College of San Mateo
Computer and Information Science Department

Advisory Board Meeting 2023

Zoom Meeting: TBA
Thursday, April 20, 2023
5:30 – 6:30 PM

Welcome and Introductions

Topics for discussion

- Recap from last year
- Recent changes to our programs
- Current CIS programs
- Future plans and questions we are trying to answer
- Open Discussion

Closing Remarks

Advisory Committee Meeting

Spring of 2023

CIS Full-time Faculty: Kamran Eftekhari & Hellen Pacheco

Director of Workforce Development: Alex Kramer

Dean of Business & Technology Division: Francisco Gamez

Recap

- Where we left off last year
  - What does the job market look like?
  - Is there demand for graduates with AS degrees in Data Science and AI?
  - Entry-level courses and programs can
    - Give students a overview of the field for future studies
    - Teach students tools that they can apply in the workplace
- Intel AI for Workforce
  - Main roles are for highly skilled workers but there's also growing demand for candidates who can demonstrate basic knowledge and understanding of AI in other roles.
    - In areas like operations, marketing, and sales, AI is frequently being implemented to automate tasks. It's important that candidates in tech-facing roles not only develop an understanding of AI tools Attended workshop last June
  - AI/ML program implemented at Maricopa County Comm. Colleges
    - https://www.maricopa.edu/degrees-certificates/science-technology-engineering-mathematics/artificial-intelligence-machine-learning-5897n-ccl

- Workshop in Data Science Education at UC Berkeley

CIS 124 Foundations of Data Science

- Based on popular UC Berkeley course **Data 8: Foundations of Data Science**
- Offered first time this Spring, 38 students
- Introduces the core concepts of data science, including statistical inference and computational thinking, while working with real data
- Teaches basic concepts of computer programming in Python
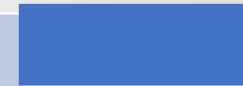- Students work on a series on assignments hosted on a JupyterHub

Recent Changes to CIS Programs

Applied Python Programming (NEW)

(12 units)

- CIS 117 Python Programming
- CIS 124 Foundations of Data Science
- CIS 502 Applied Python Programming

Applied Python Programming (Retiring)

(16 units)

- CIS 117 Python Programming
- CIS 501 Data Structures: Python
- CIS 502 Applied Python Programming
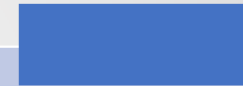- ~~CIS 503: Data Visualization and Text Analysis in Python~~

* CIS 501 will be offered for the first time this summer

Recent Changes to CIS Programs

Data Science & Big Data (14-15 units)

- CIS 133 NoSQL Databases
- CIS 140 Big Data Analytics
- CIS 364 From Data Warehousing to Big Data
- CIS 124 Foundations of Data Science or MATH 200 Elementary Probability and Statistics or PSYC 121 Basic Statistical Concepts

Data Science & Big Data (14-15 units)

- CIS 133 NoSQL Databases
- CIS 140 Big Data Analytics
- CIS 364 From Data Warehousing to Big Data
- MATH 200 Elementary Probability and Statistics or PSYC 121 Basic Statistical Concepts

Current CIS Programs

Associate in Science
(60 units)

- Computer and Information Science
- Computer Science Applications and Development
- Web and Mobile Applications

Certificate of Achievement
(30-35 units)

- Computer Science Applications and Development
- Web and Mobile Applications
- Enterprise Cybersecurity Professional
- DevOps

Certificate of Specialization
(under 16 units)

- Database Programming
- Data Science and Big Data
- Web Programming
- Web and Mobile App Development
- C++ Programming
- Java Programming
- Applied Python Programing
- Enterprise Cybersecurity
- Internet of Things

Associate of Science Degrees

Computer and Information Science

- Intro to Object Oriented Program Design
- **Programming Methods: Java or C++**
- **Data Structures: Java or C++**
- Calculus and Analytic Geometry I & II
- Composition and Reading
- Plus 4 or more units from CIS courses
- Plus 6 or more units from MATH and PHYS

Computer Science Applications and Development

- Intro to Computer and Information Science
- Intro to Object Oriented Program Design
- **Programming Methods: Java or C++**
- **Data Structures: Java or C++**
- Network and Digital Communications
- Plus 12-16 units from CIS courses

Web and Mobile Application

- Intro to Computer and Information Science OR Intro to Web Programming
- Android Programming OR iOS/Swift Programming
- JavaScript/Ajax
- Unix/Linux
- HTML5 & CSS
- Mobile Web App Development
- PHP
- Capstone Project
- Plus 9-12 units from CIS courses

Certificates of Specialization

- Database Programming
  - CIS 132 Introduction to Databases or CIS 133 NoSQL Databases
  - CIS 363 Enterprise Database Management
  - CIS 364 From Data Warehousing to Big Data

- Data Science and Big Data
  - CIS 133 NoSQL Databases
  - CIS 140 Big Data Analytics
  - CIS 364 From Data Warehousing to Big Data
  - CIS 124 Foundations of Data Science or MATH 200 Elementary Probability and Statistics or PSYC 121 Basic Statistical Concepts

- C++ Programming
  - CIS 278 Programming Methods: C++
  - CIS 279 Data Structures: C++

- Java Programming
  - CIS 255 Programming Methods: Java
  - CIS 256 Data Structures: Java

Certificates of Specialization

- Web Programming
    - CIS 114 JavaScript/Ajax Programming
    - CIS 127 HTML5 and CSS
    - CIS 129 Frameworks/Server-Side JavaScript
    - CIS 380 PHP Programming
- Web and Mobile App Development
    - CIS 114 JavaScript/Ajax Programming
    - CIS 127 HTML5 and CSS
    - CIS 128 Mobile Web App Development
    - CIS 137 iOS/Swift Programming or ~~CIS 135 Android Programming~~
- Applied Python Programing
    - CIS 117 Python Programming
    - CIS 124 Foundations of Data Science
    - CIS 502 Applied Python Programming
- Enterprise Cybersecurity
    - CIS 121 UNIX/Linux
    - CIS 151 Computer Networking
    - CIS 479 Computer and Network Security
    - CIS 482 Ethical Hacking
    - CIS 493 Cloud Security Fundamentals

Future Plans & Questions

- New hire

- Expand data science offerings?

- Design an introductory course in AI?
  - Maricopa Community Colleges AI program:
    - https://www.maricopa.edu/degrees-certificates/science-technology-engineering-mathematics/artificial-intelligence-machine-learning-5897n-ccl

- Any other suggestions?

AS-T Degree (Major Requirements)

Requirements to Transfer to Major in Computer Science	C-ID Descriptor	33 units
CIS 255 Programming Methods: Java CIS 278 Programming methods: C++	COMP 122	4 units
CIS 256 Data Structures: Java CIS 279 Data Structures: C++ CIS 501 Data Structures: Python	COMP 132	4 units
CIS 262 Discrete Mathematics for Computer Science	COMP 152	3 units
CIS 264 Computer Organization and Systems Programming	COMP 142	4 units
MATH 251 Calculus with Analytic Geometry I	MATH 210	5 units
MATH 252 Calculus with Analytic Geometry II	MATH 220	5 units
PHYS 250 Physics with Calculus I	PHYS 210	4 units
PHYS 260 Physics with Calculus II	PHYS 215	4 units
Total		33 units

Degrees and Certificates awarded in the last 5-years (Fall 2016 through Fall 2021)

CSM Computer & Information Science (CIS) Awards	Award Count	Percent
Associate of Science (A.S.) degree	**129**	**29%**
Computer & Information Science	89	20%
Computer Science Applications & Development	32	7%
Web & Mobile App Development	8	2%
Certificate of Achievement	**29**	**7%**
Computer Science Applications & Development	27	6%
Web & Mobile App Development	2	< 1%
Certificate of Specialization	**285**	**64%**
C++ Programming	81	18%
Data Science & Big Data	15	3%
Database Programming	14	3%
Development Operations	1	< 1%
Internet of Things Programming	7	2%
Java Programming	157	35%
Web & Mobile App Development	6	1%
Web Programming	4	1%
Grand Total	**443**	**100%**

Prepared on April 13, 2022

Current enrollment by major in CIS

This section includes CSM students enrolled in one or more courses during the spring 2022 term and declared a CIS program of study.

Spring 2022 CSM Computer & Information Science (CIS) Majors	Headcount	Percent
Computer & Information Science (Associate Degree)	138	59%
Computer Science Applications & Development (Associate Degree)	73	31%
Web & Mobile Application Development (Associate Degree)	7	3%
Computer Science Applications & Development (Certificate)	4	2%
Web & Mobile Application Development (Certificate)	3	1%
Data Science & Big Data (Certificate)	2	1%
Web Programming (Certificate)	2	1%
Database Programming (Certificate)	1	< 1%
Internet of Things Programming (Certificate)	1	< 1%
Java Programming (Certificate)	1	< 1%
Grand Total	**232**	**100%**

Prepared on April 13, 2022