



## ESOGU ELECTRICAL-ELECTRONICS ENGINEERING DEPARTMENT COURSE INFORMATION FORM

| Course Title   | Course Code |
|----------------|-------------|
| ANTENNA DESIGN | 15128xxx    |

| Semester in Program | Number of Course Hours per Week |          | ECTS Credit |
|---------------------|---------------------------------|----------|-------------|
|                     | Theory                          | Practice |             |
| 8                   | 2                               | 4        | 9           |

| Course ECTS Credit Distribution |                      |        |                   |        |
|---------------------------------|----------------------|--------|-------------------|--------|
| Basic Sciences                  | Engineering Sciences | Design | General Education | Social |
|                                 |                      | 9      |                   |        |

| Language of Instruction | Course Level  | Course Type |
|-------------------------|---------------|-------------|
| English                 | Undergraduate | Elective    |

|                                 |                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prerequisite</b>             | -                                                                                                                                            |
| <b>Objectives of the Course</b> | To develop innovative solutions to real-world problems in the field of antennas by applying design principles and engineering methodologies. |
| <b>Brief Course Content</b>     | Teaching the steps of engineering design process.                                                                                            |

| Learning Outcomes of the Course                                                     | Contributed POs | Teaching Methods * | Assessment Methods ** |
|-------------------------------------------------------------------------------------|-----------------|--------------------|-----------------------|
| 1 Gain hands-on design experience through teamwork.                                 | 3, 4a, 4b       | 12                 | J                     |
| 2 Learn and apply project management techniques.                                    | 3, 4a, 4b       | 14                 | J                     |
| 3 Develop the ability to understand and redefine engineering problems.              | 3, 4a, 4b       | 10                 | J                     |
| 4 To prepare a final project report, present a demo, and make an oral presentation. | 7c, 7d          | 15                 | E,G                   |
| 5                                                                                   |                 |                    |                       |
| 6                                                                                   |                 |                    |                       |
| 7                                                                                   |                 |                    |                       |
| 8                                                                                   |                 |                    |                       |
| 9                                                                                   |                 |                    |                       |
| 10                                                                                  |                 |                    |                       |
| 11                                                                                  |                 |                    |                       |

\*Teaching Methods 1:Lecture, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

\*\*Assessment Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

|                                  |                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------|
| <b>Main Textbook</b>             | Constantine A. Balanis, Antenna Theory: Analysis and Design, 4th ed., Wiley, 2016. |
| <b>Supplementary Resources</b>   | -                                                                                  |
| <b>Necessary Course Material</b> | -                                                                                  |

| Course Weekly Schedule |                                                 |
|------------------------|-------------------------------------------------|
| 1                      | Introduction to the course and team assignments |
| 2                      | Fundamentals of antennas                        |
| 3                      | Project planning and management tools           |
| 4                      | Project design and development                  |
| 5                      | Project design and development                  |
| 6                      | Project design and development                  |
| 7                      | Project design and development                  |
| 8                      | Mid-Term Exams                                  |
| 9                      | Project design and development                  |
| 10                     | Project design and development                  |
| 11                     | Project design and development                  |
| 12                     | Project design and development                  |
| 13                     | Project design and development                  |
| 14                     | Project design and development                  |
| 15                     | Final presentations and project report          |
| 16,17                  | Final Exams                                     |

| Calculation of Course Workload                              |       |             |                       |
|-------------------------------------------------------------|-------|-------------|-----------------------|
| Activities                                                  | Count | Time (Hour) | Total Workload (Hour) |
| Weekly classroom time                                       | 14    | 2           | 28                    |
| Weekly study time (review, reinforcing, preparation)        | 14    | 15          | 210                   |
| Homework                                                    |       |             |                       |
| Taking a quiz                                               |       |             |                       |
| Studying for a quiz                                         |       |             |                       |
| Oral exam                                                   |       |             |                       |
| Studying for an oral exam                                   |       |             |                       |
| Report writing (Preparation and presentation time included) | 1     | 15          | 15                    |
| Project (Preparation and presentation time included)        | 1     | 16          | 16                    |
| Presentation (Preparation time included)                    | 1     | 1           | 1                     |
|                                                             |       |             |                       |
|                                                             |       |             |                       |
| Mid-Term Exam                                               |       |             |                       |
| Studying for Mid-Term Exam                                  |       |             |                       |
| Final Exam                                                  |       |             |                       |
| Studying for Final Exam                                     |       |             |                       |
| Total workload                                              |       |             | 270                   |
| Total workload / 30                                         |       |             | 9                     |
| Course ECTS Credit                                          |       |             | 9                     |

| Assessment    |      |
|---------------|------|
| Activity Type | %    |
| Presentation  | 30   |
| Jury Exam     | 70   |
| Final Exam    | Jury |
| Total         | 100  |

| COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES<br>(5: Very high, 4: High, 3: Medium, 2: Low, 1: Very low) |                                                                                                                                                                                                                                                                                                                                                   |              |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| NO                                                                                                     | PROGRAM OUTCOMES                                                                                                                                                                                                                                                                                                                                  | Contribution |
| 1                                                                                                      | a. Sufficient knowledge of mathematics                                                                                                                                                                                                                                                                                                            |              |
|                                                                                                        | b. Sufficient knowledge of basic sciences                                                                                                                                                                                                                                                                                                         |              |
|                                                                                                        | c. Sufficient basic engineering and Electrical-Electronics engineering knowledge                                                                                                                                                                                                                                                                  |              |
|                                                                                                        | d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems                                                                                                                                                                                                                                |              |
| 2                                                                                                      | Skill of identifying, defining, formulating, and solving complex problems in Electrical-Electronics engineering and related areas by selecting and applying appropriate analysis and modeling methods, while considering the relevant UN Sustainable Development Goals.                                                                           |              |
| 3                                                                                                      | Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.                                                                                                                                                                                              | 5            |
| 4                                                                                                      | To analyze and solve the complicated engineering problems:<br>a. skill of developing, selecting and applying the required techniques and devices                                                                                                                                                                                                  | 5            |
|                                                                                                        | b. skill of using information technologies effectively                                                                                                                                                                                                                                                                                            | 3            |
| 5                                                                                                      | To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects:<br>a. skill of experimental design                                                                                                                                                                                                 |              |
|                                                                                                        | b. skill of performing the experiments, collecting the data and analyzing and interpreting the results                                                                                                                                                                                                                                            |              |
| 6                                                                                                      | a. Skill of performing individual studies                                                                                                                                                                                                                                                                                                         |              |
|                                                                                                        | b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies                                                                                                                                                                                                                                                     |              |
| 7                                                                                                      | a. Skill of effective oral and written communication in Turkish and English                                                                                                                                                                                                                                                                       |              |
|                                                                                                        | b. Skill of improving and using foreign language knowledge                                                                                                                                                                                                                                                                                        |              |
|                                                                                                        | c. Skill of effective reporting, understanding the reports and preparing the design and production reports                                                                                                                                                                                                                                        | 5            |
|                                                                                                        | d. Skill of effective presentation and giving and getting clear and understandable instructions.                                                                                                                                                                                                                                                  | 5            |
| 8                                                                                                      | Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology                                                                                                                                                                                      |              |
| 9                                                                                                      | a. Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities                                                                                                                                                                                   |              |
|                                                                                                        | b. Knowledge about legal regulations and standards of engineering                                                                                                                                                                                                                                                                                 |              |
| 10                                                                                                     | a. Knowledge about project management, risk management and change management                                                                                                                                                                                                                                                                      |              |
|                                                                                                        | b. Awareness of the significance of entrepreneurship and innovation                                                                                                                                                                                                                                                                               |              |
|                                                                                                        | c. Knowledge about sustainable development                                                                                                                                                                                                                                                                                                        |              |
| 11                                                                                                     | Knowledge of the effects of engineering applications on health, environment, economy, sustainability, and safety on global and societal dimensions within the scope of the UN Sustainable Development Goals; awareness of national and international legal regulations and standards, as well as the legal consequences of engineering solutions. |              |
| 12                                                                                                     | Knowledge about modern problems in local and universal scale                                                                                                                                                                                                                                                                                      |              |

| INSTRUCTORS |                        |  |  |  |
|-------------|------------------------|--|--|--|
| Prepared by | Prof. Dr. Gökhan ÇINAR |  |  |  |

Date: 06.07.2026