



## Level 2 Mechatronics : (L2MTR)

NCEA Level: Level 2  
 Primary Qualification: NCEA  
 Primary Learning Area: Technology  
 Date: 2020  
 Teacher: Mr Sean Booth



### Standards on Offer

NCEA Level	Standard Number	Standard Descriptor	Credits	Assessment	Literacy	Numeracy	Vocational Pathways
2	AS91338 03 ***	Design & Visual Communications 2.31 - Produce working drawings to communicate technical details of a design	4	External	No	No	C&I, M&T, PI, CI
2	AS91890 01	Digital Technologies and Hangarau Matihiko 2.1 - Present a summary of developing a digital outcome	6	Internal	No	No	N/A
2	AS91894 01	Digital Technologies and Hangarau Matihiko 2.5 - Use advanced techniques to develop an electronic outcome	6	Internal	No	No	N/A
2	AS91896 01	Digital Technologies and Hangarau Matihiko 2.7 - Develop an advanced computer programme	6	Internal	No	No	N/A
2	AS91897 01	Digital Technologies and Hangarau Matihiko 2.8 - Use advanced interactive processes to plan and develop a digital outcome	6	Internal	No	No	N/A
2	AS91899 01 ***	Digital Technologies and Hangarau Matihiko 2.10 - Present a summary of developing a digital outcome	3	External	No	No	N/A
<b>Total Available Credits</b>			<b>31</b>				

**Note:** Courses are subject to change with the review of courses at the end of each year and as the new digital standard become more clearly defined. \*\*\* Options for endorsement.

### Course Outline

Term 1 3 February - 9 April 2020 (10 weeks)	Term 2 28 April - 3 July 2020 (10 weeks)	Term 3 20 July - 25 September 2020 (10 weeks)	Term 4 12 October - early November 2020 (4 weeks)
Research and develop a concept and 3D model of your project Produce working drawings of your design Produce STL 3D Print files or Laser cut files for producing your prototype	Develop and demonstrate an understanding of advanced techniques in control programming and interfacing Produce a plan for the development program for your project Complete initial development of your project	Iteratively build, program, test and refine your prototype of the project to determine its fitness for purpose against the brief.	Presentation of your summary of developing a digital outcome
<b>KEY DATES:</b> Week 6: AS91890 - Completion of proposal for project Week 10: AS91338) - Completion of CAD model and working drawings	<b>KEY DATES:</b> Key dates will be dependent on project proposed in Term 1	<b>KEY DATES:</b> Key dates will be dependent on project proposed in Term 1	<b>KEY DATES:</b> Week 2: Completion of portfolio and presentation of final outcome

## **What will I learn and how will I learn?**

Imagine it, engineer it, and make it go. Further develop skills with micro-computer controlled robotic vehicles to solve a problem. Create a robot that will work as part of a team. Robotics provides students with opportunities to question, problem solve, think about, and create technological tools, rather than just becoming passive users of technology.

The course will take students through the more advanced concepts of electronics, DC electrical systems, control programming and interfacing. Students will learn to control motors and actuators, interface with sensors and other robots in the enhancement of a robotic device. Students will use skills developed in designing, refining and building (using the 3D printer and the laser cutter) to create a robotic vehicle in answer to a defined problem or context.

## **Entry**

Students should have the ability to work in a team. Each student will be provided with an individual computer and will share electronic equipment. Preference is given to students who achieved in Level 1 Mechatronics course, have ability in Mathematics or Science and who have a good attendance record and work ethic.

## **Conditions of Assessment**

All work must be submitted to the teacher by the due date. Any work not submitted for assessment by the deadline will receive a 'Not Achieved' grade. If students are sick on the day their work is due, they must get a doctor's certificate. Read over the student handbook for full assessment details.

## **Submitting Internal Assessment**

Assessments are to be handed in at the end of the lesson on the due date.

## **Resubmission and Further Assessment Opportunities**

Resubmissions can only be offered once and only when small errors or omissions need to be corrected in student work in a short period of time. There is no further teaching available. Further assessment opportunities are not available in any standard.