HCMC UNIVERSITY OF TECHNOLOGY AND EDUCATION
Faculty of Electrical And Electronic Engineering
Department of Industrial Electronics

ELECTRONICS AND COMMUNICATION ENGINEERING TECHNOLOGY
Level: Undergraduate

SYLLABUS

1. **Course name:** Research in Modern Electronics Technology
2. **Course code:** NETT321263
3. **Credits:** 3 (3/0/4)
   Duration: 15 weeks (45h main course and 90h self-study)
4. **Instructors:**
   1/ Nguyen Van Hiep, MEng
   2/ Nguyen Thanh Binh, MEng
5. **Course conditions**
   Prerequisites: C programming language
   Corequisites: Microprocessor
6. **Course Description**

This course provides students the knowledge of application programming in Android Operating System. Students will learn the history of the mobile operating system, the mobile programming trends, capabilities of the open source. In addition, the course introduces students to Android developer tools, basic structure of a project, user interface, control objects, event handling, and debugging an applition. Using application classes of SMS, bluetooth, wifi, acceleration sensor, voice recognition to design electronics systems.

7. **Course Goals**

Goals	***Goal description*** *(This course provides students:)*	**EPOs**
G1	Basic knowledge of the application programming in Android operating system.	01 (H)
G2	An ability to analyze, explain and resolve technical problems related to Android application.	02 (M)
G3	Capable of teamwork, communication and presentation to the crowd	04 (H)
G4	Capable of idea forming, planning, deployment, operation, and evaluation systems relatived Android application.	09 (M)

*** Note: High: H; Medium: M; Low: L**

8. Course Learning Outcomes (CLOs)

CLOs		*Description* *(After completing this course, students can have:)*	Outcome
G1	**G1.1**	The ability to apply the Android operating system, developer tools.	01
	G1.2	The ability to apply the basic structure of a Android project, control objects, event handling.	02
	G2.1	The ability to apply Android layouts, user interface designing.	01
	G2.2	The ability to apply open source classes of SMS, bluetooth, wifi, acceleration sensor, voice recognition	02
	G2.3	The ability to design the basic electronics hardwares and program Ardunio to build control application systems.	02
G3	**G3.1**	The ability to work in groups to discuss and resolve the problems related to Android. Capable of presenting a scientific matter with Powerpoint slides.	04
	G4.1	The ability to plan, design and implement an Android application.	09
	G4.3	The ability to operate, inspect and evaluate the system after deployment.	09

9. Study materials

- Textbooks:

[1] Nguyen Van Hiep, *Lap trinh Android co ban*, NXB Dai hoc quoc gia 2014

[2] Nguyen Van Hiep, Lap trinh Android trong ung dung dieu khien, NXB DHQG 2016

- References:

[3] Wei-Meng Lee, *Beginning Android™ Application Development*, Wiley Publishing, Inc, 2011

10. Sudent Assessments

- Grading points: 10

- Planning for students assessment is followed:

Type	Contents	Linetime	Assessment techniques	CLOs	Rates (%)
Midterms					**50**
Exam01	Create apps using LinearLayout, TableLayout, RelativeLayout	Week 4	Individual clips, reports via LMS	G1.1 G1.2	10
Exam02	Create apps using TextView, Button, ImageView, RadioButton	Week 6	Individual clips, reports via LMS	G1.2 G2.2	20
Exam03	Create a pratical application using ListView	Week 8	Individual clips, reports via LMS	G2.3	10

Exam04	Create a pratical application using Multi-threading	Week 10	Individual clips, reports via LMS	G2.1 G2.3	10
Final report					**50**
Final report	Students research in topics related RFID Technology	Week 13-15	Reports, presentations to the class	G1.2 G2.2 G3.1 G4.1 G4.2	

11. Course details:

Weeks	Contents	CLOs
	Chapter 1: The history of mobile devices and the mobile operating systems	
	***A/* Contents and teaching methods:** *(3)* **Contents:** 1.1 The development history of mobile devices. 1.2 The popular mobile operating systems. - Symbian - BlackBerry - IOS - Android **Teaching methods**: + Traditional lectures using powerpoint to review basic knowledges of steel structures course, to demonstrate large applications of these structures in different buidings. A series of diagnostic questions will be also used to estimate students knowledges. + Playback clips about Android's development and future. + Questions	G1.1 G2.1
	***B/* Self-study contents**: *(6)* - Learn the OS: Bada, Titan. - Comparative strengths and weaknesses of the operating systems.	G1.2 G2.1 G2.2
	Chapter 2: Overview of the Android operating system	
	***A/* Contents and teaching methods**: *(3)* **Contents:** 2.1 What is Android? 2.2 History and development of Android OS. 2.3 Android version history 2.4 Android developer tools. **Teaching methods**: + Theoretical lectures + Questions + Discussion groups	G2.3 G2.4
	***B/* Self-study contents**: *(6)* 2.5 The advantages and disadvantages of the Android operating system	G2.3 G3.1

	2.6 Android Architecture 2.7 Setup Android SDK, Create and Manage Virtual Devices	
	Chapter 3: **Basic structure of an Android project**	
	A/ **Contents and teaching methods***:(3)* **Contents:** 3.1 What is Activity? 3.2 Android project Lifecycles 3.3 Intent 3.4 Android Project's major files and classes **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups.	G1.2 G2.3
	B/ **Self-study contents:** *(6)* - Learn to Content Provider và URI - Learn to Background Service - Learn to Telephony - Learn to Broadcast	G2.3
	Chapter 4: **Building Your First Application** ***A/*** **Contents and teaching methods***:(3)* **Contents:** 3.1 Java language for Android OS 3.2 How to create an Android project with Android Studio 3.3 Run a debuggable version of the app **Teaching methods**: - Theoretical lectures - Questions. - Simulation using Android Studio	G2.3 G3.1
	B/ **Self-study contents:** *(6)* - In Android Studio, create a new project: hello world - Run on an Emulator - Run on a Real Device	G2.3
	Chapter 5: Building a Simple User Interface	
	A/ **Contents and teaching methods***: (3)* **Contents:** 4.1 Android Layouts -LinearLayout -TableLayout -RelativeLayout -FrameLayout **Teaching methods**: + Theoretical lectures + Questions.	G1.2 G2.2 G2.3

	+ Discussion groups + Simulation using Android Studio	
	***B/* Self-study contents**: *(6)* - Create some Apps using Android Layouts. - Using more layouts to creat a Android project.	G2.2 G3.1
	Chapter 5: Building a Simple User Interface (cont.)	
	A/* Contents and teaching methods: (3)* **Contents:** 5.2 Introduction to basic Views - TextView - EditText - AutocompleteTextView - Button - ImageButton **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups + Simulation using Android Studio	G1.2 G2.2 G3.1
	***B/* Self-study contents**: *(6)* Create the Apps about TextView, EditText, AutocompleteTextView, Button, ImageButton.	G2.3
	Chapter 5: Building a Simple User Interface (cont.)	
	A/* Contents and teaching methods: (3)* **Contents:** 5.3 Introduction to basic Views - CheckBox - RadioButton - RadioGroup - ToggleButton **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups + Simulation using Android Studio	G1.1 G2.2
	***B/* Self-study contents** *(6)* Create, Build and Run Apps with an Emulator and an real device.	G2.3
	Chapter 5: Building a Simple User Interface (cont.)	

	A/* Contents and teaching methods: (3)* **Contents:** 5.4 Picker Views 5.5 ListView **Teaching methods**: + Questions. + Discussion groups + Simulation using Android Studio	G2.2 G3.1
	***B/* Self-study contents** *(6)* - Create practical applications using listview, pickerview	G2.3 G3.1
	***Chapter 6:* Displaying images and Menu**	
	A/* Contents and teaching methods: (3)* **Contents:** 6.1 Using ImageView to display images **6.2** Using Menu in Android Studio. **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups	G2.2
	***B/* Self-study contents** *(6)* Create Apps to illustrate using ImageView, Menus, Clock.	G3.1
	***Chapter 7:* Event handling and multi-threading in Android**	
	A/* Contents and teaching methods: (3)* **Contents:** 7.1 The concepts. 7.2 Event Handling 7.3 Multi-threading in Android **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups + Simulation using Android Studio	G1.2 G2.2 G3.1
	***B/* Self-study contents** *(6)* - Create the Calculator App with three event handling methods. - Build a pratical App using multi-threading.	G4.1 G2.3
	Chapter 8: Intents and Intent Filters	
	A/* Contents and teaching methods: (3)* **Contents:** 8.1 What are Intents and Intent Filters? 8.2 Using Intents and Intent Filters **Teaching methods**:	G1.2 G2.2

	+ Theoretical lectures + Questions. + Discussion groups	G4.1
	***B/* Self-study contents** *(6)* - Coding a example project using explicit intent - Coding a example project using implicit intent	G2.3
	***Chapter 9:* Storage Options in Android**	
	A/* Contents and teaching methods: (3)* **Contents:** 9.1 Internal Storage 9.2 External Storage 9.3 Shared Preferences 9.4 QLite Databases **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups + Simulation using Android Studio	G1.2 G2.3 G3.1
	***B/* Self-study contents** *(6)* Coding and Debugging for the storage methods	G4.2 G3.1
	Chapter 10: Android Applications in Control areas	
	A/* Contents and teaching methods: (3)* **Contents:** 10.1 Introduction to Ardunio board 10.2 introduction to application classes of SMS, bluetooth, wifi, acceleration sensor, voice recognition **Teaching methods**: + Theoretical lectures + Questions. + Discussion groups + Simulation using Android Studio	G1.2 G2.3 G3.1
	***B/* Self-study contents** *(6)* - Learn to location in Android. - Learn to Firebase, Google spreadsheet	G4.1 G4.2
14 -15	***Essay acceptance report of the groups***	G1.1 G1.2 G2.1 G2.2 G2.3

		G3.1 G4.1

12. Learning ethics:

Home assignments and projects must be done by the students themselves. Plagiarism found in the assessments will get zero point.

13. First approved date: August 01 2012

14. Approval level:

Dean	Department	Instructor
		Nguyễn Văn Hiệp

15. Syllabus updated process

1st time: Updated content dated	Instructors
2st time: Updated content dated	Head of department