Republic of the Philippines
BATANGAS STATE UNIVERSITY
Pablo Borbon Main II,Alangilan, Batangas City
COLLEGE OF ENGINEERING, ARCHITECTURE & FINE ARTS
www.batstate-u.edu.ph Tel. No. (043) 425-0139 loc 118

CURRICULUM
Bachelor of Science in Sanitary Engineering (BSSE)
Academic Year 2018-2019
Reference CMOs: CMO No. 98 s. 2017, CMO No. 4 s. 2018 and CMO No. 20, s. 2013

Curriculum Description

The BSSE program recognizes the importance of Sanitary Engineering in the protection and preservation of the environment as well as the promotion of health and well being of the general public.

Program Educational Objectives

The graduates of Bachelor of Science in Sanitary Engineering within three to five years after graduation shall:
1. Successfully practice as sanitary engineers; and
2. Adhere to professional, moral and ethical standards in the practice of sanitary engineering.

Student Outcomes

The following skills, knowledge, and behaviors are expected to be attained by students as they progress through the program:
a. Ability to apply knowledge of mathematics and science to solve engineering problems.
b. Ability to design and conduct experiments, as well as to analyze and interpret data.
c. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, in accordance with standards.
d. Ability to function on multidisciplinary teams.
e. Ability to identify, formulate, and solve engineering problems.
f. Understanding of professional and ethical responsibility.
g. Ability to communicate effectively.
h. Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
i. Recognition of the need for, and an ability to engage in life-long learning.
j. Knowledge of contemporary issues.
k. Ability to use techniques, skills, and modern engineering tools necessary for engineering practice.
l. Knowledge and understanding of engineering and management principles as a member and leader in a team, to manage projects and in multidisciplinary environments.

CURRICULUM COMPONENTS

Classification/ Field / Course	Number of		Credit
	Lec	Lab	Units
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 Solutions to SE Problems (Advanced Mathematics)	2	3	3
Sub-Total	**14**	**3**	**15**
B. Natural and Physical Sciences			
General Chemistry	3	3	4
Physics	3	3	4
Geology	2	0	2
Modern Biology	2	3	3
Sub-Total	**10**	**9**	**13**
C. Basic Engineering Sciences			
Sanitary Engineering Orientation	1	0	1
Introduction to Engineering	0	3	1
Engineering Drawing	0	3	1
Computer Programming 1	0	3	1
Computer Programming 2	0	3	1
Computer Aided Design	0	3	1
Statics of Rigid Bodies	3	0	3
Dynamics of Rigid Bodies	2	0	2
Strength of Materials	4	0	4
Engineering Economics	3	0	3
Engineering Management	2	0	2
Technopreneurship	3	0	3
Sub-Total	**18**	**15**	**23**
D. Allied Courses			
Engineering Utilities 1	3	0	3
Engineering Utilities 2	3	0	3
Environmental Science and Engineering	3	0	3
Sub-total	**9**	**0**	**9**
E. Professional Courses			
Fundamentals of Surveying	3	6	5
Construction Materials and Testing	2	3	3
Structural Theory	3	3	4
Principles of Reinforced/Prestressed Concrete Design	3	3	4
Hydraulics	4	3	5
Hydrology	3	0	3
Sanitary Engineering Laws, Contract and Ethics	3	0	3
Geotechnical Engineering 1 (Soil Mechanics)	3	3	4
Construction Methods and Project Management	3	3	4
Environmental and Sanitary Chemistry	2	3	3
Microbioloy and Parasitology for Environmental Engineers	2	3	3
Public Health Engineering	2	0	2
Basic Occupational Safety and Health	3	0	3
Solid and Hazardous Waste Engineering	3	0	3
Environmental Planning, Laws and Impact Assssment	3	0	3
Water Supply Planning and Development	3	0	3
Sewerage and Urban Drainage	3	0	3
Sanitary Science, Plumbing and Fire Protection as Applied to Buildings	2	3	3
Environmental Engineering Laboratory	0	3	1
Water Purification Process Design	3	0	3
Sewage and Industrial Wastewater Treatment	3	0	3
SE Project Design 1	1	3	2
SE Project Design 2	0	6	2
SE Practice with Comprehensive Examinations	0	6	2
Research Methods	3	0	3
Sub-Total	**60**	**51**	**77**

F. On-the-Job-Training			
OJT	320 hrs		4
Total Technical Courses	**111**	**78**	**141**
II. Non-technical Courses			
A. General Education Courses			
Mathematics in the Modern World	3	0	3
Readings in Philippine History	3	0	3
Understanding the Self	3	0	3
The Contemporary World	3	0	3
Science, Technology and Society	3	0	3
Purposive Communication	3	0	3
Art Appreciation	3	0	3
Ethics	3	0	3
Sub-total	**24**	**0**	**24**
B. Filipino/Literature/Rizal			
Kontekstwalisadong Komunikasyon sa Filipino	3	0	3
Filipino sa Iba't Ibang Disiplina	3	0	3
ASEAN Literature	3	0	3
Life and Works and Rizal	3	0	3
Sub-total	**12**	**0**	**12**
C. Physical Education			
PE 101	2	0	2
PE 102	2	0	2
PE 103	2	0	2
PE 104	2	0	2
Sub-total	**8**	**0**	**8**
D. NSTP			
NSTP 111	3	0	3
NSTP 121	3	0	3
Sub-total	**6**	**0**	**6**
Total Non-Technical Courses	**50**	**0**	**50**
GRAND TOTAL	**161**	**78**	**191**

SUMMARY	
Courses	**Number of Units**
I. Technical Courses	
A. Mathematics	15
B. Natural/Physical Sciences	13
C. Basic Engineering Sciences	23
D. Allied Courses	9
E. Professional Courses	77
F. On-the-Job Training	4
II. Non-Technical Courses	
A. General Education Courses	24
B. Filipino/Literature/Mandated Courses	12
C. Physical Education	8
D. NSTP	6
TOTAL	**191**

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**			
GEd 102	Mathematics in the Modern World	3	0	3		
GEd 105	Readings in Philippine History	3	0	3		
GEd 101	Understanding the Self	3	0	3		
SCI 401	General Chemistry	3	3	4		
GEd 106	Purposive Communication	3	0	3		
ENGG 401	Introduction to Engineering	0	3	1		
MATH 401	Differential Calculus	3	0	3		
PE 101	Physical Fitness, Gymnastics and Aerobics	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
GEd 104	The Contemporary World	3	0	3		
GEd 109	Science, Technology and Society	3	0	3		
CpE 401	Computer Programming 1	0	3	1		
GEd 108	Art Appreciation	3	0	3		
ENGG 402	Engineering Drawing	0	3	1		
PE 102	Rhythmic Activities	2	0	2	PE 101	
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**			
GEd 107	Ethics	3	0	3		
GEd 103	Life and Works of Rizal	3	0	3		
SCI 402	Modern Biology	2	3	3		
	Total	8	3	9		

SECOND YEAR						
First Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
MATH 404	Differential Equations	3	0	3	MATH 402	
CE 404	Fundamentals of Surveying	3	6	5	ENGG 402	
SCI 405	Geology	2	0	2		
PE 103	Individual and Dual Sports	2	0	2	PE 101	
ENGG 407	Statics of Rigid Bodies	3	0	3	SCI 403, MATH 402	
ENGG 403	Computer Aided Design	0	3	1	ENGG 402	
SE 401	Sanitary Engineering Orientation	1	0	1		
SE 402	Environmental and Sanitary Chemistry	2	3	3	SCI 401	
ENGG 408	Dynamics of Rigid Bodies	2	0	2	ENGG 407	
	Total	18	12	22		

SECOND YEAR						
Second Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
SE 403	Numerical Solutions to SE Problems (Advanced Mathematics)	2	3	3	MATH 404	
PE 104	Team Sports	2	0	2	PE 101	
ENGG 413	Environmental Science and Engineering	3	0	3	SCI 401	
MATH 403	Engineering Data Analysis	3	0	3	MATH 402	
CE 402	Strength of Materials	4	0	4	ENGG 407	
SE 404	Microbiology and Parasitology for Environmental Engineers	2	3	3	SE 402	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
EE 421	Engineering Utilities 1	3	0	3		
ME 432	Engineering Utilities 2	3	0	3		
	Total	25	6	27		

THIRD YEAR						
First Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
CE 405	Hydrology	3	0	3		
CE 407	Structural Theory	3	3	4	CE 402	
CE 410	Hydraulics	4	3	5	CE 402, ENGG 408	
CE 411	Geotechnical Engineering 1 (Soil Mechanics)	3	3	4	CE 402, SCI 405	
ENGG 404	Engineering Economics	3	0	3	MATH 402	
ENGG 406	Engineering Management	2	0	2		
SE 405	Public Health Engineering	2	0	2	SE 404	
ENGG 416	Research Methods	3	0	3	MATH 403	
	Total	23	9	26		

THIRD YEAR						
Second Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
SE 406	Water Supply Planning and Development	3	0	3	CE 410	
SE 407	Sewerage and Urban Drainage	3	0	3	CE 405	
SE 408	Sewage and Industrial Wastewater Treatment	3	0	3	ENGG 413	
CE 406	Construction Materials and Testing	2	3	3	CE 402	
SE 409	Environmental Planning, Laws and Impact Assessment	3	0	3		
ENGG 411	Basic Occupational Safety and Health	3	0	3		
CE 415	Principles of Reinforced/Prestressed Concrete Design	3	3	4	CE 407	
SE 410	Solid and Hazardous Waste Engineering	3	0	3	SE 405	
	Total	23	6	25		

THIRD YEAR						
Midterm						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
Litr 102	ASEAN Literature	3	0	3		
CpE 402	Computer Programming 2	0	3	1		
Fili 102	Filipino sa Iba't Ibang Disiplina	3	0	3		
	Total	6	3	7		

FOURTH YEAR						
First Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
ENGG 417	On-the-Job Training	320 hrs		4	4th yr standing	
SE 411	SE Project Design 1	1	3	2	SE 405, SE 407, SE 408, SE 409, CE 415, ENGG 416	
SE 412	SE Laws, Contracts and Ethics	3	0	3		
	Total	4	3	9		

FOURTH YEAR						
Second Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
CE 417	Construction Methods and Project Management	3	3	4	ENGG 406	
ENGG 405	Technopreneurship	3	0	3	4th yr standing	
SE 413	Environmental Engineering Laboratory	0	3	1	4th yr standing	
SE 414	SE Project Design 2	0	6	2	SE 411	
SE 415	SE Practice with Comprehensive Examinations	0	6	2	Graduating	
SE 416	Sanitary Science, Plumbing and Fire Protection as Applied to Buildings	2	3	3	CE 410	
SE 417	Water Purification Process Design	3	0	3	SE 406	
	Total	11	21	18		
	GRAND TOTAL UNITS	**161**	**78**	**191**		