강 의 계 획 서(Syllabus)

[1] 기본 정보(Basic Information)

■ 강의 정보(Course Information)

교과목명 (Course Title)	회로및시스템 (Circuits and Systems)	강의유형 (Course Type)	이론

[2] 학습 목표/성과(Learning Objectives/Outcomes)

■ 과목 설명(Course Description)

회로이론에 이어서, 이 과목은 페이서변환(phasor transform)과 푸리에급수(Fourier series)를 기반으로 일반적이거나 전력시스템, 또는 필터의 관점에서 교류회로를 어떻게 해석하는지를 소개한다.

■ 학습 목표(Learning Objectives)

1. Circuit analysis using the Laplace transform (Laplace 변환을 이용한 회로해석법)
2. AC circuit analysis using the phasor method (Phasor 변환법을 이용한 교류회로해석)
3. Analysis and design of analog filter using MATLAB and PSpice
   (PSpice 와 MATLAB 을 사용한 아날로그필터의 해석과 설계)
4. Fourier analysis of circuits excited by periodic sources
   (주기성 전원에 의해 구동되는 회로의 Fourier 해석)
5. Two-port networks (2 단자 회로망)

■ 학습 성과(Learning Outcomes)

After taking this course following 'Circuit Theory', the students will be capable of dealing with various kinds of electric circuits and also will have developed an overview of a large class of systems from the input-output point of view.

[3] 강의 진행 정보(Course Methods)

■ 강의 진행 방식(Teaching and Learning Methods)

강의 진행 방식	추가 설명
강의	PPT를 통한 설명

■ 수업 자료(Textbooks, Reading, and other Materials)

수업 자료	제목	저자	출판일/게재일	출판사/학회지
책	Circuit Systems with MATLAB and PSpice	양원영 외 4인 공저	2012	홍릉과학출판

[4] 수업 일정(Course Schedule)

차시	강사명	수업주제 및 내용	제출 과제	추가 설명
1	양원영	Review of Circuit Theory 3.3 Circuit Analysis using Laplace Transform Appendix A: LaplaceTransform and Inverse Laplace Transform 4.2 Analysis of 2nd-order Circuits using Laplace Transform		
2	양원영	4.5 Transfer function, Impulse response, Convolution : 4.6 Steady-state analysis of AC-excited circuits and Frequency response 4.7 An Example of MATLAB Analysis and PSpice Simulation		
3	양원영	Chapter 5 Magnetically Coupled Circuits 5.1 Self Inductance 5.2 Mutual Inductance 5.3 Relative Polarity of Induced Voltages and Dot Convention 5.4 Equivalent Models of Magnetically Coupled Circuits 5.5 Ideal Transformers 5.6 Linear Transformers 5.7 Step-up/down Autotransformers		
4	양원영	Chapter 6 AC Circuits 6.1 Sinusoidal Sources 6.2 Phasors and AC Analysis Transient/Steady-State Response to Sinusoidal (AC) Input 6.3 AC Impedance of Passive Elements 6.4 AC Circuit Examples		
5	양원영	6.5 Instantaneous, Active, Reactive, and Complex Power 6.6 Power Factor 6.7 Maximum Power Transfer – Impedance Matching 6.9 Design/Simulation for Maximum Power Transfer		
6	양원영	Chapter 7 Three-Phase AC Circuits 7.1 Three-Phase Voltages 7.2 Power of Balanced Three-Phase Load 7.3 Measurement of Three-Phase Power 7.4 Three-Phase Power System 7.5 Electric Shock and Grounding		
7	양원영	Chapter 8 Frequency Selective Circuits - Filters 8.1 Lowpass Filter (LPF) 8.2 Highpass Filter (HPF) 8.3 Bandpass Filter (BPF) 8.4 Bandstop Filter (BSF)		
8	양원영	8.5 Active Filter 8.6 Analog Filter Design - Butterworth/Chebyshev I,II/Elliptic Filter - Filter Realization with Active Circuits		
9	양원영	Chapter 9 Circuit Analysis Using Fourier Analysis 9.1 Fourier Series 9.2 Computation of Fourier Coefficients using Symmetry 9.3 Circuit Analysis using Fourier Series 9.4 Fourier Series and Laplace Transform 9.5 RMS Value and Power of a Non-Sinusoidal Periodic Signal		
10	양원영	Chapter 10 Two-Port Networks 10.1 Definitions of Two-Port Parameters 10.2 Relationships among Two-Port Parameters 10.3 Reciprocity of a Two-Port Network 10.4 Interconnection of Two-Port Networks		

[5] 수강생 학습 안내 사항

1. CAU portal site ([알림마당>공지사항]>에서 “MATLAB 교내 사용 및 설치 안내” 공지사항을 참고하여 개인용 PC에 MATLAB을 설치하세요.
2. Website <http://www.orcad.com/buy/try-orcad-for-free>에서 OrCAD 17.2 PSpice Designer Lite Software (Capture/PSpice only)를 down 받아서 개인용 PC에 설치하세요.