COURSE DESCRIPTION

1. GENERAL

SCHOOL	MUSIC AND AUDIOVISUAL ARTS		
DEPARTMENT	AUDIO AND VISUAL ARTS		
LEVEL	Undergraduate		
COURSE CODE	VIS932	**SEMESTER**	9th
COURSE TITLE	Digital Image Processing II		
INDEPENDENT TEACHING ACTIVITIES		**WEEKLY TEACHING HOURS**	**ECTS**
Lecture, Hands-on Lab		4	7
COURSE CATEGORY	Specific Background		
COURSE TYPE	Elective		
PREREQUISITES	TEC411, VIS832		
LANGUAGE OF TEACHING and EXAMINATIONS	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES (In English)		
URL	https://avarts.ionio.gr/en/studies/undergraduate/courses-descriptions/vis932/		
ECLASS	https://opencourses.ionio.gr/modules/contact/index.php?course_id=274		

2. TEACHING RESULTS

Teaching Results

To provide a basic understanding of the fundamental principles underlying the analysis and properties of digital images in the frequency domain and aspects of colour theory. To familiarise students with basic processing algorithms and to promote their problem-solving skills in the field.

General Skills

- Seek, analyze and synthesize data
- Autonomous work
- Team work
- Project design and management
- Freedom of thought

3. CONTENT

An intermediate-level course on digital image analysis and processing in the frequency domain as well as analysis and processing of digital colour images

1st Week Revision of fundamentals of image processing in the data domain
2nd Week Revision of complex number analysis and theory tools
3rd Week Introduction to the Discrete Fourier Transform
4th Week The 2-D Discrete Fourier Transform
5th Week Introductory notions of filtering in the frequency domain
6th Week 2-D filtering in the frequency domain
7th Week Design methodologies for low-, high- and band-pass 2-D filters
8th Week Comparative study of data vs. frequency domain filtering. Edge detectors in the frequency domain
9th Week Introduction to the theory of human colour vision and colour theory
10th Week Colour spaces. Pseudocolouring algorithms
11th Week Linear and non-linear chromatic tonal transformations
12th Week Colour detection and restoration algorithms
13th Week Colour filtering and enhancement algorithms

4. TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	Lectures
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Enhanced by multimedia content. The learning process is supported by the asyncrhonous e-learning platform e-class.
TEACHING STRUCTURE	Activity — Semester Workload Lectures — 26 Lab Practice — 26 Literature Study and Analysis — 80 Practice and Preparation — 43 **Course Total** (ECTS: 7) — **175**
EVALUATION OF STUDENTS	In-situ laboratory assignment

5. BIBLIOGRAPHY

(in Greek)

Ν. Παπαμάρκος, Ψηφιακή Επεξεργασία και Ανάλυση Εικόνας

Ι. Πήτας, Ψηφιακή Επεξεργασία Εικόνας