**UNIVERSITY OF MARY UNDERGRADUATE COURSE SYLLABUS**

**Prefix/Course Number: CSC 106 01**

**Course Title:** **Application Software Concepts**

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| **Semester/Term**: Fall 2023 | **Course Length:** 16 weeks |  |
| **Credit/Contact Hours**: 3 | **Instructor:** Surendra Batukdeo, M.Sc.E.E. |  |
| **Course Location:** University of Mary, Main Campus | **Course Format**: Seated |  |
| Engineering Room 221 | **Office Hours:** 1100 AM to 12:00 PM  (Mon/Wed/Fri) |  |
| **Course Schedule:** 13:00 to 14:00 AM (Mon/Wed/Fri) | **o**r By Appointment | |
| **Office Number**: (701) 355- 5158 | **Office Location:** Hamm School ofEngineering | |
| **Mobile Number**: (701) 989 - 0471 | **Email:** sbatukdeo@umary.edu | |

**Course Description**:

CSC-106 is a study of Python is a programming language that lets you work more quickly and integrate your systems more effectively. You can learn to use Python and see almost immediate gains in productivity and lower maintenance costs. The understanding of programming fundamentals along with the vast use of API’s will be the applied to solve problems in both horizontal and vertical domains.

Pre-requisites: None.

**Course Information**:

This is a required course for all Engineering and Computer Science majors.

**Relationship of the Course to the Program of Study**

* **Servant Leadership:** A definition of servant leadership is available for review [online](https://my.umary.edu/ics/ClientConfig/CustomContent/syllabi/SYLLABI_DEFINITIONS.pdf). The advanced critical-thinking skills gained in this course will assist students in making informed decisions in an ethical context regarding personal and societal issues.
* **Benedictine Values:** Modeling the values of hospitality, service, community, moderation, respect for persons, and prayer. The instructor will model the Benedictine Values, and expects that students will demonstrate behavior consistent with the Benedictine Values, particularly those of respect, moderation, and community. Benedictine Values are available for review: <http://www.umary.edu/about/mission/benedictinevalues.php>
* **Core Competencies:** The four undergraduate Core Competencies are spirituality and ethics, communication, critical thinking, and global stewardship. They are further defined by the Core Competency Rubrics [online](https://my.umary.edu/ics/ClientConfig/CustomContent/syllabi/SYLLABI_DEFINITIONS.pdf). This course incorporates critical thinking and communication into its course objectives as described.

**Course Objectives:**

Students who successfully complete the course should demonstrate the following outcomes by tests and homework:

* Master the fundamentals of writing Python scripts
* Learn core Python scripting elements such as variables and flow control structures
* Discover how to work with lists and sequence data
* Write Python functions to facilitate code reuse
* Use Python to read and write files
* Make their code robust by handling errors and exceptions properly
* Work with the Python standard library
* Explore Python's object-oriented features
* Search text using regular expressions

**Major Assignments:**

This course is broken up into weekly modules, beginning on Monday of each week. All assignments are due on the due date, at the beginning of class.

* Quizzes: Each module will contain a quiz which is based on the assigned reading. Each quiz will contain different values.
* Lab Assignments: A lab assignment will be assigned for each module, which is used to reinforce the programming concepts introduced in that module.
* Programming Assignments: There will be 3-4 programming assignments throughout the semester, which are designed to put several topics into practice.
* Examinations: There will be a midterm and final examination. The final exam is a 2-hour comprehensive examination covering all of the material presented during the semester. The final exam will be on Friday, December 18, 2023, at 13:00 pm.

The lab assignment and the module quiz with the lowest score will be dropped.

**Methods for Evaluation and Grading:**

All assignments are graded based on the completeness of the solution, correctness of the solution and presentation of the material. The correct solution to a homework problem is not enough to get full credit. Students must show step-by-step calculations, which lead to the solution. Students must present the solution in a neat and orderly manner so that it is easily read and each step is understood enough so the work can be easily recreated. Open book and/or open note policies will vary for the exams.

The percentage grade is divided as follows:

|  |  |
| --- | --- |
| **Student Work** | **Percentage Contribution to Final Grade** |
| Class Attendance | 10% |
| Quizzes | 15% |
| Lab Assignments | 15% |
| Programming Assignments | 30% |
| Examinations | 30% |

The letter grades which correspond to each percentage range is as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Percentage** | **Letter Grade** | **Percentage** | **Letter Grade** | **Percentage** | **Letter Grade** |
| 92-100% | A | 80-81% | B- | 68-69% | D+ |
| 90-91% | A- | 78-79% | C+ | 62-67% | D |
| 88-89% | B+ | 72-77% | C | 60-61% | D- |
| 82-87% | B | 70-71% | C- | 0-59% | F |

**Late Assignments:**

Assignments are due at 11:59 pm of the due date. Late assignments will be assessed a 5% penalty automatically for every day late, starting at midnight. If any assignment is more than 14 days late, the best grade the student may receive is 30% of the assignment.

**Recommended Texts, Resource Materials, and Other Materials/Activities that will Incur Student Costs:**

* **Textbook**: Learning Python 5th Edition by Mark Lutz

ISBN-13: 978-1-449-35573-9

* **Learning Management System**: [https://canvas.umary.edu](https://umary.instructure.com/courses/42296)

Announcements, notes, handouts, and other resources will be added to Canvas throughout the semester. Students are encouraged to check for updates regularly.

* **Communicating with Professor**: Email, Phone or by Appointment
* **Jupyter Notebook IDE**: https://jupyter.org/

Jupyter Notebook is an open source Integrated Development Environment (IDE) for Python, Java, R, Julia, Matlab, Octave, Scheme, Processing, Scala, and many more.

**Optional/Recommended Texts, Readings, Materials:**

Supplemental readings will be added during the semester and posted on Canvas.

**Workload Expectations:**

CSC 106 is a 16-week, 3 credits, undergraduate-level course. Students are expected to spend 3 hours per week instructional time and at least 6 hours per week studying outside of class.

**Attendance Policy:**

Attendance is expected at all lectures.

**Excused Absence Policy:**

The University has a policy on excused absences related to sponsored/sanctioned activities and events. The policy is available for review online: <http://bit.ly/2thGRjo>. Students participating in such activities and events are expected to review this policy and comply with it. As long as appropriate prior notification is given according to this policy, students and faculty reach a mutual agreement concerning make-up work, and students complete the work in question, faculty shall not penalize a student for missing a class or exam when they were granted an excused absence from the university. Any questions concerning the policy may be referred to the course instructor who may refer the question to the athletic director, student activities director, or academic affairs for response.

**Assignment & Exam Policy/ies:**

Policies regarding all assignments can be found under the “Major Assignments” and “Methods for Evaluation and Grading” headings in this syllabus.

**Statement Regarding Academic Honesty**:

Students are expected to read the University of Mary’s Academic Honor Code and Honor System and abide by all the standards of conduct and requirements contained therein.  When a student is in doubt about whether or not an action might constitute an Academic Honor Code violation, s/he should request clarification from the instructor **before** the action in question is undertaken.  The Academic Honor Code is available for review on my.umary.edu using the following link: <http://bit.ly/2t3ORSu>

**Statement Regarding Reasonable Accommodations:**

The University of Mary, in compliance with the Americans with Disabilities Act and in the spirit of our mission, offers support for disabled students who provide required documentation. Students with disabilities who need accommodations should apply to the Office of Student Accessibility Services.  For further information, contact Lynn Dodge, director of Student Accessibility Services, in the Student Success Center (lower level of Welder Library) at (701) 355-8264 or [ljdodge@umary.edu](mailto:ljdodge@umary.edu).

**Channel for Communication Relating to this Course**

Instructor: Surendra Batukdeo > Chairman : Thomas Volkman > School of Engineering Dean: Terry Pilling

**Tentative content outline:**

*\*Course Outline is subject to change*

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| --- | --- | --- | --- |
| **Week** | **Week of** | **Topic** | **Chapter** |
| 1 | 3-Sep-2023 | A Python Q&A Session  How Python Runs Programs | 1,2 |
| 2 | 10-Sep-2023 | How You Run Programs  Introducing Python Object Types | 3,4 |
| 3 | 17-Sep-2023 | Numeric Types  Dynamic Typing Interlude | 5,6 |
| 4 | 24-Sep-2023 | String Fundamentals  Lists and Dictionaries | 7,8 |
| 5 | 1-Oct-2023 | Tuples, Files and Everything Else  Introducing Python Statements | 9,10 |
| 6 | 8-Oct-2023 | Assignments, Expressions and Prints  If Test and Syntax Rules | 11,12 |
| 7 | 15-Oct-2023 | While and For Loops  Iterations and Comprehensions | 13, 14 |
| 8 | 22-Oct-2023 | The Documentation Interlude  Function Basics | 15,16 |
| 9 | 29-Oct-2023 | Scopes  Arguments | 17,18 |
| 10 | 5-Nov-2023 | Advanced Function Topics  Comprehensions and Generations | 19,20 |
| 11 | 12-Nov-2023 | The Benchmarking Interlude  Modules : The Big Picture | 21,22 |
| 12 | 19-Nov-2023 | Module Coding Basics  Module Packages | 23,24 |
| 13 | 26-Nov-2023 | Advanced Module Topics  OOP : The Big Picture | 25,26 |
| 14 | 3-Dec-2023 | Class Coding Basics  A More Realistic Example | 27,28 |
| 15 | 10-Dec-2023 | Class Coding Details  Operator Overloading | 29,30 |
| 16 | 17-Dec-2023 | Revision  Final Exam |  |

**Important Dates:**

* 5-Sep-2023 First Day of Classes – Fall Semester
* 18-Sep-2023 Last Day to Drop a Fall Course with No Record
* 10-Nov-2023 Last Day to Drop with W for Fall Semester
* 1-Dec-2023 Last Day to Drop with WP/WF for Fall Semester
* 22-Dec-2023 Last Day - Fall Semester

**Days Off:**

* 25-Oct-2023 Community Learning Day – No Classes
* 23/24/25/26-Nov-2023 Thanksgiving Vacation