Substantive Change Proposal
Follow Up Report

Associate in Science, Geographic Information Systems
Certificate of Achievement, Technology Geographic Information Systems Technology I
Certificate of Achievement, Geographic Information Systems Technology II
Certificate of Achievement, Geographic Information Systems Technology III

Foothill College
12345 El Monte Road
Los Altos Hills, CA 94022
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Submitted to the Accrediting Commission for Community and Junior Colleges

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Please find the information below in response to the March 27, 2017 letter to approve the Associate in Science Degree in Geographic Information Systems. The letter requested:

> *"A follow-up report should be submitted that identifies requirements of each of the three levels of Certificates and describes their relationship, if any, to the other Certificates and the Degree."*

Relationship between Certificates and Degree

The Foothill College Geospatial Technology program offers a set of certificates which scale up to an AS degree. Each certificate can be applied to the next one in the sequence.

Below are descriptions for the three certificates and the AS degree. Per college policy, 50% of the units for any certificate or degree must be completed at Foothill College.

- Certificate of Achievement I - 22-24 units
- Certificate of Achievement II - 31-33 units
- Certificate of Achievement III - 43-46 units
- AS Degree in GIST - core courses from Certificate III plus GE courses - 90 units

Requirements of Each of the Three Levels of Certificates

I. Certificate of Achievement for Geographic Information Systems Technology I (22-24 units)

The Certificate of Achievement in Geographic Information Systems Technology I provides students with skills necessary to advance in careers that require geospatial technology skills.

Required Courses (19 units)

- GEOG/GIS11 - Introduction to Mapping & Spatial Reasoning (4 units)
- GEOG/GIST12 - Introduction to Geospatial Technology (4 units)
- GIST52 - Geospatial Data Acquisition and Management (4 units)
- GIST54A - Seminar in Specialized Applications of Geographic Information Systems (2 units)
- GIST58 - Remote Sensing and Digital Image Processing (3 units)
- GIST59 - Cartography, Map Presentation and Design (2 units)

Restricted Electives - Select one (2-4.5 units)

- CS 21A Programming in Python (4.5 units)
- CS 1A Object-Oriented Programming Methodologies in Java (4.5 units)
- CS 22A Javascript for Programmers (4.5 units)
- HORT 45 Landscape Design: Computer Applications (3 units)

II. Certificate of Achievement for Geographic Information Systems Technology II (31-33 units)

The Certificate of Achievement in Geographic Information Systems Technology II provides students with skills necessary to advance in careers that require robust geospatial technology skills.

Required Courses (23 units)

- GEOG/GIS11 - Introduction to Mapping & Spatial Reasoning (4 units)
- GEOG/GIST12 - Introduction to Geospatial Technology (4 units)
- GIST52 - Geospatial Data Acquisition and Management (4 units)
- GIST53 - Advanced Geospatial Technology & Spatial Analysis (4 units)
- GIST54A - Seminar in Specialized Applications of Geographic Information Systems (2 units)
- GIST58 - Remote Sensing and Digital Image Processing (3 units)
- GIST59 - Cartography, Map Presentation and Design (2 units)

Restricted Electives - Select two (5-10 units)

- CS 21A Programming in Python (5 units)
- CS 1A Object-Oriented Programming Methodologies in Java (5 units)
- CS 22A Javascript for Programmers (5 units)
- HORT 45 Landscape Design: Computer Applications (3 units)

III. Certificate of Achievement for Geographic Information Systems Technology III (43-46 units)

The Certificate of Achievement in Geographic Information Systems Technology III prepares students for entry-level geographic information systems technician jobs. This certificate includes an internship in geographic information systems. Students who have completed the required courses enroll in ITRN 52 and are placed in an internship with a public or private agency.

Required Courses (28 units)

- GEOG/GIS11 - Introduction to Mapping & Spatial Reasoning (4 units)
- GEOG/GIST12 - Introduction to Geospatial Technology (4 units)
- GIST52 - Geospatial Data Acquisition and Management (4 units)
- GIST53 - Advanced Geospatial Technology & Spatial Analysis (4 units)
- GIST54A - Seminar in Specialized Applications of Geographic Information Systems (2 units)
- GIST58 - Remote Sensing and Digital Image Processing (3 units)
- GIST59 - Cartography, Map Presentation and Design (2 units)
- ITRN 52 - Internship (3 units)
- C S 1A Object-Oriented Programming Methodologies in Java (4.5 units) OR CS 3A Object-Oriented Programming Methodologies in Python (4.5 units)

Restricted Electives - Select two (8-10 units)

- CS 21A Programming in Python (5 units)
- CS 22A Javascript for Programmers (5 units)
- HORT 45 Landscape Design: Computer Applications (3 units)

Other Electives - Select one (4-5 units)

- GEOG 01 Physical Geography (5 units)
- GEOG 02 Human Geography (4 units)
- GEOG 10 World Regional Geography (4 units)

IV. Associate of Science in Geographic Information Systems Technology (90 units)

The AS degree is recommended for students who do not have an Associates or Bachelor's degree and have the goal of entering the workforce. The AS degree includes general education and elective courses required for graduation plus the core courses and electives from the Certificate of Achievement in Geographic Information Systems Technology III. The Geographic Information Systems Technology degree prepares students for entry-level technician jobs.

Required Courses (28 units)

- GEOG/GIS11 - Introduction to Mapping & Spatial Reasoning (4 units)
- GEOG/GIST12 - Introduction to Geospatial Technology (4 units)
- GIST52 - Geospatial Data Acquisition and Management (4 units)
- GIST53 - Advanced Geospatial Technology & Spatial Analysis (4 units)
- GIST54A - Seminar in Specialized Applications of Geographic Information Systems (2 units)
- GIST58 - Remote Sensing and Digital Image Processing (3 units)
- GIST59 - Cartography, Map Presentation and Design (2 units)
- ITRN 52 - Internship (3 units)
- C S 1A Object-Oriented Programming Methodologies in Java OR CS 3A Object-Oriented Programming Methodologies in Python (4.5 units)

Restricted Electives - Select two (8-10 units)

- CS 21A Programming in Python (5 units)
- CS 22A Javascript for Programmers (5 units)
- HORT 45 Landscape Design: Computer Applications (3 units)

Other Electives - Select one (4-5 units)

- GEOG 01 Physical Geography (5 units)
- GEOG 02 Human Geography (4 units)
- GEOG 10 World Regional Geography (4 units)

General Education Requirements

- Completion of Foothill GE pattern (30-35 units)
- Electives (as needed to reach 90 units) (9-17 units)