

The National Engineering University

Alangilan Campus

Golden Country Homes, Alangilan, Batangas City, Philippines 4200 Tel Nos.: (0 43) 425-0139; 425-0143 local 2223 E-mail Address: cics.alangilan@g.batstate-u.edu.ph | Website Address: http://www.batstate-u.edu.ph

College of Informatics and Computing Sciences

CURRICULUM Bachelor of Science in Information Technology (BSIT) Academic Year 2021-2022

Reference CMOs: CMO No. 25, s. 2015, CMO 4 s. 2018, CMO No 20, s. 2013, CMO No. 39, s. 2021, CMO No. 40, s. 2021

Curriculum Description

The curriculum for BSIT includes the required GE courses, six (6) core courses common to all ITE programs, professional courses required for the BSIT program, and electives. The students are also required to undertake practicum work and complete a capstone project. Moreover, it is composed of three (3) tracks such as network technology, business analytics and service management.

The Information Technology curriculum combines technical, professional, and general education components to prepare students for a career, further study, and lifelong professional development in the computing discipline associated with the program. Also, the program includes basic and advanced courses on planning, development, integration and management of information technology.

Program Objectives

The alumni of BS Information Technology program, about three to five years after graduation shall:

- 1. Help create innovations to ensure the competitive edge of the Philippine computing industry.
- 2. Adhere to ethical standards in the practice of the computing profession.

Institutional Graduate Attributes

- 1. 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. Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
- 3. Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
- 4. 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. 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. 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. Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
- 8. 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.

Leading Innovations, Transforming Lives, Building the Nation



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Program Outcomes

- 1. Ability to analyze complex computing problems and to apply principles of computing and other relevant disciplines to identify solutions.
- 2. Ability to design, implement, and evaluate computing-based solutions to meet a given set of computing requirements in the context of the program's discipline.
- 3. Ability to communicate effectively in a variety of professional contexts.
- 4. Ability to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- 5. Ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- 6. Ability to use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

Curriculum Components

Courses	Units	Total
A. General Education Courses (CMO No. 20, s 2013 & CMO N	No. 4, s 2018)	
Mathematics in the Modern World	3	
Art Appreciation	3	
Kontekstwalisadong Komunikasyon sa Filipino	3	
The Life and Works of Rizal	3	
The Contemporary World	3	
Filipino sa Iba't Ibang Disiplina	3	36 units
Readings in Philippine History	3	
Science, Technology and Society	3	
ASEAN Literature	3	
Purposive Communication	3	
Understanding the Self	3	-
Ethics	3	
B. Common Courses		
Introduction to Computing	3	
Computer Programming	3	
Advance Computer Programming	3	18 units
Data Structures and Algorithms	3	
Information Management	3	
Application Development and Emerging Technologies	3	
C. Professional Courses		
Human-computer interaction	3	
Information Assurance and Security	3	69 units
Advanced Information Assurance and Security	3	
Database Management System	3	

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Advanced Database Management System	3	
Integrative Programming and Technologies	3	
Computer Networking 1	3	
Computer Networking 2	3	
System Administration and Maintenance	3	
System Integration and Architecture	3	
Social Issues and Professional Practice	3	
Capstone Project 1	3	
Capstone Project 2	3	
Internship Training	6	
Technopreneurship	3	
IT Project Management	3	
System Quality Assurance	3	
System Analysis and Design	3	
Web systems and Technologies	3	
Advanced System Integration and Architecture	3	
Platform Technologies	3	
Object-Oriented Programming	3	
D. Professional Electives (Choice of 1 Track)		
Network Technology Track		
Computer Networking 3	3	
Internet of Things (IoT)	3	
Computer Networking 4	3	
Cloud Computing	3	
Cybersecurity	3	
Business Analytics Track		
Fundamentals of Business Analytics	3	
Fundamentals of Analytics Modeling	3	15 units
Fundamentals of Enterprise Data Management	3	
Analytics Techniques & Tools	3	
Analytics Application	3	
Service Management Track		
Fundamentals of Business Process Outsourcing 101	3	
Business Communication	3	
Fundamentals of Business Process Outsourcing 102	3	
Service Culture	3	
Principles of System Thinking	3	
E. Additional Math and Science Requirements		15 units

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Linear Algebra	3	
Discrete Mathematics	3	
Calculus Based Physics	3	
Data Analysis	3	
Environmental Sciences	3	
F. Mandated Courses		
PATHFit 1: Movement Competency Training	2	
PATHFit 2: Exercise-based Fitness Activities	2	14 units
PATHFit 3: Traditional and Recreational Games	2	14 units
PATHFit 4: Team Sports (Basketball and Volleyball)	2	
NSTP 1 and 2	6	

SUMMARY						
Courses	Number of Units					
General Education	36					
Common Courses	18					
Professional Courses	69					
Professional Electives	15					
Additional Math and Science Requirements	15					
Mandated Courses	14					
TOTAL	167					



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PROGRAM OF STUDY (Network Technology Track)

	FIRST YEAR				
	FIRST SEMESTER				
Code	Course Title	Units	Lec	Lab	Prerequisite
IT 111	Introduction to Computing	3	2	3	-
GEd 102	Mathematics in the Modern World	3	3	-	-
GEd 108	Art Appreciation	3	3	-	-
FILI 101	Kontekstwalisadong Komunikasyon sa Filipino	3	3	-	-
PATHFit 1	Movement Competency Training	2	2	-	-
NSTP 111	National Service Training Program 1	3	3	-	-
GEd 103	The Life and Works of Rizal	3	3	-	-
GEd 104	The Contemporary World	3	3	-	-
	TOTAL	23	22	3	

	FIRST YEAR					
	SECOND SEMESTER					
Code	Course Title	Units	Lec	Lab	Prerequisite	
CS 111	Computer Programming	3	2	3	IT 111	
CS 131	Data Structures and Algorithms	3	2	3	IT 111	
MATH 111	Linear Algebra	3	3	-	GEd 102	
FILI 102	Filipino sa Iba't Ibang Disiplina	3	3	-	-	
GEd 105	Readings in Philippine History	3	3	-	-	
GEd 109	Science, Technology and Society	3	3	-	-	
PATHFit 2	Exercise-Based Fitness Activities	2	2	-	PATHFit 1	
NSTP 121	National Service Training Program 2	3	3	-	NSTP 111	
	TOTAL	23	21	6		

	SECOND YEAR					
	FIRST SEMESTER					
Code	Course Title	Units	Lec	Lab	Prerequisite	
CS 121	Advanced Computer Programming	3	2	3	CS 111	
IT 211	Database Management System	3	2	3	CS 111	
CS 211	Object-Oriented Programming	3	2	3	CS 111, CS 131	
LITR 102	ASEAN Literature	3	3	-	-	
CpE 405	Discrete Mathematics	3	3	-	MATH 111	
PHY 101	Calculus Based Physics	3	2	3	MATH 111	
IT 212	Computer Networking 1	3	2	3	IT 111	
PATHFit 3	Traditional and Recreational Games	2	2	-	PATHFit 1 and 2	
	TOTAL	23	18	15		



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	SECOND YEAR					
	SECOND SEMESTER					
Code	Course Title	Units	Lec	Lab	Prerequisite	
IT 221	Information Management	3	2	3	IT 111	
IT 223	Computer Networking 2	3	2	3	IT 212	
IT 222	Advanced Database Management System	3	2	3	IT 211	
MATH 408	Data Analysis	3	3	-	MATH 111	
ES 101	Environmental Sciences	3	2	3	PHY 101	
GEd 106	Purposive Communication	3	3	-	-	
GEd 101	Understanding the Self	3	3	-	-	
PATHFit 4	Team Sports (Basketball and Volleyball)	2	2	-	PATHFit 1 and 2	
	TOTAL	23	19	12		

	THIRD YEAR				
	FIRST SEMESTER				
Code	Course Title	Units	Lec	Lab	Prerequisite
IT 311	Systems Administration and Maintenance	3	2	3	IT 221,IT 222
IT 312	System Integration and Architecture	3	2	3	CS 131
NTT 401	Computer Networking 3	3	2	3	IT 223
NTT 402	Internet of Things (IoT)	3	2	3	IT 223
IT 313	System Analysis and Design	3	2	3	IT 222
IT 314	Web Systems and Technologies	3	2	3	CS 211
GEd 107	Ethics	3	3	-	-
	TOTAL	21	15	18	

	THIRD YEAR				
	SECOND SEMESTER				
Code	Course Title	Units	Lec	Lab	Prerequisite
IT 321	Human-computer interaction	3	3	-	IT 314
NTT 403	Computer Networking 4	3	2	3	NTT 401
NTT 404	Cloud Computing	3	2	3	NTT 402
IT 322	Advanced System Integration and Architecture	3	2	3	IT 312
IT 323	Information Assurance and Security	3	2	3	IT 223
IT 324	Capstone Project 1	3	3	-	3 rd Year Standing
IT 325	IT Project Management	3	3	-	IT 313
	TOTAL	21	17	12	



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	THIRD YEAR				
	MIDTERM				
Code	Course Title	Units	Lec	Lab	Prerequisite
IT 331	Application Development and Emerging Technologies	3	2	3	IT 321
IT 332	Integrative Programming and Technologies	3	2	3	IT 314
	TOTAL	6	4	6	

	FOURTH YEAR				
	FIRST SEMESTER				
Code	Course Title	Units	Lec	Lab	Prerequisite
CS 423	Social Issues and Professional Practice	3	3	-	-
IT 411	Capstone Project 2	3	3	-	IT 324
NTT 405	Cybersecurity	3	2	3	NTT 403
ENGG 405	Technopreneurship	3	3	-	-
IT 413	Advanced Information Assurance and Security	3	2	3	IT 323
IT 414	System Quality Assurance	3	2	3	IT 325
IT 412	Platform Technologies	3	3	-	IT 332
	TOTAL	21	18	9	

	FOURTH YEAR							
SECOND SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite			
IT 421	Internship Training	6	-	500	4 th Year Standing			
	TOTAL	6	-	500				



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PROGRAM OF STUDY (Business Analytics Track)

	FIRST YEAR							
	FIRST SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite			
IT 111	Introduction to Computing	3	2	3	-			
GEd 102	Mathematics in the Modern World	3	3	-	-			
GEd 108	Art Appreciation	3	3	-	-			
FILI 101	Kontekstwalisadong Komunikasyon sa Filipino	3	3	-	-			
PATHFit 1	Movement Competency Training	2	2	-	-			
NSTP 111	National Service Training Program 1	3	3	-	-			
GEd 103	The Life and Works of Rizal	3	3	-	_			
GEd 104	The Contemporary World	3	3	-	_			
	TOTAL	23	22	3				

	FIRST YEAR								
	SECOND SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
CS 111	Computer Programming	3	2	3	IT 111				
CS 131	Data Structures and Algorithms	3	2	3	IT 111				
MATH 111	Linear Algebra	3	3	-	GEd 102				
FILI 102	Filipino sa Iba't Ibang Disiplina	3	3	-	-				
GEd 105	Readings in Philippine History	3	3	-	-				
GEd 109	Science, Technology and Society	3	3	-	-				
PATHFit 2	Exercise-Based Fitness Activities	2	2	-	PATHFit 1				
NSTP 121	National Service Training Program 2	3	3	-	NSTP 111				
	TOTAL	23	21	6					

	SECOND YEAR								
	FIRST SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
CS 121	Advanced Computer Programming	3	2	3	CS 111				
IT 211	Database Management System	3	2	3	CS 111				
CS 211	Object-Oriented Programming	3	2	3	CS 111, CS 131				
LITR 102	ASEAN Literature	3	3	-	-				
CpE 405	Discrete Mathematics	3	3	-	MATH 111				
PHY 101	Calculus Based Physics	3	2	3	MATH 111				
IT 212	Computer Networking 1	3	2	3	IT 111				
PATHFit 3	Traditional and Recreational Games	2	2	-	PATHFit 1 and 2				
	TOTAL	23	18	15					



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	SECOND YEAR								
	SECOND SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
IT 221	Information Management	3	2	3	IT 111				
IT 223	Computer Networking 2	3	2	3	IT 212				
IT 222	Advanced Database Management System	3	2	3	IT 211				
MATH 408	Data Analysis	3	3	-	MATH 111				
ES 101	Environmental Sciences	3	2	3	PHY 101				
GEd 106	Purposive Communication	3	3	-	-				
GEd 101	Understanding the Self	3	3	-	-				
PATHFit									
4	Team Sports (Basketball and Volleyball)	2	2	-	PATHFit 1 and 2				
	TOTAL	23	19	12					

	THIRD YEAR								
	FIRST SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
IT 311	Systems Administration and Maintenance	3	2	3	IT 221,IT 222				
IT 312	System Integration and Architecture	3	2	3	CS 131				
BAT 401	Fundamentals of Business Analytics	3	2	3	IT 221,IT 222				
BAT 402	Fundamentals of Analytics Modeling	3	2	3	IT 221,IT 222				
IT 313	System Analysis and Design	3	2	3	IT 222				
IT 314	Web Systems and Technologies	3	2	3	CS 211				
GEd 107	Ethics	3	3	-	-				
	TOTAL	21	15	18					

	THIRD YEAR							
	SECOND SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite			
IT 321	Human-computer interaction	3	3	-	IT 314			
BAT 403	Fundamentals of Enterprise Data Management	3	2	3	BAT 401			
BAT 404	Analytics Techniques & Tools	3	2	3	BAT 402			
IT 322	Advanced System Integration and Architecture	3	2	3	IT 312			
IT 323	Information Assurance and Security	3	2	3	IT 223			
IT 324	Capstone Project 1	3	3	-	3 rd Year Standing			
IT 325	IT Project Management	3	3	-	IT 313			
	TOTAL	21	17	12				



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	THIRD YEAR							
MIDTERM								
Code	Course Title	Units	Lec	Lab	Prerequisite			
IT 331	Application Development and Emerging Technologies	3	2	3	IT 321			
IT 332	Integrative Programming and Technologies	3	2	3	IT 314			
	TOTAL	6	4	6				

	FOURTH YEAR								
	FIRST SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
CS 423	Social Issues and Professional Practice	3	3	-	-				
IT 411	Capstone Project 2	3	3	-	IT 324				
BAT 405	Analytics Application	3	2	3	BAT 404				
ENGG 405	Technopreneurship	3	3	-	-				
IT 413	Advanced Information Assurance and Security	3	2	3	IT 323				
IT 414	System Quality Assurance	3	2	3	IT 325				
IT 412	Platform Technologies	3	3	-	IT 332				
	TOTAL	21	18	9					

FOURTH YEAR							
SECOND SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite		
IT 421	Internship Training	6	-	500	4 th Year Standing		
	TOTAL	6	-	500			



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PROGRAM OF STUDY (Service Management Track)

	FIRST YEAR							
	FIRST SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite			
IT 111	Introduction to Computing	3	2	3	-			
GEd 102	Mathematics in the Modern World	3	3	-	-			
GEd 108	Art Appreciation	3	3	-	-			
FILI 101	Kontekstwalisadong Komunikasyon sa Filipino	3	3	-	-			
PATHFit 1	Movement Competency Training	2	2	-	-			
NSTP 111	National Service Training Program 1	3	3	-	-			
GEd 103	The Life and Works of Rizal	3	3	-	-			
GEd 104	The Contemporary World	3	3	-	-			
	TOTAL	23	22	3				

	FIRST YEAR								
	SECOND SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite				
CS 111	Computer Programming	3	2	3	IT 111				
CS 131	Data Structures and Algorithms	3	2	3	IT 111				
MATH 111	Linear Algebra	3	3	-	GEd 102				
FILI 102	Filipino sa Iba't Ibang Disiplina	3	3	-	-				
GEd 105	Readings in Philippine History	3	3	-	-				
GEd 109	Science, Technology and Society	3	3	-	-				
PATHFit 2	Exercise-Based Fitness Activities	2	2	-	PATHFit 1				
NSTP 112	National Service Training Program 2	3	3	-	NSTP 111				
	TOTAL	23	21	6					

	SECOND YEAR						
	FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite		
CS 121	Advanced Computer Programming	3	2	3	CS 111		
IT 211	Database Management System	3	2	3	CS 111		
CS 211	Object-Oriented Programming	3	2	3	CS 111, CS 131		
LITR 102	ASEAN Literature	3	3	-	-		
CpE 405	Discrete Mathematics	3	3	-	MATH 111		
PHY 101	Calculus Based Physics	3	2	3	MATH 111		
IT 212	Computer Networking 1	3	2	3	IT 111		
PATHFit 3	Traditional and Recreational Games	2	2	-	PATHFit 1 and 2		
	TOTAL	23	18	15			



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	SECOND YEAR						
	SECOND SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite		
IT 221	Information Management	3	2	3	IT 111		
IT 223	Computer Networking 2	3	2	3	IT 212		
IT 222	Advanced Database Management System	3	2	3	IT 211		
MATH 408	Data Analysis	3	3	-	MATH 111		
ES 101	Environmental Sciences	3	2	3	PHY 101		
GEd 106	Purposive Communication	3	3	-	-		
GEd 101	Understanding the Self	3	3	-	-		
PATHFit							
4	Team Sports (Basketball and Volleyball)	2	2	-	PATHFit 1 and 2		
	TOTAL	23	19	12			

	THIRD YEAR							
	FIRST SEMESTER							
Code	CodeCourse TitleUnitsLecLabPrerequisite							
IT 311	Systems Administration and Maintenance	3	2	3	IT 221,IT 222			
IT 312	System Integration and Architecture	3	2	3	CS 131			
SMT 401	Fundamentals of Business Process Outsourcing 101	3	2	3	IT 221			
SMT 402	Business Communication	3	2	3	IT 221			
IT 313	System Analysis and Design	3	2	3	IT 222			
IT 314	Web Systems and Technologies	3	2	3	CS 211			
GEd 107	Ethics	3	3	-	-			
	TOTAL	21	15	18				

	THIRD YEAR					
	SECOND SEMESTER					
Code	Course Title	Units	Lec	Lab	Prerequisite	
IT 321	Human-computer interaction	3	3	-	IT 314	
SMT 403	Fundamentals of Business Process Outsourcing 102	3	2	3	SMT 401	
SMT 404	Service Culture	3	2	3	SMT 401	
IT 322	Advanced System Integration and Architecture	3	2	3	IT 312	
IT 323	Information Assurance and Security	3	2	3	IT 223	
IT 324	Capstone Project 1	3	3	-	3 rd Year Standing	
IT 325	IT Project Management	3	3	-	IT 313	
	TOTAL	21	17	12		



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	THIRD YEAR					
	MIDTERM					
Code	Course Title	Units	Lec	Lab	Prerequisite	
IT 331	Application Development and Emerging Technologies	3	2	3	IT 321	
IT 332	Integrative Programming and Technologies	3	2	3	IT 314	
	TOTAL	6	4	6		

FOURTH YEAR							
	FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite		
CS 423	Social Issues and Professional Practice	3	3	-	-		
IT 411	Capstone Project 2	3	3	-	IT 324		
SMT 405	Principles of System Thinking	3	2	3	SMT 403		
ENGG 405	Technopreneurship	3	3	-	-		
IT 413	Advanced Information Assurance and Security	3	2	3	IT 323		
IT 414	System Quality Assurance	3	2	3	IT 325		
IT 412	Platform Technologies	3	3	-	IT 332		
	TOTAL	21	18	9			

FOURTH YEAR							
	SECOND SEMESTER						
Code	CodeCourse TitleUnitsLecLabPrerequisite						
IT 421	Internship Training	6	-	500	4 th Year Standing		
	TOTAL	6	-	500			