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| |  | | --- | | **Course Information** |  |  |  | | --- | --- | | Course title | Error Correcting Codes | | Semester | 110-1 | | Designated for | COLLEGE OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE  GRADUATE INSTITUTE OF COMMUNICATION ENGINEERING | | Instructor | [MAO CHAO LIN](https://nol2.aca.ntu.edu.tw/nol/coursesearch/teacher.php?op=s2&td=901084) | | Curriculum Number | EE5029 | | Curriculum Identity Number | 921 U1240 | | Credits | 3.0 | | **Course Syllabus** | | | **Please respect the intellectual property rights of others and do not copy any of the course information without permission** | | | Course Description | 1. Fundamentals 2. Introduction to Algebra 3. Linear Block Codes 4. Important Linear Block Codes 5. Cyclic Codes 6. BCH codes and Reed-Solomon Codes 7. Convolutional Codes 8.. Coded Modulation 9. Turbo Codes 10. Low Density Parity Check Codes 11. Polar Codes 12. Soft Decoding of Linear Block Codes | | Course Objective | Error-correcting codes (ECC) are essential in the modern communications for increasing the transmission reliability. Moreover, the integration of ECC with other parts of the communication system such as modulation, equalization, synchronization or channel estimation can greatly enhance the system performances.  In this course, the traditional algebra coding, convolutional coding, and the modern turbo codes, low density parity check codes and polar codes are will be included. | | References | 1. Shu Lin and Daniel J. Costello, "Error Control Coding: Fundamentals and Applications," PEARSON/ Prentice Hall, second edition, 2004.  2. Martin Bossert, "Channel Coding for Telecommunications," John Wiley, 1999.  3. Richard E. Blahut, "Theory and Practice of Error Control Codes," Addison-Wesley, 1983.  4. Todd K, Moon, "Error Correction Coding," Wiley Interscience, 2005. |  |  | | --- | | **Progress** |  |  |  |  | | --- | --- | --- | | Week | Date | Topic | | No data | | | |

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