Program Title: Software Development in Python

Program Units: 24

Division: Proposing Faculty name(s): Eric Reed

Type of Program: Transfer/Workforce

Type of Award:

    XX Transcriptable certificate

    Certificate of Achievement

    AA/AS Degree

Documentation checklists:

Transfer documentation

_____ Catalog Description
_____ List of Courses
_____ Articulation & transfer data
_____ Identification of existing program(s) at CSU/UCs
_____ Completer Projections
_____ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.)

Workforce documentation

xx_____ Catalog Description
xx_____ List of Courses
xx_____ Completer Projections
xx_____ Labor Market information
xx_____ Identification of any similar program(s) in the area
xx_____ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.

Transfer/Workforce Work Group: ☐Recommended   ☐Not Recommended

Comments:

Work Group Signature: Date:

Supervising Vice President: ☐Recommended   ☐Not Recommended

Comments:

Vice President Signature: Date:

Planning & Resource Committee: ☐Recommended   ☐Not Recommended

Comments:

Foothill College

Credit Program Narrative

Certificate of Achievement: _____Software Development in Python_____

Item 1. Program Goals and Objectives

Students learn software development techniques and methods for creating applications in Python. Students apply these skills in practical projects relevant to the software industry. The successful student will be able to use much of the coursework toward a BS in computer science.

Program Learning Outcomes:

- Students are able to design, document, test and debug programs using Python
- Students use design patterns in application programs
- Students demonstrate techniques for creating modular reusable code

Item 2. Catalog Description

Python is a high-level programming language that lets you work quickly and integrate systems more effectively. Python programmers are employed in research, data science, machine learning, artificial intelligence, quality assurance, web back-end, and other careers throughout the software industry.

Item 3. Program Requirements

Course Number	Title	Units
Required: Both of the following (9 units)		
CS 3A	OBJECT ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	**4.5**
CS 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	**4.5**
Plus: at least 15 units from the following courses		
CS 3C	ADVANCED DATA STRUCTURES AND ALGORITHMS IN PYTHON	4.5
CS 10	COMPUTER ARCHITECTURE AND ORGANIZATION	4.5
CS 18/ MATH 22	DISCRETE MATHEMATICS	5
CS 22A	JAVASCRIPT FOR PROGRAMMERS	4.5

CS 30A	INTRODUCTION TO LINUX	4.5	
CS 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	4.5	
CS 40A	SOFTWARE ENGINEERING METHODOLOGY	4.5	
CS 50A	SOFTWARE BASICS (CCNA)	4.5	
MATH 10	ELEMENTARY STATISTICS	5.0	
MATH 48A	PRECALCULUS I	5.0	
MATH 48B	PRECALCULUS II	5.0	
MATH 48C	PRECALCULUS III	5.0	
MATH 1A	CALCULUS	5.0	

Suggested Sequence:

Fall: CS 3A and MATH 48A

Winter: CS 3B and CS 30A

Spring: CS 3C and CS 40A

Total Units = 27.5

Item 4. Master Planning

Most of the prospective students of this Certificate of Achievement are from the San Francisco Bay Area, which is a hub of technological innovation in the world. However, the certificate is relevant and useful to any student who wishes to contribute to the area and potentially seek employment with one of the major multinational technology companies. There is a great need within the software industry for more trained graduates of diverse backgrounds, which is a need this certificate seeks to meet.

In addition to students from our home campus, Technology Innovation Design Engineering (TIDE) school students will complete this certificate.   TIDE is recruiting first gen, Latinx, and African American students for an overall diverse population of students. Most of the students are from the Sequoia Atherton district, near Facebook. HP, and SAP.   TIDE seeks to connect their students to these companies. Approximately 100 students will join the program each year beginning in 2020. By 2023, there should be 400 TIDE students in this certificate pipeline at any point in time.

Item 5. Enrollment and Completer Projections

Course Number	Title	2016-17	2017-18
Required: Both of the following (9 units)			

CS 3A	OBJECT ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	**189**	**381**
CS 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	**N/A**	**N/A**
Plus: at least 15 units from the following courses			
CS 3C	ADVANCED DATA STRUCTURES AND ALGORITHMS IN PYTHON	**N/A**	**N/A**
CS 10	COMPUTER ARCHITECTURE AND ORGANIZATION	**176**	**197**
CS 18/ MATH 22	DISCRETE MATHEMATICS	**230**	**239**
CS 22A	JAVASCRIPT FOR PROGRAMMERS	161	154
CS 30A	INTRODUCTION TO LINUX	231	170
CS 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	140	123
CS 40A	SOFTWARE ENGINEERING METHODOLOGY	N/A	17
CS 50A	NETWORK BASICS (CCNA)	101	87
MATH 10	ELEMENTARY STATISTICS	1902	2024
MATH 48A	PRECALCULUS I	656	603
MATH 48B	PRECALCULUS II	604	599
MATH 48C	PRECALCULUS III	682	655
MATH 1A	CALCULUS	757	805

Item 6. Place of Program in Curriculum/Similar Programs

None.

Item 7. Similar Programs at Other Colleges in Service Area

This program is similar to the De Anza College Certificate of Achievement for Programming in Python. Data shows that there is currently yet unmet demand for graduates in this area.

Many students at Foothill college travel from north of Foothill and will be better served by an offering of this program at our campus. Furthermore, the focus of our program is different from the De Anza offering due to our emphasis on software engineering patterns and principles.

None of the community colleges in the San Mateo Community College district (north of Foothill) offer this program currently.

Additional Information Required for State Submission:

TOP Code: *0707.00

Annual Completers: 80 (expected) to 2023, 200 (post 2023), 600 (post 2026)

Net Annual Labor Demand: 9000 new jobs per year (SF Bay Area)

Faculty Workload: No change.

New Faculty Positions: No new positions.

New Equipment: No new equipment.

New/Remodeled Facilities: No new facilities.

Library Acquisitions: None

Gainful Employment: Yes

Program Review Date: TBD

Distance Education: 100% of the core courses are offered online or hybrid.

ATTACH THE FOLLOWING:

1.   **Labor Market Information and Analysis**

2.   **Advisory Committee Recommendation**

3.   **Regional Consortia Approval Meeting Minutes**