UNIVERSITY OF DELTA, AGBOR, NIGERIA
COMPUTING
INFORMATION AND COMMUNICATION TECHNOLOGY
B.Sc. Information and Communication Technology

UNIDEL-ICT 305: Mobile Computing Principles and Mobile Application Development (3 Units; Compulsory; LH=30; PH=45)

Senate-approved Relevance
The training of high-skilled graduates who are conversant with mobile computing principles and be able to develop mobile applications which could be used in different ICT application areas in Delta State and Nigeria in General while considering the limitation and use of mobile devices in Nigeria is in tandem with the vision and mission of the University of Delta, Agbor. This ensures that Information and Communication Technology graduates with demonstrable potentials and necessary skill set to attend to trending issues in mobile applications and their development. The relevance of this is seeing and producing ICT graduates of the University of Delta, Agbor being versed in mobile application principles and development as mobile computing is a continually evolving and dynamic subject, with new technological advances, cultural changes and business opportunities appearing almost every day. The students would be armed with relevant skills to design and implement mobile applications which will beneficial to Delta State and Nigeria in general.

Overview
Mobile Computing is a continually evolving and dynamic subject, with new technological advances, cultural changes and business opportunities appearing almost every day. Mobile Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link through the use of mobile communication, mobile hardware and mobile software.This course explores various challenges and opportunities of mobile computing, including topics such as wireless network protocols and standards, location awareness, sensing, user interfaces, application development, security/privacy concerns including the limitations and use of small but mobile interfaces and m-commerce.

This course covers software mobile application development, its architecture and lifecycle, as well as its inherent design considerations. Students will learn about mobile resources, activities, views, layouts, and intents in addition to interacting with the location based services, messaging services, multimedia interfaces, and sensors available on the mobile device. The applications developed will manage data input from and output to files, databases and content providers. After developing applications in an emulation environment, students will install them on individual mobile devices as well as prepare them for marketplace distribution

Objectives
The objectives of this course are to: (i)discuss the guidelines, design principles and experience in developing applications for small, mobile devices, including an appreciation of context and location aware services(ii)discuss and develop an appreciation of interaction modalities with small, mobile devices (including interface design for non-standard display surfaces) through the

implementation of simple applications and use cases (iii) discuss and distinguish between and write mobile programs that uses Resources, Activities, Views (button, EditText), layouts, intents, Adapters (iv) discuss, write , extend and adapt programs that handle input-output including the following files: Files, on-device databases, External content providers (v) describe wireless communication and networking principles, that support connectivity to cellular networks, wireless internet and sensor devices including location based services(e.g. GPS), telephone and messaging(texting) services, multimedia platform(e.g. playing audio and video as well as using the camera), sensors(e.g. accelerometer) (vi) explain, install and maintain software on individual devices as well as to distribute applications on the marketplace (vii) explain basic programming structures (Control, arrays, objects, methods etc.) within Android program (viii) explain and discuss the use of transaction and e-commerce principles over such devices to support mobile business concepts (ix) describe and discuss the social and ethical issues of mobile computing, including privacy.

Learning Outcomes

Upon completion of this course, students should be able to: (i) Identify the technical challenges posed by current mobile devices and wireless communications and provide appropriate mobile application development solutions (ii) Identify current trends in mobile communications technologies and systems. (iii) Apply suitable software tools and APIs for the development of a particular mobile application. (iv) Design and implement interactive programs for mobile devices using an appropriate application (v) describe ,install and maintain software on individual devices as well as to distribute applications on the marketplace (vi) discuss and describe basic programming structures (control, arrays, objects, strings, methods, etc.) within an Android program. (vii) Explain and discuss the use of transaction and e-commerce principles over such devices to support mobile business concepts

Course Contents

Introduction to Mobile Device Application Development. Mobile Application Platform. Tools. and Technologies. Mobile Application Frameworks. Mobile Application Design Considerations. Working with Data. Database Integration for Mobile Devices. Datasets and Data Providers for Mobile Applications. XML for Application Data Storage and Interchange. Other Remote Data Access Options. Working with the Mobile User Interface. Mobile User Interface Considerations, Designing the User Interface. User Input, Customizing Controls. Developing Mobile Applications. Mobile Application Design, Mobile Application Development. Testing and Debugging Mobile Applications. Introduction to the Survey Sample Application, Creating the Server-Side Components, Creating Smart Client Components. Distributing Mobile Applications to Devices. Design and implementation of Android application for practical demonstration (Environment setup, Architecture, Organizing & accessing the resources. Activities. Services. Broadcast receivers. Fragments. Intents & filters. UI layouts. UI controls, Event handling Styles & themes. Custom components. Drag & drop. Notifications. Location-based services. Publishing Android)

Minimum Academic Standard

NUC minimum academic standard requirements for facilities.