

CURRICULUM COMPONENTS

Classification/Field/Course	Credit Units	Number of Hours/Week	
		Lec	Lab
TECHNICAL COURSES			
A. Mathematics			
Differential Calculus	3	3	0
Integral Calculus	3	3	0
Differential Equations	3	3	0
Engineering Data Analysis	3	3	0
Sub Total	**12**	**12**	**0**
B. Natural/Physical Sciences			
General Chemistry	4	3	3
Physics 1	4	3	3
Modern Biology	3	2	3
Sub Total	**11**	**8**	**9**
C. Basic Engineering Sciences			
Introduction to Engineering	1	0	3
Computer Programming 1	1	0	3
Engineering Drawing	1	0	3
Statics of Rigid Bodies	3	3	0
Computer Aided Design	1	0	3
Dynamics of Rigid Bodies	2	2	0
Mechanics of Deformable Bodies	3	3	0
Environmental Science and Engineering	3	3	0
Engineering Economics	3	3	0
Numerical Methods	3	3	0
Engineering Management	3	3	0
Research Methods	3	3	0
Technopreneurship	3	3	0
Sub Total	**30**	**26**	**12**
D. Allied Courses			
Basic Electrical Engineering	3	2	3
DC and AC Machinery	3	2	3
Basic Occupational Safety and Health	3	3	0
Sub Total	**9**	**7**	**6**
E. Professional Courses			
Naval Architecture and Marine Engineering Orientation	1	1	0
Thermodynamics 1	3	3	0
Workshop Theory and Practice	3	2	3
Advanced Mathematics for NAME	3	3	0
Thermodynamics 2	3	3	0
Fluid Mechanics	3	2	3
Machine Shop Theory and Practice	2	0	6
Life Support Systems	3	3	0
Principles of Ship Performance	3	2	3
Ship Structures	3	2	3
Maritime Laws, Rules and Regulations.	3	3	0
Marine Engineering I	3	2	3
Machine Elements	3	2	3
Coastal Engineering	3	3	0

Power Plant Engineering	5	4	3
Marine Engineering II	3	2	3
Ship Design I	3	2	3
Naval Material Science and Engineering	3	2	3
Shipyard Processes and Management	3	2	3
Marine Auxiliary System	3	3	0
Ship Design II	2	0	6
Contracts and Specifications	3	3	0
Ship Resistance and Propulsion	3	2	3
On-the-Job-Training	4	320 hours	
Computer Applications for NAME	1	0	3
Engineering in the Littoral Zone	3	3	0
NAME Design Project I	1	0	3
NAME Design Project II	1	0	3
Sub Total	**77**	**54**	**57**
F. Elective Courses			
NAME Elective I	3	3	0
NAME Elective II	3	3	0
NAME Elective III	3	3	0
Sub Total	**9**	**9**	**0**
NON-TECHNICAL COURSES			
A. General Education Courses			
Understanding the Self	3	3	0
Mathematics in the Modern World	3	3	0
Readings in Philippine History	3	3	0
Purposive Communication	3	3	0
The Contemporary World	3	3	0
Art Appreciation	3	3	0
Science, Technology and Society	3	3	0
Ethics	3	3	0
People and the Earth’s Ecosystem	3	3	0
Sub Total	**27**	**27**	**0**
B. Mandated Courses			
Life and Works of Rizal	3	3	0
Kontekstwalisadong Komunikasyon sa Filipino	3	3	0
ASEAN Literature	3	3	0
Sub Total	**9**	**9**	**0**
C. Physical Education			
Physical Fitness, Gymnastics and Aerobics	2	2	0
Rhythmic Activities	2	2	0
Individual and Dual Sports	2	2	0
Team Sports	2	2	0
Sub Total	**8**	**8**	**0**
D. National Service Training Program			
National Service Training Program 1	3	3	0
National Service Training Program 2	3	3	0
Sub Total	**6**	**6**	**0**
Grand Total	**198**	**166**	**84**

PROGRAM OF STUDY

FIRST YEAR						
FIRST SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
GEd 101	Understanding the Self	3	3	0		
GEd 102	Mathematics in the Modern World	3	3	0		
GEd 105	Readings in Philippine History	3	3	0		
GEd 106	Purposive Communication	3	3	0		
SCI 401	General Chemistry	4	3	3		
MATH 401	Differential Calculus	3	3	0		
ENGG 401	Introduction to Engineering	1	0	3		
PE 101	Physical Fitness, Gymnastics and Aerobics	2	2	0		
NSTP 111	National Service Training Program 1	3	3	0		
	Total	**25**	**23**	**6**		

FIRST YEAR						
SECOND SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
GEd 104	The Contemporary World	3	3	0		
GEd 108	Art Appreciation	3	3	0		
GEd 109	Science, Technology and Society	3	3	0		
CpE 401	Computer Programming 1	1	0	3		
MATH 402	Integral Calculus	3	3	0	MATH 401	
ENGG 402	Engineering Drawing	1	0	3		
SCI 403	Physics 1	4	3	3	MATH 401	MATH 402
PE 102	Rhythmic Activities	2	2	0	PE 101	
NSTP 121	National Service Training Program 2	3	3	0	NSTP 111	
	Total	**23**	**20**	**9**		

FIRST YEAR						
MIDTERM SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
GEd 103	Life and Works of Rizal	3	3	0		
GEd 107	Ethics	3	3	0		
SCI 402	Modern Biology	3	2	3		
	Total	**9**	**8**	**3**		

SECOND YEAR						
FIRST SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
NAME 401	Naval Architecture and Marine Engineering Orientation	1	1	0	ENGG 401	
ME 402	Thermodynamics 1	3	3	0	SCI 403, MATH 402	
ME 403	Workshop Theory and Practice	3	2	3		
MATH 403	Engineering Data Analysis	3	3	0	MATH 401	
MATH 404	Differential Equations	3	3	0	MATH 402	
EE 419	Basic Electrical Engineering	3	2	3	SCI 403, MATH 402	
ENGG 403	Computer Aided Design	1	0	3	ENGG 402	
ENGG 407	Statics of Rigid Bodies	3	3	0	SCI 403, MATH 402	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	3	0		
PE 103	Individual and Dual Sports	2	2	0	PE 101	
	Total	**25**	**22**	**9**		

SECOND YEAR						
SECOND SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
NAME 402	Advanced Mathematics for NAME	3	3	0	MATH 403	
ME 405	Thermodynamics 2	3	3	0	ME 402	
ME 406	Fluid Mechanics	3	2	3	ME 402	
NAME 403	Computer Applications for NAME	1	0	3	ENGG 403	
ME 408	Machine Shop Theory and Practice	2	0	6	ME 403	
NAME 404	Engineering in the Littoral Zone	3	3	0	ENGG 407	
EE 422	DC and AC Machinery	3	2	3	EE 419	
ENGG 408	Dynamics of Rigid Bodies	2	2	0	ENGG 407	
ENGG 418	Mechanics of Deformable Bodies	3	3	0	ENGG 407	ENGG 408
PE 104	Team Sports	2	2	0	PE 101	
	Total	**25**	**20**	**15**		

SECOND YEAR						
MIDTERM SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
NAME 400	Life Support Systems	3	3	0	PE 101	
ENGG 413	Environmental Science and Engineering	3	3	0	SCI 401	
Litr 102	ASEAN Literature	3	3	0		
	Total	**9**	**9**	**0**		

THIRD YEAR						
FIRST SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
NAME 405	Principles of Ship Performance	3	2	3	ME 406	
NAME 406	Ship Structures	3	2	3	ENGG 418	
NAME 407	Maritime Laws, Rules and Regulations	3	3	0	GEd 107	
NAME 408	Marine Engineering I	3	2	3	ME 405	
ME 412	Machine Elements	3	2	3	ENGG 408	
NAME 409	Coastal Engineering	3	3	0	ME 405	
ENGG 404	Engineering Economics	3	3	0		
ENGG 414	Numerical Methods	3	3	0		
	Total	**24**	**20**	**12**		

THIRD YEAR						
SECOND SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
GEd 110	People and the Earth's Ecosystems	3	3	0		
NAME 410	Power Plant Engineering	5	4	3	NAME 408, ME 412	
NAME 411	Marine Engineering II	3	2	3	NAME 408	
NAME 412	Ship Design I	3	2	3	NAME 406, ME 412	
NAME 413	Naval Material Science and Engineering	3	2	3	ENGG 407, SCI 401	
NAME 414	Shipyard Processes and Management	3	2	3	NAME 409	
NAME 415	Marine Auxiliary System	3	3	0	NAME 408	
ENGG 416	Research Methods	3	3	0	NAME 401	
	Total	**26**	**21**	**15**		

FOURTH YEAR						
FIRST SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
ENGG 417	On-the-Job Training	4	320 hours		NAME 411, NAME 412, NAME 414	
ENGG 411	Basic Occupational Safety and Health	3	3	0	4th year standing	
NAME 416	NAME Design Project I	1	0	3	NAME 411, NAME 412, NAME 414	
	Total	**8**	**3**	**3**		

FOURTH YEAR						
SECOND SEMESTER						
Course Code	**Course Title**	**Units**	**No. Hour/s**		**Pre-requisite(s)**	**Co-Requisite(s)**
			Hrs Lec	**Hrs Lab**		
NAME 417	NAME Design Project II	1	0	3	NAME 416	
NAME 418	Ship Design II	2	0	6	NAME 410, NAME 412	
NAME 419	Contracts and Specifications	3	3	0	NAME 414	
NAME 420	Ship Resistance and Propulsion	3	2	3	NAME 415	
NAMEE 401	NAME Elective I	3	3	0	4th year standing	
NAMEE 402	NAME Elective II	3	3	0	4th year standing	
NAMEE 403	NAME Elective III	3	3	0	4th year standing	
ENGG 406	Engineering Management	3	3	0	ENGG 404	
ENGG 405	Technopreneurship	3	3	0		
Total		**24**	**20**	**12**		
TOTAL CREDIT UNITS		**198**	**166**	**84**		