**Bicol University**

**COLLEGE OF SCIENCE**

Legazpi City

**Course Title**  : INTRODUCTION TO COMPUTING

**Course No.**  : IT101

**Course Prerequisite(s**) : none

**Number of Credits** : 3 units (2 hours lecture, 3 hours laboratory)

**Course Placement** : BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

**Semester/Term** : First Semester S.Y. 2018-2019

**Time/Room**  : 9:00-12:00 B2-101 (Laboratory); 4:00-6:00 B2-206 (Lecture)

**Course Description** : This course provides an overview of the Computing Industry and Computing profession, including Research and Applications in different fields; and Appreciation of Computing in different fields such as Biology, Sociology, Environment and Gaming; and Understanding of ACM Requirements; an Appreciation of the history of computing; and Knowledge of the Key Components of Computer Systems (Organization and Architecture), Malware, Computer Security, Internet and Internet protocols, HTML4/5 and CSS.

**Institutional Learning Outcomes:**

Every BU graduate should:

a. Demonstrate critical thinking and integrative skills to solve problems and to support life-long learning;

b. Communicate effectively and appropriately and orally and in writing for various purposes with the responsible use of ICT tools;

c. Collaborate with diverse people ethically and with mastery of knowledge and skills in given disciplines; and

d. Create knowledge and innovation to promote inclusive development as well as globalization.

**College Learning Outcomes:**

* + 1. Apply necessary scientific and technological knowledge and skills on one’s specific field of specialization.
    2. Formulate and conduct basic and applied scientific researches responsive to national and global developmental needs.
    3. Advocate volunteerism and social responsibility to alleviate community conditions
    4. Develop entrepreneurial mind-set and skills applying knowledge gained in specific fields to engage in productive enterprise.

**Program Learning Outcomes:**

The graduates of BSIT must have the ability to

1. Analyze complex problems, and identify and define the computing requirements needed to design an appropriate solution
2. Apply computing and other knowledge domains to address real-world problems
3. Design and develop computing solutions using a system-level perspective
4. Utilize modern computing tools

**COURSE OUTLINE**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Learning Outcomes** | **Specific Learning Outcomes** | **Learning Content** | **Instructional Delivery** | **Instructional Resources** | **Performance Standard** | **Assessment Tasks** | **Time Allotment** |
| 1. Apply knowledge of computing, science, and mathematics appropriate to the discipline 2. Understand best practices and standards and their applications 3. Analyze complex problems and identify and define the computing requirements appropriate to its solution 4. Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems 5. Design, Implement, and evaluate computer-based systems, processes, components, or programs to meet desired needs and requirements under various constraints 6. Integrate IT-based solutions into the user environment effectively 7. Apply knowledge through the use of current techniques, skills, tools and practices necessary for the IT profession 8. Function effectively as a member or leader of a development team recognizing the different roles within a team to accomplish a common goal 9. Assist in the creation of effective IT project plan 10. Communicate effectively with the computing and with society at large about complex computing activities through logical writing, presentations, and clear instructions 11. Explain fundamental principles, concepts as they relate to different fields   Expound the evolution of computing systems and the recent developments in the different computing knowledge areas | **A. ORIENTATION AND INTRODUCTION OF THE COURSE**  At the end of the rating period, students should be able to:   1. Mention the BU vision & mission, BU Quality Policy 2. Identify the program Objectives 3. Acquaint with the course objectives 4. Familiarize with the course policy, rating system and requirements   **B. COMPUTING IN DIFFERENT FIELDS**   1. discuss the different computing fields across business and associated industries 2. Identify the different primary and secondary job roles   1. define data, information and computer.  2. discuss the components of computer system  3. explain the benefits, limitations and characteristics of a computer system.  4. Identify the different types of software and their application  5. discuss computer capabilities and peripheral components  1. discuss computer functional units and its peripherals  2. discuss/explain the types of software  1. discuss computer conversion methods  2. solve binary, octal and hexadecimal  1. define bootstrapping, booting  2. discuss the types of booting  2. discuss OS concepts and its environment  1. discuss the goal of malware analysis  2. identify the concepts and techniques in analyzing malware  1. define computer security, CIA, authentication, 2FA  2. discuss the fundamental concept of computer security  3. Identify the components of Computer Security  4. discuss CIA  5. discuss the different authentication protocols, methods and techniques  1. define network topology, world wide web, URL  2. discuss the different communication hardware and internet protocols  3. discuss how internet, ISP, browsers and others works  4. discuss how network topologies works and how it will be implemented  5. discuss how to publish webpages  1. discuss web architecture and procedures how to create webpage using web editors/application  2. explain HTML language | 1. **Orientation and Introduction of the Course**   Discuss the overview of the topics to be covered in the whole semester, requirements of the Course, VMGO of the College/University. And, know certain rules and policies governing the whole class; be aware of the requirements and grading system of the course  **B. Appreciation of Computing in Different Fields**  1. Uses of Computer in Different Fields  **2. Different Specializations/Job Roles (***Job Description Folder***)**  **A. Primary Job Roles**   1. Software Engineer 2. Systems Software Developer 3. Research and Computing Professional 4. Application Software Developer 5. Computer Programmer   **B. Secondary Job Roles**   1. Systems Analyst 2. Data Analyst 3. Quality Assurance Specialist   Software Support Specialist  **C. Evolution of Computing**  1.What is Computer  -Data and Information  -Four Basic Functions  Computer Benefits  -Computer Advantages  Computer Limitations  2.History of Computes  3. Classification of Computers  4.Computer Applications  5. Computer Capabilities  6. Computer Parts  **D.** **Key Components of a Computer System**  1. Computer Hardware   1. Input Devices 2. Output Devices 3. Peripheral Devices 4. Memory 5. Central Processing Unit   2.  Computer Software a. Application Software b. System Software  3. Programming Languages 4. Processing a High-Level Language Program 5. Software Development Method  **E. Number Systems**  1. Binary Operations 2. Conversions   1. Binary 2. Octal 3. Decimal   Hexadecimal  **F. Operating Systems**  1. Bootstrapping  2. Operating System Concepts  3.Desktop and Server Operating Systems  4. Windows Operating system  a. DOS  b. Windows variants  c. Windows 8x  5. Other OS  a. MacOS  b. Linux  c. Fedora  d. Novell Netware  6. Utilities 7. Device Drivers  G. **Malware**   1. Incident Response: Malware Analysis 2. The Goal of Malware Analysis 3. Malware Analysis Techniques  * Static vs Dynamic Analysis * Basic Analysis * Advanced Analysis  1. Types of Malware  * RootKit * Launcher * Scareware * Spam-sending malware   Worms and Viruses  **H. Computer Security**   * What is Computer Security? * Goals of CompSecurity * The Basic Components of Security (CIA) * Vulnerabilities, Threats and Control * Security Threats and Attacks * Types of Attackers * Method of Defense/Controls  1. Encryption   Authentication  **I. Networks, Internet and Internet Protocols**  **1. Data Communications and Computer Networks**  1. Communication Media.  2. Data communication Hardware  3. Types of networks  4. Network Topologies  5. Network Protocols  **2. Introduction to internet**  1. History of the internet  2. How the internet works  -Methods of gathering information in the internet  -Structure of the internet  - Internet Service provider  -Internet address and Domain  -URLs  3. versatile Web Browser  4. Overview of the World Wide Web  -web portals  - Internet multimedia  - FTP  -Internet Protocol  5. Web Authoring and site management  -Web Publishing  -HTML  -HTML web authoring  -Web Page Designing  6. Web Publication  **HTML and CSS**   1. Introduction to web concept, architecture and environment. 2. Considerations and concerns of online presence. 3. Stages of creating web pages 4. **Structure of HTML**   Overview of HyperText Markup language (HTML)with emphasis on elements, attributes, frames, and forms.  **B. Cascading Style Sheet**  Introduction to CSS  Cascading Style Sheets tool in enhancing the appearance of web pages  Classes and IDs | Review  Lecture  Interactive Discussion  Review  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**)  Lecture  Interactive Discussion  Online Resources (**Edmodo**) | Student Manual  Book  PPT  VMGO  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  Powerpoint  Presentation  Module  Handout  WebQuest  Powerpoint  Presentation  Module  Handout  WebQuest | 85% of students relates to the purpose of the Course to VMGO of the College/University  85% of students appreciates the use of computers across business and other industries  85% of students understand how computer works including its application  Students will be graded based on participation  85% of students identified the different components of computer system including its functional units  85% of the students gained knowledge of the different number system and how OS acts as supervisor and will be graded based on participation  85% of the students gained knowledge on malware analysis and will be graded based participation  85% of the students gained knowledge how to protect and secure confidential information and will be graded based participation  85% of the students relates to the purpose of integrating data communication in the subject  90% of the students relates to the purpose of integrating data communication in the subject  85% of the students can design static webpage with CSS styles | Oral Recitation  Recitation  Recitation  Exam    Recitation  Exam  Recitation  Exam  BoardWork  Board Work  Exam  Assignments  Board Work  Exam  Assignments  Board Work  Exam  Assignments  Board Work  Exam  Assignments  Recitation  Exam | 2  3  6  5  4  4  5  6  4  7  8 |
|  |  |  |  |  |  | TOTAL | 54 Hours |

**COURSE REQUIREMENTS :** Class Participation

Attendance to lectures/conferences

Active individual and group participation

Submission of required reports/discussion papers/reaction papers Mid-term and Final Examinations

**SYSTEM OF COMPUTING GRADES : LECTURE**

ClassParticipation/Quizzes/Recitation - 40%

Examinations - 30%

Projects (Reports, Reflection Papers, Case Analysis) - 30%

100%

**LABORATORY**

Laboratory Exams - 55%

Machine Activities, Project - 45%

Projects (Reports, Reflection Papers, Case Analysis) - 30%

100%

**REFERENCES :** Leon, A. & Leon, M. (1999). Introduction to Computers. 1999, Vikas Publishing House Pvt. Ltd, New, Delhi, India

Commission on Information and Communication Technology (CICT). Introduction to Internet, Cyber Security and Ethics. *Educator’s Reference Material on Basic ICT Literacy and ICT4BE Framework.* iSchools: Bridging the digital divide.

Albacea, E. (2002). IS 214 Principles of Programming Languages. UP Open University

**eBOOK**

* Introduction to Computers and Programming. Aptara
* Evans, D. (2011). Introduction to Computing. *Explorations in Language, Logic and Machines.* August 19, 2011
* Vernon, D. (2007). An Introduction to Computer Systems. Retrieved from http://www.vernon.eu/courses/David\_Vernon\_Introduction\_to\_Computer\_Systems.pdf
* Basic Concepts of Computers. Retrieved from http://download.nos.org/coa631/ch1.pdf

**Websites:**

* Uses of Computers in Different Field Areas. Retrieved from https://www.informationq.com/uses-of-computers-in-different-fields-areas-sectors-industries-education/

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