

EMBEDDED SYSTEMS PROGRAMMING 2015-16

Information About the Course

INSTRUCTOR

Carlo Fantozzi
Assistant Professor

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Office hours: by appointment,
contact the instructor via email

TUTOR

Edoardo Degli Innocenti

Master Student

degliinn@dei.unipd.it

Ask him questions when he is in the lab (preferably)

Make arrangements via email

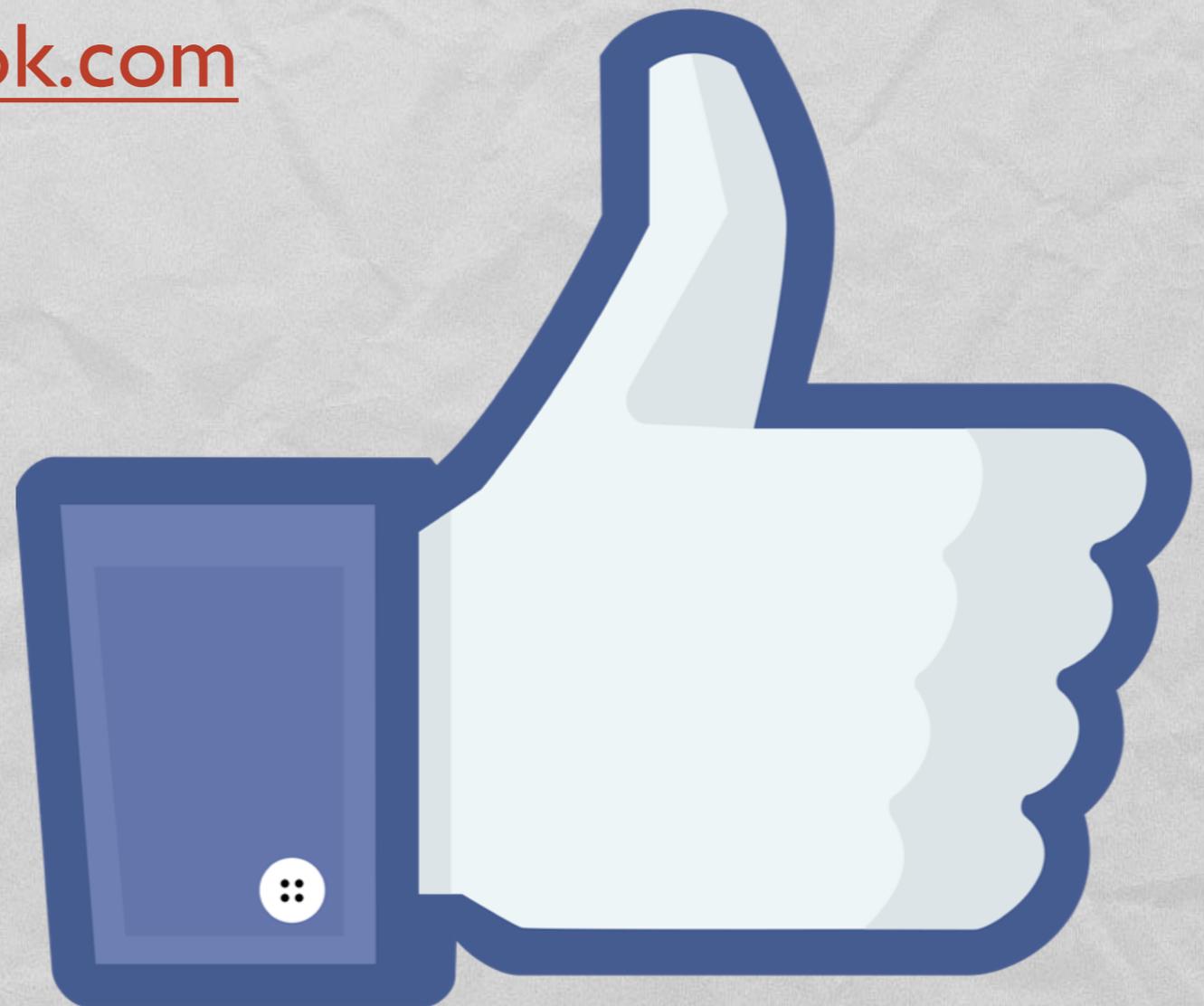
COURSE WEBSITE

- <http://www.dei.unipd.it/~fantozzi/esp1516/>
- Every information will be posted there
⇒ look at the home page every single day
- License: [CC Attribution Share-Alike 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

FACEBOOK GROUP

- <https://www.facebook.com/groups/esp1516/>
- esp1516@groups.facebook.com

- Restricted to students enrolled for grades



TEXTBOOKS

- No single textbook
- Slides from the lectures
- Material linked from the course website
- All the material for the course is in English

Advice: TAKE your own NOTES

SUGGESTED BOOKS

- Ken Arnold, James Gosling, David Holmes, “The **Java** Programming Language,” Fourth Edition, 2005
- Herbert Schildt, “**C++**: The Complete Reference,” Fourth Edition, 2002
- Brian W. Kernighan, Dennis M. Ritchie, “The **C** Programming Language,” Second Edition, 1988
- Bill Phillips, Chris Stewart, Brian Hardy, Kristin Marsicano, “**Android** Programming: The Big Nerd Ranch Guide,” Second Edition, 2015
- Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, “Design Patterns: Elements of Reusable Object-Oriented Software,” 1995
- Kenneth Dawson-Howe, “A Practical Introduction to Computer Vision with **OpenCV**,” 2014

CONTENTS (1/3)

General structure: similar to ESP1415

- Only one platform (Android)
- Algorithmics
- Both L and LM students,
different projects for the two groups
- Course participation is graded

CONTENTS (2/3)

Removed w.r.t. ESP1415

- Language Basics (-2h)
- OO Basics (-2h)
- SQL (-2h)
- Concurrency Theory (-2h)

Added w.r.t. ESP1415

- Hands-on labs (8h)

LAB (1/3)

- Used for lab lectures, and to develop your project if you do not have a personal computer/laptop
- **Integrated Development Environment for Android (Android Studio);**
- IDE includes an emulator;
limit yourself to Android 4.3 for quota reasons

LAB (2/3)

- Reserved for you: “Aula Te”, DEI/G, Via Gradenigo 6/A
- Open every Tuesday 2-6pm from Tuesday, March 15 until Tuesday, July 5
- Tuesday lecture in the lab from March 22



LAB (3/3)

- The IDE is accessible from any lab workstation in the Department; just type

```
cp -r /nfsd/opt/android-studio/dot.AndroidStudio1.5 ./AndroidStudio1.5  
/nfsd/opt/android-studio/bin/studio.sh
```



just once!

- You can install the software on your PCs as well. Download it from <http://developer.android.com/sdk/> and follow the online instructions

SAFETY

- Before accessing the lab,
you must attend an **online course on safety**
1. Connect to
<https://elearning.unipd.it/servizioformazione/course/index.php?categoryid=15>
 2. Select “PARTE GENERALE”, then login
 3. Use “sicurezza” as the enrollment key

ENROLLMENT

- 60 students maximum (40 L + 20 LM)
- Enroll via GestNuPro 3:

GESTNuPro3
GESTIONE CORSI A NUMERO PROGRAMMATO

<https://elearning.dei.unipd.it/gestnupro/>

- Deadline: Sunday, March 6
- No latecomers will be admitted

HOW TO PASS THE COURSE

Course participation +
Group project +
oral exam

(3 points + 16.5 points + 10.5 points = 30 points)

COURSE PARTICIPATION

- Weight: 10% (3 points)
- Each student graded individually
- Every form of participation will make you earn points
- As a last resort: questions administered at the end of some lectures, chosen at random
- Behave as engineers, not accountants!

GROUP PROJECT

- Weight: 55% (16.5 points)
- You must get at least 9.9 points (i.e., 18) to pass the exam
- Groups of 3 L or 3 LM students;
all the students in a group will get the same mark
- Students can propose groups;
only LM students can propose projects
- Students not grouping and/or not proposing a project
will be forcibly grouped and/or assigned a project

ORAL EXAM

- Weight: 35% (10.5 points)
- You must get at least 6.3 points (i.e., 18) to pass the exam
- Each student graded individually
- Questions on everything presented during lectures

- Project must be approved before the oral exam
(no project \Rightarrow no oral exam)

ABOUT THE PROJECT (1/6)

- The project is the most important contribution to the final mark

- Different members can have different roles



- ...But if one team member is lagging behind, then the project may fail, and everybody gets bad grades

ABOUT THE PROJECT (2/6)

- **Work as a team**
- **You will be evaluated as a team**
 - I don't care who does what
 - I don't care if a member does a bit more/less than the others
 - However, I do care if a member does nothing:
in this case, please notify me immediately

ABOUT THE PROJECT (3/6)

- **Standard Projects (L students only)**
 - **Report** on an Android topic not presented during classroom, plus a **mockup app** illustrating the topic
 - List of possible topics prepared by the instructor
 - Several groups can choose the same topic

ABOUT THE PROJECT (4/6)

- **Special Projects (LM students only)**
 - **App with significant algorithmic content, plus Facebook posts. hashtag: #groupname**
 - **List of possible topics prepared by the instructor. Only one group per topic. Topics assigned on a first come, first served basis**
 - **Groups can propose Custom Projects**

ON LM PROJECTS

- All LM groups must prepare a written project proposal
- Feedback will be provided, proposals can be rejected
- For Custom Projects: invent something really different!
- LM projects must embody significant methodological content, up to the point where just a portion of an app is defined
- Facebook posts for LM projects log the design+development process: state of the art, proposed solution, implementation

PROJECT TYPES: SUMMARY

	L	LM
Standard	✓	-
Special	-	✓ proposal required
Custom	-	✓ proposal required

ABOUT THE PROJECT (5/6)

- There is a deadline for the formation of groups
- There is no deadline to decide which project to develop. However, the sooner you make up your mind (and have your proposal approved, for LM groups), the sooner you can start working

AVAILABLE DEVICES

Hardware is available for groups who do not have any personal Android device

- **Nexus 7: 5 pieces**
- **Galaxy Nexus: 1 piece**
- **Pop C3: 4 pieces**
- **Smart Pad 706i: 1 piece**



PROJECTS AND DEVICES

- Devices assigned on request on a FCFS basis
- Devices assigned only after the project proposal has been approved
- Every group assigned a device will be responsible for it till the end of the course
- Devices cannot leave the lab

BYOD

- If you develop the project on your own device, remember to
 - **communicate your device model and OS version to the instructor when you submit your project,**
 - **take the device with you the day your project is discussed**
- This is the only way to ascertain the cause of glitches

ABOUT THE PROJECT (6/6)

To have your project graded, do the following.

1. Enroll in the session of your choice (via Uniweb)
2. By the day enrollment ends, send source code & report to the instructor by e-mail or some other means
3. In the day of the exam, discuss your project with the instructor. All project members must enroll & attend. At the end of the discussion, you will receive a mark

EXPIRATION OF GRADES

- **Incomplete grades (i.e., project marks) will be valid until February 2017**
- **Consequence: If you complete the project this year, you must pass the oral exam before ESP1617 begins**

ESP I 5 I 6: SOME FIGURES

- 68 students asked to enroll
- 60 students selected (40L+20LM)
- 60 students presented a project:
all of them received a positive mark
- 59 students passed the oral exam



PROGRAM OF STUDY

Update your program of study to include

- IN02 | 22732 “Real-time Systems”
(LM-IF students, cohort 2014-15 and earlier)
- IN01 | 22661 “Embedded Systems Programming”
(anyone else)

Update your POS it in a timely manner,
or you will not be able to enroll for the exams
and complete the course. You have been warned

COURSE TIMELINE (1/2)

- **March 6:** deadline for enrollment
- **March 8:** students list published
- **March 15:** lab opens
- **By March 17:** projects published

COURSE TIMELINE (2/2)

- **March 22:** project discussion session
- **March 25:** deadline for the definition of groups. By this date, each group must also choose a group name
- **July 5:** lab closes, devices available only upon request

FINALS

- First session: beginning of July
- Second session: mid-July
- Third session: mid-September
- Fourth session: TBA (February 2017)

- All dates published on the course website

LAST MODIFIED: MARCH 9, 2016

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