



**Bachelor of Science in Information Technology**  
Information Assurance and Security 2

**VISION**

An institution with a culture of excellence in developing globally competitive and values oriented leaders and professionals.

**MISSION**

A premier institution committed to provide industry relevant programs that are anchored on a culture of research and entrepreneurship for the development of Sorsogon and beyond.

**CORE VALUES**

- L –Leadership
- E –Excellence
- A – Accountability
- D –Discipline
- E –Environmental Stewardship
- R –Responsiveness to Change
- S –Social Responsibility

**QUALITY POLICY STATEMENT**

The Sorsogon State College commits quality education anchored on its mission and vision for the development and growth of the community. SSC shall transform knowledge through research and instruction and while adhering to statutes and continual improvement of its system.

**GOAL OF INFORMATION TECHNOLOGY PROGRAM**

The BSIT graduates are expected to become globally competent, innovative, and socially and ethically responsible computing professionals engaged in life-long learning endeavors. They are capable of contributing to the country’s national development goals.

**PROGRAM DESCRIPTION**

The BS Information Technology program includes the study of the utilization of both hardware and software technologies involving planning, installing, customizing, operating, managing and administering, and maintaining information technology infrastructure that provides computing solutions to address the need of an organization

**PROGRAM EDUCATIONAL OBJECTIVES**

- At the end of the program, a graduate is expected to:
1. Be successful in Information Technology or in their chosen career path.
  2. Engage in life-long learning and professional development through graduate studies and active participation in professional organizations
  3. Be able to interact effectively with others in a collaborative team-oriented manner in the management and execution of projects for the development of the society.
  4. Exhibit leadership qualities in technology innovation and entrepreneurship with effective communication skills, teamwork, ethics and to create ability for life-long learning needed in a successful professional career.

**PROGRAM OUTCOMES IN RELATION TO PROGRAM EDUCATIONAL OBJECTIVES**

Program Outcomes  At the end of the program, the graduates should be able to:		Program Educational Objectives			
		1	2	3	4
(a)	Articulate and discuss the latest development in the field of Information Technology	X	X	X	X
(b)	Effectively communicate orally and in written using both English and Filipino languages				X

(c)	Work effectively and independently in multi-disciplinary and multi-cultural teams		X	X	X
(d)	Act in recognition of professional, social, and ethical responsibility		X	X	X
(e)	Preserve and promote "Filipino historical and cultural heritage"				
(f)	Analyze complex problems, and identify and define the computing requirements needed to design and appropriate solution.		X	X	X
(g)	Understand and apply the concept of abstract data type to represent and implement heterogeneous data structures.	X		X	X
(h)	Design, implement and evaluate computer- based systems, processes, components or programs to meet desired needs and requirements under various constraints.	X			X
(i)	Analyze new data structures and their algorithms for asymptotic behavior.				X
(j)	Apply advanced analysis techniques (e.g., amortized, probabilistic, etc.) to algorithms.	X			
(k)	Analyze what is meant by "best", "expected", and "worst" case behavior of an algorithm and implement different types of sorting and searching algorithms.	X			
(l)	Apply fundamental graph algorithms, including depth-first and breadth-first search in solving problems.		X		
(m)	Apply knowledge through the use of current techniques, skills, tools, and practices, necessary for the IT profession		X	X	X
(n)	Assist in the creation of an effective IT project plan		X	X	
(o)	Communicate effectively with the computing community and with society at large about complex computing activities through logical writing, presentations, and clear instructions.	X	X		
(p)	Apply a level of maturity in the subject so that further study of data structures can be pursued independently.	X		X	
(q)	Function effectively as a member or leader of a development team recognizing the different roles within the team to accomplish a common goal		X	X	X

COURSE SYLLABUS

1. Course Code:

IT 413
2. Course Title:

Information Assurance and Security 2
3. Pre-requisite:
4. Credit:

5 units
5. Class Schedule:

Tuesday & Friday (9:30–11:30 AM) & Wednesday (10:30–11:30 AM)
6. Term:

1<sup>st</sup> Semester / AY 2021 – 2022
7. Consultation Time:

By appointment

8. Course Description:

This course focuses on the fundamental concepts necessary to understand the problems of information assurance as well as the possible solutions to these problems, including the security of information on computers and networks. It also provides students the principles of risk, governance, legal and ethical issues, knowledge management and sharing, and systems engineering.

9. Course Objectives in Relation to Program Outcomes

Course Objectives	Program Outcomes																
	a	B	C	d	e	f	g	h	i	j	k	l	m	n	o	P	q
At the end of the course, the students should be able to:																	
Assess the current security environment and identify the nature and role of information assurance.	E	I	D	D	E	E	D	I	I	E	I	I	I	I	I	E	I
Examine the interrelationships among elements that comprise a modern security system (hardware, software, policies, and people)	D	D	D	D	E	D	I	D	E	E	E	E	D	E	I	E	E
Examine and assess the roles, responsibilities, requirements, and effectiveness of the information systems and programs.	D	D	D	D	E	D	I	D	D	E		D	D	D	I	E	E

Legend: I-Introductory                      E-Enabling                      D-Demonstrated

10. Course Coverage:

WEEK	CO	TOPICS	Teaching Learning Activities	Assessment
		Orientation /Introduction on the Course	Discussion Question and Answer	
1-10	1	Introduction to Security Environment <ul style="list-style-type: none"><li>Security Threats in Information systems</li><li>Programs, operating system, and database security and integrity</li><li>Network security models</li></ul> Computer Security <ul style="list-style-type: none"><li>Hardware vulnerabilities</li><li>Virus and other malicious programs</li><li>Virus countermeasures</li><li>Intrusion techniques and detection</li><li>Password management</li></ul> Operating System Security <ul style="list-style-type: none"><li>Models of operating system security</li><li>User authentication</li><li>Design of secure operating systems</li><li>Operating system certification</li></ul> Database Security and Integrity <ul style="list-style-type: none"><li>Overview and policies for database security</li><li>Models for database access control</li><li>Information flow model</li><li>Authorization techniques Auditing and control</li></ul>	<ul style="list-style-type: none"><li>Class Discussion</li><li>Class Demonstration</li></ul>	<ul style="list-style-type: none"><li>Quizzes</li><li>Class Participation</li></ul>
		Midterm Examination		
11-18	2	Encryption Techniques <ul style="list-style-type: none"><li>Block &amp; stream encryption</li><li>Advanced Encryption Standard</li><li>Key distribution&amp; random number generation</li><li>Public Key cryptography and RSA. Hash functions</li></ul> Digital Signatures and Authorization Protocols <ul style="list-style-type: none"><li>Digital signature standards</li><li>Authentication services and protocols</li></ul> IP and Web Security <ul style="list-style-type: none"><li>Authentication protocols</li><li>IP security architecture</li><li>IPSec protocol</li></ul>	<ul style="list-style-type: none"><li>Class Discussion</li><li>Class Demonstration</li></ul>	<ul style="list-style-type: none"><li>Quizzes</li><li>Class Participation</li></ul>

		<ul style="list-style-type: none"><li>• Web security considerations</li><li>• Secure Socket Layer and Transport layer Security</li><li>• Secure Electronic Transactions</li></ul>		
		Final Examination		

11. Course Outcomes in Relation to Course Objectives

Course Outcomes  A student completing this course should at the minimum be able to:	Course Objectives		
	1	2	3
Discuss policies and practices to systems integration and architecture to ensure secure system operation and information assurance.	X	X	
Perform vulnerability analysis of a system and explain how design implementation of hardware and software contribute to vulnerabilities of the organization.	X	X	
Implement, enforce, and monitor system and user security requirements.	X	X	X

12. Performance Indicators

Program Outcomes Specific to	Performance Indicators
Examine and apply the fundamental techniques of computer security.	1. Asses the security environment that attend processes and technologies. 2. Evaluate the essential issues involved in sharing and protecting information.
Demonstrate foundation knowledge of information security/assurance within the organization by planning and designing a solution based on user requirements.	1. Asses the performance based on the given requirements. 2. Assess and mitigate the risks and vulnerabilities in systems.

13. Course Requirement/s:

- 1. Quizzes / Virtual Recitation
- 2. Examination
- 3. Project

14. Course Evaluation:

Laboratory	65%
a. Project	35%
b. Performance	35%
c. Attitude towards Work(on time)	20%
d. Attendance	<u>10%</u>
	100%

Attitude towards work indicators:

- Discipline
- Courtesy
- Resourcefulness and Initiative
- Perseverance
- Diligent
- Willingness / Interest
- Responsible
- Cooperation
- Confident

Theory	35%
a. Written / Oral Examination	- 30%
b. Project	- 20%
c. Virtual Participation	- 20%
d. Quizzes/Recitation	- 20%
e. Attendance	- <u>10%</u>
	100%

$$\text{Semestral Grade / Rating} = \frac{\text{Midterm} + \text{Final}}{2}$$

**15. References:**

- Integrating Information Assurance and Security into IT Education: A Look at the Model Curriculum and Emerging Practice by Melissa Jane Dark, Joseph J. Ekstrom and Barry M. Lunt, 2006
- Understanding Information Assurance and Security by Yulia Cherdantseva and Jeremy Hilton, 2015
- Advanced Information Security Management Evaluation System by Heasuk Jo , Seungjoo Kim, and Dongho Won, 2011

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