

**Newport-Mesa Unified School District**  
**Office of Secondary Curriculum and Instruction**  
**High School Course of Study**

|                              |                                                                                                                          |                                                     |   |                           |                                                         |             |  |                        |                             |           |  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---|---------------------------|---------------------------------------------------------|-------------|--|------------------------|-----------------------------|-----------|--|
| Course Title                 |                                                                                                                          | Mathematics, Engineering, Science Achievement 2     |   |                           |                                                         | Course Code |  | K0372-373              |                             |           |  |
| Transcript Title:            |                                                                                                                          | MESA 2AB                                            |   | Grades Levels:            |                                                         | 10-12       |  | Board Adoption Date:   |                             | 6/09/2020 |  |
| Content Area:                |                                                                                                                          | Interdisciplinary Elective                          |   | GPA Scale:                |                                                         | 4.0         |  | Date Course Submitted: |                             | 3-6-20    |  |
| Credential Required:         |                                                                                                                          | Single Subject Secondary Math or Science Credential |   | Graduation Subject Areas: |                                                         | Electives   |  | CALPADS Code:          |                             | 9233      |  |
| UC/CSU “A-G” Area Approvals: |                                                                                                                          |                                                     | g |                           | School Site/person that wrote and submitted the course: |             |  |                        | Early College High School – |           |  |
| Recommend Skills:            | Algebra 1 (Math I) & MESA 1                                                                                              |                                                     |   |                           |                                                         |             |  |                        |                             |           |  |
| Next course(s):              | MESA 3                                                                                                                   |                                                     |   |                           |                                                         |             |  |                        |                             |           |  |
| Textbook to be used:         | MESA is not a textbook based course. There are multiple resources the teacher will use as indicated in the unit studies. |                                                     |   |                           |                                                         |             |  |                        |                             |           |  |

**COURSE DESCRIPTION** (catalog summary):

*In this year-long college-preparatory course, students will explore robotics, computer programming and coding. Working in teams, students complete a series of design challenges (hands-on projects) such as: VEX robotics, ARDUINO controlled devices, SCRATCH programs, web page design and JAVA based applications and programs. These projects promote critical thinking, communication, collaboration, creativity and provide a foundation for data collection, analysis, reflection, presentations and technical writing skills. Each unit introduces students to the real world application of the skills and principles and highlights how they relate to possible careers in STEM fields.*

**GOALS** (expected performance outcomes for students):

*MESA is funded by the State of California and is administered by the University of California, with funding allocated from UC and the California Community College Chancellor's Office. MESA also pursues additional financial and resource support from private and public sources. MESA functions with a partnership of all the major public and private education systems in California.*

*MESA helps underserved and underrepresented students to achieve success in STEM studies and careers. Most MESA students are the first in their families to go to college. Most students are from low-income households and/or attend Title I funded schools. With MESA's support these students excel in science, technology, engineering and math—some of the most difficult academic subjects. California's students excel in STEM pathways, from elementary to graduate school and into careers where they accelerate and build the Golden State's leadership in research, industry, and service.*

*a. Follow MESA-developed guidelines (reinforcing California State Math and Science Standards) to build hands-on projects, which will be entered into rigorous local, regional, and in some cases state and national contests.*

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- b. Learn and apply effective study skills techniques for academic success*
- c. Enter at least one project in the MESA Day preliminary competition • <https://mesa.ucop.edu/staff/mesa-day-rules/>*
- d. Compete in at least 1 virtual project • <http://mesa.ucop.edu/our-programs/mesa-statewide-virtual-computer-sciencecontest/>*
- e. Attend one MESA Saturday Academies at UCI (not sure yet) • <http://mesa.eng.uci.edu/resources-students.html>*

**CALIFORNIA CONTENT STANDARDS** (how the course aligns with California and/or national curriculum standards):

*MESA provides rigorous academic development that includes math and science curriculum based on the California Math and Science Standards. MESA also offers individualized academic planning, study skills training, peer group learning techniques, career exploration, parent involvement, professional development, transfer assistance, and special orientation classes and services for students in high school, community college and four-year institutions.*

**EVALUATION** (how the effectiveness of the course will be monitored and assessed):

*MESA measures success by helping students who are traditionally underrepresented in higher education become college- and career-ready. MESA students succeed with:*

- Academic support based on high standards*
- Individual counseling to ensure that college prerequisites and transfer/college graduation requirements are met*
- Industry involvement in activities including mentoring, shadow days and speakers*
- Reinforcement of California math and science standards through hands-on projects, group learning and constantly evolving curriculum*
- Supportive student communities based on academic success*
- Professional development for math and science teachers in low-performing schools*
- Networks of parents, educators and industry leaders and community resources to support students*
- Regional MESA center alliances that further smooth the educational pathway*

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| Unit 1                                  | Length of Unit ... 4-6 Weeks |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
|-----------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|                                         | Key Vocabulary               | Standards (referenced)                                                                                                             | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Tools / Texts                                                                                                                    |                                                                                                 |
| <b><i>Introduction to Computing</i></b> | Computer                     | CSTA K-12 CS Standards                                                                                                             | BACKGROUND: In this unit students are introduced to the concepts of computing while investigating the major components of computers and the suitability of these components for particular applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>UC Irvine MESA Google Drive</i>                                                                                               |                                                                                                 |
|                                         | Computing                    | 3A-CS-01<br>Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>UC Riverside MESA Google Drive</i>                                                                                            |                                                                                                 |
|                                         | Processor                    | 3A-CS-02<br>Compare levels of abstraction and interactions between application software, system software, and hardware layers.     | PURPOSE/OBJECTIVES: <ul style="list-style-type: none"><li>▪ Students will experiment with experiment with internet techniques, explore a variety of websites and web applications and will also learn the history of computer science and the world wide web.</li><li>▪ Students will research current events related to public policy, law, ethics and the societal impact of data and the internet which will include discussing issues of privacy and security.</li><li>▪ The fundamentals of human interaction and ergonomics are introduced and students will learn that machine behavior is based on algorithms applied to useful representations of information.</li><li>▪ Students will compare and contrast the characteristics that make certain tasks easy or difficult for computers and for humans.</li><li>▪ Students will be introduced to coding.</li><li>▪ Throughout the engineering design cycle students are required to document their findings in an engineering notebook in preparation for panel discussions and peer dialogue about their project.</li></ul> | <i>MESA Day Rules and Lab Book Requirement</i>                                                                                   |                                                                                                 |
|                                         | Operating System             |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>MESA DAY Curriculum</i>                                                                                                       |                                                                                                 |
|                                         | Memory                       |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3A-CS-03<br>Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. | <i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i>         |
|                                         | Hard Drive                   |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  | <i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i> |
|                                         | Optical Drive                | <i>c. Sticky notes or book tabs</i>                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
|                                         | Monitor                      |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  | <i>d. Ruler and/or protractor</i>                                                               |
|                                         | Video Card                   |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>e. Colored pencils</i>                                                                                                        |                                                                                                 |
|                                         | Sound Card                   | SCRATCH                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
|                                         | Application Software         |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
|                                         | System Software              |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
|                                         | Hardware Layers              |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |
| SCRATCH                                 |                              |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                  |                                                                                                 |

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| Course Title    | Mathematics, Engineering, Science Achievement 2                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                        | Course Code                                                                                                                                                                                         | K0372-373 |
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|                 |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>The unit will culminate in the creation of a SCRATCH program demonstrating different input methods and reflecting the knowledge gained in the unit.</li></ul> |           |
| Differentiation | Support -- for students who are struggling with the content                                                                                                                                                                 | Content: All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.<br><br>Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content. |                                                                                                                                                                                                     |           |
|                 | Extension – for high achieving students.                                                                                                                                                                                    | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |                                                                                                                                                                                                     |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson): <ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                     |           |
|                 | Summative Assessments (unit final evaluation): <ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                     |           |

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| Unit 2         | Length of Unit ... 4-6 Weeks |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|----------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                | Key Vocabulary               | Standards (referenced)                                                                                                                            | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tools / Texts                                                                            |
| Math Challenge | Algorithm                    | CSTA K-12 CS Standards                                                                                                                            | BACKGROUND: This unit provides students with opportunities to gain greater proficiency in higher level math courses by becoming more computational thinkers by applying a variety of problem-solving techniques as they create solutions to problems that are situated in a variety of contexts. The range of contexts will require students to think abstractly and apply known algorithms where appropriate, but also create new algorithms. The contexts may reveal situations in which problems are not easily solved by computer and for which there are no known solutions. This unit also illustrates the connections between mathematics and computer science.<br><br>PURPOSE/OBJECTIVES: <ul style="list-style-type: none"><li>Students will be introduced to selected topics in discrete mathematics including Boolean logic, functions, graphs and the binary number system.</li><li>Students are also introduced to searching and sorting algorithms and graphs.</li><li>Students will have the opportunities to become more proficient speakers and communicate effectively as they will need to present and justify their solutions.</li></ul> | UC Irvine MESA Google Drive                                                              |
|                | Discrete Mathematics         | 3A-DA-09<br>Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | UC Riverside MESA Google Drive                                                           |
|                | Boolean Logic                |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|                | Functions                    | 3A-DA-10<br>Evaluate the tradeoffs in how data elements are organized and where data is stored.                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MESA Day Rules and Lab Book Requirement                                                  |
|                | Graphs                       |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|                | Binary Number System         | 3A-DA-11<br>Create interactive data visualizations using software tools to help others better understand real-world phenomena.                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MESA DAY Curriculum                                                                      |
|                | Sequencing                   |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | a. Composition notebook to be used as a MESA journal exclusively for this class.         |
|                | Selection                    |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|                | Iteration                    | 3A-DA-12<br>Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely) |
|                | Computational Thinking       |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|                | Critical Thinking            |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | c. Sticky notes or book tabs                                                             |
|                | Collaboration                |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |
|                | Communication                |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | d. Ruler and/or protractor                                                               |
|                | Creativity                   |                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | e. Colored pencils                                                                       |

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| Differentiation | Support -- for students who are struggling with the content                                                                                                                                                                        | Content: All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.<br><br>Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content. |             |           |
|                 | Extension – for high achieving students.                                                                                                                                                                                           | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |             |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson):<br><br><ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |
|                 | Summative Assessments (unit final evaluation):<br><br><ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |

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| Unit 3                          | Length of Unit ... 4-6 Weeks |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | Key Vocabulary               | Standards (referenced)                                                                                                                                  | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Tools / Texts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Webpage Design Challenge</b> | Web Design                   | CSTA K-12 CS Standards                                                                                                                                  | <p>BACKGROUND: This unit expands on student's knowledge of algorithms, data sets and abstraction and will have them become a web page developer.</p> <p>PURPOSE/OBJECTIVES:</p> <ul style="list-style-type: none"> <li>Students will learn to plan and code their web pages using various techniques including but not limited to HTML and XML.</li> <li>They will investigate issues of social responsibility in web use such as data mining and rights to privacy.</li> <li>They will ensure their web pages are user-friendly, compatible and stable across different platforms.</li> <li>Throughout the project students will utilize the engineering design cycle and document their findings in their engineering design notebooks.</li> </ul> | <p><i>UC Irvine MESA Google Drive</i></p> <p><i>UC Riverside MESA Google Drive</i></p> <p><i>MESA Day Rules and Lab Book Requirement</i></p> <p><i>MESA DAY Curriculum</i></p> <p><i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i></p> <p><i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i></p> <p><i>c. Sticky notes or book tabs</i></p> <p><i>d. Ruler and/or protractor</i></p> <p><i>e. Colored pencils</i></p> |
|                                 | Browser                      | 3A-IC-24<br>Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | URL                          |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | HTML                         | 3A-IC-25<br>Test and refine computational artifacts to reduce bias and equity deficits.                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | XML                          |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | Storyboard                   | 3A-IC-26<br>Demonstrate ways a given algorithm applies to problems across disciplines.                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | Hyperlink                    | 3A-IC-27<br>Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | Tag                          | 3A-IC-28<br>Explain the beneficial and harmful effects that intellectual property laws can have on innovation.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 |                              | 3A-IC-29<br>Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 |                              | 3A-IC-30                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|                 |                                                                                                                                                                                                                             | Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.                                                                                                                                                                                                                                                                                                                     |             |           |
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|                 | Extension – for high achieving students.                                                                                                                                                                                    | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |             |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson): <ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |
|                 | Summative Assessments (unit final evaluation): <ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |

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| Unit 4                                     | Length of Unit ... 4-6 Weeks |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                            | Key Vocabulary               | Standards (referenced)                                                                                                                                                                                | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Tools / Texts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Programming – Biology App Challenge</b> | KWL Chart                    | CSTA K-12 CS Standards                                                                                                                                                                                | <p>BACKGROUND: Students are introduced to some basic issues associated with program design and development. Students design algorithms and create programming solutions to a variety of computational problems using an interactive development process. Programming problems include mathematical and logical concepts and a variety of programming constructs.</p> <p>PURPOSE/OBJECTIVES:</p> <ul style="list-style-type: none"> <li>Students will explore and experiment with different application development programs to design and program a biology experiment with different application development programs to design and program a biology related app for use on a cell phone or tablet, such as a variation of an activity tracker, a biology study aid, a game about body systems, or a diet tracker.</li> <li>Students will test it on different platforms and have the opportunity to troubleshoot and fix the various bugs afflicting their program.</li> </ul> | <p><i>UC Irvine MESA Google Drive</i></p> <p><i>UC Riverside MESA Google Drive</i></p> <p><i>MESA Day Rules and Lab Book Requirement</i></p> <p><i>MESA DAY Curriculum</i></p> <p><i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i></p> <p><i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i></p> <p><i>c. Sticky notes or book tabs</i></p> <p><i>d. Ruler and/or protractor</i></p> <p><i>e. Colored pencils</i></p> |
|                                            | Blocks                       | 3A-AP-13<br>Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | X-Coordinates                |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Y-Coordinates                |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Systematic Analysis          | 3A-AP-14<br>Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Construct                    |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Procedure                    | 3A-AP-15<br>Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Module                       |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            | Object                       | 3A-AP-16<br>Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                            |                              | 3A-AP-17<br>Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Newport-Mesa Unified School District**  
**Office of Secondary Curriculum and Instruction**  
**High School Course of Study**

| <b>Course Title</b> | <b>Mathematics, Engineering, Science Achievement 2</b> | <b>Course Code</b> | <b>K0372-373</b> |
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|  |  | <p>3A-AP-18<br/>Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.</p> <p>3A-AP-19<br/>Systematically design and develop programs for broad audiences by incorporating feedback from users.</p> <p>3A-AP-20<br/>Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.</p> <p>3A-AP-21<br/>Evaluate and refine computational artifacts to make them more usable and accessible.</p> <p>3A-AP-22<br/>Design and develop computational artifacts working in team roles using collaborative tools.</p> <p>3A-AP-23<br/>Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.</p> |  |  |
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**Newport-Mesa Unified School District**  
**Office of Secondary Curriculum and Instruction**  
**High School Course of Study**

| Course Title    | Mathematics, Engineering, Science Achievement 2                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                        | Course Code | K0372-373 |
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| Differentiation | Support -- for students who are struggling with the content                                                                                                                                                                        | Content: All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.<br><br>Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content. |             |           |
|                 | Extension – for high achieving students.                                                                                                                                                                                           | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |             |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson):<br><br><ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |
|                 | Summative Assessments (unit final evaluation):<br><br><ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |

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| <b>Course Title</b> | <i>Mathematics, Engineering, Science Achievement 2</i> | <b>Course Code</b> | <i>K0372-373</i> |
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| Unit 5                         | Length of Unit ... 4-6 Weeks |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                | Key Vocabulary               | Standards (referenced)                                                                                                                                                                    | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tools / Texts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>VEX Robotics Challenges</b> | Robot                        | CSTA K-12 CS Standards                                                                                                                                                                    | <p>BACKGROUND: This unit introduces robotics as an application of computer science that can be used to solve problems in a variety of settings from business to health care and how robotics enables innovation by automating processes that may be dangerous or otherwise problematic for humans.</p> <p>PURPOSE/OBJECTIVES:</p> <ul style="list-style-type: none"> <li>Students explore how to integrate hardware and software in order to solve problems.</li> <li>Students will see the effect of software and hardware design on the resulting product.</li> <li>Students will apply previously learned topics to the study of robotics.</li> </ul> | <p><i>UC Irvine MESA Google Drive</i></p> <p><i>UC Riverside MESA Google Drive</i></p> <p><i>MESA Day Rules and Lab Book Requirement</i></p> <p><i>MESA DAY Curriculum</i></p> <p><i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i></p> <p><i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i></p> <p><i>c. Sticky notes or book tabs</i></p> <p><i>d. Ruler and/or protractor</i></p> <p><i>e. Colored pencils</i></p> |
|                                | Robotics                     | 3A-AP-13                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Edison Robot                 | Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Body                         |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Control                      | 3A-AP-14                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Behavior                     | Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Debugging                    |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Programming                  | 3A-AP-15                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | Choreography                 | Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                |                              | 3A-AP-16                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                |                              | Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                |                              | 3A-AP-17                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                |                              | Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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**Office of Secondary Curriculum and Instruction**  
**High School Course of Study**

| <b>Course Title</b> | <b>Mathematics, Engineering, Science Achievement 2</b> | <b>Course Code</b> | <b>K0372-373</b> |
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|  |  | <p>3A-AP-18<br/>Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.</p> <p>3A-AP-19<br/>Systematically design and develop programs for broad audiences by incorporating feedback from users.</p> <p>3A-AP-20<br/>Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.</p> <p>3A-AP-21<br/>Evaluate and refine computational artifacts to make them more usable and accessible.</p> <p>3A-AP-22<br/>Design and develop computational artifacts working in team roles using collaborative tools.</p> <p>3A-AP-23<br/>Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.</p> |  |  |
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| Course Title    | Mathematics, Engineering, Science Achievement 2                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                        | Course Code | K0372-373 |
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| Differentiation | Support -- for students who are struggling with the content                                                                                                                                                                 | Content: All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.<br><br>Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content. |             |           |
|                 | Extension – for high achieving students.                                                                                                                                                                                    | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |             |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson): <ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |
|                 | Summative Assessments (unit final evaluation): <ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |

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| Unit 6                          | Length of Unit ... 4-6 Weeks |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                 | Key Vocabulary               | Standards (referenced)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Tools / Texts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Advanced Robotics/Design</b> |                              | <p>CSTA K-12 CS Standards</p> <p>3A-AP-13<br/>Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.</p> <p>3A-AP-14<br/>Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.</p> <p>3A-AP-15<br/>Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made.</p> <p>3A-AP-16<br/>Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.</p> <p>3A-AP-17<br/>Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.</p> | <p>BACKGROUND: In this unit students expand on the previous unit to continue learning how the different types of inputs received from various types of sensors, such as sound, light or electrical signals are converted into code that a computer can understand and can then execute certain actions.</p> <p>PURPOSE/OBJECTIVES:</p> <ul style="list-style-type: none"> <li>▪ Students will apply the previously learned topics of programming and algorithms to design a device utilizing Arduino or Raspberry Pi hardware that may benefit society.</li> <li>▪ The challenge may focus on water, environmental or biology related issues affecting society.</li> <li>▪ Students will utilize their engineering journals to document the design process and outcomes.</li> <li>▪ Students will also be required to present their device in front of a panel and be prepared to answer technical questions about their device.</li> </ul> | <p><i>UC Irvine MESA Google Drive</i></p> <p><i>UC Riverside MESA Google Drive</i></p> <p><i>MESA Day Rules and Lab Book Requirement</i></p> <p><i>MESA DAY Curriculum</i></p> <p><i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i></p> <p><i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i></p> <p><i>c. Sticky notes or book tabs</i></p> <p><i>d. Ruler and/or protractor</i></p> <p><i>e. Colored pencils</i></p> |

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| Course Title           | <i>Mathematics, Engineering, Science Achievement 2</i> | Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | K0372-373 |
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|                        |                                                        | <p>3A-AP-18<br/>Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.</p> <p>3A-AP-19<br/>Systematically design and develop programs for broad audiences by incorporating feedback from users.</p> <p>3A-AP-20<br/>Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.</p> <p>3A-AP-21<br/>Evaluate and refine computational artifacts to make them more usable and accessible.</p> <p>3A-AP-22<br/>Design and develop computational artifacts working in team roles using collaborative tools.</p> <p>3A-AP-23<br/>Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.</p> |           |
| <b>Differentiation</b> | <b>Support -- for students who</b>                     | <p>Content: <i>All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.</i></p> <p>Process: <i>All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |

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| Course Title |                                                                                                                                                                                                                                           | Mathematics, Engineering, Science Achievement 2                                                                                                                                                                                                                                                                         | Course Code | K0372-373 |
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|              | are struggling with the content                                                                                                                                                                                                           | Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content.                                                                                                                                                                              |             |           |
|              | Extension – for high achieving students.                                                                                                                                                                                                  | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students. |             |           |
| Evaluation   | <b>Formative Assessments</b> (ongoing & mid-lesson):<br><br><ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                         |             |           |
|              | <b>Summative Assessments</b> (unit final evaluation):<br><br><ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                         |             |           |

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| Unit 7               | Length of Unit ... 4-6 Weeks |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                      | Key Vocabulary               | Standards (referenced)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Model Tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Tools / Texts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Cybersecurity</b> |                              | <p>CSTA K-12 CS Standards</p> <p>3A-NI-04<br/>Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.</p> <p>3A-NI-05<br/>Give examples to illustrate how sensitive data can be affected by malware and other attacks.</p> <p>3A-NI-06<br/>Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.</p> <p>3A-NI-07<br/>Compare various security measures, considering tradeoffs between the usability and security of a computing system.</p> <p>3A-NI-08<br/>Explain tradeoffs when selecting and implementing cybersecurity recommendations.</p> | <p>BACKGROUND: This unit will introduce students to the principles of data and technology that define cybersecurity.</p> <p>PURPOSE/OBJECTIVES:</p> <ul style="list-style-type: none"> <li>▪ They will investigate the importance of cybersecurity and the integral role of cybersecurity professionals.</li> <li>▪ Students will explore the foundations of cybersecurity principles, risk management, security architecture, incidents, attacks and emerging IT technologies.</li> <li>▪ They will be able to distinguish system and applications security threats and vulnerabilities and different classes of attacks.</li> <li>▪ For the final project or challenge, students may be presented with a cybersecurity scenario in which they will have to submit a written document which will define the type of incident, analyze the threat and risk within the context of cybersecurity, evaluate the potential outcomes resulting from the scenario and determine the best solution.</li> </ul> | <p><i>UC Irvine MESA Google Drive</i></p> <p><i>UC Riverside MESA Google Drive</i></p> <p><i>MESA Day Rules and Lab Book Requirement</i></p> <p><i>MESA DAY Curriculum</i></p> <p><i>a. Composition notebook to be used as a MESA journal exclusively for this class.</i></p> <p><i>b. Several sharp pencils with erasers (mechanical pencils with lead refills work nicely)</i></p> <p><i>c. Sticky notes or book tabs</i></p> <p><i>d. Ruler and/or protractor</i></p> <p><i>e. Colored pencils</i></p> |

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| Course Title    | Mathematics, Engineering, Science Achievement 2                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                        | Course Code | K0372-373 |
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| Differentiation | Support -- for students who are struggling with the content                                                                                                                                                                        | Content: All materials are provided with scaffolding and differentiation modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with scaffolding and differentiation embedded for English Learners and struggling learners.<br><br>Product: All assignments can be completed in a modified format to accommodate English Learners and students who struggle with the content. |             |           |
|                 | Extension – for high achieving students.                                                                                                                                                                                           | Content: All materials are provided with enrichment modalities to be utilized by the teacher as needed.<br><br>Process: All lessons are constructed with enrichment embedded for high achieving students.<br><br>Product: All assignments can be completed in a modified format to accommodate high achieving students.                                                                                                |             |           |
| Evaluation      | Formative Assessments (ongoing & mid-lesson):<br><br><ul style="list-style-type: none"><li>Complete Journal Entries</li><li>Group Discussions</li><li>Group Projects</li><li>Group Presentations</li></ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |
|                 | Summative Assessments (unit final evaluation):<br><br><ul style="list-style-type: none"><li>MESA Notebook with rubric scoring</li><li>Final Project with rubric scoring</li><li>Video of Project construction (optional)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                        |             |           |