COMP 662: Programming Databases - Python

Spring 2021

04/12/2021 - 06/11/2021

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Course/Program Description and Purpose

This is an advanced course that introduces the learner to programming databases with Python. Topics covered include configuring drivers, creating a database, using Structured Query Language (SQL), coding in Python to retrieve data from and update a database, and use an Object Relational Mapping (ORM) language to simplify coding. Examples used are drawn from diverse areas such as financial data processing, gaming applications, and more. Students will be able to use this knowledge to land mid-level positions in such fields as data science, embedded programming, data analytics, and more.

SLOs are the knowledge, skills, and attitudes that students possess and can demonstrate upon completing a course or program of study. The SLOs for the institution and each program are located on the SDCE website.

Prerequisites

Comp 660 Programming With Python I and
Comp 661 Programming With Python II

Institutional SLOs

Social Responsibility: SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
Effective Communication: SDCE students demonstrate effective communication skills.
Critical Thinking: SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
Personal and Professional Development: SDCE students pursue short term and lifelong learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.
Diversity: At SDCE students have many different cultures, religions, language backgrounds, and races. We promise to respect each other's cultures and differences. These differences make our

community strong. If you do not respect other students' differences, you may be asked to leave the course. You can sign a promise to respect others equally at SDCE Diversity Pledge.

Program SLOs

Upon successful completion of this program, you will be able to:

- Students completing a software course will be able to demonstrate the use of the software tools to effectively communicate with others in person, with paper documents or online.
- demonstrate the capability to work in teams of other diverse individuals to apply Information Technology solutions to a problem.
- demonstrate the ability to use Information Technology and software tools to support decision processes and critical thinking.
- pursue continued Information Technology education to complete short term goals such as website development, and also continue with long term programs that will keep them current in this rapidly changing field.

Course SLOs

Upon successful completion of this course, you will be able to:

1. Demonstrate an advanced understanding of Python and relational databases.
2. Install the necessary tools and drivers required for connecting Python to relational databases.
3. Use a Python module to connect to a relational database.
4. Architect a database using a database management system.
5. Demonstrate a basic understanding of using the Structured Query Language (SQL) to retrieve and add data within a database management system.
6. Demonstrate the ability to use Python code to create, retrieve, update, and delete (CRUD) data in a relational database.
7. Demonstrate a basic understanding of how to use an Object Relational Mapping (ORM) language in conjunction with Python code.

Course Resources

Textbook and other resources:

Various links and online materials will be provided throughout the class for the necessary content.

One of the online textbooks that will be referenced is:

- **Title:** Python for Everybody
- **Author:** Dr. Charles Russell Severance, Sue Blumenberg, Elliott Hauser, Aimee Andrion

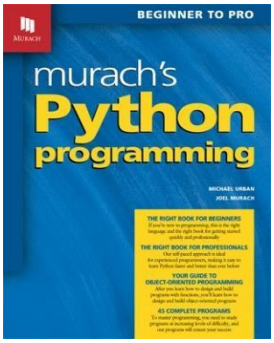
- **Paperback:** 245 pages
- **Publisher:** CreateSpace Independent Publishing Platform (April 9, 2016)
- **Language:** English
- **ISBN-13:** 978-1530051120

Available at:

- https://www.py4e.com/book.php (Links to an external site.)
- PDF: link here (Links to an external site.)
- HTML: link here (Links to an external site.)
- Jupyter Notebooks: link here (Links to an external site.)

Optional Textbooks

If you have this book from the previous Python Chapter 17 is a good reference:



Title: Murach's Python Programming
Author: Joel Murach and Michael Urban
Paperback: 550 pages
Publisher: Mike Murach & Associates (2016)
Language: English
ISBN-13: 978-1-890774-97-4.

Basic Technology Requirements

Canvas Technical Requirements
This is a list of basic computer system requirements to use Canvas. It is always recommended to use the most up-to-date versions and better internet connections. Canvas will still run with the minimum specifications, but you may experience slower loading times.

Computer Specifications
Canvas and its hosting infrastructure are designed for maximum compatibility and minimal requirements.

Screen Size

A minimum of 800x600. That is the average size of a netbook. You probably won't want to view Canvas on a smaller screen than that.

Operating Systems

Windows XP SP3 and newer
Mac OSX 10.6 and newer
Linux - chromeOS

Mobile Operating System Native App Support

iOS apps require version 11 or later
Android apps require version 5.0 or later. All Android and iOS both support the two most recent versions of their respective operating systems.

Computer Speed and Processor

Use a computer 5 years old or newer when possible
1GB of RAM
2GHz processor

Internet Speed

Along with compatibility and web standards, Canvas has been carefully crafted to accommodate low bandwidth environments.
Minimum of 512k

Screen Readers

The latest versions of JAWS and VoiceOver

Notice* Canvas recommends a minimum bandwidth of 512K which is basic DSL. Dial-up internet access is no longer a viable option for online learners.

Which browsers does Canvas support?

Because it's built using web standards, Canvas runs on Windows, Mac, Linux, iOS, & Android or any other device with a modern web browser. However, Internet Explorer is no longer supported

If you are interested in minimums here, they are:

Chrome 19
Safari 5
Firefox 12
Flash 9 (if you want to use the audio/video recording or viewing feature, the Chat feature or upload files)

Rather than focusing on minimums, we highly recommend updating to the newest version of whatever browser you are using as well as the most up to date Flash plug-in.

Other Notes:

The Java plug-in is required for screen sharing in Conferences. Otherwise, there are no other browser plug-ins used by Canvas.

The Canvas UI was optimized for desktop displays, small form factors such as phones may not be as pleasant to use Canvas with. We recommend trying out our Mobile App (instructure.com/mobile) if you are on an iPhone or have an iPad.

Part 2: Course/Program Completion Requirements and Grading

Course Grading

Week	Date	Module	Disussion	Assignment	Quiz
1	4/12/2021	Module 1: Introduction to Python, Databases and Tools	30	50	
2	4/19/2021	Module 2: Databases and Tables	30	50	70
3	4/26/2021	Module 3: Structured Query Language (SQL)	30	50	
4	5/3/2021	Module 4: Relational Databases	30	50	70
5	5/10/2021	Module 5: Object Relational Mapping (ORM)	30	50	
6	5/17/2021	Module 6: Putting it All Together	30	50	70
7	5/24/2021	Module 7: Analyzing Data	30	50	
8	6/2/2021	Last Assignments Due (6/7 Last Day of Class)			
	6/7/2021	Last Day of Class			
		Total Points	210	350	210

Grade	Points	Percentage
A	900 -1000	90% -100%
B	800 - 899	80% - 89%
C	700 - 799	70% - 79%

D	600 - 699	60% - 69%
F	Less than 599	Less than 59%

Support

Technical Support

Our technical support team supports services for technical issues, such as course logins, course software support, and online learning training.

Online Learning Pathways: 619-388-6750

Technical Requirements

Instructional Services

Instructional services provide support for online learning.

Contact: Training for Online Learning

Counseling/Student Services

Student services provides If you need help with a personal problem or advice about your studies, you can make an appointment with a counselor. For example, a counselor can help you make a plan to reach your goals: improving your English, getting your GED, enrolling in a job training class or attending college. If you need help finding a job, you can contact the Career Development Services Counselor

Contact Career Services

Disability Support Programs and Services (DSPS)

If you have a disability or think you might have a disability, you can contact the counselor in the Disability Support Programs and Services (DSPS) at your campus. DSPS can provide services and special equipment that will make it easier for you to study in our classes. An example of special equipment is a machine that enlarges the print for people who have a vision disability. Since it takes time to provide services, we recommend that you contact the counselor at least two weeks in advance. DSPS services are confidential and voluntary.

Contact DSPS

SDCE Policies

Course Attendance

Regular attendance is expected in all courses. For online courses the expectation is that you will check into the course at minimum 3 times a week. Any student frequently absent from the course may, at the discretion of the instructor, be dropped from the course. Those students receiving Veteran's Benefits or CalWORKS must comply with the attendance requirements specific to these programs.

Drops/Withdrawals

Students must communicate with the instructor if they can no longer attend the class. It will be up to the instructor to drop each student from their roster.

Problem Solutions

Problem set solutions will not be posted. It is the responsibility of the student to make sure they find out how to solve the assignment or quiz problems (after the due date) by asking about them in the discussion board.

Commitment to Integrity and Academic Dishonesty Policy

- Students should actively participate in course activities.
- Our college has rules about academic dishonesty:
    - Students are not permitted to cheat on course assignments or tests.
    - Students are not permitted to use false information.
    - Students may not copy the language or ideas of another person and use them as their own ideas.
- An instructor will take the following steps if he/she thinks a student has been dishonest in completing a course assignment or test:
    - Discuss the situation with the student. Make sure that the student understands why his/her action is dishonest.
    - If the student did not understand that his action was dishonest, the instructor can give the student a warning.
    - If the student knew that his action was dishonest, the instructor can give him/her a failing grade.

Course Summary

All assignments for a session have due dates clearly listed in Canvas.

Note that the weekly live sessions are listed on the calendar in Zoom. Live sessions will not be held on SDCE holidays. If a live session for this course falls on an SDCE holiday, the live

session will be cancelled, and your instructor will inform you as to when the Live Session will be rescheduled or how the content will be covered.

All module and assignment information is contained in the Canvas site for this course.