
Software/Full Stack Development

Overview:

This program will allow participants the opportunity to focus on the basics of software development on both the front end and back end. Participants will have the ability to program using Object Oriented Programming principles in an established and well utilized programming language. Participants will also understand database theory and Application Programming Interfaces (API).

The end of the program will also give participants the opportunity to connect with and engage in a Work Integrated Learning (WIL) project with industry.

Time Dedication:

This program is a full-time program and there will be substantial work involved outside of the classroom. Students should be prepared to spend up to 3 hours of time outside of class learning these topics. There will be learning outside of class hours as well.

Courses are held Monday to Friday from 8 – 12 except for holidays.

What to Expect:

Software development is a field where there is often not one right answer so the goal as part of this program is to also work on encouraging using creative problem solving to find a solution to a programming problem. This means the path to the answer is not always A, B, C and may take multiple paths to get to the answer and that there is typically not a perfect answer. This hard shift in mindset can be frustrating but the instructors will help to guide students into this new way of thinking.

This shift into a more agile and adaptive mindset will be beneficial and help students to fit into their new industry.

The main languages taught will be C#, HTML, CSS, Javascript and SQL. This will allow students the opportunity to have a strong base to build their knowledge from without trying to spread the learning too thin and allowing a deeper knowledge foundation. Software development is a field that is always growing, and the learning will never stop. This base will help students be successful in that area.

Courses

SODV9104 - Software Programming Basics	13 Weeks ~104 hours
SODV9105 - Web Programming Basics	11 Weeks ~88 hours
DATA9103 - Database Theory	2 Weeks ~16 hours
SODV9995 – Full Stack Work Integrated Learning	~157 hours

Software Programming Basics - 13 weeks (approx. 104 hours)

Course Learning Outcomes:

- 1 Describe development environments and their purpose
- 2 Create maintainable software solutions using logic and branches
- 3 Solve programming problems using common algorithms and basic flow control structures
- 4 Employ functions and loops to create code reuse efficiencies
- 5 Employ data store elements in program implementation
- 6 Develop simple applications utilizing Object Oriented Programming designs

Using standard development environments participants will use data structure elements, variables, logic and conditional branches. This will enable participants to demonstrate knowledge in developing simple applications using an Object-Oriented Programming approach.

Web Programming Basics - 11 weeks (approx. 88 hours)

Course Learning Outcomes

- 1 Create a website using HTML
- 2 Construct web layout and style using CSS
- 3 Employ JavaScript to control dynamic behaviours of a web page
- 4 Develop a dynamic user interface using the React framework
- 5 Demonstrate the use of API's in software development

Participants will apply web programming fundamentals, such as HTML, CSS, and JavaScript, to create websites and user interfaces. Participants will be introduced to API's and their usage in web development projects.

Database Theory - 2 Weeks (approx. 16 hours)

Course Learning Outcomes:

- 1 Describe relational databases
- 2 Employ SQL for database calls
- 3 Manage and retrieve data from a database through SQL constructs

Participants will be able to describe relational databases and their usage within a business context. They will demonstrate the ability to employ SQL for database calls while managing and retrieving data through SQL constructs.

Full Stack Work Integrated Learning (approx. 157 hours)

Course Learning Outcomes:

- 1 Research and evaluate an industry challenge as a member of a project team
- 2 Negotiate and prioritize project team roles to address client needs
- 3 Apply client engagement strategies
- 4 Develop and present a software solution that strategically addresses the industry challenge

In this course, students participate in a Work Integrated Learning (WIL) project that summatively incorporates the knowledge, skills, and attitudes gained during the Full Stack/Software Development Program. Students practice and refine skills in research, client communication, and documentation during advanced software design and development.

Online Learning:

The learning for this program is done online which means there are some different requirements needed to be successful. With online learning the student needs to be engaged and asking questions. Without these questions the instructor will often be unaware of what issues may be arising. There is also a tendency in this

type of delivery to expect quicker answers so patience can also be key as the instructor may not have the answers in front of them.

These topics are likely new to most if not all learners and the feelings of no longer being the expert will be tough. It is ok to not know and to fail when trying to learn. We will help you get through that failure to get you to success. You will also find in these programs that the more you learn, the more you discover that can be learned. You will never learn it all, but we will help make you proficient enough to keep learning.