## MCS IB Physics Y2 Subject Group Overview

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<thead>
<tr>
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<th>Waves</th>
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### Statement of Inquiry
- Measurement is a process of detecting an unknown physical quantity by using a standard quantity.
- Phenomenon: A plane can “fly blind” and arrive safely at the correct location simply by using vector coordinates.

### Crosscutting Concepts
- Simple Harmonic Motion
- Parts of waves
- Transverse and longitudinal waves
- Wave speed
- Fronts and rays
- Superposition
- Polarization
- Snell’s Law
- Interference of waves

### CORE IDEAS
- Units and the metric system
- Precise measurements
- Errors and Uncertainties

### Scientific Investigation
- The IA, worth 20% of the final assessment, consists of one scientific investigation. This individual investigation will cover a topic that is commensurate with the level of the course of study.
- Assessed by the teacher, and externally moderated by the IB.

### IA Component
- Duration: 10 hours
- Weighting: 20% Individual investigation.

### Statement of Inquiry
- Some energy will be lost to surroundings and will not be used to perform useful work.
- Phenomenon: The Earth will run out of non-renewable energy much sooner than we think.

### CORE IDEAS
- Sankey Diagrams
- Black body radiation
- Albedo and emissivity
- The solar constant and greenhouse effect
- Forms of renewable energy and resources

### Statement of Inquiry
- The energy of a photon is dependent on its frequency.
- Phenomenon: Matter is made up of many fundamental particles.

### CORE IDEAS
- Energy levels
- Radioactive decay
- Isotopes
- Mass defect and binding energy
- Nuclear fission and fusion
- Quarks, lepton, and their antiparticles
- Conservation laws
- Exchange particles
- Feynman diagrams

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### Level Specific Differentiation
Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.

### Resources
- Schoology Course Page
- Hodder IB Physics textbook (problems and labs)
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