

## WTCS Repository

10-806-139 Survey of Physics

# Course Outcome Summary

### Course Information

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|  | Description | This course emphasizes understanding basic physics concepts through laboratory investigation and applications. Topics include kinematics, dynamics, work, energy, power, temperature, heat, waves, electricity, magnetism, electromagnetic waves, and optics.. |
|  | Total Credits | 3 |

### Course History

Pre/Corequisites

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| Prerequisite | Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College. |

### Course Competencies

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| 1. | Use measurements and units |
|  | Assessment Strategies |
|  | 1.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 1.1. | apply dimensional analysis to calculations |
|  | 1.2. | convert between systems of measurement |
|  | 1.3. | describe uncertainties and errors in measurement |
|  | 1.4. | verify consistency of calculations |
| 2. | Solve problems involving Newton's laws |
|  | Assessment Strategies |
|  | 2.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 2.1. | describe the concepts of Newton’s laws |
|  | 2.2. | include correct units of measure |
|  | 2.3. | manipulate the equation(s) to solve for the unknown |
|  | 2.4. | substitute values and complete the calculation |
| 3. | Solve problems involving the concepts of conservation laws |
|  | Assessment Strategies |
|  | 3.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 3.1. | describe the concepts of conservation laws |
|  | 3.2. | include correct units of measure |
|  | 3.3. | manipulate the equation(s) to solve for the unknown |
|  | 3.4. | substitute values and complete the calculation |
| 4. | Solve problems involving materials |
|  | Assessment Strategies |
|  | 4.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 4.1. | describe the concepts of phase, atomic structure, pressure, and density |
|  | 4.2. | include correct units of measure |
|  | 4.3. | manipulate the equation(s) to solve for the unknown |
|  | 4.4. | substitute values and complete the calculation |
| 5. | Solve problems involving thermodynamics |
|  | Assessment Strategies |
|  | 5.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 5.1. | describe the concept of heat and its interaction and affect on objects |
|  | 5.2. | describe the laws of thermodynamics |
|  | 5.3. | include correct units of measure |
|  | 5.4. | manipulate the equation(s) to solve for the unknown |
|  | 5.5. | substitute values and complete the calculation |
| 6. | Solve problems involving waves |
|  | Assessment Strategies |
|  | 6.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 6.1. | describe the properties of waves |
|  | 6.2. | describe the properties of oscillation |
|  | 6.3. | describe the properties of sound waves |
|  | 6.4. | include correct units of measure |
|  | 6.5. | manipulate the equation(s) to solve for the unknown |
|  | 6.6. | substitute values and complete the calculation |
| 7. | Solve problems involving electricity |
|  | Assessment Strategies |
|  | 7.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 7.1. | describe the concepts of the electric field and electric force |
|  | 7.2. | describe the concepts of simple electric circuits |
|  | 7.3. | include correct units of measure |
|  | 7.4. | manipulate the equation(s) to solve for the unknown |
|  | 7.5. | substitute values and complete the calculation |
| 8. | Solve problems involving magnetism |
|  | Assessment Strategies |
|  | 8.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 8.1. | describe the concepts of the magnetic field and magnetic force |
|  | 8.2. | describe the relationship between electricity and magnetism |
|  | 8.3. | include correct units of measure |
|  | 8.4. | manipulate the equation(s) to solve for the unknown |
|  | 8.5. | substitute values and complete the calculation |
| 9. | Solve problems involving geometric optics |
|  | Assessment Strategies |
|  | 9.1. | Oral, Written, Graphic and/or Skill Assessment |
|  | Criteria |
|  | 9.1. | describe the properties of visible light |
|  | 9.2. | describe the concepts of image formation with lenses and mirrors |
|  | 9.3. | describe the operation of the human eye |
|  | 9.4. | include correct units of measure |
|  | 9.5. | manipulate the equation(s) to solve for the unknown |
|  | 9.6. | substitute values and complete the calculation |