Newton Moore Senior High School
Science
Year 7 Engineering Specialist
2016

Course Description

This course includes robotics, coding, electronics (incorporating Project Ignite and 3D printing) and solar energy. Students will be involved in various types of learning activities involving self-paced work, online tutorials, explicit instruction, practical and theory work. In addition to the course content delivered in these units, this course aims to develop problem solving skills, the ability to work as part of a team and prepares students to engage in long-term project based work using the Technology Process.

Technology Process

Students apply the knowledge and skills learnt throughout their units and the technology processes to performed assigned tasks and solve problems by:

- Investigating – Students investigate issues, needs and opportunities.
- Designing – Students devise and generate ideas in preparation for assembly.
- Producing – Students assemble, operate and manage production processes
- Evaluating – Students evaluate intentions, plans and actions

Course Outline

Week	Content
Term 1	
1	Robotics introduction: Kit allocation, file set-up, construction of robots
2	Software overview and programming basics
3	Worksheet 1: Tasks 1-5 (Display, sounds and movement)
4	Worksheet 2: Task 6-10 (Turning and manoeuvring)
5	Worksheet 3: Tasks 11-15 (Control using sensors)
6	Worksheet 4: Tasks 16-20 (Using sensors to perform actions)
7	Apply your knowledge tasks
8	Apply your knowledge tasks
9	Apply your knowledge tasks
10	Kit audit and reflection
Term 2	
1	Introduction to Coding- Student log-ins & unplugged activity: Tangrams
2	Coding- Basic command: Navigating mazes and drawing

Week	Content
3	Coding- Variables
4	Coding- Loops
5	Coding- Functions and functions with parameters
6	Coding- Binary
7	Coding- Apply your knowledge challenges
8	Coding- Apply your knowledge challenges
9	3D printing investigation: Use and applications of 3D printing
10	3D printing investigation: Use and applications of 3D printing
Term 3	
1	Electronics. Introduction and safety
2	Conductors and Insulators
3	Current, voltage and resistance
4	Simple circuit- series and parallel
5	Circuit symbols and circuit drawings
6	Project ignite/ 3D printing
7	Project ignite/ 3D printing
8	Project ignite/ 3D printing
9	Project ignite/ 3D printing
10	Project ignite- Project completion
Term 4	
1	Introduction to solar energy- ongoing monitoring of school solar panels throughout term.
2	Research project- Renewable energies: solar
3	Research project- Renewable energies: solar
4	STELR Investigation # 1
5	STELR investigation #1 & # 2
6	STELR investigation #2
7	Design and build your own solar cooker
8	Design and build your own solar cooker
9	Design and build your own solar cooker- project completion/ presentation
10	Course reflection

This course outline may be subject to change, any changes will be communicated to students.

Assessment Outline

Assessment Task	Outcome	Date Due	Max Score	% Weight
Semester 1				
Robotics	**Technology Process**	Week 9	100	25
Coding	**Technology Process**	Week 6	100	25
Semester 1 Total				50
Semester 2				
Electronics (Project Ignite)	**Technology Process**	Week 20	100	25
Solar energy research and investigation	**Technology Process**	Week 35	100	25
Semester 2 Total				50
Total				100

The above weightings are intended to show the importance of each task. The allocation of a grade at the end of a semester is determined based on grade related descriptors issued by School Curriculum and Standards Authority.