



Computer Information Systems

Advisory Meeting

Tuesday, April 25, 2023; 3:30 – 4:30 p.m.

MINUTES

Presented by:

Alina Varona, Dean of Career Education and Workforce Development

Manny Kang, COM CIS Instructor, CIS Coordinator

Heather Rahman, COM, Career Education, Program Coordinator

Attended:

Cindy Reuter – Capstone, Technical Program Manager

Patrick Dorn - County of Marin, IT Manager

Kurt Jackson – AutoDesk, Operations Architect

Ray Kaupp – Regional Director, ICT (Information Communication Technology), BACCC (Bay Area Community College Consortium)

Victor Ramensky - President, Local Chapter of ISC2

Doug Kaye – Retired Software Executive, once CTO of start-up companies

Chelsey Perez - COM Career Internship and Service-Learning Coordinator

Araceli Nuñez - Marin County Office of Education, K-12 Coordinator

Ed Essick – COM instructor

Yvonne Ortiz – COM CIS Instructor

Matthew Howard – COM IT Supervisor

Patrick Ekoue-totou – COM V.P., IT

Ron Palmer – COM Automotive Instructor, Chair of Career Education

<p>Welcome and Introductions & Overview of CIS, Career Education</p>	<p>Alina Varona began the meeting with a welcoming. Everyone introduced themselves, and Alina gave an overview of Career Education and what program revitalization means. She explained that COM (College of Marin) is more diverse than the county in terms of socio-economic backgrounds, level of education, first generation education and student demographics.</p>
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Please refer to the corresponding presentation slides attached to this document.

	<p>The CIS (Computer Information Systems) program serves students with a variety of career and educational goals.</p>
<p>Open Discussion</p>	<p>The committee discussed general enrollment impact and education changes since the pandemic. It was stated that colleges are back in person with classes, appointments, and services. Generally, enrollment would be lower because the job market is good right now. The advantage of online classes is that they are easier to attend when students are also working. K-12 suffered greatly as students would attend classes for longer hours. However, at the college level, students attend for 1 – 2 hours typically any given day.</p> <p><i>The enrollments slide attests to the impact of enrollments comparing each academic year for Career Education programs at College of Marin.</i></p> <p>Regarding hiring/staffing concerns, including skills, trainings and qualifications required for information technology employment, the committee members offered the following:</p> <ul style="list-style-type: none"> -emphasized the importance of cloud computing -current priorities and needs for hiring – County of Marin IT dept is building paid internships for people who need more experience first. Program is sponsored by Department of Public Works. <p>ACTION: Patrick Dorn will send over internship info.</p> <ul style="list-style-type: none"> - Looking for experience, knowledge. Degrees are not as important sometimes. Know languages, cloud services, and products. Universal products include SAS that many companies use that would be helpful to know. Software engineers still need a degree in computer science. <p>-ACTION: Cindy Reuter will send a list of products/services that are good to know.</p>

-Victor Ramensky – security industry is not a direct path. Recommends having a certificate in cyber security as a goal. This program needs to also teach risk – skills that would be a plus when hiring, even at entry level help desk position, for example.

- Larger tech companies and corps are more involved in running their cloud services compared to smaller businesses.

-Kurt Jackson - Autodesk closed San Rafael offices because everyone works from home now. Post pandemic security is different because of WFH – focus not just on in-office network security but also security to cover workers remotely. Candidates should have outside experience or understanding of cloud technologies.

- ACTION: Victor offered to send list of things that he thinks is missing in the proposed curriculum

-Araceli Nuñez- From the K-12 side, San Marin High School and the College of Marin began an agreement between CIS 120, 160 AND 275 for the CISCO Networking Academy. For the Articulation by Exam, both the COM faculty (Dr. Kang) and San Marin High School instructors meet and work through both curriculums for alignment.

Kurt Jackson - When a company has new products or technical issues/upgrades, candidates will need a degree. The candidate would need critical thinking skills to think, research and test.

Software/skills mentioned by the committee as valuable:

- Azure
- KQL
- MySQL
- SAS
- SQL
- How to watch logs
- How to build scripts
- NetSuite
- Salesforce

	<ul style="list-style-type: none"> ○ Knowing methodologies, how we create products, how they are deployed/delivered ○ Risk: assessment, prevention, disaster recovery, virus software, permission patterns, access rules, digital signatures, trusted certificates, systems communications
<p>CIS Program Growth <i>Please refer to the presentation slides.</i></p>	<p>Manny Kang proceeded to describe what's currently offered for CIS students and proposed 2 new IT/Cyber Security certificates and an associate degree offering.</p> <p>-Feedback on proposed CIS programs:</p> <ul style="list-style-type: none"> - Web software and information security analyst are too different for single proposed certificate. Security systems need to be more in-depth and less broad. - Networking fundamentals and practices is good for security analysts, Python not so important. Suggestion to add something about analytics to the network and system administrator certificate. - A certificate is good for specific need/type of job, degree is good for tasks that may not be able to be matched directly with a learned task. Both valuable and useful. - Info security also needs knowledge of data - Names of courses should reflect the course teachings - The committee seemed to think the courses are mixed and too broad. Combining web software and information security analyst are 2 different things. Hardware and software courses do not need to be combined in a security certificate. <p>Manny stated the following are covered in the classes or will be:</p> <p>Windows 10 systems and networking, DNS dynamic, servers, files, networking devices, Cisco</p>

	<p>Networking and Comp TIA, permission security, cloud security, Google cloud, Amazon</p>
<p>Labor Market Information - <i>Please refer to the presentation slides.</i></p>	<p>Heather Rahman briefly spoke about the labor market data. It represents the Bay Area counties. It was sourced from Employment Development Department/Department of Labor, and it's based on tax filings and job postings. The demand is higher than supply.</p> <p>The committee asked who is currently hiring our students at the 2-year level. This is one of the most challenging questions to track and answer employment outcomes for COM and other community colleges. We only know what % of students were employed when they respond back through a survey 6 months after completion.</p>
<p>High School Connections <i>Please refer to the presentation slides.</i></p>	<p>Heather briefly announced which CIS courses are taught at San Marin High School through an Articulation by Exam agreement. High school to college pathways will be created once CIS completes the revitalization phase, but also will be taken into consideration in the creation and implementation of any changes to the program.</p>
<p>Summary, Wrap-up, Next Steps</p>	<p>The committee agreed that COM/CIS should share the class information for all classes comprising the new certificates and degree potential offerings, so they will be able to provide better assessments, feedback and support.</p> <p>Heather will follow up with the committee. We will plan another meeting in Fall 2023 after the summer break where relevant curriculum will be shared weeks before the meeting.</p>

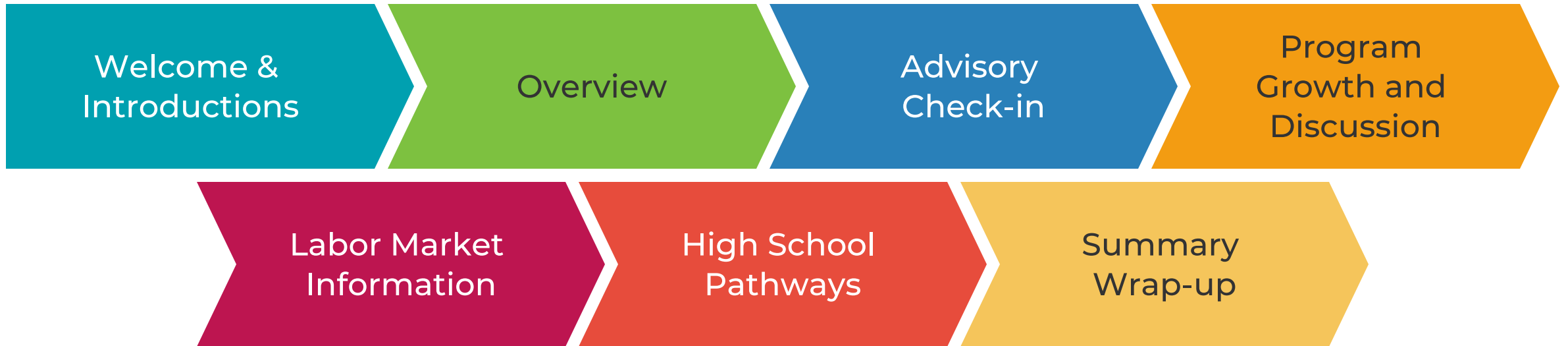


Computer Information Systems

Advisory Committee Meeting

Tuesday, April 25, 2022

AGENDA





Welcome!

and

Introductions

We'd like to learn a little about you...



Overview

Alina Varona

Dean of Career Education and Workforce Development

Overview of Career Education

About Computer Information Systems

What does Revitalization mean?

Overview of Career Education and Workforce Development

Prepare students with skills for 21st century jobs, careers, and the future of work

Degrees and Certificates

- **Create Pathways & Support Momentum**

Short Term Training and Workforce Development

- **Respond In-Time to Labor Market Needs and Connect to Employment**

Non Credit Education

- **Ladder and Bridge to Basic Skills, Work, and Credit**

2.1 million students at **116** colleges

[HTTPS://WWW.CCCCO.EDU/ABOUT-US/CHANCELLORS-OFFICE/DIVISIONS/WORKFORCE-AND-ECONOMIC-DEVELOPMENT](https://www.cccco.edu/about-us/chancellors-office/divisions/workforce-and-economic-development)

Career Education: Programs

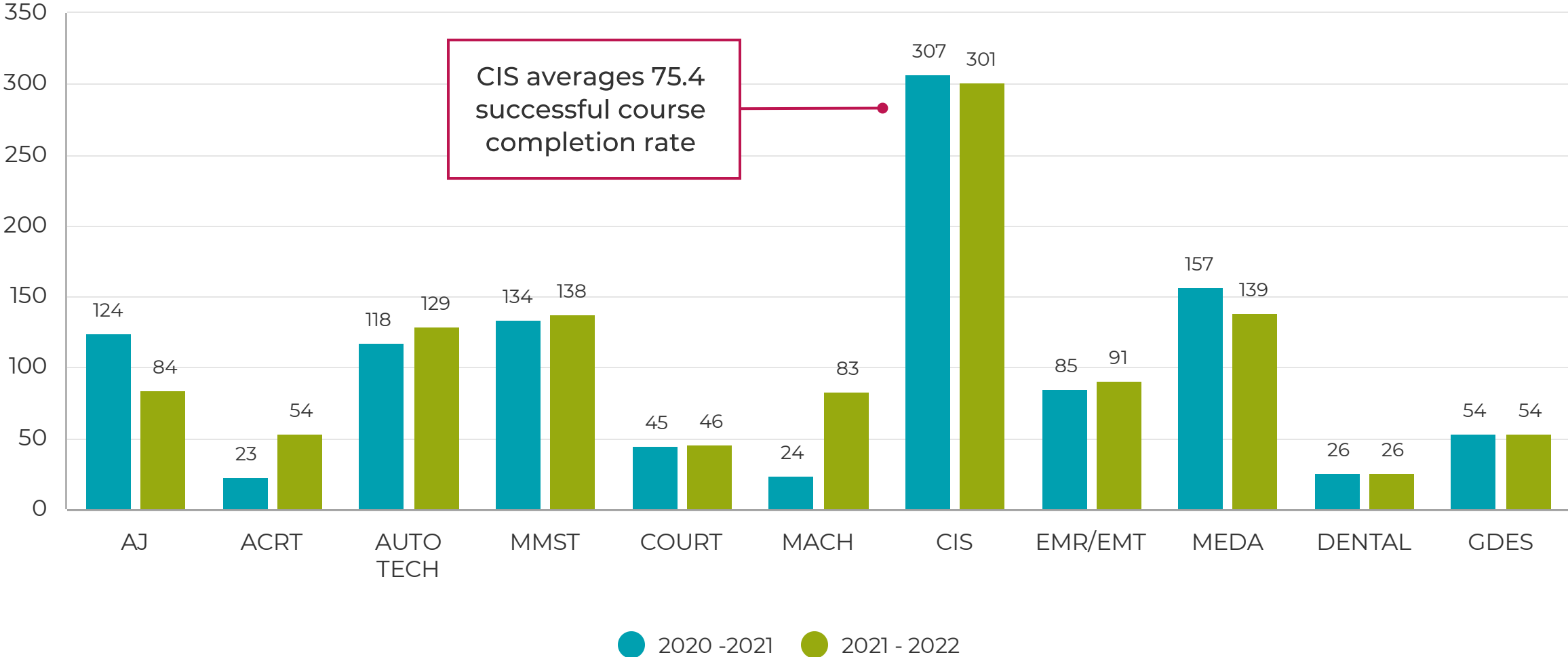
cte.marin.edu



- Administration of Justice
- Auto & Industrial
 - Auto Collision Repair; Auto Technology; Electronics; Machine & Metals
- Computers & Multimedia
 - Computer Information Systems;** Graphic Design; 3D, Video, Game Dev; Web Design and Development; MS Office Specialist Certification
- Court Reporting
- Health Sciences
 - Dental Assisting; Emergency Medical Technician Training; Medical Assisting, Public Safety Degree; FIRE Foundry Program; CNA/CHHA
- Organic Farming
- Education to Career (E2C)
 - Construction Program
 - CNA/CHHA - coming soon
 - Bus Coach Operator Apprenticeship - coming soon
- Summer Career Academies
 - High School Academies
- Short-Term Career Training Programs (12 Weeks)
 - Business Start-Up: online selling, accounting, office applications, social media marketing

Enrollments by Program

unduplicated headcount by program x 2 academic years

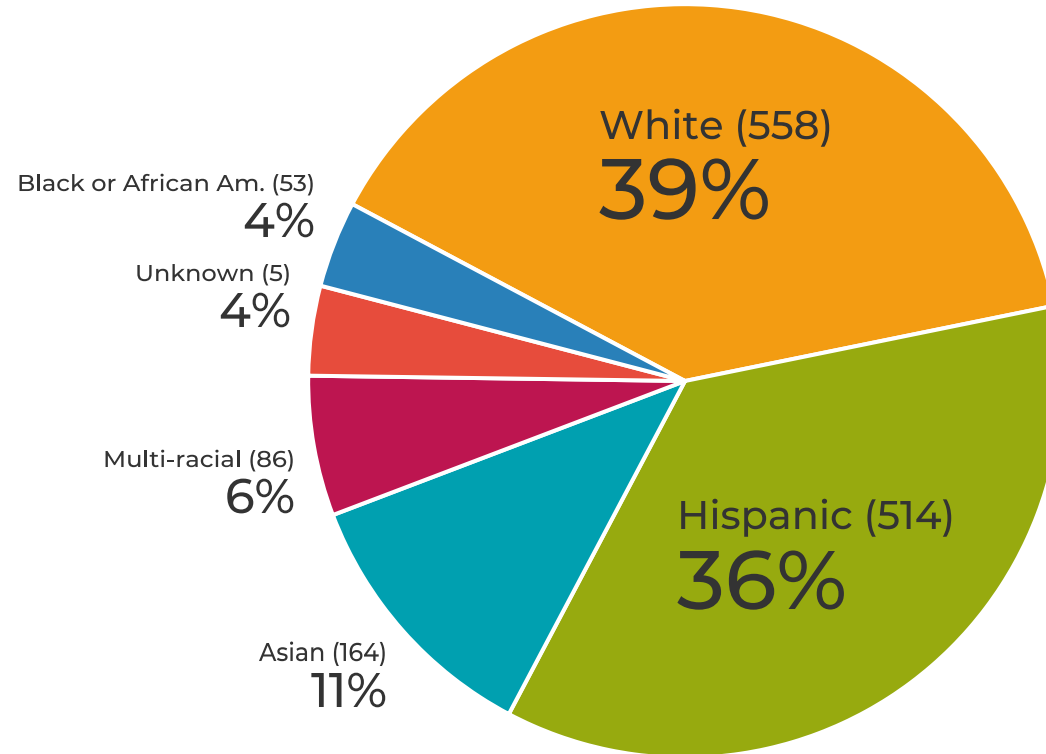


Average Student Demographics

Computer Information Systems

2019 - 2022

56% Female students
42% Male students
2% Unknown



COLLEGE OF MARIN CREDIT STUDENT CHARACTERISTICS

Gender: Male 39% Female 60%;
Median Age: 23

Race/Ethnicity:

Asian: 487 (7%)

Black/African American: 207 (3%)

Hispanic: 1,985 (30%)

Multi-racial: 408 (6%)

Native American: 14 (0.2%)

Native Hawaiian/Pacific Islander: 13 (0.2%)

White: 3,211 (48%)



Advisory Check-in

PRIORITIES AND CURRENT LANDSCAPE

Advisory Member Share Outs & Discussion

What has this last year looked like for your field?



Staffing and Recruiting

- What are your current priorities and needs for hiring?



Community Partnership & Impacts

- How should we best prepare our students to be qualified and competitive?



Other Key Items?

- What should we be aware of to support our future students?
- Potential technology, training, or emerging sectors?



Training & Professional Development

- Does your team need additional training?
- Are there professional development options needed for your industry?



About Revitalization and Computer Information Systems

AP 4022: PROGRAM REVITALIZATION

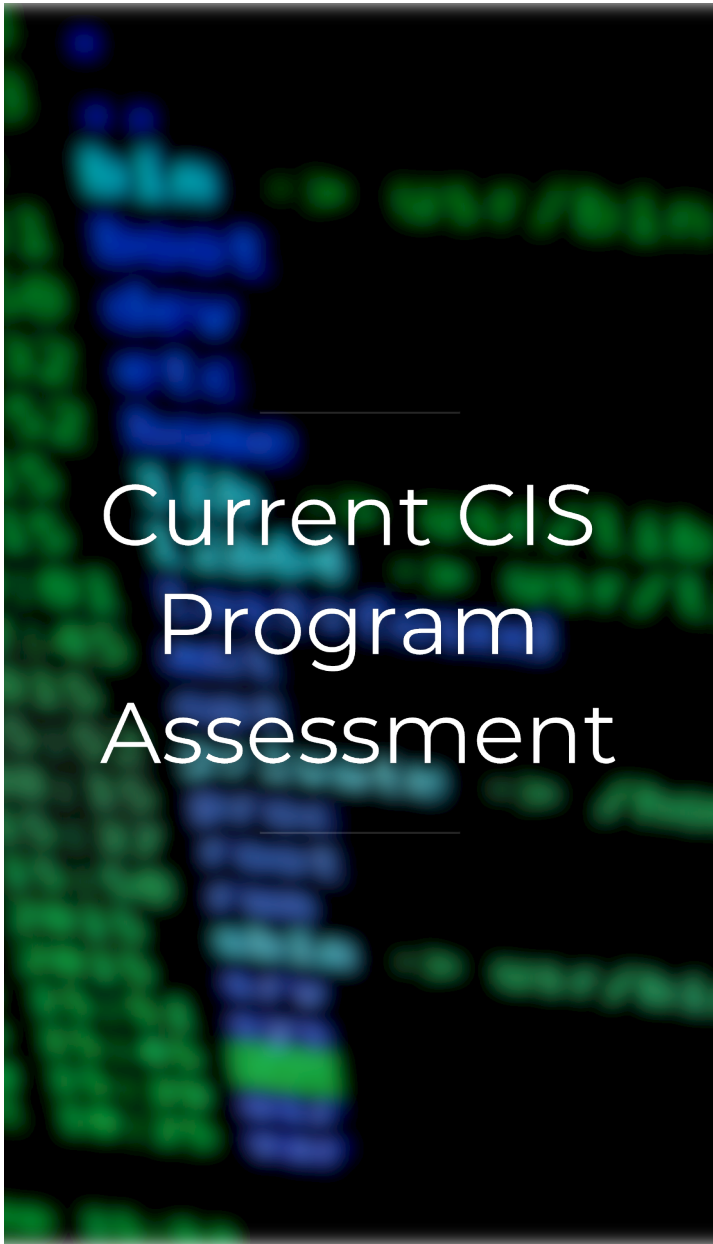
- * Identify the program's strengths, weaknesses, opportunities, and challenges Identify the program's strengths, weaknesses, opportunities, and challenges
- * Make specific recommendations for improvement
- * Include a list of measurable actions

Benefits of Program Revitalization

Redesigning a program to benefit students most!

- Provides a mechanism for comprehensive focus on curriculum and offerings.
- Centers on prolonged, meaningful inquiry that supports refined delivery model and student centered improvements.
- Creates opportunities to update offerings or build new degrees/certificates/courses.
- Allows us to understand who is served and who might be served better.
- Involves peers and experts to support how we enhance, reimagine, and grow programs.





Current CIS Program Assessment

STRENGTHS

- Courses are online
- Flexible offerings - onsite and online
- Increase in student enrollment for online offerings
- Dedicated faculty

WEAKNESSES

- Incongruous offerings
- Redundancy and replication across related disciplines
- Very low student enrollment in some areas
- Out of date curriculum

OPPORTUNITIES

- Updating curriculum to align with industry standards
- Stackable certificates
- Connections with other programs
- Online demand

CHALLENGES

- One discipline with multiple disciplines
- Inherited organizational structure
- RE-imagining a new model
- Alignment of curriculum

CIS/Information Technology

Current CIS Degree and Certificate of Achievement Offerings:

- Associate's of Science in Computer Information Systems (60 units total, 21 units concentrated)
- Certificate Achievement in Computer Information Systems (21 units total)

Potentially NEW Degree Offerings:

- **Cyber Security AS Degree (22 - 23 units)** - combining:
 - Network and System Administrator Certificate (14 units)
 - Web Software and Information Security Analyst (14 units)
- **Data Analytics AS-T Degree (22 - 23 units)**

CIS Degree

A.S. in Computer Information Systems (Total 21)

Complete all of the following

1. Required Core Courses (Total 13.5)

Complete the following number of credits: 13.5

CIS102 - Beginning MS Word 1.5

CIS103 - Intermediate MS Word 1.5

CIS110 - Introduction to Computer Information Systems 3

CIS113 - MS PowerPoint Presentations and Publications 1.5

CIS117 - Introduction to MS Access Database Design 1.5

CIS118 - Introduction to MS Excel Spreadsheet Design 1.5

CIS127 - Intermediate MS Access Database Design 1.5

CIS128 - Intermediate MS Excel Spreadsheet Design 1.5

2. Electives (select a minimum of 7.5 units) (Total 7.5)

Complete the following number of credits: 7.5

CIS100 - Computer Keyboarding 1

CIS101 - Introduction to Personal Computers and Operating Systems 1.5

CIS111 - Google Apps for Business and Personal Use 2

CIS120 - IT Essentials 2

CIS126 - Introduction to Windows 1.5

CIS137 - Advanced Database Design 1.5

CIS141 - Introduction to HTML Programming 1.5

CIS142 - Intermediate HTML and Scripting 1.5

CIS155A - Systems and Network Administration 1.5

CIS215 - Visual BASIC Programming 3.5

CIS237 - Introduction to SQL Programming 1.5

CIS275 - Networking Fundamentals and Practices 3



Program Growth

Manny Kang

Doctor of Information Technology and Instructor

CIS Certificates/Degrees

What is Computer Information Systems (CIS)?

Today's Focus: Technical and Networking

- Courses provide “hands-on” computer use that emphasizes the development of the skills necessary for employment and personal use of computers.
- Current curriculum touches upon:

Languages/Applications	Courses also cover:
JAVA	Cascading Screen Style (CSS)
JavaScript	Content Management Systems
HTML	Integrated Drive Electronics
PYTHON	SEO
SQL	Security
BASIC	
WordPress	

Building a New Program

2 IT/Cyber Security Certificates

Combine to
create a 3rd
certificate
offering?
25 units

Network and System Administrator (14 units total)

- CIS 110 - Information Systems, Computer Information (3 units) (articulated)
- CIS 126 - Introduction to Windows (2 units)
- CIS 155 - Systems and Network Administration (3 units)
- CIS 275 - Networking Fundamentals and Practices (3 units)
- NEW - Unix System Admin. (3 units) - to be developed

Web Software and Information Security Analyst (14 units total)

- CIS 110 - Information Systems, Computer Information (3 units) (articulated)
- COMP 138 - Introduction to Programming - Python (4 units)
- CIS 120 - IT Essentials: PC Hardware and Software (4 units)
- CIS 160 - Introduction to Information Systems Security (3 units)

New Program Possibility

CIS/Information Technology-

Cyber Security Stackable Certificates -->AS Degree

Required Core Courses (14 units):

- **CIS 110 - Business Information Systems, Computer Information (3 units) (articulated)**
- CIS 126 - Introduction to Windows (2 units)
- CIS 155 - Systems and Network Administration (3 units)
- CIS 275 - Computer Network Fundamentals (3 units)
- NEW - Unix System Admin. (3 units) - to be developed

OR Required Core Courses (14 units)

- **CIS 110 - Information Systems, Computer Information (3 units) (articulated)**
- COMP 138 - Introduction to Programming - Python (4 units)
- CIS 120 - IT Essentials: PC Hardware and Software (4 units)
- CIS 160 - Introduction to Information Systems Security (3 units)

PLUS - Select 6 units or 2 courses:

- NEW - Introduction to Systems Analysis and Design (3 units)
- NEW - Introduction to Cybersecurity: Ethical Hacking (3 units)
- NEW - Cloud Computing and Virtualization (3 units)
- CIS 237 - Intro to Data base Management Systems (3 units) - *To Be Updated*

Discussion

- Many of the classes for this degree do not articulate to transfer to a 4-year university. Should we explore an A.S. Cyber Security Degree?
- Are students employable with an Associate's degree or Certificate in IT Cyber Security?
- What jobs can students pursue once completing a Cyber Security certificate or degree?
- What skills and key courses are vital for a Cyber Security career?
- What recommendations or edits do you suggest?
- Do you approve the addition of this Cyber Security stackable certificate?

5-year
plan

New Program Upon Approval

CIS/Information Technology-

Data Analytics AS-T Degree (22 - 23 units)

Required Core Courses (15 units):

- NEW - Foundations of Data Analytics (3 units)
- NEW - Intro to SQL Databases and NoSQL (3 units)
- CIS 110 - Introduction to CIS (3 units)
- CIS 138 - Intro to Python Programming Concepts and Methodologies (3 units)
- NEW - Data Visualization (3 units)

AND Select 6 units or 2 courses:

- CIS 118 - Intermediate Excel (2 units)
- NEW - Introduction to Unix/Linux (3 units)
- New - Machine Learning (3 units)
- New - Big Data Analytics and Management (3 units)
- New - Privacy, Security, Ethics (3 units)
- CIS 160 - Information Security (3 units)

AND Select 3 - 4 units or 1 course:

- STAT 115 - Introduction to Statistics (3 units)
- Math 114 - Finite Mathematics (3 units)
- Math 121 - Business Calculus (3 units)
- Math 123 - Single Variable Calculus I Early Transcendentals (4 units)



Labor Market Information

Heather Rahman

Program Coordinator, Career Education

Regional Counties:
Marin, Napa, Sonoma,
Solano, San Francisco
and San Mateo

Regional Labor Market Information

Sources: labormarketinfo.edd.ca.gov
and O*Net Online

Occupations (Typical Educational Requirements)	Alternative Job Titles	Occupational Growth	Average Annual Earnings	Annual Job Openings projected through 2028
Computer Systems Analysts (Bachelor's degree)	Applications Analyst, Business Systems Analyst, ISA, IT Analyst, Systems Analyst	11%	\$109,696	1,438
Information Security Analysts (Bachelor's degree)	Information Security Officer, ISSO, IT Specialist	8 - 10%	\$125,091	235
Computer and Information Systems Managers (Bachelor's degree)	Data Processing Manager, Information Systems Manager (IS Manager), Information Systems Supervisor (IS Supervisor), Information	11%	\$176,310	1,955

Data Analytics Related Occupations

Descriptions

- **Data Scientists**

Design, model, or implement corporate data warehousing activities. Program and configure warehouses of database information and provide support to warehouse users.

- **Business Intelligence Analyst**

In 76% of job postings a Bachelor's degree is required. Produce financial and market intelligence by querying data repositories and generating periodic reports. Devise methods for identifying data patterns and trends in available information sources.

- **Data Warehousing Specialists**

In 78% of job postings a Bachelor's degree is required. Design, model, or implement corporate data warehousing activities. Program and configure warehouses of database information and provide support to warehouse users.

Data Analytics - **Regional** Labor Market

Source: EMSI

Occupations	Alternative Job Titles	Occupational Growth	Average Annual Earnings Regionally	Annual Job Openings projected
Data Scientists	Principal Data Scientist, Product Data Scientist, Applied Data Scientist, Data Analytics Specialist	32%	\$151,000	1,103
Business Intelligence Analyst	Business Intelligence Analyst, Competitive Intelligence Analyst, Data Analyst, Intelligence Analyst, Market Intelligence Analyst, Market Intelligence Consultant, Strategic Business and Technology Intelligence Consultant, Strategist	32%	\$151,000	1,103
Data Warehousing Specialist	Data Warehouse Analyst, Data Warehouse Solution Architect	18%	\$175,000	278

What is the Supply in our Region?



Average # completions with a degree or certificate in related educational sector:

- **116** - Office Technology/Applications at Napa, Santa Rosa and Solano
- **29** - Information Technology, General at Santa Rosa on average
- **2** - Computer Information Systems at COM
- **12** Computer Networking (SRJC CISCO Networking)
- **16** - Other Information Technology at SRJC

Total of **175 students** on average complete in our area. None are data analytics nor cyber security concentrated programs.



High School Connections

Building Pathways

Currently working with local high schools to bridge their classes to College of Marin

San Marin High School:

- **CISCO** - IT Essentials, Networks, Switching and Routing
 - **Articulation by Exam courses**
 - CIS 120 - Information Tecnology Essentials
 - CIS 160 - Intro to Information Systems Security
 - CIS 275 - Networking Fundamentals and Practices
 - College of Marin counseling embedded at the local high schools
- A pathway map to be develop after revitalization for CIS

Career
Education

COLLEGE OF
MARIN

Computer Information Systems

CAREERS / ANNUAL AVERAGE INCOME

- Network and Computer Systems Administration - \$95,442
- Information Security Analysts - \$107,250
- Business Operations Specialists - \$63,000
- Database Administrators - \$79,329
- Executive Administration Assistants - \$68,315

PROGRAM OFFERINGS

- Associate in Science Degree in Computer Information Systems (60.0 Units)
- Certificate of Achievement, Computer Information Systems (13.5 Units)
- Skills Certificate, Microsoft Office (10.5 units)
- Skills Certificate, Microsoft Office Database Specialist (6.0 Units)

FALL CORE CLASSES

- CIS103 - Intermediate MS Word (1.5 units, CSU)
- CIS110 - Intro to Computer Information Systems (3 units, CSU/UC)
- CIS113 - MS PowerPoint Presentations and Publications (1.5 units, CSU)
- CIS118 - Intro to MS Excel Spreadsheet Design (1.5 units, CSU)
- CIS 128 - Intermediate MS Excel Spreadsheet Design (1.5 units, CSU)

SPRING CORE CLASSES

- CIS102 - Beginning MS Word (1.5 units, CSU)
- CIS117 - Intro to MS Access Database Design (1.5 units, CSU)
- CIS127 - Intermediate MS Access Database Design (1.5 units, CSU)
- + additional 7.5 units from a selected list

* Course scheduling is subject to change. Please check with a counselor to determine your educational plan. Classes are located at IVC, KTD and online.

TO GET STARTED

Course Scheduling www1.marin.edu/schedule

Enrollment Services, Financial Aid and Registration es.marin.edu

High School student programs and enrollment information www1.marin.edu/high-school-programs

PROGRAM CONTACT

Manny Kang
MaKang@marin.edu
(415) 457-8811 x8200

PROGRAM ONLINE

academics.marin.edu/program/mach

COUNSELING

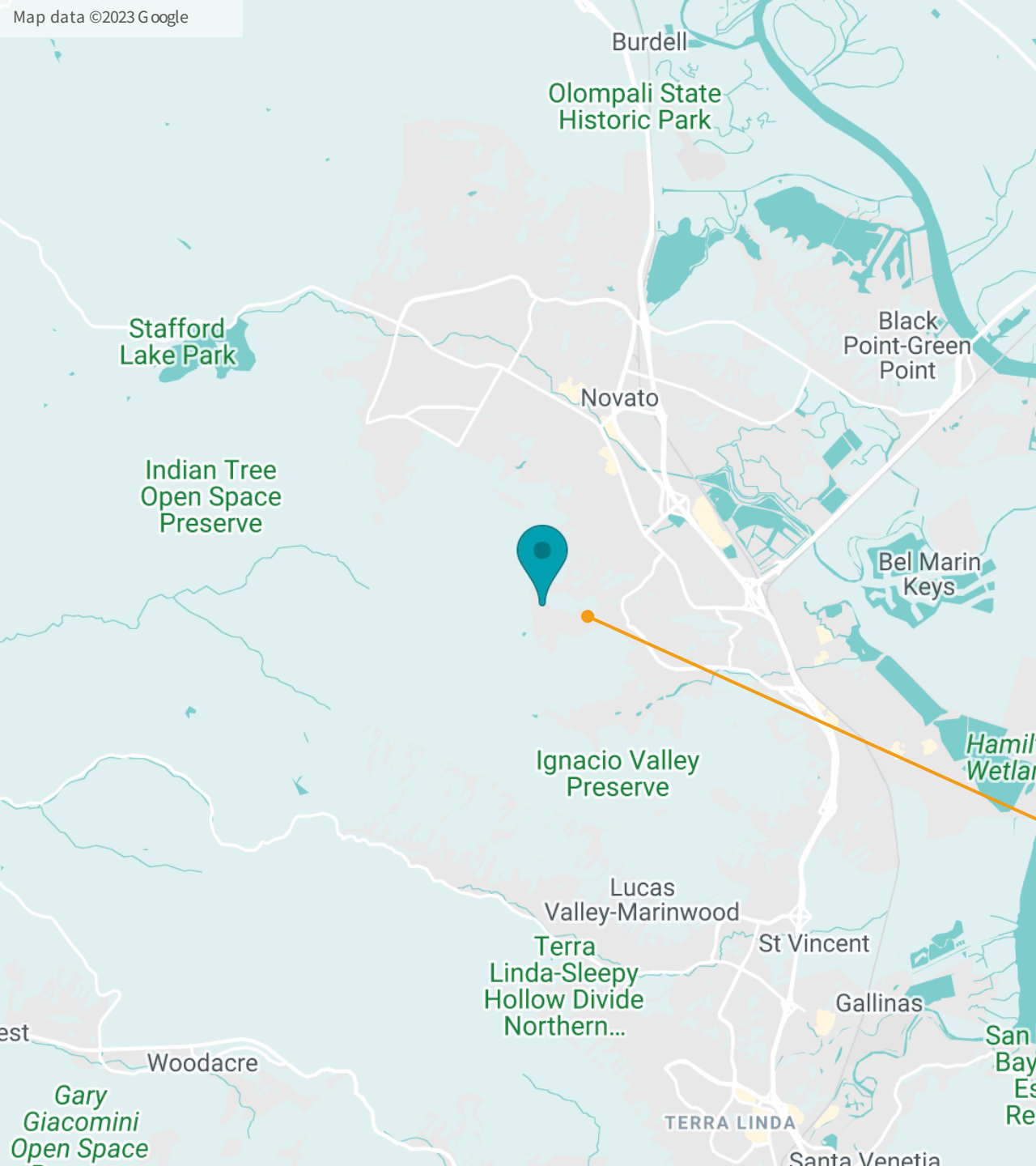
(415) 485-9432
ss.marin.edu/counseling



Summary/Wrap-up

Thoughts? **Questions?**

NEXT STEPS



Thank You!

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- @ Heather J Rahman <hrahman@marin.edu>

College of Marin, Indian Valley Campus