Course name	**ECE 53301 Wireless and Multimedia Computing**
Credit and contact hours	(3 cr.) Class 3
Course coordinator's name	Mohamed. El-Sharkawy
Textbook	Book chapters and papers will be on reserve in the library or available on the course web site.
Course information	ECE 53301 – Wireless and Multimedia Computing (3 cr.) Class 3. P: ECE 30100 and ECE 36200. A treatment of voice and video over IP, internet of things and wireless communication algorithms, protocols, standards, and implementation using embedded systems. **Prerequisites/ Co-Requisite** P: ECE 30100 and ECE 36200 **Required, Elective, or Selected Elective:** EE Elective, CE Elective
Goals for the course	Upon successful completion of the course, students should be able to: 1. Describe the different wireless and multimedia computing protocols and standards. [1,2,6] 2. Design basic wireless and multimedia computing algorithms that demonstrate an understanding of the architecture and C programming of digital signal and embedded processors. [1, 2, 1, 6] 3. Implement basic wireless and multimedia computing algorithms using digital signal and embedded processors. [1, 2,6] 4. Implement different wireless, internet of things and multimedia computing protocols and standards. [1, 2,6]
List of topics to be covered	1.Voice and Video over IP. - Review of Data and Voice Fundamentals. - Voice over IP. - VOIP Standards. - Voice/Speech Coding Standards. - VOIP Applications. - Video in Multimedia Communications. 2. Embedded Systems. - Architecture of Embedded Systems. - Optimal implementation of wireless and multimedia computing algorithms using a combination of C and some assembly languages (mainly C). - Development Tools available for EmbeddedSystems 3. Wireless Sensors Networks and Internet of things applications. - Sensors. - Wireless Sensors - Wireless Sensors Networks (WSN).

	- Internet of Things (IOT). - IPv6. - Low Power Wireless Personal Area Network (LoWPAN). - 6LoWPAN (IPv6 over LoWPAN). - Constrained Application Protocol (CoAP). - Bluetooth Low Energy. - Thread Open Standard. - NFC. 4. Wireless Communications and Networking - Basic Concepts. - Fundamentals of Cellular and Wireless Communications. - Wireless/Wireline Interworking. - Technologies for Global Voice and Data Systems. - Spread Spectrum. - Multiple Access Techniques. - Multiple-antenna and MIMO Systems. - Fading, Diversity and Equalization. - OFDM and Ultra-wideband Systems and Architectural Issues. - Cellular and Wireless Communications Protocols and Standards (1G up to 5G). 5. Advanced Voice and Video over IP, Internet of Things andWireless Communication Applications. 6. Exams (2.0 classes and final exam period)
Syllabi approved by	Mohamed El-Sharkawy
Date of approval	12/9/2021