San Pablo Catholic University (UCSP)
Undergraduate Program in
Computer Science
SILABO

Universidad Católica San Pablo
2022-II

CS2B1. Platform Based Development (Mandatory)

1. General information

1.1 School	:	Ciencia de la Computación
1.2 Course	:	CS2B1. Platform Based Development
1.3 Semester	:	3^{er} Semestre.
1.4 Prerrequisites	:	CS112. Computer Science I. (2^{nd} Sem)
1.5 Type of course	:	Mandatory
1.6 Learning modality	:	Face to face
1.7 Horas	:	1 HT; 2 HP; 2 HL;
1.8 Credits	:	3

2. Professors

3. Course foundation

The world has changed due to the use of fabric and related technologies, rapid, timely and personalized access to the information, through web technology, ubiquitous and pervasive; they have changed the way we do things, how do we think? and how does the industry develop? Web technologies, ubiquitous and pervasive are based on the development of web services, web applications and mobile applications, which are necessary to understand the architecture, design, and implementation of web services, web applications and mobile applications.

4. Summary

1. Introduction 2. Web Platforms 3. Desarrollo de servicios y aplicaciones web 4. Mobile Platforms 5. Mobile Applications for Android Handheld Systems

5. Generales Goals

- That the student is able to design and implement services, web applications using tools and languages such as HTML, CSS, JavaScript (including AJAX), back-end scripting and a database, at an intermediate level.
- That the student is able to develop mobile applications, administration of web servers in a Unix system and an introduction to web security, at an intermediate level.

6. Contribution to Outcomes

This discipline contributes to the achievement of the following outcomes:

c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. (**Usage**)

d) An ability to function on multidisciplinary teams. (**Usage**)

g) The broad education necessary to understand the impact of computing solutions in a global, economic, environmental, and societal context. (**Usage**)

i) An ability to use the techniques, skills, and modern computing tools necessary for computing practice. (**Usage**)

o) Understand that the formation of a good professional is not disconnected or opposed but rather contributes to genuine personal growth. This requires the assimilation of solid values, broad spiritual horizons and a deep vision of the cultural environment. (**Usage**)

7. Content

UNIT 1: Introduction (5)

Competences: g

Content	**Generales Goals**
• Overview of platforms (e.g., Web, Mobile, Game, Industrial) • Programming via platform-specific APIs • Overview of Platform Languages (e.g., Objective C, HTML5) • Programming under platform constraints	• Describe how platform-based development differs from general purpose programming [Familiarity] • List characteristics of platform languages [Familiarity] • Write and execute a simple platform-based program [Familiarity] • List the advantages and disadvantages of programming with platform constraints [Familiarity]

Readings: fielding2000fielding, **grove2009web**, **annuzzi2013introduction**, **Cornez2015**

UNIT 2: Web Platforms (5)

Competences: c,g,i

Content	**Generales Goals**
• Web programming languages (e.g., HTML5, Java Script, PHP, CSS) • • Web Platform constraints: Client-Server, Stateless-Stateful, Cache, Uniform Interface, Layered System, Code on Demand, ReST. • Web platform constraints • Software as a Service (SaaS) • Web standards	• Design and Implement a simple web application [Familiarity] • Describe the constraints that the web puts on developers [Familiarity] • Compare and contrast web programming with general purpose programming [Familiarity] • Describe the differences between Software-as-a-Service and traditional software products [Familiarity] • Discuss how web standards impact software development [Familiarity] • Review an existing web application against a current web standard [Familiarity]

Readings: fielding2000fielding

UNIT 3: Desarrollo de servicios y aplicaciones web (25)

Competences: c,d,g,i

Content	**Generales Goals**
• Describe, identify and debug issues related to web application development • Design and development of interactive web applications using HTML5 and Python • Use MySQL for data management and manipulate MySQL with Python • Design and development of asynchronous web applications using Ajax techniques • Using dynamic client side Javascript scripting language and server side python scripting language with Ajax • Apply XML / JSON technologies for data management with Ajax • Use framework, services and Ajax web APIs and apply design patterns to web application development	• Server-side python scripting language: variables, data types, operations, strings, functions, control statements, arrays, files and directory access, maintain state. [Usage] • Web programming approach using embedded python. [Usage] • Accessing and Manipulating MySQL. [Usage] • The Ajax web application development approach. [Usage] • DOM and CSS used in JavaScript. [Usage] • Asynchronous Content Update Technologies. [Usage] • XMLHttpRequest objects use to communicate between clients and servers. [Usage] • XML and JSON. [Usage] • XSLT and XPath as mechanisms for transforming XML documents. [Usage] • Web services and APIs (especially Google Maps). [Usage] • Macros Ajax for the development of contemporary web applications. [Usage] • Design patterns used in web applications. [Usage]

Readings: freeman2011head

UNIT 4: Mobile Platforms (5)

Competences: c,d,g,i

Content	**Generales Goals**
• Mobile programming languages • Design Principles: Segregation of Interfaces, Single Responsability, Separation of concerns, Dependency Inversion. • Challenges with mobility and wireless communication • Location-aware applications • Performance / power tradeoffs • Mobile platform constraints • Emerging technologies	• Design and implement a mobile application for a given mobile platform [Familiarity] • Discuss the constraints that mobile platforms put on developers [Familiarity] • Discuss the performance vs power tradeoff [Familiarity] • Compare and Contrast mobile programming with general purpose programming [Familiarity]

Readings: martin2017clean, **annuzzi2013introduction**

UNIT 5: Mobile Applications for Android Handheld Systems (25)

Competences: c,d,g,i

Content	**Generales Goals**
• The Android Platform • The Android Development Environment • Application Fundamentals • The Activity Class • The Intent Class • Permissions • The Fragment Class • User Interface Classes • User Notifications • The BroadcastReceiver Class • Threads, AsyncTask & Handlers • Alarms • Networking (http class) • Multi-touch & Gestures • Sensors • Location & Maps	• Students identify necessary software and install it on their personal computers. • Students perform various tasks to familiarize themselves with the Android platform and Environment for development. [Usage] • Students build applications that trace the lifecycle callback methods emitted by the Android platform and demonstrate the behavior of Android when device configuration changes (for example, when the device moves from vertical to horizontal and vice versa). [Usage] • Students build applications that require starting multiple activities through both standard and custom methods. [Usage] • Students build applications that require standard and custom permissions. [Usage] • Students build an application that uses a single code base, but creates different user interfaces depending on the screen size of a device. [Usage] • Students construct a to-do list manager using the user interface elements discussed in class. The application allows users to create new items and to display them in a ListView. [Usage] • Students build an application that uses location information to collect latitude, length of places they visit. [Usage]

Readings: annuzzi2013introduction, **Cornez2015**

8. Methodology

El profesor del curso presentará clases teóricas de los temas señalados en el programa propiciando la intervención de los alumnos.

El profesor del curso presentará demostraciones para fundamentar clases teóricas.

El profesor y los alumnos realizarán prácticas

Los alumnos deberán asistir a clase habiendo leído lo que el profesor va a presentar. De esta manera se facilitará la comprensión y los estudiantes estarán en mejores condiciones de hacer consultas en clase.

9. Assessment

Continuous Assessment 1 : 20 %

Partial Exam : 30 %

Continuous Assessment 2 : 20 %

Final exam : 30 %