

Carnegie Mellon /  
University of Coimbra

Professional Master of Software  
Engineering (MSE)

2009/2010



Carnegie Mellon

# CMU?

PREMIUM ONLINE EDITION  
**America's Best Graduate Schools 2007**

THE SCIENCES    Rankings    Directory    Tools    Articles    Sciences Index

## Computer Science

Ranked in 2006\*

Rank/School	Average assessment score (5.0 = highest)
1. <a href="#">Carnegie Mellon University (PA)</a>	5.0
<a href="#">Massachusetts Institute of Technology</a>	5.0
<a href="#">Stanford University (CA)</a>	5.0
<a href="#">University of California-Berkeley</a>	5.0
5. <a href="#">Cornell University (NY)</a>	4.6
<a href="#">University of Illinois-Urbana-Champaign</a>	4.6
7. <a href="#">University of Washington</a>	4.5
8. <a href="#">Princeton University (NJ)</a>	4.4
9. <a href="#">University of Texas-Austin</a>	4.3
<a href="#">University of Wisconsin-Madison</a>	4.3
11. <a href="#">California Institute of Technology</a>	4.2
<a href="#">Georgia Institute of Technology</a>	4.2
13. <a href="#">University of California-San Diego</a>	4.0
<a href="#">University of Maryland-College Park</a>	4.0
15. <a href="#">Harvard University (MA)</a>	3.9
<a href="#">University of California-Los Angeles</a>	3.9
<a href="#">University of Michigan-Ann Arbor</a>	3.9

# UC?

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- Oldest University in Portugal
  - One of the oldest in the world
  - 800 years of history and tradition
- Internationally ranked as the best University in Portugal



# The Current State of the Software Industry

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- Ever higher complexity, continuous change, super fast markets
- Large Scale systems are now the norm
- Low qualified labour is not the answer for creating high-value products
- The software industry needs Technical Leaders, and these will not just pop up in an ad-hoc way
- Projects live and die because of Technology, People and Processes; universities typically only teach the first.

# CMU/UC Master of Software Engineering

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***Develop future leaders of industrial software engineering practice***

- Explicitly training graduates for:
  - Effectively managing teams, projects and processes
  - Creating architectures for large-scale systems
  - Implementing change inside of organizations
  - Becoming team leaders, project managers, software architects
- Program that top organizations send their engineers to do before becoming team and section leads
- Widely recognized as being the Number One Program in Software Engineering worldwide

# New Type of Degree

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- 16 month INTENSIVE program
  - 4 months in Pittsburgh, USA
  - 12 months in Coimbra, Portugal
- Global classroom – Coimbra / Pittsburgh / India / Korea
  - Coimbra is THE offering for Europe!
  - Dual-degree: graduates earn a degree from Carnegie Mellon (US) and a degree from the University of Coimbra (Portugal)
- Two years of relevant professional experience REQUIRED
- Enrols only very bright people from anywhere in the world
- Professional Degree – from industry to industry

# Student Profile / Admission Requirements

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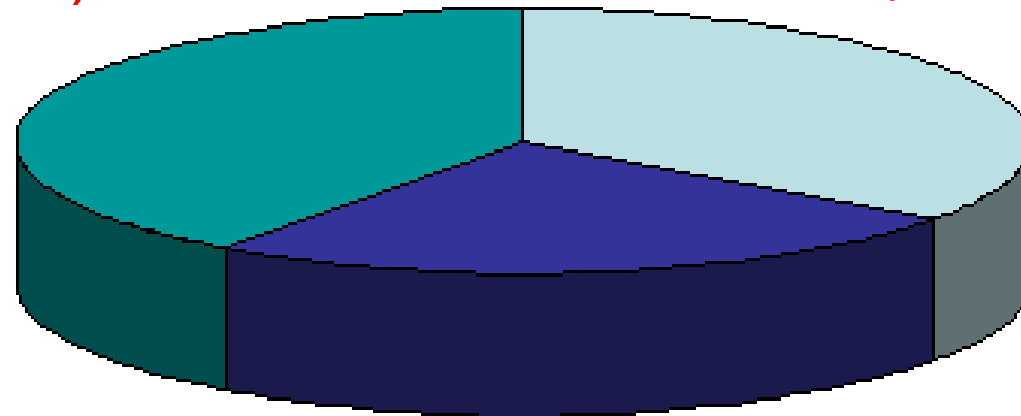
- 2+ years of relevant experience in Industry
  - Most students average 5 years
  - Projects, size, teams, development methodology, languages, etc.
- Strong Motivation
  - Must show a strong desire to become a technical leader and to improve the way software is made
- Highly recommended
  - Letters sent directly to the admission committee
  - Qualitative and Quantitative evaluation
- TOEFL + GRE scores
  - <http://www.ets.org/>
- Interview (in English)

# MSE Overview

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Software Development Studio  
(40%)

Electives  
(30%)



5 Core Courses  
(30%)



# Core Courses

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- Methods of Software Development
  - Learn how to gather, manage and analyze requirements
- Managing Software Development
  - Learn different software development methods and lifecycles
- Analysis of Software Artifacts
  - Learn how to reason about artifacts, from specification to code
- Architectures for Software Systems
  - Learn how to systematically create architectures for large-scale systems
- Models of Software Systems
  - Learn how to formally model and reason about software

# Program Overview

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- **Fall 2009 (@Coimbra):** August→December
  - 17-651: Models of Software Systems 12U
  - 17-653: Managing Software Development 12U
  - 17-652: Methods: Deciding What to Design 12U
  - 17-671: Software Development Studio I 9U
  - 17-676: Software Engineering Bootcamp 3U
  - 17-656: Comm. for Software Engineers I 3U
  
- **Spring 2010 (@Pittsburgh):** January→May
  - 17-654: Analysis of Software Artifacts 12U
  - 17-655: Architectures for Software Systems 12U
  - 17-672: Software Development Studio II 12U
  - 17-657: Communication for Software Engineers II 3U
  - *Elective* 9-12U

# Program Overview (2)

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- **Summer 2010 (@Coimbra): May→August**
  - 17-673: Software Development Studio II 48U
  - *Elective* 9-12U
  
- **Fall 2010 (@ Coimbra): August→December**
  - 17-674: Studio Reflective Practice 12U
  - *Elective* 9-12U
  - *Elective* 9-12U

# Software Development Studio

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- Working in teams of five, students analyze a significant and challenging problem, autonomously planning, managing and implementing a realistic solution for an industrial client
  - E.g. NASA, Google, General Motors, BOSH, U.S. Navy, etc.
- The studio project starts on the first day students arrive at the program and ends on the day they leave
- Each project is fully mentored by two faculty staff
- It serves as a learning forum for applying the techniques studied in the core courses

# Electives

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- Courses that students take advancing their knowledge in specific areas
- Example courses:
  - Risk Management for Software Intensive Projects
  - Software Systems Security Engineering
  - Managing Technical People
  - Software Measurement
  - Software Process Improvement
  - Real-Time Software and Systems
  - Embedded Systems
  - *(among others)*

# How Much and Who?

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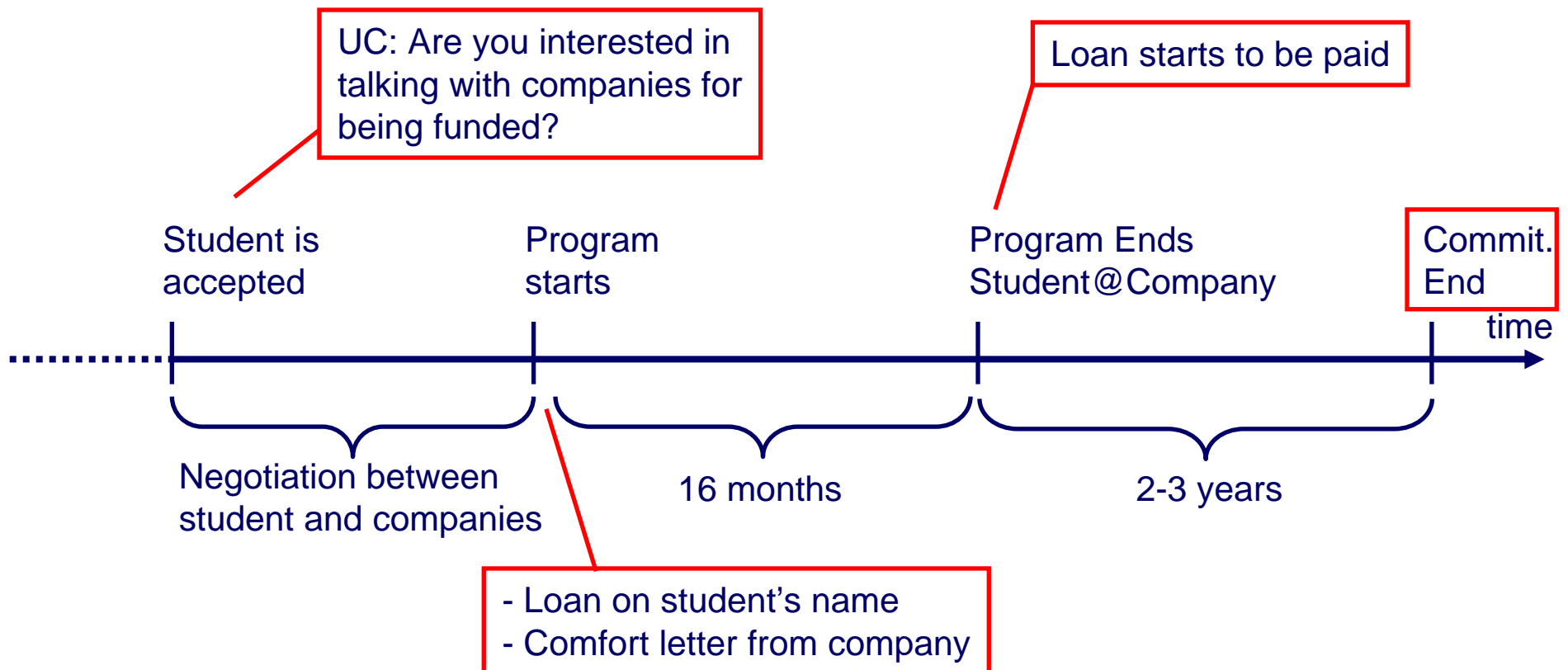
- Tuition: 10.000€
- Plus cost of living (Portugal + US)
- There's the possibility of being fully-funded for studying
- Our industrial partners hire you at the end!

Novabase



# MSE Affiliate Sponsor's Program

- Companies are willing to fully-fund students giving them a job at the end of the program!
  - About 30k€, seen as a join-in bonus
  - In a way that is safe for the company and safe for the student



When?

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Application Deadline 2010/2011

February/2010



Questions?

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Change your life!

MSE

MASTER OF SOFTWARE ENGINEERING

<http://mse.dei.uc.pt>