University of Hawai'i
Code Request Form for Academic Programs

NEW OR MODIFY PROGRAM CODE

Form #CR-AP1
Modified June 2017

☒ **New Program Code** ☐ **Modify Program Code** Date: 1/8/2018

REQUESTOR CONTACT INFORMATION

Name	Shelby Wong	Campus	Hilo, UH
Title	Curriculum and Catalog Coord.	Email	shelbyw@hawaii.edu
Office/Dept	OVCAA	Phone	932-7927

NEW PROGRAM CODE TO CREATE

Institution	HIL - University of Hawaii at Hilo	Campus	~~<Select a Campus>~~ HIL
Level	UG - Undergraduate	Effective Term	Fall 2018

		Code (Max. Characters)	Description	Check if requesting new code:
College	(2)	NH	Natural and Health Sciences	☒ See Banner form STVCOLL
Department	(4)	CSCI	Computer Science	☐ See Banner form STVDEPT
Degree/Certificate	(6)	SC	Subject Certificate	☐ See Banner form STVDEGC
Major	(4)	~~DSCI~~ CSCI	~~Data Science~~ Computer Science	☒ See Banner form STVMAJR
Concentration	(4)	DSCI	Data Science	☐ See Banner form STVMAJR
Minor	(4)			☐ See Banner form STVMAJR

If a similar major/concentration code exists in Banner, please list the code:

Justification to warrant a new major/concentration code similar to an existing major/concentration code:

Is this major/concentration code being used the same way at the other UH campuses?	☐ Yes	☒ No
Should this program be available for applicants to select as their planned course of study on the online application? *If yes, student may select the code as their only program of study.*	☐ Yes	☒ No

RULES PERTAINING TO FINANCIAL AID AND 150% DIRECT SUBSIDIZED LOAN LIMIT LEGISLATION

Is 50% or greater of the classes in this program offered at a location other than the Home Campus?	☐ Yes	☒ No
Is this program/major/certificate financial aid eligible?	☐ Yes	☒ No
Does this certificate qualify as a Gainful Employment Program (Title IV-eligible certificate program)? *See http://www.ifap.ed.gov/GainfulEmploymentInfo/index.html*	☐ Yes	☒ No

Program Length
In academic years; decimals are acceptable. The length of the program should match what is published by the campus in any online and/or written publication. 1.0

Special Program Designations ☐ A ☐ B ☒ N ☐ P ☐ T ☐ U
See Special Program Designations Code Definitions on IRAO Program Code Request webpage

Required Terms of Enrollment: ☒ Fall ☒ Spring ☐ Summer ☐ Extended

IRAO USE ONLY: DATE RECEIVED

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ADDITIONAL COMMENTS

Requesting new program code: SC-CSCI-DSCI at UH Hilo. New subject certificate under the BOR approved Computer Science BS degree. Effective Fall 2018. CIP CODE: 11.0104

ATTACHMENTS

BOR Approved: Sole-credential Certificates, Associate (excluding ATS), Bachelor and Graduate Degrees, and sole credential certificates

☐ BOR Meeting Minutes & Supporting Documents ☐ Curriculum

Chancellor Approved: Concentrations, Certificates and Associate in Technical Studies (ATS) Degree

☒ Memo from Chancellor to notify Vice President for Academic Planning and Policy regarding program action.

☒ Curriculum

CERTIFICATES ONLY: Please check one (1) statement. This certificate is a...

☐ BOR approved certificate. BOR Meeting/Approval Date: _____

☐ Chancellor approved within an authorized BOR program. BOR Program: _____

☐ Chancellor approved CO in accordance with UHCCP 5.203, Section IV.B.10.

VERIFICATIONS

By signing below, I verify that I have reviewed and confirm the above information that is pertinent to my position.

Registrar (Print Name)	Financial Aid Officer (Print Name)	For Community Colleges, verification of consultation with OVPCC Academic Affairs:
Chelsea Kay-Wong	Sherrie Padilla	Suzette Robinson
1/30/18	1/30/18	
Signature Date	Signature Date	Signature Date

Form modified: June 2017

Code | Data Science

Approved | Fall 2018

Proposal Information

Workflow Status

(VCAA)

✔ VCAA

(VCAA) \\ VCAA

✔ **Kenneth Hon**
Approved 12-9-2017

✔ ✔ ✔ ✔ ✔ ✔ ✔ ✔

Prev Next

Program Title
Data Science

Admin Use Only

Code

P) Proposal Details

P.1) This is a proposal for:
New certificate or minor track within an existing BOR approved Baccalaureate or Graduate program

Home Program
Computer Science

P.2) Proposal Summary
This is a proposal for a subject certificate program in the field of data science. Data science is an interdisciplinary field of study involving natural sciences, social science, statistics, information, computer science, health science, and design. Broadly speaking, data scientists are focused on acquiring, archiving, and extracting knowledge from data to solve difficult problems. Data science involves a wide variety of skills, as data scientists are often involved in experimental design, data cleaning, decision making, and communication of their findings to non-experts.

P.3) Proposal Rationale/Justification

This program is being implemented as part of the 'Ike Wai EPSCoR project that is being undertaken system wide at the University of Hawaii. The program will provide training for future data scientists and prepare students for jobs in this rapidly expanding field. Both Forbes Magazine and the Harvard Business Review describe the field as being one of the most important in the 21st Century[1]. Having a certificate program in this subject will provide UH-Hilo students with a competitive advantage in the marketplace. The program will also provide UH-Hilo with more capacity to undertake data science research for future grants and improve the quality of undergraduate research in the related disciplines.

[1] https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century

P.4) Related Course(s)

CS171 (Data Science Fundamentals in R) - Proposal Submitted
CS172 (Python for Data Analysis) - Proposal Submitted
Math271 (Applied Statistics with R) - Proposal Submitted
CS272 (Machine Learning) - Proposal Submitted

P.5) Course(s) from Other Departments

Yes

Courses

Math271 (Applied Statistics with R) - Proposal Submitted

In addition to the core courses described in P4, the certificate will require students to choose two electives from a list of courses in the natural sciences or the social sciences that are data intensive in their nature. All of these courses have approvals from their departments to be listed in the certificate.

- ASTR/PHYS 260 = Computational Phys & Astron (3 credit)
- ASTR/PHYS 260L = Computational Phys & Astron Lab (1 credit)
- ASTR 350 L = Stellar Astrophysics Lab (2 credit)
- ASTR 351 L = Galactic & Extragal Astrophys (2 credit)
- BIO 280 = Biostatistics
- CHEM 431L Instrumental Analysis Lab
- GEOG 480 = Geog Info Sys & Visualization
- GEOG 481 = Advance Geo-Spatial Techniques
- GEOG 470 = Remote Sensing
- GEOG 488 = Advanced Geostatistics
- GEOL 445 = GIS for Geology
- GEOL 450 = Remote Sensing
- GEOL 472 = Volcano Seismology & Geodesy
- MARE 250 = Statistical Apps in Mar Sci
- Math 421 - Probability
- Math 422 - Mathematical Statistics

P.6) Proposal Impact(s) - Resources

EPSCoR has provided four new faculty positions that are being funded from the grant. The computer science and math positions will be focused on constructing and offering these courses. Since faculty are already working in these positions, no new resources are required. It is not anticipated that the program will cause any of the cognate courses to exceed their usual capacity.

P.7) Department Vote

	DATE	APPROVE	NOT APPROVE	ABSTAIN
DEPT VOTE	09/25/17	8	0	2

P.8) Proposal Supporting Documents

- Minutes-StaffMeeting-20170925.docx

P.9) Proposer Notes

The minutes from the computer science staff meeting that took place on September 26, 2017 concerning this certificate program are attached.

1) Program Information

1.1) Degree Type

Undergraduate Subject Certificate

1.2) Program Description

The Certificate in Data Science allows students to develop skills relating to the acquisition, archival, and extraction of knowledge from data in its various forms in order to find solutions to problems. This curriculum also focuses on sound experimental design, data-driven prediction, forecasting and decision making, as well as the communication of narratives regarding the actionable insights found within data.

1.3) Program Catalog Description

Data Science Certificate

The Certificate in Data Science allows students to develop skills relating to the acquiring, archiving, extracting knowledge from data in its various forms in order to find solutions to problems. This certificate program also focuses on communicating narratives regarding the underlying structure and patterns found within the data.

Requirements (18 credits):

- CS171 (Data Science Fundamentals in R)
- CS172 (Python for Data Analysis)
- CS272 (Machine Learning)
- Math271 (Applied Statistics with R)

Choose two of the following courses (6 credits)[1]:

- ASTR/PHYS 260 Computational Phys & Astron (3 credit)
- ASTR/PHYS 260L Computational Phys & Astron Lab (1 credit)
- ASTR 350 L Stellar Astrophysics Lab (2 credit)
- ASTR 351 L Galactic & Extragal Astrophys (2 credit)
- BIO 280 Biostatistics
- CHEM 431L Instrumental Analysis Lab
- CS 421 Database Systems Design
- CS 422 Database Analytics
- CS 435 Computer Security & Forensics
- CS 440 Artificial Intelligence
- CS 475 Data Visualization
- CS 480 Digital image Processing
- CS 485 Social Network Analysis
- GEOG 480 Geog Info Sys & Visualization
- GEOG 481 Advance Geo-Spatial Techniques
- GEOG 470 Remote Sensing
- GEOG 488 Advanced Geostatistics
- GEOL 445 GIS for Geology
- GEOL 450 Remote Sensing
- GEOL 472 Volcano Seismology & Geodesy
- MARE 250 Statistical Apps in Mar Sci
- Math 421 – Probability
- Math 422 - Mathematical Statistics

[1] In the future, this will be two courses from a single field to allow specialization.

1.4) College
College of Arts and Sciences (CAS) Natural Sciences

1.5) Department
Computer Science (CS)

2) Program Requirements

2.1) Minimum Number of Credits
18

2.2) Minimum GPA
2.0

2.3) Minimum Acceptable Grade
C

2.4) Program Notes

The program will be adding more elective courses as more departments submit data intensive courses for inclusion within the certificate.

3) Attachments

- Minutes-StaffMeeting-20170925.docx