

	<p style="text-align: center;">HO CHI MINH UNIVERSITY OF TECHNOLOGY AND EDUCATION</p> <p style="text-align: center;">FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING</p>	<p>Programme: Biomedical Engineering</p> <p>Programme Level: Undergraduate</p>
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Syllabus

1. **Course Name:** Wireless Technology
2. **Course Code:** WITE331365
3. **Credits:** 3 credits (3:0:6) (3-hour lecture and 6 hours of self-study per week)
4. **Course Instructor(s):**
 - A. Assoc. Prof. Thanh-Hai Nguyen
 - B. Thanh-Tam Nguyen, MEng
 - C. Dr. Manh-Hung Nguyen
5. **Registration Requirements**
 - A. Pre-requisite Course(s): None
 - B. Previous Course(s): Basic Electronics, Digital

6. **Course Descriptions:**

This course provides students with an understanding of common wireless technologies, including Wifi, Bluetooth, Zigbee, NFC, RFID and can expand to introduce other wireless technologies that have applications in the field of medical devices. Students also learn the basics of radio communications such as frequency bands, modulation techniques, and multiple access techniques. In each wireless technology, security issues and the application of that technology are also introduced. Students also have the opportunity to learn about the integration of wireless technologies into medical device design and applications in biomedical electronics.

7. **Course Learning Outcomes (CLOs)**

CLOs	Descriptions	ELO(s)/PI(s)	Competency
CLO1	<i>After completing this module you should be able to:</i> Explain the structures and working principles of wireless network components while calculating the parameters of radio transmission lines.	ELO1/PI1.3	R
CLO2	Compute the design parameters of the medical information system, design and operate the medical information system.	ELO2/PI2.1	R
CLO3	Apply technical standards in the design and manufacture of wireless devices in biomedical electronics and new technologies in wireless networks for a long-term learning strategy.	ELO4/PI4.3	R
CLO4	Collaborate effectively in a team to discuss and solve problems related in wireless technology.	ELO5/PI5.3	R

Notes: I: Introduction, R: Reinforce, M: Mastery

8. Course Content

- Overview of wireless technology.
- Wi-Fi Wireless network - IEEE 802.11.
- BLUETOOTH Technology – IEEE 802.15.1.
- ZIGBEE Technology – IEEE 802.15.4.
- WIMAX – IEEE 802.16.
- NFC Technology.
- RFID Technology.
- Applications of wireless technology in biomedical electronics

9. Teaching Methods

- Presentation
- Group activities
- Problem solving

10. Student Assessments

- Grading scale: **10**
- Assessment plan:

No.	Content	CLOs	Competency	Assessment Methods	Assessment Tools	Weighting (%)
Formative Assessment						50
1	- Comparison of wireless technologies - General knowledge of wireless technologies. - Encryption and security in wireless technology	CLO1	3	MCQs	UTEx	10
2	- Calculation of radio transmissions. - Radio modulation techniques. - Multiple access in radio communication	CLO2	2	Essay	Grading scale	20
3	Designing and simulating a wireless technology application circuit in Biomedical Engineering.	CLO4	3	Essay	Grading rubric	20
Summative Assessment						50
5	- Wi-Fi network	CLO3	3	Essay	Grading scale	50

	- Bluetooth technology - Zigbee technology - NFC technology - RFID technology The examination time is 60- 90 minutes			MCQs		
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11. Learning Materials

A. Main reading:

- William Stallings, Wireless Communications and Network, ISBN: 978-0131918351, Prentice Hall 2005.

B. Extra reading:

- David Tse and Pramod V., Fundamentals of Wireless Communication, Cambridge University Press, 2005

12. General Information

Academic Integrity

All students in this class are subject to HCMUTE's Academic Integrity Policy (<http://sao.hcmute.edu.vn/>) and should acquaint themselves with its content and requirements, including a strict prohibition against plagiarism. Any violations will be reported to the Faculty of Electrical and Electronic Engineering Dean's office.

Notice of Change

All information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advanced notice. Students need to regularly update the information of their registered class.

Intellectual Property

All contents of these lectures, including written materials distributed to the class, are under copyright protection from HCMUTE's Intellectual Property Regulations. Notes based on these materials may not be sold or commercialized without the express permission of the instructor.

13. Approval Date:

14. Endorsement:

Dean of Faculty	Head of Department	Course Instructor
Assoc. Prof. Minh-Tam Nguyen	Assoc. Prof. Thanh-Hai Nguyen	

15. Revision History:

<p>1st Revision:</p>	<p><i>Course Instructor</i></p> <p>Assoc. Prof. Thanh-Hai Nguyen <i>Head of Department</i></p>
<p>2nd Revision:</p>	<p><i>Course Instructor</i></p> <p>Assoc. Prof. Thanh-Hai Nguyen <i>Head of Department</i></p>