Core Learning

Portfolio Projects

Flipped Learning

Enrichment

Technology

Wellbeing

Soft Skills

Employability

Data Academy HLT

Tasks	GLH
Core Learning - Python fundamentals	120 - 240 minutes
Portfolio Task - Python fundamentals	60 - 120 minutes
Flipped Learning - NumPy	30 minutes
Enrichment - Lambda, inheritance, classes and objects	60 minutes
Technology - Internet of Things (IoT)	60 minutes
Wellbeing - Diet	60 minutes
Soft Skills - Email Etiquette	60 minutes
Employability - Microsoft Certifications	60 minutes

*Times are a rough guideline

TECH TALENT ACADEMY

Core Learning

20 - 40 mins

Core Learning 1 - Motorbike

A motorbike costs £2000 and loses 10% of its value every year. Using a loop, print the value of the bike every following year whilst the value of the bike is greater than £1000.

Follow the instructions below:

1. Store the value of the bike in a variable
2. Create a while loop which subtracts 10% of the bikes value until the value reaches £1000

REMINDER

Must check marking criteria

Use examples from lesson

Once complete, submit the ipynb file via Teams

Core Learning

Marking Criteria – Motorbike

	Pass	Merit	Distinction
• **Syntax**	• Attempts to use Python syntax with some success	• Python syntax is largely accurate with some errors	• Python syntax is consistently accurate and appropriate to the task
• **Code**	• Attempts to store motorbike value against a variable • Attempts to set up a loop • Attempt to calculate the 10% decrease in value	• Successfully stores motorbike value against a variable • Sets up a whilst loop • Calculates the 10% decrease in value	• Converts to loop into a function or procedure and passes in new parameters

Core Learning

20 - 40 mins

Core Learning 2 - loops

Write a program that iterates through a word and counts the number of vowel.

Follow the instructions below:

1. Create a variable which enables the user to enter a string
2. Create variable count_vowel = 0
3. Iterate through the string using a for loop. This loop will want to look through every letter of the word and determine how many vowels are within that word.
4. Print out to console an appropriate message to the uses which informs them of how many values are in the string.

Core Learning

Marking Criteria – loops

	Pass	Merit	Distinction
Syntax	• Attempts to use Python syntax with some success	• Python syntax is largely accurate with some errors	• Python syntax is consistently accurate and appropriate to the task
Code	• Stores a string in a variable • Attempts to count the number of vowels and consonants within the variable	• Uses any form of loop to iterate over the string • Counts the correct number of vowels within the string	• Converts to loop into a function or procedure and passes in new parameters

Core Learning

60 - 120 mins

Core Learning 3 – volume

Write a program that includes a procedure to multiply 3 numbers together and outputs the result. Follow the instructions below:

1. In the main body of the program input the lengths of the box: width, depth, and height
2. Use the procedure to calculate the volume of the box
3. Modify the procedure to a function to return the volume and output the volume in the main program

Lengths should allow decimal places

Core Learning

Marking Criteria – volume

	Pass	Merit	Distinction
• **Syntax**	• Attempts to use Python syntax with some success	• Python syntax is largely accurate with some errors	• Python syntax is consistently accurate and appropriate to the task
• **Code**	• Attempts to calculate volume • Numbers are not in the appropriate datatype • Have created a procedure	• Volume is calculated correctly • Numbers are displayed as floats • Program is converted into a function and the output volume is returned to the main program	• Successfully passed in new parameters into the function

Core Learning

20 - 40 mins

Core Learning 4 - Pythagoras

Pythagoras' Theorem states that the square of the long side (c) of a right-angled triangle is the sum of the squares of the two shorter sides (a and b) such as:
c**2 = a**2 + b**2

Write a program that calculates the lengths of sides of a triangle using Pythagoras's Theorem. Follow these instructions:

1. Print a menu for Pythagoras's calculator

2. Prompt the user to enter an option and complete the calculation

Example menu:

1 - Find the length of a given b and c
2 - Find the length of b given a and c
3 - Find the length of c given a and b
4 - Exit

Core Learning

Marking Criteria – Pythagoras

	Pass	Merit	Distinction
Syntax	• Attempts to use Python syntax with some success	• Python syntax is largely accurate with some errors	• Python syntax is consistently accurate and appropriate to the task
Code	• Attempts to create a function or procedure • Prints a menu to the user • Attempts to create an IF statement to enable users to input lengths	• Creates a function which returns the value back to main program • Successfully creates an IF statement to enable users to input lengths • Prints a goodbye message and exits the program	• Successfully passed in new parameters into the function

60 - 120 mins

Portfolio Projects

Portfolio Tasks -

Build a program that collects user data on a specific location and outputs the weather details of that provided location

https://www.youtube.com/watch?v=SqvVm3QiQVk&t=1494s

Build your own bot that works in Discord which is a platform where people can come together and chat online

https://www.youtube.com/watch?v=SPTfmiYiuok

Using the BeautifulSoup library to scrape a real Estate agency website to find houses and export the information such as the name, location, address, and area to a CSV file

https://www.youtube.com/watch?v=mDveiN1pqyw

Remember to upload to GitHub

GitHub

30 mins

Flipped Learning

Flipped Learning

Use the following resources to support you ahead of next weeks session on the following concepts:

What is the NumPy library?
Arrays V list
Slicing
Reshaping
Matrix
Math operators
Spilt and join
Search and sort
Mathematics

Visit the w3schools website to learn the basics of the NumPy library
https://www.w3schools.com/python/numpy/default.asp

60 mins

Enrichment

Use the following resources to explain concepts in more detail:

Python Lambda - https://www.w3schools.com/python/python_lambda.asp

Python classes and objects - https://www.w3schools.com/python/python_classes.asp

Python Inheritance - https://www.w3schools.com/python/python_inheritance.asp

Python modules - https://www.w3schools.com/python/python_modules.asp

60 mins

Technology

Internet of Things (IoT) refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data.

Pretty much any physical object can be transformed into an IoT device if it can be connected to the internet to be controlled or communicate information.

A lightbulb that can be switched on using a smartphone app is an IoT device, as is a motion sensor or a connected streetlight. An IoT device could be as fluffy as a child's toy or as serious as a driverless truck. Some larger objects may themselves be filled with many smaller IoT components, such as a jet engine that's now filled with thousands of sensors collecting and transmitting data back to make sure it is operating efficiently. At an even bigger scale, smart cities projects are filling entire regions with sensors to help us understand and control the environment.

To find out more information about IoT, use the following links

https://www.youtube.com/watch?v=FjO2iTrWUx0 (subtitles aren't always accurate but is a great introductory video to IoT).
Website providing facts and figures about IoT
https://www.zdnet.com/article/what-is-the-internet-of-things-everything-you-need-to-know-about-the-io
Blog on how to create an IoT device
https://blog.particle.io/building-an-iot-device/

60 mins

Wellbeing

This week, our focus is on **Diet**.

Some jobs within the tech industry can involve sitting down for long periods of time, maybe not burning as many calories as you would on none-workdays. Sometimes the lunch break you planned needs to be moved to accommodate a meeting, in particular if you work remote. Maybe not having a set routine can impact how we eat and drink throughout the day; for this reason, some people skip meals whilst others snack on quick, easy to eat food.

The following are some tips which may help with diet whilst working at a desk:

- Aways have plenty of water (or squash) available
- Block out time in your calendar for a lunch break
- Eat away from your desk
- Eat standing up (if possible); this helps with digestion but also gives you time to stretch your legs
- Have fruit (and nuts if not allergic) available to snack on, such as apples, bananas and grapes
- Plan and prepare lunch the evening before

There are many websites offering tips and advice but hopefully you can find something that works for you:
https://www.doitatyourdesk.com/blog/2020/3/4/can-you-lose-weight-with-a-desk-job
https://www.insider.com/weight-loss-tips-at-work-2019-1

60 mins

Soft Skills

This week, our focus is **Email Etiquette.**

Email was designed as an informal way to communicate however this has changed over the past few years as more companies have started to use email as their main method of communication. For example, many customers have moved to paperless billing meaning that emails sent must be formal as if it were a letter was sent through the post.

With this uncertainty if email is formal or informal, it is important to know what is acceptable and what is not. The following guidelines may be helpful:

- Clear and concise subject line: Ensure your recipient knows what your email is about – do not leave blank
- Use standard fonts and formatting: Leave the font alone; use the default one that is provided – only use emojis if your recipient has done so and your certain this is acceptable
- Use punctuation appropriately: Use sentence case when sending emails. Refrain from typing in CAPS, this is seen as aggressive or shouting. Don't overuse the exclamation mark at the end of a sentence as this could indicate overexcitement!
- Use appropriate greetings and sign-offs: Use Hi xxx, for an informal email and sign off with 'thanks xxx'.
- Think before using 'reply all' or forwarding: Is this necessary?
- Remember, others may see your email: emails can be forwarded on, so please check what you send is positive, polite and professional

For more information, please use the links below:
https://uk.indeed.com/career-advice/career-development/email-etiquette
https://www.pipefy.com/blog/email-etiquette-at-work/

60 mins

Employability

A Microsoft Certification demonstrates to employers that you have the knowledge required for a particular field within the tech industry. To support you with obtaining industry recognised certifications, Tech Talent Academy have provided you with access to Microsoft Certifications for free! All learning materials can be accessed online and can be completed at your own pace. You will be able to access the Microsoft courses after you have completed your Academy with Tech Talent.

To register, click on the link below:

https://docs.microsoft.com/en-us/certifications/student-training-and-certification

To access the courses for free, you will need to use your Tech Talent Microsoft account provided when you joined the academy.