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| **Course** | ECE 54400 – Digital Communications |
| **Type of Course** | Elective for the CmpE and EE programs |
| **Catalog Description** | Introduction to digital communication systems and spread spectrum communications. Topics include analog message digitization, signal space representation of digital signals, binary and M-ary signaling methods, detection of binary and M-ary signals, comparison of digital communication systems in terms of signal energy and signal bandwidth requirements. The principal types of spread spectrum systems are analyzed and compared. Application of spread spectrum to multiple access systems and to secure communication systems is discussed. |
| **Credits** | Cr. 3. Dual Level, Undergraduate-Graduate |
| **Contact Hours** | 3 |
| **Prerequisite Courses** | ECE 42800 and senior or graduate standing in either an engineering or science degree program. |
| **Textbook** | *Introduction to Digital Communications*, by Michael B. Pursley. Publisher: Prentice Hall, 2005. (ISBN-10: 0201184931, ISBN-13: 9780201184938) |
| **Lecture Topics** | 1. Review of Probability and Random Variables
2. Linear Systems with Random Inputs
3. Frequency Domain Analysis
4. Baseband Transmission of Binary Data
5. Coherent Communications
6. Noncoherent Communications
7. Intersymbol Interference
8. Spread Spectrum Systems
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| **Computer Usage** | Medium  |
| **Laboratory Experience** | None |
| **Design Experience** | None |
| **Coordinator** | Carlos Pomalaza-Ráez, Ph.D. |
| **Date** | 03/02/2018 |