

# TOROS ÜNİVERSİTESİ

Faculty Of Engineering  
Electrical And Electronics Engineering (English)

## Course Information

| ELECTRONICS I |          |             |          |                 |             |
|---------------|----------|-------------|----------|-----------------|-------------|
| Code          | Semester | Theoretical | Practice | National Credit | ECTS Credit |
|               |          | Hour / Week |          |                 |             |
| EEE303        | Fall     | 2           | 2        | 3               | 5           |

|                                             |                                                                                                                                                                                                          |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prerequisites and co-requisites</b>      | EEE201 Electric Circuits I                                                                                                                                                                               |
| <b>Language of instruction</b>              | English                                                                                                                                                                                                  |
| <b>Type</b>                                 | Required                                                                                                                                                                                                 |
| <b>Level of Course</b>                      | Bachelor's                                                                                                                                                                                               |
| <b>Lecturer</b>                             | Asst. Prof. Cevher AK                                                                                                                                                                                    |
| <b>Mode of Delivery</b>                     | Face to Face                                                                                                                                                                                             |
| <b>Suggested Subject</b>                    |                                                                                                                                                                                                          |
| <b>Professional practise ( internship )</b> | Available                                                                                                                                                                                                |
| <b>Objectives of the Course</b>             | Understan operation, characteristics, and limitations of basic electronic circuits that form an integrated circuits (IC). Gain knowledge and skills to analyze and design the basic electronic circuits. |
| <b>Contents of the Course</b>               | Diodes, Diode Circuits Analysis, Rectifier Circuits, Clipper Circuits, Clamper Circuits, Zener Diode Circuits. BJTs and FETs: DC Analysis and Small Signal Analysis, Frequency Responses.                |

## Learning Outcomes of Course

| # | Learning Outcomes                                                                                                     |
|---|-----------------------------------------------------------------------------------------------------------------------|
| 1 | Acquisition of the ability to analyze and design of simple analog circuits design with semiconductor circuit elements |
| 2 | Recognition of diode element and used in electronic circuits                                                          |
| 3 | Analyze of diode circuits and design with diode applications                                                          |
| 4 | Recognition of transistor (BJT) and used in electronic circuits                                                       |
| 5 | Analyze of transistor circuits and design with diode applications                                                     |
| 6 | Identify and apply the DC and AC analysis of BJT and its implementation                                               |
| 7 | Acquisition of the ability to design of BJT amplifier circuits                                                        |

## Course Syllabus

| # | Subjects                                                                                               | Teaching Methods and Technics |
|---|--------------------------------------------------------------------------------------------------------|-------------------------------|
| 1 | Inroduction to Electronics, Electronic circuit devices                                                 | lecture                       |
| 2 | Characteristics and modelling of diodes, Introduction to PSpice, Introduction of Laboratory Equipments | lecture                       |
| 3 | Modelling of electronic devices, PSpice, and Use of Laboratory Equipments                              | lecture                       |
| 4 | Diode Circuits (Clippers, Clampers, rectifiers, etc.). Laboratory: Diode characterictics               | lecture                       |
| 5 | Characteristics of BJT, DC Analysis of BJT Amplifiers                                                  | lecture                       |
| 6 | Small signal analysis of BJT Amplifier Laboratory: Characteristic of BJT                               | lecture                       |
| 7 | Review                                                                                                 | lecture                       |
| 8 | Midterm Exam.                                                                                          |                               |

|    |                                                                                         |         |
|----|-----------------------------------------------------------------------------------------|---------|
| 9  | BJT Amplifiers. Laboratory: BJT Amplifier                                               | lecture |
| 10 | Characteristics of FET, DC Analysis of FET Amplifiers                                   | lecture |
| 11 | Small signal analysis of FET Amplifier Laboratory: Characteristic of FET                | lecture |
| 12 | FET Amplifiers. Laboratory: FET Amplifier                                               | lecture |
| 13 | Frequency response of electronic circuits. Laboratory: Frequency response of amplifiers | lecture |
| 14 | Multi-stage amplifiers. Laboratory: Multi-stage amplifiers                              | lecture |
| 15 | Review                                                                                  | lecture |
| 16 | Final Exam                                                                              |         |

## Course Syllabus

| # | Material / Resources                                       | Information About Resources | Reference / Recommended Resources |
|---|------------------------------------------------------------|-----------------------------|-----------------------------------|
| 1 | Microelectronics Circuit Analysis and Design. D.A. Neamen. |                             |                                   |
| 2 | Microelectronic Circuits. Sedra and Smith.                 |                             |                                   |
| 3 | Microelectronic Circuit Design. Jeager.                    |                             |                                   |

## Method of Assessment

| # | Weight | Work Type     | Work Title    |
|---|--------|---------------|---------------|
| 1 | 40%    | Mid-Term Exam | Mid-Term Exam |
| 2 | 60%    | Final Exam    | Final Exam    |

## Relationship between Learning Outcomes of Course and Program Outcomes

| # | Learning Outcomes                                                                                                     | Program Outcomes | Method of Assessment |
|---|-----------------------------------------------------------------------------------------------------------------------|------------------|----------------------|
| 1 | Acquisition of the ability to analyze and design of simple analog circuits design with semiconductor circuit elements | 1                | 1,2                  |
| 2 | Recognition of diode element and used in electronic circuits                                                          | 3                | 1,2                  |
| 3 | Analyze of diode circuits and design with diode applications                                                          | 2                | 1,2                  |
| 4 | Recognition of transistor (BJT) and used in electronic circuits                                                       | 4                | 1,2                  |
| 5 | Analyze of transistor circuits and design with diode applications                                                     | 4                | 1,2                  |
| 6 | Identify and apply the DC and AC analysis of BJT and its implementation                                               | 4                | 1,2                  |
| 7 | Acquisition of the ability to design of BJT amplifier circuits                                                        | 4                | 1,2                  |

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

## Work Load Details

| # | Type of Work                                                  | Quantity | Time (Hour) | Work Load |
|---|---------------------------------------------------------------|----------|-------------|-----------|
| 1 | Course Duration                                               | 14       | 4           | 56        |
| 2 | Course Duration Except Class (Preliminary Study, Enhancement) | 14       | 4           | 56        |
| 3 | Presentation and Seminar Preparation                          | 0        | 0           | 0         |
| 4 | Web Research, Library and Archival Work                       | 0        | 0           | 0         |
| 5 | Document/Information Listing                                  | 0        | 0           | 0         |
| 6 | Workshop                                                      | 0        | 0           | 0         |
| 7 | Preparation for Midterm Exam                                  | 1        | 1           | 1         |
| 8 | Midterm Exam                                                  | 1        | 1           | 1         |

|    |                            |   |    |            |
|----|----------------------------|---|----|------------|
| 9  | Quiz                       | 0 | 0  | 0          |
| 10 | Homework                   | 0 | 0  | 0          |
| 11 | Midterm Project            | 0 | 0  | 0          |
| 12 | Midterm Exercise           | 0 | 0  | 0          |
| 13 | Final Project              | 1 | 3  | 3          |
| 14 | Final Exercise             | 0 | 0  | 0          |
| 15 | Preparation for Final Exam | 1 | 3  | 3          |
| 16 | Final Exam                 | 1 | 30 | 30         |
|    |                            |   |    | <b>150</b> |