# Circuit Theory

| | | | | |
|---|---|---|---|---|
| Course Name | Course type (credit/hours) | Required course(3/3) | Course code | C003 |
| | Target students Division/major/grade | Electrical and Computer Engineering/Sophomore | Opening semester | 2020 1ST SEMESTER |
| | Class time and classroom | Tue D(WH538)Thu C(WH538) | English Grade | A(100%English) |
| Reference to this course | Prerequisite courses | 회로이론 | | |
| | Related basic courses | 공학수학 | | |
| | Recommended concurrent courses | | | |
| | Related advanced courses | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Instructor | Name (title/division) | Ran Rong(Assistant Professor, Electrical and Computer Engineering) | | | | |
| | Office Room Number | 종합관 603호 | Office phone Number | 2375 | e-mail | |
| | Office hours | | Homepage address | | | |
| Teaching Assistant | Name (title/division) | | | | | |
| | Office Room Number | | Office phone Number | | e-mail | |

## 1. Introduction

The electric circuits are the parts of the basic fabric of modern technologies. This course introduces the fundamental knowledge of electric circuits, including circuits elements, resistant circuits and circuit theorems etc., and shows how to analyze and design electric circuits according to engineering problems.

Getting info about this Course
- The syllabus contains tentative information.
- I will announce in class if there is any change.
- You are responsible for making sure that you obtain this information.
- Come to classes on time and listen carefully for announcement(s).

## 2. Course Objectives

After the course study , students should be capable to:
1) Given an electric circuit, know how to analyze it;
2) know how to design a circuit according to an engineering problem.

## 3. Class types and activities

1) Lecture: Introduce the fundamental knowledge + Examples
2) Midterm + Final Exams;
3) Homeworks;
3) Quizs (optional)

## 4. Teaching Method

- [V] lecture
- [V] discussion and debate
- [ ] team project(presentation and case studies)
- [ ] experiments(role-playing,etc)
- [ ] designing and production
- [ ] on-site learning(on-site training)
- [ ] others

## 5. Support Systems in Use

- [V] AjouBb
- [ ] automatic recording system
- [ ] web-based assignment
- [ ] cyber lecture
- [ ] online content
- [ ] class behavior analyazing system
- [ ] others

## 6. Teaching Tools

- [V] PBL(Problem Based Learning)
- [V] CBL(Case Based Learning)
- [ ] TBL(Team Based Learning)
- [ ] UR(Undergraduate Research)
- [ ] FL(Flipped Learning)
- [ ] DSAL(Data Science Active Learning)
- [ ] others

## 7. Knowledge and ability required for taking this course

1) Basic Physics knowledges;
2) Engineering Math.;
3) Matlab/C/C++ programming (optional).

## 8. Method of Evaluation

| Evaluation Item | The Number of Times | Evaluation Proportion | Remarks |
|---|---|---|---|
| Attendance | 30 | 10% | |
| midterm exam | 1 | 30% | |
| final exam | 1 | 30% | |
| quiz | 1 | 10% | |
| presentation | | | |
| discussion | | | |
| homework | 4 | 20% | |
| etc | | | |
| study hours | | | |

## 9. Textbook and supplementary material

| Main/Sub | Title (Web-site) | Writer | Publisher | Publication year |
|---|---|---|---|---|
| Main | Introduction to Electric Circuits | R. C. Dorf and J. A. Svoboda | Wiley | |

## 10. Class system and Class shedule

1. Circuit Elements;
2. Resistive Circuits;
3. Mehtods of Analysis of Resistive Circuits;
4: Circuit Theorems;
5: Energy storage elements included circuits analysis;
6: Sinusoidal steady-state Analysis.

## < Class Schedule >

* language : K-korean, E-English

| Weeks | Topics | language | Instructor | Teaching Method | Evaluation Method | Matter to be prepared |
|---|---|---|---|---|---|---|
| 1 | Introduction | E | Ran Rong | Lecture | | |
| 2 | Circuit elements | E | Ran Rong | Lecture | HW | |
| 3 | Resistive Circuits | E | Ran Rong | Lecture | HW | |
| 4 | Node voltage analysis | E | Ran Rong | Lecture | HW | |
| 5 | Mesh current analysis | E | Ran Rong | Lecture | HW and miniproject | |

< Class Schedule >

* language : K-korean, E-English

| Weeks | Topics | language | Instructor | Teaching Method | Evaluation Method | Matter to be prepared |
|---|---|---|---|---|---|---|
| 6 | superposition theorem | E | Ran Rong | Lecture | HW | |
| 7 | Thevenin Theorem | E | Ran Rong | Lecture | HW | |
| 8 | Midterm | E | Ran Rong | | | |
| 9 | Norton's Equivalent circuit | E | Ran Rong | Lecture | HW | |
| 10 | Capcitor and inductor | E | Ran Rong | Lecture | HW | |
| 11 | RL circuit | E | Ran Rong | Lecture | HW | |
| 12 | RC circuit | E | Ran Rong | Lecture | HW and miniproject | |
| 13 | Circuits with two energy storage elements | E | Ran Rong | Lecture | HW | |
| 14 | Sinusoidal steady-state analysis | E | Ran Rong | Lecture | HW | |
| 15 | Impedances | E | Ran Rong | Lecture | HW | |
| 16 | Final exam | E | Ran Rong | | | |

## 11. Other items of notification