



Меѓународен Универзитет Визион - International Vision University
 Universiteti Ndërkombëtar Vizion - Uluslararası Vizyon Üniversitesi

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SYLLABUS

COURSE NAME	COURSE CODE	SEMESTER	COURSE LOAD	ECTS
SIGNAL PROCESSING	CEN-4008	7	150	5

Prerequisite(s)	None
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Course Language	Macedonian, Turkish, English
Course Type	Required
Course Level	First Cycle
Course Lecturer	
Course Assistants	
Classroom	
Extra-Curricular Office Hours and Location	

Course Objectives	This course is designed to teach how to process digitized information in digital signal processing systems.
Course Learning Outcomes	The student will gain a perspective on the basic principles and techniques of digital signal processing. The student will gain the ability to understand and design new digital signal processing systems. Students will be able to design digital filters with a computer-based approach. Students will grasp how to apply mathematical concepts to real-world problems. Students will be able to develop algorithms for the application of digital signal processing concepts.
Course Contents	Discrete-Time Signals and Systems; Discrete-time Fourier Transform; Discrete Fourier Transform; Discrete-Time Processing of Continuous Time Signals; z-transform; Frequency Domain Analysis of Linear and Time-Invariant Systems; Digital Filter Design Techniques.

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subjects	Related Preparation
1	Introduction / Signals, Systems and Signal Processing / Classification of Signals / Frequency Concept in Continuous and Discrete Time Signals.	Related Chapters of Course Sources
2	Sampling Process / Analog to Digital and Digital to Analog Conversion / Continuous Time Bandpass Sampling and Reconversion	Related Chapters of Course Sources
3	Discrete-Time Signals / Discrete-Time Systems / Analysis of Discrete-Time Linear Time-Invariant Systems / Analysis of Discrete-Time Systems with Difference Equations	Related Chapters of Course Sources
4	Implementation of Discrete-Time Systems / Convolution / Correlation in Discrete-Time Signals	Related Chapters of Course Sources
5	Frequency Analysis for Discrete-Time Signals / Frequency-Domain and Time-Domain Signal Properties / Fourier Transform Features for Discrete-Time Signals	Related Chapters of Course Sources
6	Frequency-Domain Properties of Linear Time-Invariant (LTD) Systems / Frequency Response of LTD Systems / Use of LTD Systems as Frequency-Selective Filters	Related Chapters of Course Sources
7	Midterm	Related Chapters of Course Sources
8	Frequency Domain Sampling: Discrete Fourier Transform (AFD) / Features of AFD / Frequency Analysis using AFD	Related Chapters of Course Sources
9	Frequency response of time-invariant systems. Its response to true sinusoidal signals. Ideal filters and their applications. Time domain and frequency domain.	Related Chapters of Course Sources
10	The z-Transform and its Application to the Analysis of LTD Systems / Properties of the z-Transform / Inverse z-Transform / Analysis of LTD Systems in the z-Domain	Related Chapters of Course Sources
11	Structures for Implementation of Discrete-Time Systems / Structure of FIR Systems / Structures for IIR Systems	Related Chapters of Course Sources
12	Multirate Digital Signal Processing	Related Chapters of Course Sources
13	Multirate Digital Signal Processing	Related Chapters of Course Sources
14	Project presentations	Related Chapters of Course Sources
15	Final Exam	Related Chapters of Course Sources

ECTS / WORKLOAD TABLE

Presentation / Seminar			
Hours for off-the-classroom study (Pre-study, practice)	14	3	42
Midterm Exam	1	12	12
Final examination	1	14	14
Total Work Load			
ECTS		5	

GENERAL PRINCIPLE RELATED WITH COURSE

Dear Students,

In order to be included in the lesson, learn the lesson fully and achieve the success you deserve, you must come to each lesson prepared by reading the sections related to the subjects to be covered from the basic and supplementary textbooks. We expect you to meticulously comply with the lesson hours, not to interrupt the lessons unless it is absolutely necessary, to participate actively in the lesson, to communicate fully with your teacher and classmates, and to be active by participating in the discussions in the class. Unethical behaviors that may occur both in classes and in exams will be acted upon within the framework of the relevant regulation. Attendance will be taken at the time your teacher requests, at the beginning, middle or end of each lesson. Students who attend all classes during the semester will be given a 15-point attendance grade in addition to the exam grade.

SOURCES

COMPULSORY LITERATURE		
No	Name of the book	Author's Name, Publishing house, Publication Year
1	Digital Signal Processing, , 4th Edition	S. K. Mitra, McGraw-Hill Int. Edition, 2011
2	Електроника	М.Камилов, ЕТФ Скопје, 2002
3		

ADDITIONAL LITERATURE		
No	Name of the book	Author's Name, Publishing house, Publication Year
1	Sayısal İşaret İşleme	Sarp Ertürk, Birsen Yayınevi,2005 http://www.jhu.edu/~signals/

EVALUATION SYSTEM

Underlying the Assessment Studies	NUMBER	PERCENTAGE OF GRADE
Attendance/Participation	15	%10
Project / Event	1	%20
Mid-Term Exam	1	%35
Final Exam	1	%35
TOTAL	17	%100

ETHICAL CODE OF THE UNIVERSITY

In case students are cheating on exams or preparation the same, it is not making reference to the source to be used in studies, as for example in assignments, projects and presentation (plagiarism), in accordance with legislations by Ministry of Education and Science of the Republic of North Macedonia and International Vision University, apply relevant disciplinary rules. International Vision University students are expected never attempts in this kind of behavior.