

Grade	S3	Subject	Physics
Course	ICA		
Class Hours	4 Hours/Week		

### Competencies

① Inquiry	Continually ask questions about the nature of the universe around them. Think deeply about the why and the how of familiar phenomena.
② Problem Solving	Create conceptual models to analyze real world problems. Break down complex systems into manageable components.
③ Innovation	Develop novel applications of physical concepts. Creatively apply mathematical models to develop innovative solutions.

3	Explain physical laws and concepts in their own words.	Model real-world situations using free-body diagrams and mathematical equations.	Create an original problem or model using the concepts of force, fields, and energy. Construct viable arguments.
2	Solve mathematical problems relating physical quantities.	Connect physical and mathematical concepts. Make sense of problems and persevere in solving them.	Efficiently and strategically deconstruct systems into manageable components.
1	Know the meaning of key vocabulary.	Break down component forces on given systems. Identify the logical units of a problem and their connections.	Reason abstractly and quantitatively. Critique the reasoning of others.
	A Recognition	B Logical Thinking	C Creative Thinking

Term	Month	Unit	Unit Goals	Activities
1	4 5	Energy and Motion	<ul style="list-style-type: none"> <li>Students will be able to understand the relationship between energy, force, and motion. Learn Newton's laws and show how they apply to various different systems.</li> <li>Students will be able to identify the different types of field forces, and how they relate to energy. Explain the difference between field and contact forces.</li> </ul>	<ul style="list-style-type: none"> <li>Laboratory investigations, in-class demonstrations, group discussions, research projects, textbook assignments, quizzes, and tests.</li> </ul>
	6 7	Field Forces and Energy		
2	9 10	Electromagnetism and Energy Generation	<ul style="list-style-type: none"> <li>Students will be able to understand the inherent relationship between electric charge and magnetism. Describe various methods of generating electricity, including advantages and disadvantages of each.</li> <li>Students will be able to understand the mechanisms by which waves transport energy. Know the types of electromagnetic radiation, and the real world applications thereof.</li> </ul>	<ul style="list-style-type: none"> <li>Laboratory investigations, in-class demonstrations, group discussions, research projects, textbook assignments, quizzes, and tests.</li> </ul>
	11 12	Wave Energy and Communication		