Program Creation Sign-Off

Program Title: Software Development in C++

Program Units: 24 units

Division: PSME   **Proposing Faculty name(s):** Anand Venkataraman

Type of Program: xx_____ Transfer   or   xx_____ Workforce

Type of Award:

xx____ Transcriptable certificate

_____ Certificate of Achievement

_____ AA/AS Degree

Documentation checklists:

<u>Transfer documentation</u>

_____ 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 DRAFT
        (i.e. faculty, equipment, etc.)

<u>Workforce documentation</u>

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:

DRAFT

PaRC Signature: Date:

Division Curriculum Committee: ☐Recommended   ☐Not Recommended
Comments:

Division CC Signature: Date:

Foothill College

Credit Program Narrative

Certificate of Achievement: _____Software Development in C++_____

Item 1. Program Goals and Objectives

Students learn software development techniques and methods for creating applications in C++. Students also 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 C++
- Students use design patterns in application programs
- Students demonstrate techniques for creating modular reusable code

Item 2. Catalog Description

C++ is a high-level programming language that lets you work quickly and integrate systems more effectively. C++ 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 2A	OBJECT ORIENTED PROGRAMMING METHODOLOGIES IN C++	**4.5**
CS 2B	INTERMEDIATE SOFTWARE DESIGN IN C++	**4.5**
Plus: at least 15 units from the following courses		
CS 2C	ADVANCED DATA STRUCTURES AND ALGORITHMS IN C++	**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	NETWORK 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 2A and MATH 48A

Winter: CS 2B and CS 30A

Spring: CS 2C and CS 40A

DRAFT

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.

Item 5. Enrollment and Completer Projections

Course Number	Title	2016-17	2017-18
Required: Both of the following (9 units)			
CS 2A	OBJECT ORIENTED PROGRAMMING METHODOLOGIES IN C++	**552**	**571**
CS 2B	INTERMEDIATE SOFTWARE DESIGN IN C++	**229**	**203**
Plus: at least 15 units from the following courses			

CS 2C	ADVANCED DATA STRUCTURES AND ALGORITHMS IN C++	**120**	**131**
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	SOFTWARE 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 like the De Anza College Certificate of Achievement for Programming in C++. Data shows that there is currently yet unmet demand for graduates in this area.

Several students at Foothill college come here 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: 120 (expected)

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**