CODING

UNIFY Series: STEM

BIG IDEA:

Coding exposes, engages and challenges students to embrace innovation in a digital age. It aims to engage students to think and problem solve while acquiring an understanding of how technologies can work for them. The course is designed to guide students through levels of computational, mathematical, design, systems and futures thinking.

Coding helps schools to build staff and student capability simultaneously. Key teachers and leaders can access the IMPACT STEM Team. Your web conference supervisor can co-teach with our online teacher.

SELECTION CRITERIA:

- ✓ Selection criteria for the UNIFY Series is largely subjective.
- ✓ Many schools use this project as a STEM enrichment opportunity for mid-to-high achieving students.
- ✓ Teacher judgement and student interest in the topic should assist selection.

AUSTRALIAN CURRICULUM:

See page 2 for Australian Curriculum links, NAPLAN online, and assessment/reporting details.

THE COURSE:

LESSON OVERVIEW		
NO.	**TITLE**	**CONTENT**
1	Welcome to Coding	▪ Design Thinking ▪ Tools and Avatar
2	What is Code?	▪ Overview of Programming ▪ Think like a computer
3	Let's Code: Block Code	▪ Graphics and Pixels ▪ Introduction to Block Code
4	We Code: Block Code	▪ Programming in Blocky ▪ Problem solving with Blocky
5	You Code: Block Code	▪ Programming in Blocky ▪ Check in 1: Flag challenge
6	Computer Programming	▪ Programming Language ▪ Syntax
7	Let's Code: Python	▪ Bytes and Binary Code ▪ Problem solving with Python
8	We Code: Python	▪ Password decision making (else/ if) ▪ Problem solving with Python
9	You Code: Python	▪ Programming in Python ▪ Check in 2: Pin number challenge
10	Electronics Code	▪ Code into context ▪ Makey Makey Kit
11	Electronics Code	▪ Programming a Makey Makey ▪ Check in 3: Electronics
12	Futures	▪ Futures Thinking ▪ The real world of code

Years 7, 8

UNIFY Series
Rounds 1-3

Coding and robotics are important for every student to prepare them for the jobs of the future, where technology will be part of every workplace. But it's not just about the code. Learning coding engages students in developing their skills in critical thinking, creativity, collaboration and innovation.

Coding is a "must have" for every student. Our schools are partnering with industry and universities, generating real pathways for our students into the world of work and further study. Through these partnerships, our teachers are increasing their skills and our students are connecting coding and robotics to their future.'

#Coding Counts
Advancing Education (DET)

How it Works	Participation Costs	Secondary Main Page	**Register Now!**

Contact Details: Phone (07) 3727 2888 or email admin@impact.eq.edu.au

Australian Curriculum

Digital Technologies Learning Area

Digital Technologies Knowledge and Understanding	Digital Technologies Processes and Production Skills
▪ Investigate how data is transmitted and secured in wired, wireless and mobile networks, and how the specifications affect performance (ACTDIK023) ▪ Investigate how digital systems represent text, image and audio data in binary (ACTDIK024)	▪ Analyse and visualise data using a range of software to create information, and use structured data to model objects or events (ACTDIP026) ▪ Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028) ▪ Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030)

General Capabilities

Numeracy	ICT Capability
Using measurement ▪ Estimate and measure with metric units **Interpreting statistical information** ▪ Interpret data displays **Using spatial reasoning** ▪ Visualise 2D shapes and 3D objects ▪ Interpret diagrams	**Managing and operating ICT** ▪ Select and use hardware and software **Creating with ICT** ▪ Generate solutions to challenges and learning area tasks **Communicating with ICT** ▪ Select and use appropriate ICT tools safely to share and exchange information and to safely collaborate with other.
Literacy	**Critical and Creative Thinking**
Comprehending texts through listening, reading and viewing ▪ Comprehend texts ▪ Navigate, read and view learning area texts ▪ Interpret and analyse learning area texts **Composing texts through speaking, writing and creating** ▪ Compose spoken, written, visual and multimodal learning area texts **Word Knowledge** ▪ Understand learning area vocabulary **Visual Knowledge** ▪ Understand how visual elements create meaning	**Inquiring – identifying, exploring and organising information and ideas** ▪ Pose questions ▪ Identify and clarify information and ideas ▪ Organise and process information **Reflecting on thinking and processes** ▪ Reflect on processes **Generating ideas, possibilities and actions** ▪ Consider alternatives ▪ Seek solutions and put ideas into action ▪ Imagine possibilities and connect ideas **Analysing, synthesising and evaluating reasoning and procedures** ▪ Apply logic and reasoning ▪ Draw conclusions and design a course of action

NAPLAN Online – ICT Skills Guide

NAPLAN Online requires students to confidently use a computer or device in at least seven ways. As shown below, IMPACT Centre projects develop all seven of these skills and are an excellent way to prepare your students for online testing.

1. Locate and select an answer from a list – YES 2. Type an answer – YES 3. Read the screen and navigate web pages – YES 4. Manipulate objects on screen – YES	5. Read and comprehend digital texts – YES 6. Plan and compose text using word processing – YES 7. Listen using a headset – YES **NB:** See DET's NAPLAN Online ICT Skills Guide for details.

Assessment	Reporting
1. Pre-Post assessment – eLearn quiz 2. Check in Problem Solving Tasks for programming in Blocky, Python and Electronics.	▪ Pre-Post assessment data is provided to schools, along with student attendance data. ▪ Qualitative report card comments are provided to schools. We recommend their inclusion as an OLA on semester report cards.