|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Teaching and Learning Guide**: Unit – 11 Physics 2D Motion | | | | | |
| **TOPIC**  **Total 3 weeks** | **LEARNING INTENTIONS** | **REFERENCES & RESOURCES** | **Suggested**  **Time** | **PRODUCT & SUCCESS CRITERIA** | **21st Century Skills** |
|  |  | * + Multimedia, Web   + Text references   + Library |  | * + How will success be measured?   + What are the success criteria? | Characteristics of Learning |
| **Phase 1 & 2**  **Focussed Lesson**  **Guided Instruction** | **The everyday motion of objects can be analysed through the application of Newton’s Laws**  *Constant Velocity Motion*  *Constant Acceleration Motion*  *2D Constant Acceleration Motion* | Textbook questions  Kahn Academy | 1.0    3.0    3.0 | **Shallow**  Given starting conditions, I can calculate other variables of an object travelling in two dimensions, using given Laws of Motion  (*s, u, v, a, t, F, m*) | **Collaboration**: No student Collaboration    **Knowledge Construction**: Students do not construct knowledge    **Problem Solving:** Students are not solving problems (?) |
| **Phase 3**  **Collaborative Learning** | **The relationship between force, mass and acceleration can be analysed qualitatively and quantitatively using algorithms and graphical techniques.**  *Determine the initial velocity of the projectile launcher* | Projectile Launchers | 3.0 | **Deep**  I can apply the Laws of Motion in a real situation, and use measured data to determine other variables as needed.  I can take into account errors and environmental conditions that may affect the application of theory. | **Collaboration:** Students work together, students have shared responsibility    **Problem Solving:** Students are solving problems, but may not be authentic    **Knowledge Construction**: Activity requires students to interpret, analyse, synthesis or evaluate knowledge |
| **Phase 4**  **Independent Task** | **The motion of particles can be described and analysed using principles of dynamics.**  *Hit a set a target for the projectile launcher* | Projectile Launchers | 2.0 | **Conceptual**  I can apply the Laws of Motion to solve a problem in a real situation, and use measured data to predict outcomes in a complex situation.  I can modify calculated values to take into account environmental conditions that may affect the application of theory | **Collaboration:** Students make substantive decisions together, students' work is interdependent    **Problem Solving:** Students innovate to solve authentic problems  **Knowledge Construction:** (not relevant at this stage) |
|  |  |  |  |  | Not covered:  **Self Regulation**  **Skilled Communcation**  **The Use of ICT** |