

**STEM Programs of Study**

<b>STEM Foundational Courses</b> <b>7<sup>th</sup>-8<sup>th</sup> Grade</b>
Automation and Robotics (399110)
Design and Modeling (399120)
Magic of Electrons (399130)
Science of Technology (399140)
Career Medical Detectives (399180)
Flight and Space (399250)
Green Architecture (399300)
Energy and the Environment (399310)
Intro to Engineering and Technology Education (ETE I) (399150)
Fundamentals of Technology and Engineering (ETE II) (399160)

**Cluster: Architecture and Construction****Pathway: Design and Pre-Construction**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Architectural CAD	Drafting and Design (494700)	Architectural/CAD I (494710)	1. Architectural/CAD II (494730) 2. Youth Apprenticeship (490300) 3. Career Practicum (490690)
Industry Recognized Certifications: 1. Autodesk Certified User (ACU) Revit 2. Solid Edge Associate			

**Cluster: Architecture and Construction****Pathway: Design and Pre-Construction**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Engineering CAD	Drafting and Design (494700)	Engineering/CAD I (494740)	1. Engineering/CAD II (494760) 2. Youth Apprenticeship (490300) 3. Career Practicum (490690)
Industry Recognized Certifications: 1. Autodesk Certified User (ACU) Inventor 2. AutoCAD Certified User 3. Solid Edge Associate 4. Certified Solidworks Associate (CSWA) 5. MakerBot Certification 6. Certified OnShape Associate			

**Cluster: Health Sciences****Pathway: Biotechnology Research and Development**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Biomedical Sciences	Principles of Biomedical Sciences (PBS) (495000)	Human Body Systems (HBS) (495010)	1. Medical Interventions (MI) (495020) 2. Youth Apprenticeship (490310) 3. Career Practicum (490700)
Industry Recognized Certifications: 1. Biotechnician Assistant Credentialing Exam (B.A.C.E.)			

**Cluster: Information Technology****Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Artificial Intelligence and Machine Learning	Artificial Intelligence and Machine Learning – Year 1 (465410)  or  College Board AP Computer Science Principles (565030)	Artificial Intelligence and Machine Learning – Year 2 (465420)	<ol style="list-style-type: none"> <li>1. Advanced Artificial Intelligence and Machine Learning (465430)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
<p>Industry Recognized Certifications:</p> <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> <li>9. <a href="#">Tensor Flow</a></li> <li>10. <a href="#">AWS Certified Machine Learning</a></li> </ol>			

**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Computer Engineering	Computer Engineering – Year 1 (465470)  or  College Board AP Computer Science Principles (565030)	Computer Engineering – Year 2 (465480)	<ol style="list-style-type: none"> <li>1. Advanced Computer Engineering (465490)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> </ol>			

**Cluster: Information Technology****Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Cybersecurity	Cybersecurity – Year 1 (465270)  or  College Board AP Computer Science Principles (565030)	Cybersecurity – Year 2 (465280)	<ol style="list-style-type: none"> <li>1. Advanced Cybersecurity (465290)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
<p>Industry Recognized Certifications:</p> <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> <li>9. <a href="#">CEH Certified Ethical Hacker</a></li> <li>10. <a href="#">CompTIA PenTest+</a></li> </ol>			

**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Data Science	Data Science – Year 1 (465710)  or  College Board AP Computer Science Principles (565030)	Data Science – Year 2 (465720)	<ol style="list-style-type: none"> <li>1. Advanced Data Science (465730)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> <li>9. <a href="#">Professional Data Engineer</a></li> <li>10. <a href="#">AWS Certified Data Analytics</a></li> <li>11. <a href="#">Data Science Certification</a></li> </ol>			

**Cluster: Information Technology****Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Game Development and Design	Game Development and Design – Year 1 (465670)  or  College Board AP Computer Science Principles (565030)	Game Development and Design – Year 2 (465680)	<ol style="list-style-type: none"> <li>Advanced Game Development and Design (465690)</li> <li>Computer Science Independent Study (465930)</li> <li>Computer Science Internship (465940)</li> <li>CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>

## Industry Recognized Certifications:

- [PCAP - Certified Associate in Python Programming](#)
- [CLA – C Programming Language Certified Associate](#)
- [CPA – C++ Certified Associate Programmer](#)
- [Java SE 8 Programmer Certification](#)
- [CJSD - Certified JavaScript Developer](#)
- [CompTIA A+](#)
- [CompTIA Network+](#)
- [CompTIA Security+](#)
- [Associate Android Developer](#)
- [Unity Certified User: Programmer](#)
- [Unity Certified User: VR](#)
- [Unity Certified User: Artist](#)
- [Swift Certification Level 1](#)

**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Mobile Application Development	Mobile Application Development – Year 1 (465370)  or  College Board AP Computer Science Principles (565030)	Mobile Application Development – Year 2 (465380)	<ol style="list-style-type: none"> <li>1. Advanced Mobile Application Development (465390)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
<p>Industry Recognized Certifications:</p> <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> <li>9. <a href="#">Associate Android Developer</a></li> <li>10. <a href="#">Swift Certification Level 1</a></li> </ol>			

**Cluster: Information Technology****Pathway: Network Systems**

Program of Study	Level One	Level Two	Level Three
Computer Science: Networking	Networking – Year 1 (465170)  or  College Board AP Computer Science Principles (565030)	Networking – Year 2 (465180)	<ol style="list-style-type: none"> <li>1. Advanced Networking (465190)</li> <li>2. Computer Science Independent Study (465930)</li> <li>3. Computer Science Internship (465940)</li> <li>4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>

**Industry Recognized Certifications:**

1. [PCAP - Certified Associate in Python Programming](#)
2. [CLA – C Programming Language Certified Associate](#)
3. [CPA – C++ Certified Associate Programmer](#)
4. [Java SE 8 Programmer Certification](#)
5. [CJSD - Certified JavaScript Developer](#)
6. [CompTIA A+](#)
7. [CompTIA Network+](#)
8. [CompTIA Security+](#)
9. Cisco Certified Entry Network Tech (CCENT)
10. CompTIA Network +
11. CompTIA Cloud+
12. CompTIA Linux+
13. CompTIA IT Fundamentals
14. Cisco IT Essentials PC Hardware & Software Certification
15. Cisco Certified Network Associate (CCNA)



**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Programming	Programming – Year 1 (465070)  or  College Board AP Computer Science Principles (565030)	Programming – Year 2 (465080)  or  College Board AP Computer Science A (565130)*  <i>*College Board AP Computer Science A (565130) can be used to meet the requirements for Level Two OR Level Three in the Computer Science: Programming program of study, but not both.</i>	<ol style="list-style-type: none"> <li>1. Advanced Programming (465090)</li> <li>2. International Baccalaureate (IB) Computer Science SL (565230)</li> <li>3. International Baccalaureate (IB) Computer Science HL (565330)</li> <li>4. College Board AP Computer Science A (565130)</li> <li>5. Computer Science Independent Study (465930)</li> <li>6. Computer Science Internship (465940)</li> <li>7. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>8. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>9. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> <li>9. <a href="#">Associate Android Developer</a></li> <li>10. <a href="#">Swift Certification Level 1</a></li> </ol>			

**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
Computer Science: Robotics	Robotics – Year 1 (465570)  Or  College Board AP Computer Science Principles (565030)	Robotics – Year 2 (465580)	1. Advanced Robotics (465590) 2. Computer Science Independent Study (465930) 3. Computer Science Internship (465940) 4. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990) 5. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890) 6. Career Practicum – Computer Science (465780, 465790, 465880, 465890)
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. <a href="#">PCAP - Certified Associate in Python Programming</a></li> <li>2. <a href="#">CLA – C Programming Language Certified Associate</a></li> <li>3. <a href="#">CPA – C++ Certified Associate Programmer</a></li> <li>4. <a href="#">Java SE 8 Programmer Certification</a></li> <li>5. <a href="#">CJSD - Certified JavaScript Developer</a></li> <li>6. <a href="#">CompTIA A+</a></li> <li>7. <a href="#">CompTIA Network+</a></li> <li>8. <a href="#">CompTIA Security+</a></li> </ol>			

**Cluster: Information Technology**  
**Pathway: Programming & Software Development**

Program of Study	Level One	Level Two	Level Three
ASU UPSkill: Coding with Swift All three UPSkill Courses are 9-week courses.	UpSkill Introduction to Coding with Swift Concurrent Credit (565910)	UpSkill Intermediate Coding with Swift Concurrent Credit (565920)	<ol style="list-style-type: none"> <li>1. UpSkill Advanced Studio in Swift Coding (Weighted Concurrent Credit 565810)</li> <li>2. Independent Study for Swift certification (465910)</li> <li>3. Advanced Programming (465090)</li> <li>4. Computer Science Independent Study (465930)</li> <li>5. Computer Science Internship (465940)</li> <li>6. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990)</li> <li>7. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890)</li> <li>8. Career Practicum – Computer Science (465780, 465790, 465880, 465890)</li> </ol>
Industry Recognized Certifications: 1. <a href="#">Swift Certification Level 1</a>			

**Cluster: Information Technology**  
**Pathway: Web & Digital Communications**

Program of Study	Level One	Level Two	Level Three
Website Development	Web Technologies (492670)	Mobile Application Development – Year 1 (465370)  or  Programming – Year 1 (465070)  or  College Board AP Computer Science Principles (565030)	1. Mobile Application Development – Year 2 (465380) 2. Advanced Programming (465090) 3. Computer Science Independent Study (465930) 4. Computer Science Internship (465940) 5. CS Concurrent Credit (565910, 565920, 565930, 565940, 565950, 565960, 565970, 565980, 565990) 6. CS Weighted Concurrent Credit (565810, 565820, 565830, 565840, 565850, 565860, 565870, 565880, 565890) 7. Career Practicum – Computer Science (465780, 465790, 465880, 465890)
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. Microsoft Technology Associate Software Development Fundamentals</li> <li>2. Microsoft Technology Mobility and Device Fundamentals</li> <li>3. Swift Certification Level 1</li> <li>4. Associate Android Developer</li> <li>5. Adobe Certified Associate – Web Communication – Dreamweaver</li> <li>6. <a href="#">JavaScript Certification W3</a></li> <li>7. <a href="#">Front End Certification</a></li> <li>8. <a href="#">CJSD - Certified JavaScript Developer</a></li> </ol>			

**Cluster: STEM (Science, Technology, Engineering, and Mathematics)****Pathway: Engineering and Technology**

Program of Study	Level One	Level Two	Level Three
Unmanned Aerial Systems	Unmanned Aerial Systems (UAS) I (490160)	Unmanned Aerial Systems (UAS) II (490170)	<ol style="list-style-type: none"> <li>1. Unmanned Aerial Systems (UAS) III (490180)</li> <li>2. Unmanned Aerial Systems (UAS) Flex Course (490150)</li> <li>3. Civil Engineering and Architecture (CEA) (495440)</li> <li>4. Computer-Integrated Manufacturing (CIM) (495450)</li> <li>5. Digital Electronics (DE) (495460)</li> <li>6. Youth Apprenticeship (490330)</li> <li>7. Career Practicum (490720)</li> </ol>
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. FAA Part 107 Licensure</li> <li>2. ArcGIS Desktop Entry Certification</li> </ol>			

**Cluster: STEM (Science, Technology, Engineering, and Mathematics)****Pathway: Engineering and Technology**

Program of Study	Level One	Level Two	Level Three
Automation and Robotics Technology	Automation and Robotics Technology 1 (490390)	Automation and Robotics Technology 2 (490400)	<ol style="list-style-type: none"> <li>1. Automation and Robotics Technology 3 (490410)</li> <li>2. Youth Apprenticeship (490330)</li> <li>3. Career Practicum (490710)</li> </ol>
Industry Recognized Certifications: <ol style="list-style-type: none"> <li>1. ABB Robotics</li> <li>2. FANUC Robotics</li> </ol>			

**Cluster: STEM (Science, Technology, Engineering, and Mathematics)****Pathway: Engineering and Technology**

Program of Study	Level One	Level Two	Level Three
Pre-Engineering	Introduction to Engineering Design (IED) (495480)  or  Innovations in Science and Technology I (493960)	Principles of Engineering (POE) (495490)  or  Innovations in Science and Technology II (493970)	<ol style="list-style-type: none"> <li>1. Aerospace Engineering (AE) (494980)</li> <li>2. Civil Engineering and Architecture (CEA) (495440)</li> <li>3. Computer-Integrated Manufacturing (CIM) (495450)</li> <li>4. Digital Electronics (DE) (495460)</li> <li>5. Engineering Design and Development (495470)</li> <li>6. One full credit (2 courses) of AR Approved Computer Science (course codes may vary)</li> <li>7. Youth Apprenticeship (490330)</li> <li>8. Career Practicum (490720)</li> <li>9. Innovations in Science and Technology III (493980)</li> </ol>
<b>Industry Recognized Certifications:</b> <ol style="list-style-type: none"> <li>1. Autodesk Certified User (ACU) Inventor</li> <li>2. Autodesk Certified User (ACU) Revit</li> <li>3. CLAD: Certified LabVIEW Associate Developer</li> <li>4. Solid Edge Certified Associate</li> <li>5. MakerBot Certification</li> <li>6. Certified OnShape Associate</li> </ol>			

The following certifications are approved for use across all STEM programs of study:

- Career Readiness Certificate
- Digital Literacy
- EverFi Financial Literacy
- All Microsoft MOS and MTA

**Updates:****10/12/2020**

- Fixed IB Computer Science Course Codes: (465XXX to 565XXX)

**12/4/2020**

- Updated CS PoS with CS YA and CP course codes

**1/12/2021**

- Added Certified OnShape Associate certification to Engineering CAD and Pre-Engineering PoS

**3/16/2021**

- **Computer Science PoS Updates:**
  - o All CS PoS Updated
  - o Computer Engineering, AI/ML, Data Science PoS Added
  - o CS certification lists updated
- Formatting changes