# COMMUNICATION SYSTEMS

| | | |
|---|---|---|
| 1 | Course Title: | COMMUNICATION SYSTEMS |
| 2 | Course Code: | EEM3402 |
| 3 | Type of Course: | Compulsory |
| 4 | Level of Course: | First Cycle |
| 5 | Year of Study: | 3 |
| 6 | Semester: | 6 |
| 7 | ECTS Credits Allocated: | 6.00 |
| 8 | Theoretical (hour/week): | 4.00 |
| 9 | Practice (hour/week): | 0.00 |
| 10 | Laboratory (hour/week): | 0 |
| 11 | Prerequisites: | None |
| 12 | Language: | Turkish |
| 13 | Mode of Delivery: | Face to face |
| 14 | Course Coordinator: | Prof. Dr. TUNCAY ERTAŞ |
| 15 | Course Lecturers: | Prof. Dr. Tuncay ERTAŞ |
| 16 | Contact information of the Course Coordinator: | E-posta:tertas@uludag.edu.tr<br>Tel: (224) 294 2013<br>Adres: Elektronik Mühendisliği Bölümü, 5. Kat, Ofis No:113 |
| 17 | Website: | http://home.uludag.edu.tr/~tertas |
| 18 | Objective of the Course: | To analyze signals and systems in time and frequency domain. To have a sound understanding of communications systems with various modulation formats. To apply the basic concepts to the design and analysis of communication systems. |
| 19 | Contribution of the Course to Professional Development: | |
| 20 | Learning Outcomes: | |
| | 1 | To sketch the discrete and continuous spectra of signals |
| | 2 | To conduct noise analysis of analog modulation systems |
| | 3 | To understand the optimum receiver principles |
| | 4 | To find the BER for various mod. |
| | 5 | To solve problems related to communication systems using Matlab. |
| | 6 | |
| | 7 | |
| | 8 | |
| | 9 | |
| | 10 | |

| | | |
|---|---|---|
| 21 | Course Content: | |
| | **Course Content:** | |
| Week | Theoretical | Practice |
| 1 | Signals and systems | |
| 2 | Double sideband modulations | |
| 3 | Single and vestigial sideband modulations | |
| 4 | Angle Modulations | |

| | | |
|---|---|---|
| **5** | Random processes | |
| **6** | Noise in AM systems | |
| **7** | Noise in FM systems | |
| **8** | Repeating courses and midterm exam | |
| **9** | Sampling and pulse modulations | |
| **10** | Baseband pulse transmissions | |
| **11** | Baseband pulse transmissions | |
| **12** | Signal space and receiver types | |
| **13** | Bandpass digital modulations | |
| **14** | Bandpass digital modulations cont. | |

| | | |
|---|---|---|
| **22** | Textbooks, References and/or Other Materials: | 1- J. G. Proakis ve M. Salehi: Fundamentals of Communication Systems, Prentice-Hall<br>2- S. Haykin: Communication Systems, Wiley, 4th Ed. |
| **23** | Assesment | |

| **TERM LEARNING ACTIVITIES** | **NUMBE** | **WEIGHT** |
|---|---|---|
| Theoretical | 14 | 25.00 |
| Practicals/Labs | 0 | 0.00 |
| Self study and preperation | 14 | 4.00 |
| Homeworks | 3 | 10.00 |
| Projects | 0 | 0.00 |
| Field Studies | 0 | 0.00 |
| Midterm exams | 1 | 24.00 |
| Others | 0 | 0.00 |
| Final Exams | 1 | 28.00 |
| Total | 33 | 100.00 |
| Success Grade | | 60.00 |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Home work-project | 3 | 3.00 | 42.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Total | 5 | 4.00 | 56.00 |
| Homeworks | 3 | 10.00 | 30.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 24.00 | 24.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams | 1 | 28.00 | 28.00 |
| Total Work Load | | | 180.00 |
| Total work load/ 30 hr | | | 6.00 |
| ECTS Credit of the Course | | | 6.00 |

| **25** | **CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PQ1** | **PQ2** | **PQ3** | **PQ4** | **PQ5** | **PQ6** | **PQ7** | **PQ8** | **PQ9** | **PQ10** | **PQ11** | **PQ12** | **PQ13** | **PQ14** | **PQ15** | **PQ16** |
| **ÖK1** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK2** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK3** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK4** | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ÖK5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **LO: Learning Objectives PQ: Program Qualifications** | | | | | |
|---|---|---|---|---|---|
| **Contribution Level:** | **1 very low** | **2 low** | **3 Medium** | **4 High** | **5 Very High** |