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| **Lesson Title : *N/A*** | **Unit #:*****N/A*** | **Lesson #:*****N/A*** | **Activity #:*****1*** |
| **Activity Title: Medical Device Material Selection** |

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| **Estimated Lesson Duration:** | ***N/A*** |
| **Estimated Activity Duration:** | ***2 days (two 90 minute blocks)*** |

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| **Setting:** | ***Classroom (with laptops)*** |

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| **Activity Objectives: *Identify material properties and how they meet device needs*** |

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| **Activity Guiding Questions: *What goes into consideration when picking a material for a medical device?*** |

| **Next Generation Science Standards (NGSS)**  |
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| **Science and Engineering Practices (Check all that apply)**  | **Crosscutting Concepts (Check all that apply)** |
| [x]  Asking questions (for science) and defining problems (for engineering) | [ ]  Patterns |
| [ ]  Developing and using models | [x]  Cause and effect |
| [ ]  Planning and carrying out investigations | [ ]  Scale, proportion, and quantity |
| [ ]  Analyzing and interpreting data | [ ]  Systems and system models |
| [ ]  Using mathematics and computational thinking | [ ]  Energy and matter: Flows, cycles, and conservation |
| [x]  Constructing explanations (for science) and designing solutions (for engineering) | [ ]  Structure and function.  |
| [x]  Engaging in argument from evidence | [ ]  Stability and change.  |
| [x]  Obtaining, evaluating, and communicating information  |  |

| **Ohio’s New Learning Standards for Science (ONLS)** |
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| **Expectations for Learning - Cognitive Demands (Check all that apply)** |
| [x]  Designing Technological/Engineering Solutions Using Science concepts **(T)** |
| [ ]  Demonstrating Science Knowledge **(D)** |
| [x]  Interpreting and Communicating Science Concepts **(C)** |
| [ ]  Recalling Accurate Science **(R)** |

| **Common Core State Standards -- Mathematics (CCSS)** |
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| **Standards for Mathematical Practice (Check all that apply)** |
| [ ]  Make sense of problems and persevere in solving them | [ ]  Useappropriate tools strategically |
| [x]  Reason abstractly and quantitatively | [ ]  Attendto precision |
| [x]  Construct viable arguments and critique the reasoning of others | [ ]  Look for and make use of structure |
| [ ]  Model with mathematics | [ ]  Look for and express regularity in repeated reasoning |

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| **Unit Academic Standards (NGSS, ONLS and/or CCSS): *Medical Technology*** |

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| **Materials**: *See attached* |

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| **Teacher Advance Preparation: *Secure/ schedule laptops with internet access for class. Projector for presentation.*** |

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| **Activity Procedures: Day One**1. ***Administer pre-test (15mins)***
2. ***Have students turn pre-test over,***
3. ***Present hook; first part is guided mini-activity “name that medical device,”***
4. ***Present answers that follow the mini-activity,***
5. ***Deliver lecture based on remainder of presentation (30-45 minutes),***
6. ***Break students into groups of 4 or 5,***
7. ***Randomly assign medical devices from “name that medical device” activity,***
8. ***Grant students remainder of period to use laptops to work on activity,***

***On day 2:***1. ***Grant 20 to 30 minutes to finish activity and work on 2 to 5 minute presentation on their project.***
2. ***Have groups deliver presentations one at a time. Administer post-test***
3. ***Analyze data between pre-test and post test, take average of students’ scores and compare.***
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**Formative Assessments:**  *Pre-test, Class questions during mini-activity, questions during lecture, pose questions to groups as they present.*

**Summative Assessments:** *Post-test assessment (attached), Group presentations*

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| **Differentiation:** *This lesson accommodates a variety of learner types, visual and auditory especially. The research meets the needs of the kinesthetic learner as well.*  |

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| **Reflection:** *In retrospect, I would have used my original activity form to pre-empt some of the students’ questions. There were more guiding questions that didn’t leave any speculation as to what was expected in each section. I would also have tried to work on a time time-table to accommodate shorter class periods. As of now there is only one for block-length classes* |