| Teacher: CORE |  |
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| ENGINEERING |  |
| w/MATLAB | Year: 2017-18 |
| Course: Engineering |  |
| w/MATLAB | Month: All Months |



How do you address
arrays and matrices?

Students address arrays Vector and matrices

How do you work with strings?
O Adding Vectors
students will be able to String
munipulate string
2.5.11.B-Communication ~ Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas, and results.

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| Essential Questions | Content | Knowledge and Skills | Vocabulary | Assessments |

b
e
r
N Mathmatical Operations
with Arrays and Script
Files
0
Essential Questions Content Knowledge and Skills Vocabulary Assessments Lessons Resources Standards
v How do you add and subtract arrays?
e How do you multiple arrays?

Students will be able
to multiple arrays.

Statics Test:
Equilibrium of
a point

Students will solve
problems by writing programs in MATLAB using arrays

Students will be able to add component vectors.

Static problems

How do brake vectors Students will solve come vectors.

Test 2 EGR
Quiz2
2.3.11. C-Calculations ~ Use properties of geometric figures and measurement formulas to a specific angle created by parallel lines and a transversal).
2.10.11.B-Trigonometric Functions ~ Graph properties of the graphs.
2.5.11.B-Communication ~ Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas, and results.
2.6.11.A-Collection of Data ~ Design and conduct an experiment using random sampling.
b How do you do element
by element operations
on arrays?
e How do you use built in
functions to analze arrays?
r

Students will be able to multiple arrays.

Students will be able to divide arrays.

Students will be able to
munipulate arrays
element by element
Students will be able to use built in functions to analze arrays.
2.6.11.C-Numerical Summaries ~ Select or calculate the appropriate measure of central tendency, calculate and apply the interquartile range for one-variable data, and construct a line of best fit and calculate its equation for twovariable data.

Two Dimensional Plots

| Essential Questions | Content | Knowledge and Skills | Vocabulary | Assessments |
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| J Programming in |  |  |
| :--- | :--- | :--- | :--- | :--- |
| MATLAB |  |  |

How do you use a userdefined function?

F Moments or Torques


How do you do
numerical intergation on MATLAB?

How do you perform numerical intergration?

Students will be able to do numerical intergration on MATLAB

Students will be able to solve ordinary differential equations using MATLAB
2.6.11.C-Numerical Summaries ~ Select or calculate the appropriate measure of central tendency, calculate and apply the interquartile range for one-variable data, and construct a line of best fit and calculate its equation for two variable data.
2.6.11.E-Interpretation of Data ~ Make predictions based on lines of best fit or draw conclusions on the value of a variable in a population based on the results of a sample

How do you solve ordinary differential equations using MATLAB?
A Equilibrium of Rigid Body

| p |  | Knowledge and Skills | Vocabulary | Assessments |
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How do you use
symbolic math to solve algebraic equations?

Students will be able to use symbolic math to solve algebraic equations.
3.4.12.C2.a-Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
3.4.12.C3.a-Apply the concept that many technological problems require a multidisciplinary approach.
3.4.12.D2.a-Verify that engineering design is
influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

## Structural Analysis

Essential Questions Content Knowledge and Skills Vocabulary Assessments Lessons Resources Standards
n How are the
compressinal and tensial the force in each
force of a truss
calculated?
e How is "the method of
joints" used to analyize
a truss

Students will calculate Students will be able to member of a truss. member of a truss.
calcculate the force is each
3.4.12.A3.a-Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).
3.4.12.B1.a-Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies.

