**ST. JOSEPH’S COLLEGE OF NEW YORK**

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**Fdtns/CompPrgrmUsingAnimation**

**Course Description:**

The course will introduce students to the fundamentals of computer programming. Students will learn how to use computers for problem solving by creating algorithms, coding solutions and testing and debugging programs. We will experiment with three programming environments: **Alice; a 3D** environment based on Java, **Visual Basic** and **Java**.

**Recommended Textbooks:**

|  |  |
| --- | --- |
| Starting out With Alice - 3rd edition | Cover of Starting out With Alice - With Cd and Access 3RD 13 (ISBN 978-0133129748) |
| Programming Essentials Using Java: A Game Application Approach  by William McAllister, S. Jane Fritz | Programming Essentials Using Java: A Game Application Approach |
| Visual Basic.NET An Introduction to Computer Programming 1st edition  Hong,Fischer |  |

**Course Objectives:**

Upon successful completion of the course, students will learn:

1. Process of writing a computer program in four steps:

* requirements specification, which we will call scenario or problem statement
* design
* implementation, or writing the code
* testing

1. Elements of algorithm design: functions, if/else, loops, recursion
2. Elements of interactive programming: event handling
3. Basic data structures: lists, arrays

Students will also be able to:

1. Demonstrate understanding of the steps required in solving a problem using a computer.
2. Demonstrate broad problem-solving experience by referring to solutions from a problem bank covered during class
3. Create an application based upon object-oriented concepts using a code generation tool.
4. Demonstrate understanding of flowcharting techniques to solve an algorithm.
5. Demonstrate reading comprehension of software showing the coding paradigms of repetition loops, decision statements, arrays and modules.

**General Education Outcomes:**

* **SKILLS/Inquiry/Analysis:** Students will employ scientific reasoning and logical thinking.

* **SKILLS/Communication:** Students will communicate in diverse settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means

* **VALUES, ETHICS, RELATIONSHIPS / Professional/Personal Development:**

Students will work with teams, including those of diverse composition. Build consensus. Respect and use creativity.

**Grade Requirement –** Students must complete all Lab and Online assignments, and take all tests.

**Evaluation and Grading** –

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Test1 |  | 20% |
| Test2 |  | 20% |
| Lab Assignments |  | 30% |
| Final |  | 30% |
|  |  |  |
|  |  | ===== |
| Total |  | 100% |

**Storage Media --** You must have a USB storage media.

**Assessment Criteria**

|  |  |
| --- | --- |
| **For the successful completion of this course a student should be able to:** | **Evaluation methods and criteria** |
| 1. Demonstrate understanding of the steps required in solving a problem using a computer. | Students will describe problem, identify inputs, processes and desired outcomes in laboratory assignments, class work and tests.    Students will solve problems with the flowchart interpreter Visual Logic in laboratory assignments, class work and tests. |
| 2. Demonstrate broad problem-solving experience by referring to solutions from a problem bank covered during class | Students will demonstrate problem-solving ability in laboratory assignments, class work and tests. |
| 3. Create an application based upon object-oriented concepts using a code generation tool. | Students will use object-oriented programming concepts to create a video game prototype or animation with Alice in laboratory assignments and the project. |
| 4. Demonstrate understanding of flowcharting techniques to solve an algorithm. | Students will solve problems with Visual Logic in Laboratory Assignments, Class work and tests. |
| 5. Demonstrate reading comprehension of software showing the coding paradigms of repetition loops, decision statements, arrays and modules. | Students will identify coding paradigms in Laboratory Assignments, Class work and tests |

**General Education Outcomes and Assessment:**

|  |  |
| --- | --- |
| **Learning Outcomes** | **Assessment Method** |
| **SKILLS/Inquiry/Analysis** Students will employ scientific reasoning and logical thinking. | Students will describe problem, identify inputs, processes and desired outcomes in laboratory assignments, class work and tests.    Students will solve problems with the flowchart interpreter Visual Logic in laboratory assignments, class work and tests.    Students will identify coding paradigms in Laboratory Assignments, Class work and tests |
| **SKILLS/Communication**  Students will communicate in diverse  settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means | Oral presentations of their projects. |
| **VALUES, ETHICS, RELATIONSHIPS**  **/ Professional/Personal Development**  Students will work with teams, including those of diverse composition. Build consensus. Respect and use creativity. | Alice project in which students will work in groups, build consensus and respect and use creativity |

**Disabilities:**

St. Joseph's College, in accordance with the Americans with Disabilities Act, provides assistance and resources for students with disabilities.  If you have a documented disability -  physical, psychological, medical, or learning -  which may impact your academic learning, please contact Kris Percival, Director of the Academic Center. Kris can be contact at McEnetgart Hall, Room 306, 718.940.5314, or [kpercvial@sjcny.edu](mailto:kpercvial@sjcny.edu). This office will assist you in getting appropriate accommodations at the College and in the classroom.  All information will be kept confidential and private. Students should also work with their instructor to make arrangements if they require accommodations for test taking, carrying out assignments, or other academic needs.

https://ssl.gstatic.com/ui/v1/icons/mail/images/cleardot.gif