



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 2103

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

College of Engineering Technology

CURRICULUM

Bachelor of Instrumentation and Control 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

Bachelor of Food Engineering Technology is an undergraduate degree program that focuses on applying engineering principles and technology in the food industry. This program combines food science, technology, and engineering elements to prepare students for careers in producing, processing, and monitoring the quality of food products. Students pursuing this degree typically study courses related to food chemistry, microbiology, food processing equipment, food safety, food laws, food quality management, and engineering principles. They also study courses dealing with food analysis, sensory evaluations, packaging, and labeling. They learn how to design and optimize food production processes, develop new food products, and ensure that food manufacturing facilities meet safety and food regulatory standards.

Program Educational Objectives

PEO 1	Title: Successful Professional Practice	
	Description: Successfully practice as instrumentation and control 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
PEO 2	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.
	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.	
KPI 4	Graduates have managed continual quality improvement.	



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PEO 3	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

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** - 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.



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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				67 units
1	FET 141	Introduction to Food Science and Technology	2	
2	FET 142	Food Selection, Preparation, and Nutrition	4	
3	FET 143	Inorganic Chemistry	3	
4	FET 144	Organic Chemistry with Biochemistry	3	
5	FET 145	General Microbiology	3	
6	FET 241	Food Chemistry	3	
7	FET 242	Food Microbiology	3	
8	FET 243	Thermodynamics for FET	3	
9	FET 244	Food Analysis	3	
10	FET 245	Fluid Mechanics for FET	3	
11	FET 246	Postharvest Handling & Technology	3	
12	FET 341	Sensory Evaluation & Food Product Devt	3	
13	FET 342	Food Processing Engineering I (Heat Processing, non thermal processing and chemical preservation)	3	
14	FET 343	Food safety and quality management	2	
15	FET 344	Food Packaging & Labeling	3	
16	FET 345	Food Processing Engineering II (Fermentation, refrigeration and freezing, drying and dehydration, concentration, hurdle technology)	3	
17	FET 346	Food Laws and Regulations	2	
18	BET343	Technology Capstone Project 1	3	
19	BET347	Technology Capstone Project 2	3	
20	BET441	Supervised Industrial Training 1	6	
21	BET442	Supervised Industrial Training 2	6	



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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				168 units

SUMMARY	
Courses	Number of Units
Math and Sciences Courses	19
Applied Courses	32
Professional Courses	67
Required General Education	24
Mandated Courses	3
General Education Electives	9
PATHFit & NSTP	14
TOTAL	168



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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)
FET 141	Introduction to Food Science and Technology	2	0	2		
FET 142	Food Selection, Preparation and Nutrition	3	3	4		
GEEd 101	Understanding the Self	3	0	3		
GEEd 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		23	12	24		

FIRST YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
FET 143	Inorganic Chemistry	2	3	3	SciET141	
FET 144	Organic Chemistry with Biochemistry	2	3	3	SciET141	
FET 145	General Microbiology	2	3	3	FET 142	
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)
GEEd 103	Life and Works of Rizal	3	0	3		
GEEd 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)
FET 241	Food Chemistry	2	3	3	FET 143, FET 144	
FET 242	Food Microbiology	2	3	3	FET 145	
FET 243	Thermodynamics for FET	3	0	3	SciET141, PHY101	
AI 101	Linear Algebra with AI	3	0	3		
GE d 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		21	9	24		

SECOND YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
FET 244	Food Analysis	2	3	3	FET 241	
FET 245	Fluid Mechanics for FET	3	0	3	SciET141, PHY101	
FET 246	Postharvest Handling & Technology	2	3	3	FET 241	
GAD101	Gender and Society	3	0	3		
BET 241	Materials Selection & Testing	3	0	3		
GE d 106	Purposive Communication	3	0	3		
AI 102	Probability and Statistics for AI	3	0	3	MATH101	
PATHFit 4	Choice of Dance, Sports, Martial Arts, Group Exercise, Outdoor, and Adventure Activities 2	2	0	2	PATHFit 1 & 2	
Total		21	6	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	
FET 341	Sensory Evaluation & Food Product Development	2	3	3	FET 244, FET 246	
FET 342	Food Processing Engineering I (Heat Processing, non-thermal processing, and chemical preservation)	2	3	3	FET 243, FET 245	
FET 343	Food safety and quality management	2	0	2		
GE 107	Ethics	3	0	3		
GE 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		FET 341-343
	Total	22	12	26		

THIRD YEAR						
SECOND SEMESTER						
Course Code	Course Title	Lec	Lab	Credit Units	Pre-requisite(s)	Co-requisite(s)
FET 344	Food Packaging & Labeling	2	3	3	FET 341	
FET 345	Food Processing Engineering II (Fermentation, refrigeration, and freezing, drying, and dehydration, concentration, hurdle technology)	2	3	3	FET 342	
FET 346	Food Laws and Regulations	2	0	2		
GE 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	BET343	
	Total	23	9	26		



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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		