**Capstone Project Brief: University planner application using Flutter**

**Objective:** Create a University planner app using Flutter

**Overview:**

Flutter is an open-source mobile application development framework created by Google. It is used to develop native applications for both Android and iOS from a single codebase. Students will build a university planner app using Flutter that will work on both their Android and iPhones.

**App description:**The app will be a university planner that will store a student’s class schedule, assignment deadlines, and exam timetable. It will store all the data in a local database. The app will send push notifications for classes and deadlines and other reminders. The UI of the app is up to the student and they are encouraged to be creative. For example, the main screen of the app may have an “Agenda” screen showing upcoming tasks and events and a calendar on the top. Items may be colour coded based on the unit it is related to. And a progress screen may show what the student has complete so far.

Eventually, students will be able to update the app to include Firebase to turn it into a fully-fledged app that has login and sync across devices. Firebase is a mobile and web application development platform also developed by Google. Students will be using Firebase’s Authentication, Cloud Storage, and Cloud Firestore functions. Firebase has excellent integration with Flutter and has a free plan called Firebase Spark Plan. The Spark plan adequate for the app.

**Rationale:**

Flutter and Dart is a relatively new method of building native apps. Generally, students who might have taken application development units at university learn traditional methods such as Java and Objective C or Swift to build Android and iOS apps respectively. Building a Flutter app means learning an entirely new language from scratch. The idea of the project is to test the adaptability of the student. New language and frameworks will come and go every so often, however the fundamentals of programming remain the same. Students must be able to use prior knowledge of other languages to figure out how to do familiar things in a new environment with a new language. A project like this will introduce students to the Flutter framework and its various libraries, widgets and other unique features.

**Proposed timeline:**

Week 1:

Introduction

Setting up the environment

Set up VS Code or preferred IDE

Set up Flutter and Dart

Set up Xcode or Android Studio

Set up iOS or Android Emulator

Set up phone in developer mode

Week 2:

Troubleshoot any installation issues students might encounter

Start with basic “Hello World” app

Use the basic app to introduce concepts:

Basic programming concepts to ensure every student is up to speed:

Ensure students understand functions and classes

Ensure students understand basics of good UI and UX

Basics of the IDE

Use the basic app to introduce Flutter concepts:

What are widgets

Guide students how and where to look up resources:

Flutter Documentation: <https://flutter.dev/docs>

Flutter & Dart packages: <https://pub.dartlang.org/flutter>

Material Design: <https://material.io/develop/flutter/>

Tutorials on YouTube, example apps on GitHub etc.

Week 3-4

Build app, troubleshoot issues

Week 5

Introduce students to version control and start using git and GitHub

Week 6

Build app, troubleshoot issues

Week 7

Mid-point progress report

Week 8

Introduce students to Firebase depending on their progress so far

Week 9-10

Continue work

Week 11

Prepare app for deployment and installation on real phones

Build .apk or put app on TestFlight

Week 12

Presentation and demonstration of app