



Republic of the Philippines
BATANGAS STATE UNIVERSITY
The National Engineering University

Alangilan Campus
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CURRICULUM

Bachelor of Mechatronics Engineering Technology

CMO Reference No. 86, S. 2017; CMO Reference No. 13, S. 2023; CMO Reference No. 4, S. 2018;
CMO Reference No. 20, S. 2013; CMO Reference No. 39, S. 2021; CMO Reference No. 40, S. 2021
ABET-ETAC Criteria for Accrediting Engineering Technology Programs 2023-2024

Curriculum Description

The Bachelor of Mechatronics Engineering Technology program aims to produce competent graduates who can contribute to industrialization and society's welfare, particularly in the interdisciplinary field of mechatronics. The program provides a deep understanding of mechanical, electrical, electronics and computing systems, merging these disciplines to design, develop, and implement cutting-edge solutions in various industries, recognizing its critical role in societal growth. Graduates must possess a robust foundation in technical knowledge, practical skills, and a holistic perspective essential for innovation and problem-solving within the field. Moreover, the program focuses on fostering an in-depth understanding of mechatronic systems, robotics, automation, control systems, and the integration of software and hardware components. Students will engage in hands-on projects, case studies, and internships to gain practical experience, ensuring they are well-prepared for the dynamic demands of the industry.

Additionally, the program aims to develop graduates with ethical behavior, integrity, social responsibility, effective communication, teamwork, and leadership skills, while also promoting lifelong learning to keep up with the ever-changing field of engineering technology. The program provides opportunities for further studies, research, certifications, as well as personal and professional development, including career advancement.

Program Educational Objectives

PEO 1	Title: Successful Professional Practice	
	Description: Successfully practice as mechatronics engineering technologists for the welfare of the society.	
	KPI 1	Graduates are involved in operations planning with contribution towards improving processes.
	KPI 2	Graduates are able to undertake technology activities in a way that contributes to sustainable development
	KPI 3	Graduates are actively involved in designing of new systems and processes and/or providing consultancy and advice to either internal or external customers.



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PEO 2	Title: Ethics and Professionalism	
	Description: Demonstrate a high degree of ethics and professionalism at all time	
	KPI 1	Graduates have planned for effective project implementation through managing the planning, budgeting and organization of tasks, people, and resources.
	KPI 2	Graduates have managed teams and developed staff to meet changing technical and managerial needs.
	KPI 3	Graduates are developing or have started a company or partnership business.
PEO 3	KPI 4	Graduates have managed continual quality improvement.
	Title: Technological Advancement	
	Description: Contribute to the technological advancement for the welfare of the humanity	
	KPI 1	Graduates have actively contributed to the development of new technologies, processes and/or methodologies or improvements in existing ones
	KPI 2	Graduates participated in research and development projects aimed at technological innovations
	KPI 3	Graduates have actively engaged with stakeholders including communities and end-users, to understand and address real-world challenges
	KPI 4	Graduates communicate and collaborate with interdisciplinary teams to ensure the societal impact of their technological contributions.

Institutional Graduate Attributes

- 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.
- Creativity and Innovation** - Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
- Critical and Systems** - Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
- 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
- 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.
- 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



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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.

Curriculum Components

Courses			Units	Total
Math and Sciences Courses				19 units
1	MathET140	Comprehensive Math (Algebra, Trigonometry, Analytic Geometry)	0	
2	MATH101	Differential Calculus	4	
3	MATH102	Integral Calculus	4	
4	AI 102	Probability and Statistics for AI	3	
5	SciET141	Chemistry	4	
6	PHY101	Physics for BET	4	
Applied Courses				32 units
1	AI 103	Machine Learning and Neural Networks	3	
2	CpET140	Computer Programming	3	
3	BET141	Production Drawing	3	
4	BET142	Computer Aided Design	2	
5	BET143	Occupational Health and Industrial Safety Management	3	
6	BET 241	Materials Selection & Testing	3	
7	BET 341	Quality Control and Assurance	3	
8	BET 342	Technopreneurship for BET	3	
9	BET344	Engineering Technology Ethics	3	
10	BET 345	Industrial Operation & Management Practices	3	
11	BET 346	Engineering Technology Management	3	
Professional Courses				66 units
1	ELET 141	Circuit Analysis I	3	
2	ELET 143	Circuit Analysis II	3	
3	ELXET 142	Electronics Devices	3	
4	ELXET 143	Digital Electronics	3	
5	MXET 241	Electric Motors and Control	3	
6	MXET 141	Fluid Power and Control	3	
7	MXET 242	Electro-pneumatics and Electro-hydraulics	3	
8	MXET243	Machine Elements	3	
9	ELXET 241	Microcontroller System	3	
10	MXET244	Programmable Logic Control	3	
11	MXET341	Industrial Robotics	3	
12	MXET342	Control System	3	
13	MXET245	Electronic Instrumentation	3	
14	MXET343	Modeling, Simulation and Analysis	3	



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15	MXET344	Manufacturing process	3	
16	MXET345	Industrial Programming and Networking	3	
17	BET343	Technology Capstone Project 1	3	
18	BET347	Technology Capstone Project 2	3	
19	BET441	Supervised Industrial Training 1	6	
20	BET442	Supervised Industrial Training 2	6	

Required General Education				24 units
1	GEd 101	Understanding the Self	3	
2	GEd 102	Mathematics in the Modern World	3	
3	GEd 104	The Contemporary World	3	
4	GEd 105	Readings in Philippine History	3	
5	GEd 106	Purposive Communication	3	
6	GEd 107	Ethics	3	
7	GEd 108	Art Appreciation	3	
8	GEd 109	Science, Technology, and Society	3	
Mandated Courses				3 units
1	GEd 103	Life and Works of Rizal	3	
General Education Electives				9 units
1	AI 101	Linear Algebra	3	
2	GAD101	Gender and Society	3	
3	ES101	Environmental Science	3	
4	Litr102	Asean Literature	0	
PATHFit & NSTP				14 units
1	PATHFit 1	Movement Competency Training	2	
2	PATHFit 2	Exercise-based Fitness Activities	2	
3	PATHFit 3	Choice of Dance, Sports, Martial Arts, Group Exercise, Outdoor, and Adventure Activities 1	2	
4	PATHFit 4	Choice of Dance, Sports, Martial Arts, Group Exercise, Outdoor, and Adventure Activities 2	2	
5	NSTP 111	National Service Training Program 1	3	
6	NSTP 121	National Service Training Program 2	3	
Grand Total				167 units

SUMMARY	
Courses	Number of Units
Math and Sciences Courses	19
Applied Courses	32
Professional Courses	66
Required General Education	24
Mandated Courses	3
General Education Electives	9
PATHFit & NSTP	14
TOTAL	167



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PROGRAM OF STUDY

FIRST YEAR						
FIRST SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
ELET 141	Circuit Analysis I	2	3	3		
ELXET 142	Electronics Devices	2	3	3		
GEd 101	Understanding the Self	3	0	3		
GEd 102	Mathematics in the Modern World	3	0	3		
SciET141	Chemistry	3	3	4		
BET141	Production Drawing	1	6	3		
MathET140	Comprehensive Math (Algebra, Trigonometry, Analytic Geometry)	3	0	0		
PATHFit 1	Movement Competency Training	2	0	2		
NSTP 111	National Service Training Program 1	3	0	3		
	Total	22	15	24		

FIRST YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
ELET 143	Circuit Analysis II	2	3	3	ELET 141	
ELXET 143	Digital Electronics	2	3	3	ELXET 142	
MXET 141	Fluid Power and Control	2	3	3		
MATH101	Differential Calculus	4	0	4	MathET140	
PHY101	Physics for BET	3	3	4	MathET140	
BET142	Computer Aided Design	1	3	2	BET141	
PATHFit 2	Exercise-based Fitness Activities	2	0	2	PATHFit 1	
NSTP 121	National Service Training Program 2	3	0	3	NSTP 111	
	Total	19	15	24		

FIRST YEAR						
MIDTERM SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
GEd 103	Life and Works of Rizal	3	0	3		
GEd 104	The Contemporary World	3	0	3		
BET 143	Occupational Health and Industrial Safety Management	3	0	3		
	Total	9	0	9		



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SECOND YEAR						
FIRST SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
MXET 241	Electric Motors and Control	2	3	3	ELET 143	
MXET 242	Electro-Pneumatics and Electro-Hydraulics	2	3	3	ELXET 142, MXET141	
MXET 243	Machine Elements	2	3	3	PHY 101	
AI 101	Linear Algebra for AI	3	0	3		
GEEd 105	Readings in Philippine History	3	0	3		
MATH102	Integral Calculus	4	0	4	MATH101	
CpET140	Computer Programming	2	3	3		
PATHFit 3	Choice of Dance, Sports, Martial Arts, Group Exercise, Outdoor, and Adventure Activities 1	2	0	2	PATHFit 1 & 2	
	Total	20	12	24		

SECOND YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
ELXET 241	Microcontroller System	2	3	3	CpET140	
MXET 244	Programmable Logic Control	2	3	3	MXET 241	
MXET 245	Electronic Instrumentation	2	3	3		ELXET 241
GAD101	Gender and Society	3	0	3		
BET 241	Materials Selection & Testing	3	0	3		
GEEd 106	Purposive Communication	3	0	3		
AI 102	Probability and Statistics for AI	3	0	3	MATH 102	
PATHFit 4	Choice of Dance, Sports, Martial Arts, Group Exercise, Outdoor, and Adventure Activities 2	2	0	2	PATHFit 1 & 2	
	Total	20	9	23		



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THIRD YEAR						
FIRST SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
AI 103	Machine Learning and Neural Networks	2	3	3	AI 101, AI 102, CpET 140	
MET 341	Pneumatics and Hydraulics	2	3	3	MET 245	
MET 342	Computer Numerical Control Machining (Lathe and Milling)	2	3	3	MET 243 MET 246	
GEd 107	Ethics	3	0	3		
GEd 108	Art Appreciation	3	0	3		
BET 341	Quality Control and Assurance	3	0	3		
BET 342	Technopreneurship for BET	3	0	3		
BET 343	Technology Capstone Project 1	2	3	3	MET 245, MET 246	
	Total	20	12	24		

THIRD YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
MET 343	Basic Arc and Gas Welding for Engineering Technology	1	6	3	MET 342	
MET 344	Instrumentation and Manufacturing Automation	3	0	3	MET 341	
GEd 109	Science, Technology and Society	3	0	3		
ES 101	Environmental Science	3	0	3		
BET 344	Engineering Technology Ethics	3	0	3		
BET 345	Industrial Operation & Management Practices	3	0	3		
BET 346	Engineering Technology Management	3	0	3		
BET 347	Technology Capstone Project 2	2	3	3	BET 343	
	Total	21	9	24		



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FOURTH YEAR						
FIRST SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
BET 441	Supervised Industrial Training 1	0	540	6	BET347	
	Total	0	540	6		

FOURTH YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
BET 442	Supervised Industrial Training 2	0	540	6	BET 441	
	Total	0	540	6		