

Republic of the Philippines
BATANGAS STATE UNIVERSITY
The National Engineering University

Alangilan Campus

Golden Country Homes, Alangilan, Batangas City, Philippines 4200

Tel Nos.: (+63 43) 425-0139 local 2121

E-mail Address: coe.alangilan@g.batstate-u.edu.ph | Website Address: <http://www.batstate-u.edu.ph>

College of Engineering

CURRICULUM

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

Academic Year 2023-2024

Reference CMOs: CMO Reference No. 21 s.2021, CMO No. 4 s.2018, CMO No. 20 s.2013,
CMO No. 39 s.2021, CMO No. 40 s.2021

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

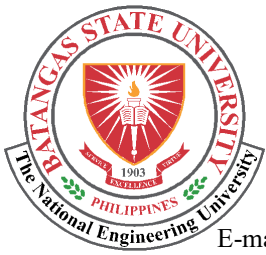
The Naval Architecture and Marine Engineering alumni three to five years after graduation shall:

1. **Specialist.** Practice as a 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.** Assume leadership position in industry, academe, government, or private sector with 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.



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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 as 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 engineering problems by applying principles of engineering, science, and mathematics;



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



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Curriculum Components

Classification/ Field / Course	No. of Hours/Week		Credit Units
	Lec	Lab	
I. TECHNICAL COURSES			
A. Mathematics			
Differential Calculus	3	0	3
Integral Calculus	3	0	3
Engineering Data Analysis	3	0	3
Differential Equations	3	0	3
Numerical Methods	3	0	3
Sub-total	15	0	15
B. Natural/Physical Sciences			
General Chemistry	3	3	4
Modern Biology	2	3	3
Physics 1	3	3	4
Sub-total	8	9	11
C. Basic Engineering Sciences			
Introduction to Engineering	0	3	1
Engineering Drawing	0	3	1
Computer Aided Design	0	3	1
Engineering Economics	3	0	3
Technopreneurship	3	0	3
Statics of Rigid Bodies	3	0	3
Dynamics of Rigid Bodies	3	0	3
Basic Occupational Safety and Health	3	0	3
Environmental Science and Engineering	3	0	3
Research Methods	3	0	3
Mechanics of Deformable Bodies	3	0	3
Sub-total	24	9	27
D. Allied Courses			
Computer Programming 1	0	3	1
Basic Electrical Engineering	2	3	3
Basic Electronics	2	3	3
DC and AC Machinery	3	3	4
Sub-total	7	12	11
E. Fundamental Naval Architecture and Marine Engineering Courses			
Thermodynamics 1	3	0	3
Thermodynamics 2	3	0	3
Fluid Mechanics	3	0	3
Machine Elements	3	0	3
Workshop Theory and Practice for NAME	2	3	3
Introduction to Naval Architecture and Marine Engineering	3	0	3
Ship Drafting	0	6	2



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Ship Modeling	2	3	3
Ship Hydrostatics	3	0	3
Marine Engineering 1	3	3	4
Marine Engineering 2	3	3	4
Marine Auxiliary Systems	2	3	3
NAME Practice and Comprehensive Exam	0	6	2
On the-Job-Training	400		5
Sub-total	30	27	44
F. Professional Naval Architecture and Marine Engineering Course			
Ship Resistance	3	3	4
Intact Stability	3	3	4
Damage Stability	3	6	5
Ship Structural Analysis	3	6	5
Ship Structural Design	3	3	4
Motion in Waves	2	3	3
Marine Power Plant Engineering	3	0	3
Ship Propulsion	3	3	4
Maritime Laws, PMMRR and Code of Ethics	3	0	3
Ship Building Processes	3	6	5
Naval Material Science and Engineering	3	0	3
Shipyards Processes	2	3	3
Shipyards Management	3	0	3
Contracts and Specifications	3	0	3
Marine Inspection and Surveys	2	3	3
Ship Design 1	2	9	5
Ship Design 2	2	9	5
Sub-total	46	57	65
Total (Technical Courses)	130	114	173
II. NON-TECHNICAL COURSES			
A. General Education Course			
Purposive Communication	3	0	3
Mathematics in the Modern World	3	0	3
Understanding the Self	3	0	3
Art Appreciation	3	0	3
Ethics	3	0	3
Readings in Philippine History	3	0	3
Contemporary World	3	0	3
Science, Technology and Society	3	0	3
Sub-total	24	0	24
B. General Education Elective and Mandated Courses			
Kontekstwalisadong Komunikasyon sa Filipino	3	0	3
Filipino sa Iba't Ibang Disiplina	3	0	3
Life and Works of Rizal	3	0	3
Sub-total	9	0	9



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C. Physical Activities Toward Health and Fitness			
PATHFit 1 - Movement Competency Training	2	0	2
PATHFit 2 - Exercise-based Fitness Activities	2	0	2
PATHFit 3 – Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Traditional and Recreational Games)	2	0	2
PATHFit 4 – Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Team Sports, Basketball and Volleyball)	2	0	2
Sub-total	8	0	8
D. National Service Training Program			
NSTP 1	3	0	3
NSTP 2	3	0	3
Sub-total	6	0	6
Total (Non-Technical Courses)	47	0	47
GRAND TOTAL	177	114	220

SUMMARY	
Courses	Number of Units
I. Technical Courses	
A. Mathematics	15
B. Natural/Physical Sciences	11
C. Basic Engineering Sciences	27
D. Allied Courses	11
E. Fundamental Courses	44
F. Professional Naval Architecture and Marine Engineering Courses	65
II. Non-Technical Courses	
A. General Education Courses	24
B. General Education Elective/Mandated Courses	9
C. PATHFit 1-4	8
D. NSTP	6
GRAND TOTAL	220



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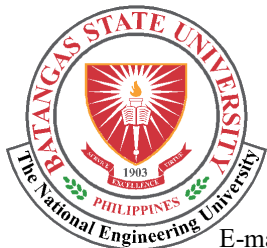
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PROGRAM OF STUDY

FIRST YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
MATH 401	Differential Calculus	3	0	3		
SCI 401	General Chemistry	3	3	4		
ENGG 401	Introduction to Engineering	0	3	1		
Ged 102	Mathematics in the Modern World	3	0	3		
Ged 101	Understanding the Self	3	0	3		
Ged 105	Readings in Philippine History	3	0	3		
Ged 106	Purposive Communication	3	0	3		
PATH Fit 1	Movement Competency Training	2	0	2		
NSTP 111	National Service Training Program 1	3	0	3		
Total		23	6	25		

FIRST YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
MATH 402	Integral Calculus	3	0	3	MATH 401	
SCI 403	Physics 1	3	3	4	MATH 401	MATH 402
ENGG 402	Engineering Drawing	0	3	1		
CpE 401	Computer Programming 1	0	3	1		
Ged 104	The Contemporary World	3	0	3		
Ged 108	Art Appreciation	3	0	3		
Ged 109	Science, Technology and Society	3	0	3		
PATHFit 2	Exercise-based Fitness Activities	2	0	2	PATHFit 1	
NSTP 121	National Service Training Program 2	3	0	3	NSTP 111	
Total		20	9	23		

FIRST YEAR						
Midterm						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
SCI 402	Modern Biology	2	3	3		
Ged 103	Life and Works of Rizal	3	0	3		
Ged 107	Ethics	3	0	3		
Total		8	3	9		



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SECOND YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
NAME 401	Introduction to Naval Architecture and Marine Engineering	3	0	3	ENGG 401	
ME 402	Thermodynamics 1	3	0	3	SCI 403, MATH 402	
ME 433	Workshop Theory and Practice for NAME	2	3	3		
MATH 403	Engineering Data Analysis	3	0	3	MATH 401	
MATH 404	Differential Equations	3	0	3	MATH 402	
EE 419	Basic Electrical Engineering	2	3	3	SCI 403, MATH 402	
ENGG 403	Computer Aided Design	0	3	1	ENGG 402	
ENGG 407	Statics of Rigid Bodies	3	0	3	SCI 403, MATH 402	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
PATHFit 3	Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Traditional and Recreational Games)	2	0	2	PATHFit 1 and 2	
Total		24	9	27		

SECOND YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ME 405	Thermodynamics 2	3	0	3	ME 402	
ME 406	Fluid Mechanics	3	0	3	ME 402	
NAME 402	Ship Drafting	0	6	2	ENGG 402	
NAME 411	Marine Engineering 1	3	3	4		
ENGG 408	Dynamics of Rigid Bodies	3	0	3	ENGG 407	
NAME 404	Ship Hydrostatics	3	0	3	NAME 401	
Fili 102	Filipino sa Iba't Ibang Disiplina	3	0	3	Fili 101	
PATHFit 4	Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Team Sports, Basketball and Volleyball)	2	0	2	PATHFit 1 and 2	
Total		20	9	23		



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SECOND YEAR						
Mid Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 405	Technopreneurship	3	0	3		
ENGG 418	Mechanics of Deformable Bodies	3	0	3	ENGG 408	
NAME 403	Ship Modeling	2	3	3	NAME 402	
Total		8	3	9		

THIRD YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 414	Numerical Methods	3	0	3		
NAME 412	Marine Engineering 2	3	3	4	NAME 411	
NAME 417	Ship Building Processes	3	6	5	NAME 401	
NAME 405	Ship Resistance	3	3	4	NAME 404	
ME 412	Machine Elements	3	0	3	ENGG 418	
ENGG 416	Research Methods	3	0	3	NAME 401	
NAME 418	Naval Material Science and Engineering	3	0	3		
Total		21	12	25		

THIRD YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
EE 422	DC and AC Machinery	3	3	4	EE 419	
NAME 406	Intact Stability	3	3	4	NAME 405	
NAME 413	Marine Auxiliary Systems	3	0	3	NAME 412	NAME 414
NAME 414	Marine Power Plant Engineering	2	3	3	NAME 412	NAME 413
NAME 415	Ship Propulsion	3	3	4	NAME 412	NAME 414
ENGG 404	Engineering Economics	3	0	3		
ENGG 413	Environmental Science and Engineering	3	0	3	SCI 401	
ECE 422	Basic Electronics	2	3	3	EE 419	
Total		22	15	27		



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THIRD YEAR						
MIDTERM						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 420	On-the-Job Training for NAME	400		5	NAME 405	
ENGG 411	Basic Occupational Safety and Health	3	0	3		
Total		3	0	8		

FOURTH YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
NAME 407	Damage Stability	3	6	5	NAME 406	NAME 410
NAME 408	Ship Structural Analysis	3	6	5		NAME 409 NAME 410
NAME 409	Ship Structural Design	3	3	4	NAME 404 ENGG 418	NAME 408 NAME 410
NAME 410	Motion in Waves	2	3	3	ME 406 NAME 405 NAME 406	NAME 407 NAME 408 NAME 423
NAME 423	Ship Design 1(Capstone Project)	2	9	5		NAME 410
Total		13	27	22		

FOURTH YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
NAME 416	Maritime Laws, PMMRR and Code of Ethics	3	0	3	Ged 107	
NAME 419	Shipyards Processes	2	3	3	NAME 409	
NAME 420	Shipyards Management	3	0	3		
NAME 421	Contracts and Specifications	3	0	3		
NAME 422	Marine Inspection and Surveys	2	3	3		
NAME 424	Ship Design 2	2	9	5	NAME 423	
NAME 425	Naval Architecture and Marine Engineering Practice and Comprehensive Exam	0	6	2	4 th Year Standing	
Total		15	21	22		
GRAND TOTAL UNITS		177	114	220		