

# Republic of the Philippines BATANGAS STATE UNIVERSITY

The National Engineering University

Lipa Campus

A Tanco Drive, Marawoy , Lipa City Batangas City, Philippines 4217

Tel Nos.: (+ 6343) 980-0385; 980-0392 local 3130

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#### **College of Informatics and Computing Sciences**

### CURRICULUM Bachelor of Science in Information Technology (BSIT)

Academic Year 2023-2024 Reference CMOs: CMO No. 25, s. 2015, CMO No. 4 s. 2018, CMO No. 20, s. 2013, CMO No. 39 s. 2021, CMO No. 39 s. 2021, CMO No. 40 s. 2021. PICAB Criteria for Accrediting ITE Programs and ABET CAC Criteria for Accrediting Computing Programs

#### **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.



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#### **College of Informatics and Computing Sciences**

#### **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 identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing- based systems.

#### **Curriculum Components**

Courses	Units	Total
A. General Education Courses (CMO No. 20, s 2013 & CMO No. 4, s 2018)		36 units
B. Common Courses		18 units
Introduction to Computing	3	
Computer Programming	3	
Advance Computer Programming	3	
Data Structures and Algorithms	3	
Information Management	3	
Application Development and Emerging Technologies	3	
C. Professional Courses		69 units
Human-computer interaction	3	
Information Assurance and Security	3	
Advanced Information Assurance and Security	3	
Database Management System	3	
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)		15 units
Network Technology Track		
Computer Networking 3	3	1
Internet of Things (IoT)	3	
Computer Networking 4	3	
Cloud Computing	3	
Cybersecurity	3	1



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<b>Business Analytics Track</b>		
Fundamentals of Business Analytics	3	
Fundamentals of Analytics Modeling	3	
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
Linear Algebra	3	
Discrete Mathematics	3	
Calculus Based Physics	3	
Data Analysis	3	
Environmental Sciences	3	
F. Mandated Courses		14 units
PATHFit 1: Movement Competency Training	2	
PATHFit 2: Exercise-based Fitness Activities	2	
PATHFit 3: Traditional and Recreational Games	2	
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					

#### PROGRAM OF STUDY (Network Technology Track)

	FIRST YEAR					
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	
IT 111	Introduction to Computing 1.50	3	2	3	-	
GEd 102	Mathematics in the Modern World 1.75	3	3	-	-	
GEd 108	Art Appreciation 1.75	3	3	-	-	
FILI 101	Kontekstwalisadong Komunikasyon sa Filipino 2.75	3	3	-	-	
PATHFit 1	Movement Competency Training 1.25	2	2	-	-	
NSTP 111	National Service Training Program 1 1.00	3	3	-	-	
GEd 103	The Life and Works of Rizal 2.00	3	3	-	-	
GEd 104	The Contemporary World 1.25	3	3	-	-	
	TOTAL	23	22	3		



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	FIRST YEAR						
SECOND SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite		
CS 111	Computer Programming 2.50	3	2	3	IT 111		
CS 131	Data Structures and Algorithms2.75	3	2	3	IT 111		
MATH 111	Linear Algebra 3.00	3	3	-	GEd 102		
FILI 102	Filipino sa Iba't Ibang Disiplina 2.25	3	3	-	-		
GEd 105	Readings in Philippine History 2.00	3	3	-	-		
GEd 109	Science, Technology and Society 2.25	3	3	-	-		
PATHFit 2	Exercise-Based Fitness Activities 1.50	2	2	-	PATHFit 1		
NSTP 121	National Service Training Program 2 2.00	3	3	-	NSTP 111		
	TOTAL	23	21	6			

	SECOND YEAR					
FIRST SEMESTER						
Code	Course Title	Units	Lec	Lab	Prerequisite	
CS 121	Advanced Computer Programming 2.50	3	2	3	CS 111	
IT 211	Database Management System2.25	3	2	3	CS 111	
CS 211	Object-Oriented Programming 2.75	3	2	3	CS 111, CS 131	
LITR 102	ASEAN Literature 2.25	3	3	-	-	
CpE 405	Discrete Mathematics2.50	3	3	-	MATH 111	
PHY 101	Calculus Based Physics 3.00	3	2	3	MATH 111	
IT 212	Computer Networking 1 2.75	3	2	3	IT 111	
PATHFit 3	Traditional and Recreational Games 1.50	2	2	-	PATHFit 1 and 2	
	TOTAL	23	18	15		

	SECOND YEAR						
SECOND SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite		
IT 221	Information Management 2.00	3	2	3	IT 111		
IT 223	Computer Networking 2 2.25	3	2	3	IT 212		
IT 222	Advanced Database Management System 3.00	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 2.00	3	3	-	-		
GEd 101	Understanding the Self 1.75	3	3	-	-		
PATHFit 4	Team Sports (Basketball and Volleyball) 1.00	2	2	-	PATHFit 1 and 2		
	ΤΟΤΑΙ	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			



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	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 <sup>rd</sup> Year Standing		
IT 325	IT Project Management	3	3	-	IT 313		
	TOTAL	21	17	12			

	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 <sup>th</sup> 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 and 2				
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				

	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					



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	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 <sup>rd</sup> Year Standing				
IT 325	IT Project Management	3	3	-	IT 313				
	TOTAL	21	17	12					

	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 SEM	<b>MESTER</b>				
Code	Course Title	Units	Lec	Lab	Prerequisite
IT 421	Internship Training	6	-	500	4 <sup>th</sup> 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 1.50	3	2	3	-			
GEd 102	Mathematics in the Modern World 1.75	3	3	-	-			
GEd 108	Art Appreciation 1.75	3	3	-	-			
FILI 101	Kontekstwalisadong Komunikasyon sa Filipino 2.75	3	3	-	-			
PATHFit 1	Movement Competency Training 1.25	2	2	-	-			
NSTP 111	National Service Training Program 1 1.00	3	3	-	-			
GEd 103	The Life and Works of Rizal 2.00	3	3	-	-			
GEd 104	The Contemporary World 1.25	3	3	-	-			
	TOTAL	23	22	3				

-	FIRST YEAR								
SECOND SEMESTER									
Code	Course Title	Units	Lec	Lab	Prerequisite				
CS 111	Computer Programming 2.50	3	2	3	IT 111				
CS 131	Data Structures and Algorithms2.75	3	2	3	IT 111				
MATH 111	Linear Algebra 3.00	3	3	-	GEd 102				
FILI 102	Filipino sa Iba't Ibang Disiplina 2.25	3	3	-	-				
GEd 105	Readings in Philippine History 2.00	3	3	-	-				
GEd 109	Science, Technology and Society 2.25	3	3	-	-				
PATHFit 2	Exercise-Based Fitness Activities 1.50	2	2	-	PATHFit 1				
NSTP 112	National Service Training Program 2 2.00	3	3	-	NSTP 111				
	TOTAL	23	21	6					

	SECOND YEAR							
FIRST SEMESTER								
Code	Course Title	Units	Lec	Lab	Prerequisite			
CS 121	Advanced Computer Programming 2.50	3	2	3	CS 111			
IT 211	Database Management System2.25	3	2	3	CS 111			
CS 211	Object-Oriented Programming 2.75	3	2	3	CS 111, CS 131			
LITR 102	ASEAN Literature 2.25	3	3	-	-			
CpE 405	Discrete Mathematics2.50	3	3	-	MATH 111			
PHY 101	Calculus Based Physics 3.00	3	2	3	MATH 111			
IT 212	Computer Networking 1 2.75	3	2	3	IT 111			
PATHFit 3	Traditional and Recreational Games 1.50	2	2	-	PATHFit 1 and 2			
	TOTAL	23	18	15				

SECOND YEAR							
SECOND SEMESTER							
Code	Course Title	Units	Lec	Lab	Prerequisite		
IT 221	Information Management 2.00	3	2	3	IT 111		
IT 223	Computer Networking 2 2.25	3	2	3	IT 212		
IT 222	Advanced Database Management System 3.00	3	2	3	IT 211		
MATH 408	Data Analysis TO TAKE	3	3	-	MATH 111		
ES 101	Environmental Sciences TO TAKE	3	2	3	PHY 101		
GEd 106	Purposive Communication 2.00	3	3	-	-		
GEd 101	Understanding the Self 1.75	3	3	-	-		
PATHFit 4	Team Sports (Basketball and Volleyball) 1.00	2	2	-	PATHFit 1 and 2		
	TOTAL	23	19	12			



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	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 1.75	3	2	3	CS 131	
SMT 401	Fundamentals of Business Process Outsourcing 101 2.00	3	2	3	IT 221	
SMT 402	Business Communication 2.00	3	2	3	IT 221	
IT 313	System Analysis and Design2.00	3	2	3	IT 222	
IT 314	Web Systems and Technologies	3	2	3	CS 211	
GEd 107	Ethics 2.00	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 TO TAKE	3	2	3	SMT 401	
SMT 404	Service Culture TO TAKE	3	2	3	SMT 401	
IT 322	Advanced System Integration and Architecture TO TAKE	3	2	3	IT 312	
IT 323	Information Assurance and Security TO TAKE	3	2	3	IT 223	
IT 324	Capstone Project 1 TO TAKE	3	3	-	3 <sup>rd</sup> Year Standing	
IT 325	IT Project Management TO TAKE	3	3	-	IT 313	
	TOTAL	21	17	12		

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 1.50	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 <sup>th</sup> Year Standing		
	TOTAL	6	-	500			