Program	Level	Second cycle
	Name of the program	Theoretical Computer Science

COURSE				
Course title	**Computer Vision**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
CS 520	III	Mandatory course	8	3+0+2
Lecturer				
Course Goals	Computer vision is a branch of computer science aimed at modelling the real world or recognising objects in digital images. These images can be obtained using cameras, radars or specialised sensors such as those used in medicine. Students will be introduced to the basic techniques used in computer vision. They will learn how to apply digital image processing techniques and edge detection, segmentation and shape recognition techniques.			
Learning Outcomes	After completing the module, students will be able to: • understand the basics of creating digital images • use essential methods, techniques and ideas of computer vision • use typical pattern recognition techniques for object recognition • develop simple object recognition systems			

COURSE CONTENT

- Digital image formation
- Digital image processing
- Feature detection and matching
- Segmentation
- Image alignment
- Structure from motion
- Dense motion estimation
- Image stitching
- Computational photography
- Stereo matching
- 3D reconstruction
- Image-based rendering
- Recognition

LITERATURE

1. R. Szeliski: *"Computer Vision: Algorithms and Applications"*, 2011.
2. S. J. D. Prince: *"Computer Vision: Models, Learning, and Inference"*, 1st Edition, 2012.
3. R. Hartley, A. Zisserman: *"Multiple View Geometry in Computer Vision"*, 2nd Edition, 2004.
4. J. R. Parker: *"Algorithms for Image Processing and Computer Vision"*, 2nd Edition, 2010.

STUDENT WORKLOAD (hours in a semester)

Lectures	45	Tutorial	30	Individual work	125	T o t a l	200

GRADING			REMARKS
Criterion	Maximum points	Minimum points	
Midterm exams	30		
Laboratory assignments	30		
Final exam	40		
T o t a l	100	55	