SWITCH ACADEMY

POWER X SOFTWARE & PRODUCT DEVELOPMENT

WELCOME KIT

HELLO

This information kit is designed to welcome you to our community. In the next 6 months, you will be going through a learning experience that had been put together by specialists and industry experts to support your lifelong learning ambitions.
We hope you will enjoy your journey with us.

CONTENTS

YOUR SAFETY MATTERS

SAFE MANAGEMENT MEASURES

SAFEENTRY

Our campus enforces SafeEntry measures and the checkpoints are located as follows:

- **Campus Centre (Building 3)** for visitors travelling via public transport
- **Carpark Entrance C** for visitors who are travelling with their own transport

SAFE MANAGEMENT MEASURES

Instructors and participants are required to wear masks at all times. (Except when eating, drinking). Practice safe distancing and good personal hygiene.

CONTACT TRACING

To facilitate national contact tracing efforts, participants are strongly encouraged to carry a TraceTogether token or download and turn on the TraceTogether application while on campus.

Download the app and enable Bluetooth®.

The Bluetooth data stored on your phone after 25 days is auto-deleted.

WELCOME TO THE ACADEMY

Thank you for embarking on our programme.

We set up SUTD Academy in 2018 with the goal of providing adult learners a venue to acquire industry-relevant skills in the areas of technology and design to help learners remain relevant in this digital economy.

We have prepared this guide to help you familiarise with this programme. This guide presents useful information such as course information, course structure, instructors profile and accessibility information.

We are grateful that you have made SUTD Academy your preferred partner in your lifelong learning.

PROF. PEY KIN LEONG

ASSOCIATE PROVOST FOR
UNDERGRADUATE STUDIES AND
SUTD ACADEMY

LEARNING

FORMAT

GENERAL FORMAT

You will go through a total of 5 days of learning and assessment.

4 days (9 am to 5 pm) of in-class, face-to-face learning followed by 28 days of project work, and finally a project presentation.

There will be no examinations, but there will be assessments, quizzes, and projects to determine your learning progress.

OVERVIEW

Online learning can be a great way to learn, and there are lots of ways to learn online. We will be exploring learning via a synchronous-approach.

This means our lessons are “live” and real-time, our instructors will be able to communicate and respond to learners right when it happens.

TOOL

We will be using Zoom to conduct our consultation and presentation sessions. Zoom provides video communications, with an easy, reliable cloud platform for video and audio conferencing, collaboration, chat, and webinars across mobile devices, desktops, telephones, and room systems.

You will receive a guide on how to use Zoom.

GETTING AROUND

SUTD

ADDRESS

8 Somapah Road, Singapore 487372

TRAVELLING BY TRAIN

Recommended

Alight at Upper Changi MRT Station (DT34) and take Exit B – our campus will be on your left when you exit the station

Alight at Expo MRT Station (DT35/CG1) and walk to our campus - along Changi South Avenue 1 in the direction of Max Pavilion/Somapah Road

TRAVELLING BY BUS

Recommended

Alight at one of the bus stops along Somapah Road and walk to our Campus:

B96449: SUTD.
Service No: 20

B96441: Opposite SUTD.
Service No: 20

Alight at one of the bus stops along Upper Changi Road East and walk to our Campus:

B96041: Upper Changi Road East, Before Tropicana Condo.
Service No: 2, 5, 24

B96049: Upper Changi Road East, Opposite Tropicana Condo.
Service No: 2, 5, 24

Alight at Changi Business Park Bus Terminal and walk to our Campus:

Service No: 47, 118

TRAVELLING BY PRIVATE TRANSPORT

From ECP:

- Take Exit 2B on ECP (Xilin Ave towards Tampines)
- Turn right to Changi South Ave 1
- Turn left into the Campus carpark Entrance C (after the sports complex), after the traffic junction of Somapah Road and Changi South Ave 1

From PIE:

- Take Exit 4A on PIE (Simei Ave)
- Turn left to Upper Changi Road East
- Turn right to Somapah Road
- Turn left to Changi South Ave 1
- Turn left into the Campus carpark Entrance C (after the sports complex)

GETTING READY

PREPARATION

Embarking on a learning programme requires both discipline and time management but you don't have to be alone. Getting support from your network of family and friends can help. Along the way, you could build new friendships and networks with your fellow participants.

ATTENDANCE

Participants must strive to attend all classes and maintain a minimum attendance of 75% per module.

ASSESSMENT

Participants must complete their assessments (assignments/tests/projects) on time to complete the modules.

01

BUILDING NETWORKS

You will be spending time with the instructors and fellow participants during the course of study, so we encourage you to get to know them whether it is through class interactions, or online interactions with one another.

02

SETTING GOALS

As you start your programme, set some goals that you want to achieve during and post programme.

You can use the SMART framework to setting your objectives: Specific, Measurable, Attainable, Realistic, Time-bound.

You can discuss these goals anytime with our career coach.

03

TAKING OWNERSHIP

Much as you have decided to embark on this 6-month learning journey with us, the best way for you to get the most of out of this, is to take ownership in learning and be responsible for every phase and its outcomes; including setting your goals.

CONDUCT

ADVISORY

Participant conduct and behaviour, transpired on or off University premises, fall under the jurisdiction of the University. University premises include buildings, facilities, land, grounds, structures and properties such as computers and its systems.

Participants of the Programme are expected to maintain the University's standards of responsible demeanour during the course of the programme.

1. APPROPRIATE BEHAVIOUR

The University reinforces the importance of being kind, courteous, considerate and responsible when interacting with other members of the University community. Unbecoming conduct that involves, but is not limited to, intimidation, lewdness, drunkenness, threats and participation in any disturbance of peace and unlawful assembly.

2. INTEGRITY AND RESPECT FOR OTHERS

The quest for academic advancement should not be compromised by the lack of personal integrity. Participants should avoid any acts of academic dishonesty and report possible cases of it to the University authorities. Cheating in any form, including plagiarism, forgery and falsification of important documents, will be deemed an offence.

Participants are also expected to display respect for all within the University community, as well as be aware of the diversity and sensitivity of religious customs, beliefs and cultures of others. Actions that create a sense of negativity or exhibit signs of intimidation, humiliation and/or violation of another individual's dignity is indicative of a failure to respect others and will not be condoned.

3. PUNCTUALITY

Observing punctuality is a good practice and reflects favourably on the participant as being courteous and respectful towards others. Efforts should be made on the participant's part to be on time when attending classes in campus or online sessions.

4. DRESS CODE

Establishing a good impression by dressing well and being decently clad informs others that you respect them and yourself.

Security considerations require participants to be easily identifiable at all times, and you are encouraged to carry your Trainee Identity Card when in campus.

5. EQUIPMENT LOAN

All equipment loaned from the University must be returned in their original condition in a timely manner.

GETTING READY

DEVICES AND CONNECTIVITY

BRING YOUR OWN DEVICES

We advise participants to bring your own laptop to class. This is to facilitate the learnings and discussions as well as to aid in the progress of your project work. Please ensure that you have the administrator's privileges to the laptop.

System Requirements

Your laptop should have at least 8GB RAM, 250GB storage and i5 processor.

Recommended Browser

You should have an updated web browser preferably with the latest version of Chrome (86.0.4240.111 or 86.0.4240.114) or Firefox browser.

COURSE SCHEDULE

Course	Dates
Fundamentals in JavaScript	Class: July (6, 13, 19, 27) Consultation: August (31) **Presentation: September (21)**
Fundamentals in Python (Intermediate)	Class: July (8, 15, 29), August (5) Consultation: August (26) **Presentation: September (9)**
Fundamentals in Backend Development	Class: August (3, 10, 17, 24) Consultation: September (28) **Presentation: October (19)**
Fundamentals in Frontend Development	Class: August (6, 13, 20, 27) Consultation: October (1) **Presentation: October (21)**
Fundamentals in Developer Tools	Class: September (1, 8, 15, 23) Consultation: October (27) **Presentation: November (17)**
Design Innovation Bootcamp	Class: October (15, 22, 29), November (5, 16) **Presentation: November (30)**
Introduction to Software Product Management	Class: November (24), December (15) **Presentation: December (29)**

Denotes Project Presentation

YOUR JOURNEY

CERTIFICATES

Participants will receive the following graduate certificates upon successful completion of the following modules:

1. Graduate Certificate in Backend Development

2. Graduate Certificate in Frontend Development

1. Fundamentals in Backend Development
2. Fundamentals in Python (Intermediate)
3. Fundamentals in Developer Tools
4. Fundamentals in Frontend Development
5. Fundamentals in JavaScript
6. Introduction to Software Product Management
7. Design Innovation Bootcamp

COURSE MODULES

FRONTEND DEVELOPMENT

FUNDAMENTALS IN JAVASCRIPT

- **HTML**

  Elements, attributes, events, color names, entities and more
- **Document Object Model (DOM)**

  Methods, Document, Elements, Changing and more
- **Asynchronous JavaScript**

  Callbacks, Promises, Async/Await
- **Function Expressions**

  Immediately-invoked Function Expressions (IIFE)

FUNDAMENTALS IN FRONTEND DEVELOPMENT

- **HTML**

  Elements, attributes, events, color names, entities, character-sets and more
- **CSS**

  Properties,selectors,functions,animatable and more
- **React**

  ES6, Render HTML, JSX, Components, Props, State, and more
- **AngularJS**

  Expressions, Modules, Directives, Mdel, Data Binding and more

BACKEND DEVELOPMENT

FUNDAMENTALS IN BACKEND DEVELOPMENT

- **Node.js**

  Elements, attributes, events, color names, entities and more
- **Node.js MySQL**

  Create Database , Create Table , Insert Into Table, Selecting From a Table and more
- **Express Framework**

  Installing Express, Request & Response and more

FUNDAMENTALS IN PYTHON (INTERMEDIATE)

- **Algorithms and Python's Data Structures**
- **Object Oriented Programming (OOP)**
- **Exception Handling**
- **Lambda Functions**
- **Functional Programming**

SOFTWARE DEVELOPMENT

FUNDAMENTALS IN DEVELOPER TOOLS

- **Continuous Integration**

  GitFlow, Unit Testing, Performance Testing
- **Continous Deployment**

  Testing, Configurations , Deployment with AWS Cloud
- **Git/Github**
- **Basic Docker concepts**
- **REST API and Websockets**
- **Web application vulnerabilities and mitigations**
- **Shell (bash, zsh or fish)**

PRODUCT MANAGEMENT

These modules are not eligible for qualification in the micro-credential programmes (Graduate Certificate and ModularMaster Certificate).

INTRODUCTION TO SOFTWARE PRODUCT MANAGEMENT

- **Agile Development (Scrum)**

  Processes, Appproaches and Adoptions
- **Test Driven Development (TDD)**

  Adding test, Running tests, Writing code, Running tests, Refactor code, Repeat
- **Express Framework**

  Installing Express, Request & Response and more

DESIGN INNOVATION BOOTCAMP

- **Agile-oriented Design Innovation (DI)**

  DI Process, Value of DI, Mindsets and more
- **Discover**

  Personas & Scenarios, Contextual Needs Analysis and more
- **Define**

  Activity Analysis, Opportunity Statement framing and more
- **Develop**

  6-3-5 C-Sketch Method, Real-Win-Worth, and more
- **Deliver**

  Storyboarding, Prototyping Canvas, Paper Prototyping and more

INSTRUCTORS

PROFILE

OKA KURNIAWAN

SENIOR LECTURER,
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Though his first name sounds like a Japanese, Oka was actually born in Indonesia. He came to Singapore in 2000 to study Electrical and Electronics Engineering in Nanyang Technological University (NTU), Singapore. After he finished his Bachelor degree, he continued his further study in NTU to obtain his doctoral degree in Semiconductor Physics. In the last year of his doctoral degree, he began to work at the Institute of High Performance Computing (IHPC), A*STAR, Singapore.

During his term in IHPC, he was involved with various research projects using numerical methods to solve quantum mechanics, electromagnetics, and plasmonics. After three and a half year in IHPC, he realized that his passion in teaching has not yet been realised, and so he moved on to School of Mathematics and Science, Singapore Polytechnic, in 2011. After completing his two-year contract, he then decided to join SUTD. While teaching in Singapore Polytechnic, he was also an adjunct lecturer at Digipen Singapore, Singapore Institute of Technology (SIT).

Email: oka_kurniawan@sutd.edu.sg

CYRILLE JEGOUREL

LECTURER,
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Cyrille was born in France. He studied mathematics and statistical engineering in University of Rennes 1, France. After he finished his Master degree, he started to work at Inria Rennes as a statistician and, gradually, obtained his PhD degree in computer science in November 2014.

His thesis was about Rare Event Simulation for Statistical Model Checking. After his PhD, he joined the National University of Singapore (NUS) as a postdoctoral research fellow. After a year and half, he joined SUTD (ISTD pillar) as a postdoc for two years and half. During this period, he had the chance to be also a teaching assistant for three terms at SUTD (for ESD pillar). These latter experiences convinced him to become a lecturer at SUTD in July 2019.

Email: cyrille_jegourel@sutd.edu.sg

KRIS WOOD

SENIOR FELLOW,
SUTD ACADEMY

Dr Kristin L. Wood is currently Professor, Co-Director (SUTD-MIT IDC) & Founding Head of Pillar (EPD) Singapore University of Technology and Design (SUTD) and a Senior Academy Fellow.

Dr Wood completed his M.S. and Ph.D. degrees in the Division of Engineering and Applied Science at the California Institute of Technology, where he was an AT&T Bell Laboratories Ph.D. Scholar. Dr Wood joined the faculty at the University of Texas in September 1989 and established a computational and experimental laboratory for research in engineering design and manufacturing, in addition to a teaching laboratory for prototyping, reverse engineering measurements, and testing. During his academic career, Dr Wood was a Distinguished Visiting Professor at the United States Air Force Academy

Email: kristinwood@sutd.edu.sg

SUDIPTA CHATTOPADHYAY

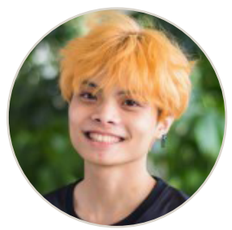
ASSISTANT PROFESSOR,
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Sudipta is a Assistant Professor at Information Systems Technology and Design at SUTD.

His research interests broadly cover the area of Program Analysis, Embedded Systems and Compilers. Concretely, his goal is to understand the influence of execution platform on critical software properties, such as performance, energy, robustness and security.

In his doctoral dissertation, he worked on Execution-time Predictability, with a specific focus on Multi-core Platforms. At present, he is exploring different ideas for efficient, reliable and secure execution of complex software systems. Some specific application areas include (but not limited to) cyber-physical systems, mobile applications and smart home.

Email: sudipta_chattopadhyay@sutd.edu.sg



STANLEY NGUYEN

FELLOW,
SUTD ACADEMY

Stanley Nguyen is an energetic, ambitious individual with strong interest in software development. Fluent in computational thinking, programming languages, and development frameworks. Open-minded individual with good inter-personal skills, a fast-learner who yearns for opportunities for self-development.

His experiences include leading teams of engineers across Xendit. He has also worked as a Software Engineer at VISA Inc.

He holds a Bachelor of Engineering (Information System Technology and Design), from the Singapore University of Technology And Design.

Email: hung.ngn.the@gmail.com

GETTING ASSISTANCE

SUTD ACADEMY

ACADEMY CONTACT

General Helpline: 6499 7171

Email: sutd_academy@sutd.edu.sg

YOUR PROGRAMME MANAGER

Azmi SHAMSUDIN

azmi_shamsudin@sutd.edu.sg

6499 7171 / 8893 6828

Your programme manager will be your point-of-contact and assist you during your learning journey with us.

READINESS CHECKLIST

- ☑ I have downloaded the TraceTogether App and turn on app and allowed Bluetooth connection or I will carry my TraceTogether Token with me at all times
- ☑ I have downloaded and set up my Zoom account on my desktop/laptop/mobile
- ☑ I have prepared a laptop for class
- ☑ I have submitted my profile photo

SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Follow us on social media to get updates on upskilling and reskilling.

www.facebook.com/SUTDAcademy

www.linkedin.com/company/sutd-academy

8 Somapah Road, Singapore 487372