

Mobile Development :

Syllabus



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Outline :

- Aims and Objectives
- Course Content
- Why it is important
- Teaching Staff
- Evaluation & Assignments
- Resources
- Ethics & Policies.





Aims & Objectives

- Students will learn mobile application development and design by looking at different technological frameworks.
- Students are expected to design and develop a professional-quality mobile applications that addresses a real-world problem in an innovative way.
- Coursework includes project conception, design, implementation, and pilot testing of mobile phone software applications

Course Content

Part 1 : Introduction:

- Why Mobile Apps?
- Technology : Native, Web and Hybrid

Part 2 : App Design Issues and Considerations

- Mobile Development Lifecycle Overview
- Architecture, Design and Engineering Considerations
- Usability and User Interaction Design
- Overarching Design Principles and Guidelines

Part 3: Developing the Mobile App

- Techniques, Methodologies for Mobile Application Development
- Mobile Application Development Frameworks
- Persistent Data in Mobile Apps
- Maps and Location in Mobile Apps
- Access to Hardware and Sensors
- Building Mobile Apps Powered by Enterprise Backend
- Secured Data Store and Synchronisation

Part 4 : Testing and Publishing Apps

- Mobile Application Build and Delivery
- Testing Mobile Applications
- App Distribution Through App Stores
- Monetizing Apps



Course Content

- Three different paradigms of development will be taught:
 - Native Development (Limited to Android : 4 Weeks)
 - Cross-platform Development (using Flutter : 4 Weeks)
 - Web-Based Mobile Development (Using Cordova :vs React Native or Ionic 1 Week)



Why it is important ?

- Because mobile phones are becoming ubiquitous and an integral part of our lives.
- Convenience of digital users to interact with information systems from their smartphones.
- Career Perspectives:
 - Mastering the technologies, concepts and methodologies for developing mobile applications, would be an advantage on your CV to secure the best job.
 - Most startups being launched recently are based on a mobile-app project.

Teaching Staff

- **Lectures :**

- **Professor Imed Bouchrika**
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- **Lab Sessions :**

- **Dr. Hayet Saadi**
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- **Dr. Youcef Omari**
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Evaluation & Assignments

- Exam : 60%
- Continuous Evaluation : 40%
 - Group Mini Project : **7 points**
 - Mid-Term Exam : Individual Coding Exercise : **4 points**
 - Online Quizzes : **4 points**
 - Lab Homework and Assignments : **3 points**
 - Staff Appreciation : **2 points**
 - Challenge Exercises : **2 points** (Extra credit)
- Late Submission :
 - 1 day Penalty of 20%
 - 2 days Penalty of 50%
 - 3 days → Zero mark is given.



Quizzes (4 points)

- Quizzes will be available either :
 - After the lecture and closed at the end of the week.
 - During the lecture only.
- Missing three quizzes, zero mark will be given directly and all other submissions will not be considered.
- There will be only 6 quizzes



Quizzes (4 points)

- Online Quizzes should preferably be done before attending the tutorial sessions.
- Quizzes include easy/medium M.C.Questions aimed to enforce your understanding for the concepts discussed during the lecture.
- PLEASE : Don't rush to answer the quiz, take your time, **search for the solutions on the web** and submit your answers when you are certain.
- The quiz will be open during the week of the lecture. (To ensure students will not procrastinate doing their revision and homework)

Group Mini Project (7 points)

- ***Team Creation :***

- Teams of 2 or 3 members will be created (**No more than 3 members**).
- You are **not** allowed to change your team to another team when the topic is assigned.

- ***Team Leader :***

- Up to the team to have a democratic process to select a leader or any other process they like to invent .
- All correspondence, reporting and communication must be done by the team leader

Group Mini Project (7 points)

- Project Topic :
 - Two Options:
 - The team can come up with an idea for a project to implement.
 - Provided it is validated by a staff
 - Can be an extension for the Software Engineering project
 - We will give you a set of topics to choose from
 - The project topics must :
 - Feasible within the resources you have
 - Will be used by real people .
 - It solves an existing problem
 - **Not over ambitious.**

Group Mini Project (7 points)

- Marking Per Student or Per Team :
 - We will give one Mark per Team.
 - You work all a a team, you either all win or all lose.
 - If other students are not contributing ? it is not fair that he/she gets the same mark as a working person ? :
 - There will be an individual evaluation per members.
 - Students not attending team meetings, Lab sessions, lectures will be penalized.

Group Mini Project (7 points)



- Marking Schema :
 - Functional Software : 2 points (Non functioning software \Rightarrow opts)
 - Existence of Backend : 0.5 point
 - Published on Google Play + There are real* users of your software : 1.5 points
 - Design and Implementation : 1 points
 - Documentation : 0.5 points
 - Demonstration : 0.5 points
 - Reporting and Management : 0.5 points
 - Non-Functional Requirements : 0.5 points

**Real users means not fake, bots, or ENSIA students or relatives*

Mid-Term Coding Exercise

(4 points)

- Individual Exercise
 - Students would be given a topic (or set of topics to choose from)
 - Based on what they learned in lectures and lab sessions, they will develop a mobile application with a minimal set of functionalities.
 - It will be an individual exercise. Books, PCs, online resources are permitted.
 - Evaluation Schema :
 - Functional on a real-mobile phone : 1.5 point
 - Clean Code and Better Software Architecture at [GitHub.com](https://github.com) : 1 point
 - Extra Attractive Functionalities : 1 point
 - Good User Experience and Usability : 0.5 point

Group Mini Project (7 points)

- Exceptional Project :
 - The team developing a professional software having an exceptional impact
 - Considerable* number of **active real users**.
 - Fully functional
 - Professional Branding and Packaging
 - Students of the selected team, will get the full mark for :
 - All the quizzes (Provided they don't miss three quizzes)
 - The group project
 - Only one team will be selected

**Real users means not fake, bots, or ENSIA students*

Challenge Questions

(2 points of extra credit)

- Meant for you to learn how to solve difficult problems that you may face in the future and you can not find their solutions on the web freely.
- Solutions for the challenge Exercises will be submitted via Google Classroom when the Assignments are created. **(It will be created without prior notice with only a one day deadline or subjected to quota)**
- Solving the exercises is optional, but you are encouraged to do so.

Important Dates



- **12 October 2023** : Creation of Teams
- **19 October 2023** : Selection of Project Topics
- **02 November 2023** : Submission of the Design for UI/UX
- **16 November 2023** : Release of MVP
- **07 December 2023** : Release of Beta Version
- **11 January 2024** : Final Submission of the project deliverables
- **Week : 14 January 2024** : Project Validation



Attending Lectures

- There would be quizzes during lectures from time to time. They will be graded.
- Can the lectures be substituted by Youtube videos given by Top Scientists from MIT and Stanford ?
- Are lectures about telling you what's inside the book that you can read on your own ?
- Deliberate missing of lectures would contribute to create a lazy atmosphere among the students + Accumulation of pressure and stress before the exam.



Lab Sessions - TP

- Exercises of Prefix :
 - **C** : to be solved in class where you will be given some time to try to solve them.
 - **A : Assignments/homework** that you need to solve within a week deadline. You need to submit your solution via Google Classroom
 - **P** : Are optional exercises to be done at home after class. Discuss with your colleagues about the possible solutions. Feel free to bring your solutions to the lecturer to discuss in class when convenient.
- Note that all **P exercises** are potential exam questions that they **will** be included into the final exams.



Lab Sessions - TP

- TP Sessions will serve as :
 - An opportunity for students to work and collaborate on their projects.
 - Meeting sessions where teams brief their lecturer about their progress.
 - Lecturers can demonstrate new technologies or platforms to students
- **Important Note :**
 - Lab Session time should never be wasted to install software or configure them.
 - Lab instructors would offer guidance and recommendations on coding strategies, principles, tips and explanations. But don't expect us to write the code or debug it. (As it can be time consuming and unfair to other students seeking legitimate assistance)



Absence & Coming late

- LAB Sessions :
 - Students being absent more than allowed, law will be strictly applied and students will be excluded.
- Penalizing Coefficient for Absence:
 - = $1 - 0.05 * (\text{Total number of absences in (LAB Sessions + Lectures)})$
 - Lab session = one session of 90 minutes
 - Will be used as a penalizing coefficient for the Continuous Mark.
- Being late :
 - Students coming 10 minutes late, will be allowed in class but they will be considered **ABSENT**



Resources

- Course Textbooks and Online Resources:

- *Native Android Development :*

- *Reto Meier, Ian Lake, "PROFESSIONAL ANDROID®", FOURTH EDITION, 2018*
 - *Ricardo Costeira, Subhrajyoti Sen, Kolin Stürt & Antonio Roa-Valverde, "Real-World Android by Tutorials", 2022*
 - *Alexandru Dumbravan, "Clean Android Architecture", 2022*
 - *Bryan Sills, Brian Gardner, Kristin Marsicano and Chris Stewart, "Android Programming: The Big Nerd Ranch Guide", 2022*

- *Flutter*

Policies



- The use of **Mobile Phones inside the classroom is prohibited for Chat and non-educational purposes**. Disciplinary measures would be taken as it is considered as a disrespect to the lecturers and to the school.
- Penalty for Late Submissions will be applied strictly. Any submission that we cannot open or unzip, zero mark will be given directly. Submission by email is never acceptable.
- If you need assistance or have any questions, always speak directly to the lecturer, lab staff and make use of the weekly office hours.