

Mobile Programming & Multimedia Course Introduction

Prof. Ombretta Gaggi
University of Padua



1

Communications



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

E-mail: gaggi@math.unipd.it

Office hours: by appointment via e-mail

Moodle:

[https://stem.elearning.unipd.it/course/
view.php?id=5309](https://stem.elearning.unipd.it/course/view.php?id=5309)

Mobile Programming and Multimedia

2

2

Educational objectives



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

The course is divided into two different sections

- Mobile Programming
- Multimedia

We will cover the main technologies for
encoding, storage and transmission of
multimedia information

... Yes, great, perfect, but practically?

Mobile Programming and Multimedia

3

3

... yes, perfect, but practically?



UNIVERSITÀ
DEGLI STUDI
DI PADOVA




Mobile Programming and Multimedia

4

4

Media and Technologies



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

“Media” and “Multimedia” definition

Technologies for encoding, processing, transmission and storage of multimedia data

Classification

Static and continuous media

Mobile Programming and Multimedia

5

5


Images: representation and encoding

How human sight works

Image properties: size, quality, transmission, visualization

File formats:

- GIF
- PNG
- JPEG
- JPEG2000
- others...



Mobile Programming and Multimedia

6

6

Audio: representation and encoding


What is sound?

Audio properties: fidelity, transmission, playback

Standard file formats:

- WAV
- MP3
- others...

MIDI



Mobile Programming and Multimedia

7

7

Video: representation and coding


Human vision with motion pictures

Digital and analogic video

Video properties: quality, representation, transmission

Standard formats:

- H261
- H263
- MPEG family
- DivX, Xvid




Mobile Programming and Multimedia

8

8

Data compression



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Reasons behind data compression

- Storage space, transmission time

Continuous and not-continuous media compression


Lossless and lossy compression

Lossless encoding

- Entropy encoding methods
- Semantic compression

Lossy encoding

- Image compression: JPEG
- Video compression: MPEG1-2
- Audio compression: MP3




Mobile Programming and Multimedia

9

9

Textbooks



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Lectures' slides (moodle)

Slides are not a replacement of books and lectures, and their unique use is not enough for the examination.

Textbooks:

- Ze-Nian Li, Mark S. Drew, Jiangchuan Liu, *Fundamentals of Multimedia*, Springer, 2021.

Suggested research material (moodle)

- Fundamentals
- Detailed studies

Mobile Programming and Multimedia

10

10




Mobile Programming and Multimedia

11

11

Target knowledge



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

The course provides the skills needed to build a mobile application, from its design and development to the deployment in the different stores and its maintenance.

... Yes, great, perfect, but practically?

Mobile Programming and Multimedia

12

12

Which Operating System? Coding language?

Cross Platform
Apps
Development

13

What are the main elements that define the quality of an application?

Mobile Programming and Multimedia

14

Target skills and knowledge

Mobile interface design

Cross-platform development

Emotional design

Wearable devices

Market

15

Textbooks

Lectures' slides (moodle)

Slides are not a replacement of books and lectures, and their unique use is not enough for the examination.

Textbooks:


- Josh Clark, *Designing for Touch*, A book apart, 2015
- Aaron Walter, *Designing for Emotion*, A book apart, 2011

Suggested research material (moodle)

- Fundamentals
- Detailed studies

16

Examination




UNIVERSITÀ
DEGLI STUDI
DI PADOVA

The examination will require:

- A presentation of an argument with slides plus an oral examination

Or:

- A small group project with a final report plus a small oral examination
- In-depth analysis of an argument with a presentation and a small oral examination
 - The argument must be defined by the end of April
 - Possible dates: 30th - 31th May 2023



Mobile Programming and Multimedia

17