

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE: Programming Concepts using Python**

**CODE NO. : CSD103 SEMESTER: 1**

**PROGRAM: All I. T. Studies Students**

**AUTHOR: Willem de Bruyne**

**DATE: June 2011 PREVIOUS OUTLINE DATED: June 2010**

**APPROVED:**

	<b>“Brian Punch”</b>	<b>July/11</b>
	_____	_____
	<b>Chair</b>	<b>DATE</b>

**TOTAL CREDITS: 4**

**PREREQUISITE(S): None**

**HOURS/WEEK: Two**

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**I. COURSE DESCRIPTION:**

This course uses the Python programming language to teach programming concepts and problem solving skills, without assuming any previous programming experience. The course will start with an introduction to the fundamentals of data storage, input and output, control structures, functions, file I/O and objects that are create from standard library classes.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to understand:

## 1. Introduction to Computers and Programming

Potential Elements of the Performance:

- Introduction.
- Hardware and Software
- How computers store data
- How a program works
- Using Python.

## 2. Input, Processing, and Output

Potential Elements of the Performance:

- Designing a program
- Input, processing, and output
- Display output with the *print* Function.
- Comments
- Variables
- Reading input form the keyboard
- Performing calculations
- More about data output

## 3. Simple Functions

Potential Elements of the Performance:

- Introduction to Functions
- Defining and Calling a Function
- Designing a program to use Functions
- Local variables

- Passing Arguments to Functions
- Global variables and global constants

#### 4. Decision Structures and Boolean Logic

##### Potential Elements of the Performance:

- The *if* statement
- The *if-else* statement
- Comparing Strings
- Nested Decision structures and the *if-elif-else* statement
- Logical operators
- Boolean Variables

#### 5. Repetition Structures

##### Potential Elements of the Performance:

- Introduction to Repetition structures
- The *while* loop: a conditional-controlled loop
- The *for* loop: a count-controlled loop
- Calculating a running total
- Sentinels
- Input validation loops
- Nested loops

#### 6. Value-Returning Functions and Modules

##### Potential Elements of the Performance:

- Introduction to value-returning Functions: generating random numbers
- Writing your own value-returning Functions
- The *math* module
- Storing Functions in Modules

#### 7. Files and Exceptions

##### Potential Elements of the Performance:

- Introduction to file input and output
- Using loops to process files
- Processing records
- Exceptions

## 8. More About Strings

### Potential Elements of the Performance:

- Basic string operations
- String slicing
- Testing, searching, and manipulating strings

## 9. Classes and Object-Oriented Programming

### Potential Elements of the Performance:

- Procedural and object-oriented programming
- Classes
- Working with instances
- Techniques for designing classes

**III. TOPICS:**

1. Introduction to Computers and Programming
2. Input, Processing, and Output
3. Simple Functions
4. Decision Structures and Boolean Logic
5. Repetition Structures
6. Value-Returning Functions and Modules
7. More About Strings
8. Classes and Object-Oriented Programming
9. Files and Exception

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

Starting Out with PYTHON, 2<sup>nd</sup> Edition Tony Gaddis  
 ISBN-13: 978-0-13-257637-6

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Quizzes & Tests	60%
Assignments	32%
<u>Part./Present.</u>	<u>8%</u>
	100%

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a	

	student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

The professor reserves the right to adjust the mark up or down 5% based on attendance, participation, leadership, creativity and whether there is an improving trend.

A minimum of **80% attendance** required in the labs and lectures.

- Students must complete and pass both the test and assignment portion of the course in order to pass the entire course.
- All Assignments must be completed satisfactorily to complete the course.
- Late hand in penalties will be a zero grade unless you have prior permission from the instructor
- Makeup Tests are at the discretion of the instructor and will be assigned a maximum grade of 50%.
- The professor reserves the right to adjust the number of tests, practical tests and quizzes based on unforeseen circumstances. The students will be given sufficient notice to any changes and the reasons thereof.
- A student who is absent for 3 or more times without any valid reason or effort to resolve the problem will result in action taken.

NOTE: If action is to be taken, it will range from marks being deducted to a maximum of removal from the course.

**Eligibility for X Grades/Upgrading of Incompletes** When a student's course work is incomplete or final grade is below 50%, there is the possibility of upgrading to a pass when a student meets all of the following criteria: The student's attendance has been satisfactory. An overall average of at least 50% has been achieved. The student has not had a failing grade in all of the theory tests taken. The student has made reasonable efforts to participate in class and complete assignments.

Note: **The opportunity for an X grade is usually reserved for those with extenuating circumstances.** The nature of the upgrading requirements will be determined by the instructor and may involve one or more of the following: completion of existing labs and assignments, completion of additional assignments, re-testing on individual parts of the course or a comprehensive test on the entire course.

### **Labs:**

Lab activities represent a very important component of this course in which practical 'hands-on' skills will be developed. Because of this, attendance is mandatory and the satisfactory completion of all lab activities is required. Evaluation of lab work in-class will be done. It is the

student's responsibility to discuss absences from regularly scheduled labs with the instructor so that alternate arrangements (where possible) can be made to complete the lab requirements.

## VI. SPECIAL NOTES

### Attendance:

Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances should be discussed with the professor. Students are required to be in class on time and attendance will be taken within the first five minutes of class. A missed class will result in a penalty in your marks unless you have discussed your absence with the professor as described above. Unauthorized absences could result in a zero grade being assigned. The penalty depends on course hours and will be applied as follows:

Course Hours	Deduction
5 hrs/week (75 hrs)	1% / hr
4 hrs/week (60 hrs)	1.5% /hr
3 hrs/week (45 hrs)	2% /hr
2 hrs/week (30 hrs)	3%/hr

Absentee reports will be discussed with each student during regular meetings with Faculty Mentors. Final penalties will be reviewed by the professor and will be at the discretion of the professor.

### Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

## VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.