SUBJECT: TED - Technology, Design and Engineering.

Sequence of Topics 2025

Year	Term 1	Term 2	Term 3	Term 4
7	Touch Typing for 15-20 minutes each week			

	Year 7: Digital Basics
	• Xuno Introduction (.5)
	• Outlook/emails (.5) (office.com accounts)
	• Word basics (2)
	• Excel basics (5)
	• Microsoft forms (1)
		Both: Ice cream Engineers 1
		• Popsicle stick bridge* – hold >2kg, most weight wins (4)
		• Design a dome* (4)
			Year 7: Digital Design 1
			• PowerPoint (2)
			• Canva (4)
			• Scratch –
			  ○ iRobot tutorials
			  ○ coding animation (beginner games) (5)
				Year 7: 3D Modelling
				• TinkerCAD – avatar and all terrain wheelchair/Moon Camp (4)
				• 3D printing by hand* (2)
				• Engineer a cane* (2)
				• Flight/aerodynamics* (2)

8	Touch Typing for 15-20 minutes each week			

	Year 8: Digital Advertising
	• iMovie – make a tv ad/camp video (6)
	• Website building (4)
		Both: Ice Cream Engineers 2
		• Popsicle trebuchet toss* (2)
		• Seismographs Activity* (3)
		  ○ Earthquakes research task
		• Filtration investigation* (2)
		• Pneumatic and hydraulic machines project (3)
			Year 8: Digital Design 2
			• Photoshop (6)
			  ○ Hamburger
			  ○ Veggie Man
			  ○ Album cover design
			  ○ Self-Portrait
			  ○ Magazine page
			• Coding (2)– iRobot challenges
			• Podcasting (2)
				Year 8: Dig. Des. Cont. and Coding Circuits
				• Music Production (2)
				• Micro:Bit Coding (3)
				• Figma App Protoyping
				
				Optional Extras:
				• Binary Basics* (1)
				• Give Binary a try* (1)
				• Barcodes* (1)
				• Writing in HTML* (2)
				• TinkerCAD – Circuits (5)
				
				Industry guest speakers?

NOTE: Brackets after each topic indicate an approximate number of weeks spent on each topic.
Term 2 can be completed in a two year rotation with both groups at once to entice positive competition.

*Popsicle stick bridge: https://tryengineering.org/teacher/popsicle-bridge/
Bridges expansion: https://www.teachengineering.org/curriculum/browse?collection=CurricularUnits
*Design a dome: https://tryengineering.org/teacher/design-dome/
*Trebuchet toss: https://tryengineering.org/teacher/trebuchet-toss/ Could be added into Term 2 at Year 7 in 2023 if needed to fill term.
*Binary Basics: https://tryengineering.org/teacher/binary-basics/
*Give Binary a Try: https://tryengineering.org/teacher/give-binary-try/
*Barcodes: https://tryengineering.org/teacher/cracking-code/
*HTML: https://tryengineering.org/teacher/writing-in-html/
*Flight: https://tryengineering.org/teacher/take-flight/
*Cane: https://tryengineering.org/teacher/engineer-cane/
*Seismographs: https://tryengineering.org/teacher/shake-it-seismographs/
*3D printing: https://tryengineering.org/teacher/3d-printing-by-hand/
*Recycling: https://tryengineering.org/teacher/recycling-sorter/
*Filtration: https://tryengineering.org/teacher/filtration-investigation/

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Subject: Design and Technologies	**Year Level: 7**
Topic: Digital Basics	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students are introduced to Xuno, Outlook, Word and Excel to establish basic skills to assist them in other subject areas. The office.com platform will be explored so that students can see the different applications available to them.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students must be able to navigate Xuno; send messages, finding their timetable etc.
- Students should be able to save word documents to specific locations, open files, change font types, insert pictures and tables etc.
- They should be able to open new google docs, share with others (teacher)
- Students must be able to use Excel formula such as sum, difference, multiply, divide. They should also be able to display data graphically, fill down in cells, format text, add multiple sheets to a document, freeze panes.
- They should also be able open, save and share excel documents.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. Technology – computers/laptops, Xuno logins, office.com. logins
2. Teacher modelling
3. https://edu.gcfglobal.org/en/excel2016/ (for excel how to videos)
4. Using student collected data to create spreadsheets (shoe size, height, eye colour, skittles in their handful etc.)
5. Writing short stories on word

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Pre-test on Word/Excel
2. Ability to save/share/edit documents (both excel and work)

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Computer room
2. Tv to model for students

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Curriculum Document – Teacher Resource

Subject: Design and Technologies	**Year Level: 7/8**
Topic: Ice Cream Engineers 1	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will problem solve and collaborate to solve engineering design challenges. This will include discussing challenges, brainstorming ideas, constructing and trialling solutions, reflecting on designs to improve efficiency/sustainability.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Bridge/Dome construction strategies
- Strong shapes
- Geometry, measurement for angles and distance of projectiles
- Strong communication, team work, resilience and problem-solving skills.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Competition for strongest bridge and/or dome

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Greatest improvement in strength/distance
2. Best looking Bridge
3. Most efficient use of materials
4. If student groups can build a successful structure

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Popsicle sticks (large and mini)
2. String
3. Pipe cleaners
4. Tooth picks
5. Paper Clips
6. Masking Tape
7. Ruler
8. Measuring tape
9. Weights (Science Room)
10. Scales
11. Tv/Laptop

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Subject: Design and Technologies	**Year Level: 7**
Topic: Digital Design 1	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will learn about design principles to create a PowerPoint presentation. They will also explore the creative platform Canva to create invitations and social media type posts. Students will also explore the animation abilities of Canva. Finally, students will explore coding via Scratch.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students must be able to open, save and edit files in PowerPoint. They must be able to use design principles to create a presentation with aminations and slide transitions.
- Students will explore the program Canva – upload media, use elements and styles tools and create simple animated projects.
- Students will explore the platform Scratch. They will work through tutorials to change characters, move characters, change outfits, add sounds etc for their animations. They will complete the *Basic* games from MakerSpace

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Student choice for PowerPoint presentation topics
3. Game based play/coding

Assessment: *(Ways in which you will measure the level of student achievement)*

1. PowerPoint Presentation
2. Social Media "Post"
3. Invitation
4. Coded Games

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Laptop/computers
2. Internet access
3. MakerSpace videos to air drop to students' computers (Scratch)

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Subject: Design and Technologies	**Year Level: 7**
Topic: 3D Modelling	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will use a collaborative problem-solving approach to design and create different structures to meet specific requirements. Students will explore 3D modelling software platform TinkerCAD. They will apply the knowledge of 3D printing to make simple structures by hand with mud/icing. Students will also investigate the mechanics behind flight and stability in walking canes to gain a broad understanding of the fields in which engineers can work.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students will complete basic training using the 3D modelling platform TinkerCAD. They will then apply their knowledge through construction of an avatar, all terrain wheelchair (both of these activities have built in lesson plans on TinkerCAD) and construct a Moon Camp (option to enter a global competition with designs – 2 difficulty level available)
- Students will then complete the 3D printing by hand using mud or icing through a piping bag to create a simple structure that can air dry.
- Students will also explore the features that make a cane useful and design the ultimate walking cane including the addition of unusual features
- Students will also explore aerodynamics including wind resistance, weighting and build material strength. Student will design and build their own flight devices with selected materials.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Group design and build challenges
3. The movie "Up" for the walking cane

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Flight distance and hang time competition
2. Best Walking Cane prototype

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Popsicle sticks, Blue-tack, String, Ruler, String
2. Measuring tape
3. Weights (textbooks)
4. Tv/Laptop
5. Guest Speakers/Past Students possibly by WebEx/Zoom
6. TinkerCAD needs a teacher account with a class set up first.

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Donald High School 2024
Curriculum Document – Teacher Resource

Subject: Design and Technologies	**Year Level: 8**
Topic: Digital Advertising	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will use iMovie, Powtoon.com and Weebly to create digital designs to explore advertising and create videos and website on topics of the student's choice.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students will explore how to use iMovie to successfully create a brief advertisement for their favourite product. This will include planning, acting, filming and digital creation of a 30-second advertisement. Students will also use photos and footage from Yr8 Camp to create their own camp films.
- Students will also explore the digital platform powtoon.com (via a free account) to create a short video explaining how to perform a task of their choice. Could use cross curricular links for video content.
- Students will also explore the online website building platform weebly.com to create a multiple page website with working links on a topic of their choice. Will need to set up a teacher account first.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Student choice in design

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Advertising Advertisement
2. PowToon Instructional Video
3. Website with working pages and links, photos, external links and text manipulation

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Tv/Laptop
2. Internet access
3. Ipads/Teacher Phone/Laptops for filming

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Curriculum Document – Teacher Resource

Subject: Design and Technologies	**Year Level: 7/8**
Topic: Icecream Engineers 2	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will use a collaborative problem-solving approach to design and create different structures to meet specific requirements. Students will investigate the mechanics behind trebuchets, recycling sorting machines, filtration devices, seismographs, and hydraulic devices to gain a broad understanding of the fields in which engineers can work.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students will explore the mechanisms behind seismographs, including their design, build and why they are used.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Group design and build challenges

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Successful research and presentation of a theme around earthquakes
2. Successful planning, design and build of trebuchet, seismograph, recycling sorter and filtration system and hydraulic device.
3. The degree to which students are able to problem solve and collaborate to find solutions to real world problems.
4. Student resilience in the face of challenge/failure

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Popsicle sticks
2. Blue tack
3. String
4. Pencils
5. Measuring tape
6. String
7. Small Ball
8. Plastic tubes
9. Sand/dirt/pebbles
10. Recycling/Rubbish
11. Scales
12. Tv/Laptop
13. Guest Speakers/Past Students possibly by WebEx/Zoom

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Donald High School 2024
Curriculum Document – Teacher Resource

Subject: Design and Technologies	**Year Level: 8**
Topic: Digital Design 2	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will use Photoshop and Scratch to create digital designs such as short animations, album covers and brochures for websites created in the digital unit.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students will explore how to use Photoshop to successfully create magazine pages, album cover and image modification (self-portrait)
- Students will complete teacher set challenges from code.irobot.com such as writing your name and completing a skiing course (challenges ideas available on website)
- Students will also explore the online design platform Scratch using the MakerSpace Advanced Gaming Unit. They will also plan and animate a brief story of an everyday hero.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context and exemplars
2. Student choice in design

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Album cover
2. Magazine page
3. Image manipulation – self portrait
4. Coded Games

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Tv/Laptop
2. Internet access
3. Scratch Teacher Account with class set up

Donald High School 2024
Curriculum Document – Teacher Resource

Subject: Design and Technologies	**Year Level: 8**
Topic: Coding and Circuits	**Duration of Topic: 10 weeks**
VELS/AusVELS Levels/Information: 7.5 – 9.5	

Unit Summary: *(A broad overview of the topic)*
Students will individually learn how binary code, barcodes and HTML coding works. They will then create their own coding. They will also use TinkerCAd to explore how circuits work.

Content: *(A detailed description of the topic in terms of the skills and key knowledge students must demonstrate during/upon completion of the topic)*

- Students should be able to create block code and send it to a Micro:bit robot to complete several challenges such as to create a digital pet
- Students must be able to understand how binary works and be able to construct short strings of binary code.
- They must understand the characteristics of barcodes and design their own for a product of their choice.
- Students will gain an idea of how circuits work and construct their own digital circuits on TinkerCAD.

Key Engagement Strategies: *(Instructional Strategies/Aspects of Powerful Learning/Differentiation)*

1. YouTube videos for context
2. Student choice for barcode products and binary strings

Assessment: *(Ways in which you will measure the level of student achievement)*

1. Short assessments to determine if successful coding were achieved
2. Functioning Circuits

Resources: *(Things you will need/use to successfully deliver this topic)*

1. Laptop/computers
2. Internet access
3. Micro:bit robots
4. Product labels for barcodes
5. TinkerCAD will need a teacher account and class set up prior to activities