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| Course Title and Code | IT 442 Wireless and Mobile Data Networks |
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I. Course Identification and General Information:

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| Course Title | Wireless and Mobile Data Networks | Course Code | IT 442 | Pre-requisite | COE 351 |
| Department | Information Technology | Course Level | 9 | Credit Hours | 3(2+1) |

II. Course Description/Topics: The following course topics will be covered.

A broad overview of wireless and wireless technologies, cellular networks, WLAN, Ad-hoc networks, Sensor Networks, and mobile computing; Wireless Local Area Networks: IEEE 802.11 Standards; 2G, 3G, and 4G Cellular Mobile Networks, Protocols, and Standards; Medium Access Control (MAC) Protocols for Wireless Networks: Frequency division multiple access, Time Division Multiple Access, Spread Spectrum Multiple Access (FHMA, CDMA), CSMA/CD, CSMA/CA; Routing in s Mobile IP Networks; Mobile Ad Hoc Networks and Wireless Mobile Ad Hoc Networks; Wireless Metropolitan Area Networks (WiMAX); UMTS, GPRS, HSPA, LTE, and LTE-Advanced architectures.

III. Course Outcomes: Summary of the main learning outcomes for students enrolled in the course.

- When asked, in writing, students will be able to recall the many areas of interest that lie within this area, including networking, wireless, wireless technologies, cellular networks, WLAN, Ad-hoc networks, and mobile computing.
- When asked, in writing, students will be able to identify the Wireless Local Area Networks: IEEE 802.11 Standards.
- When asked, in writing, students will be able to recognize the difference between 2G, 3G, and 4G Cellular Mobile Networks, Protocols, and Standards.
- When asked, in writing, students will be able to define the Medium Access Control (MAC) Protocols for Wireless Networks: Frequency division multiple access, Time Division Multiple Access, Spread Spectrum Multiple Access (FHMA, CDMA), CSMA/CD, and CSMA/CA.
- When asked, in writing, students will be able to differentiate between the Mobile IP Routing Protocols: Direct Routing, Indirect Routing.
- When asked, in writing, students will be able to differentiate between the Wireless Personal Area Networks: Bluetooth, ZigBee, and IEEE 802.15.
- When asked, in writing, students will be able to identify the meaning of Mobile Ad Hoc Networks and Wireless Mobile Ad Hoc Networks. Wireless Metropolitan Area Networks (WiMAX).
- When asked, in writing, students will be able to differentiate between the different architectures for UMTS, GPRS, HSPA, LTE, and LTE-Advanced

IV. Required Text:

- **Computer Networking: a top-down approach / James F. Kurose**, Keith W. Ross Published 2018, ISBN-13: 978-0-13-285620-1. PEARSON
- **comptia security+ guide to network security fundamentals fifth edition Mark Ciampa** Published 2015, ISBN= 97815093911
- **Handbook of Algorithms for Wireless Networking and Mobile Computing**, Azzedine Boukerche, Chapman & Hall/CRC, Taylor & Francis Group, 2006.

V. References:

- T. S. Rappaport, **Wireless Communications: Principles and Practice**, 2nd edition, Prentice-Hall, 2001.
- **Wireless and Mobile Network Architectures**, Dr. Yi-Bing Lin, Imrich Chlamtac, John Wiley, 2000, ISBN: 978-0-471-39492-1.