ECGR-3111 Signals and Systems
Fall 2013
Course syllabus

INSTRUCTOR: Amitangshu Pal

OFFICE: Room: EPIC-2331
Phone: 980-229-3383, E-mail: apal@uncc.edu

OFFICE HOURS: Tuesdays and Thursdays, 5.00 pm – 6.30 pm

LECTURE SCHEDULE: Mondays and Wednesday, 11.00 am – 12.15 pm, EPIC-G222.
Recitations on Fridays, 2.00 – 3.15pm, EPIC-2222.

COURSE CONTENT: This course is designed to introduce the student to the theory and the mathematical techniques used in analyzing and understanding continuous-time linear systems (systems and the interaction of signals in systems).

PREREQUISITE: ECGR 2112 (Network Theory-II) with a Grade C or higher. The following skills are necessary: (a) general mathematical skills, including integration, differentiation and algebraic manipulation, and (b) basic electrical circuit theory.

TEXT: Signals and Systems, by A. V. Oppenheim, A. S. Willsky, S. H. Nawab, Second Edition, Prentice Hall, 1997.

REFERENCES: 1.) Signals and Systems, JustAsk! Edition, by Simon Haykin and Barry Van Veen, John Wiley & Sons, 2005.

2.) Linear Systems and Signals, by B. P. Lathi, Oxford University Press, 2002.

3.) Computer Explorations in Signals and Systems using MATLAB, Second Edition, by J. R. Buck, M. M. Daniel, and A. C. Singer, Prentice Hall Signal Processing Series, 2002.

OUTCOMES: The following competencies will be developed:

1. Understand the properties of elementary signals and their transformations.

2. Understand how the process of convolution relates the response of a linear system to the input signal and the system's impulse response.

3. Familiarize with the idea of representing continuous-time signals and LTI systems in the frequency domain.

4. The ability to solve differential equations using Fourier transforms.

5. Understand Laplace transform and the complex frequency variables.

6. The ability to solve integer-differential equations using Laplace transforms.

GRADING:

Homework assignments=25%,
Mid-term examinations=25%,
Quiz=20%,
Final examinations=30%.
Late assignments will not be accepted for grading.

ACADEMIC INTEGRITY:

Students have the responsibility to know and observe the requirements of the UNCC Code of Student Academic Integrity. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.

ONLINE:

Course material and announcements will be available at http://webpages.uncc.edu/~apal/

TENTATIVE SCHEDULE OF CLASSES:

Lectures	Topics	Chapter
1-5	Introduction to signals and systems, signal classification, basic operations on signals, systems, classification of systems.	1.0-1.6
6-10	LTI systems, impulse response, convolution, properties of LTI systems, step response.	2.2-2.3
11-13	Representation of systems by differential equations, solutions of differential equations, block diagrams.	2.4
14	Mid-term examination.	
15-19	Fourier Series representation of continuous time signals, properties, applications.	3.0 – 3.5, 3.8 –3.10
20-24	The continuous time Fourier Transform, properties, and applications.	4.0 – 4.8
25-28	Laplace transform, properties, inverse Laplace transform, Transfer function, applications of the Laplace transform.	9.0 – 9.3, 9.7