



## Faculty of Computer Science

- 6 Institutes
- 25 Chairs, 4 Senior-Professorships
- 300 Employees (138 State HR Budget)
- 1,700 Students
- 200+ Research Areas
- ~8.3 Mil EUR Third-Party Funds in 2015
- 241 Doctorate Students 2016
- 30 Doctorate Conferrals 2017
  - 16 by May 2018



# Distributed Systems Engineering



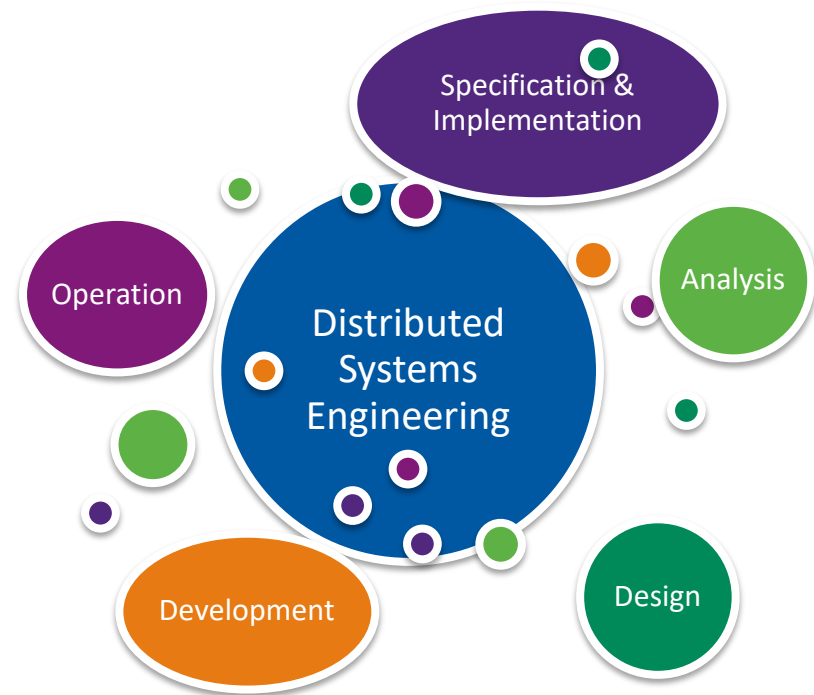
# DSE Master's Degree Program

2-year full-time master's degree program

focusing on advanced topics of

–distributed (software) systems engineering with special emphasis on

- secure software for networked and distributed systems
- mobile and ubiquitous computing



<https://tu-dresden.de/ing/informatik/sya/se/master-dse>

## DSE Curriculum

- **4 mandatory lecture series (30cr)**
  - Systems Engineering (9cr)
  - Ubiquitous Systems (7cr)
  - Transactional & Secure Platforms (9cr)
  - System Design (5cr)
- **compulsory elective module (48cr)**
- **mandatory internship (12cr)**
  - 2 Placements (each 6cr), or
  - 1 Assignment Paper (12cr)
- **mandatory master's thesis (30cr)**

**TOTAL= 120cr**

#	Module	SWS (L/E/S/P)	Credits
DSE-14-E1	Advanced Security and Cryptography	2 / 2	6
DSE-14-E2	Wireless Sensor Networks	2 / 0 / 2	6
DSE-14-E3	Distributed Operating Systems	2 / 1 / 1	6
DSE-14-E4	Component-based Software Engineering	2 / 2	6
DSE-14-E5	Selected Areas of Internet-based Systems	4 / 4	12
DSE-14-E6	Concurrent and Distributed Systems	4 / 0 / 0 / 4	12
DSE-14-E7	Software Fault Tolerance	2 / 2 / 2 / 4	15
DSE-14-E8	Microkernel-based Operating Systems	2 / 1	6
DSE-14-E9	Real-Time Systems	2 / 1	6
DSE-14-E10	Application Development for M&U Computing	2 / 2	6
DSE-14-E11	Principles of Dependable Systems	2 / 2 / 2	9
DSE-14-E12	Foundations of Computational Logic	4 / 4	9
DSE-14-E13	Advanced Topics in Systems Architecture	2 / 0	3
DSE-14-E14	Advanced Topics in Distributed Systems	2 / 2	6

## Prerequisites for DSE Applicants

- A three-years bachelor's degree in computer science or a comparable qualifying university degree
- Certificate of proficiency in English
  - **TOEFL** with 550 points
  - **IELTS** with level 6.0 (for non-native speakers only)
- Certificates indicating "very good" achievements in the following computer science related areas:
  - Operating Systems
  - Networks
  - Database Systems
  - Software Engineering
  - Mathematics
  - Electrical Engineering
  - Distributed Systems
  - Advanced Programming Skills.
- Submission of a **GRE** score report is strongly recommended.



## Double Degree Program

- Universidad Politécnica de Madrid (UPM), Spain
- Università degli Studi di Napoli „Parthenope“, Italy
- Università degli Studi di Napoli „Federico II,“ Italy
- National Technical University of Ukraine (KPI)
- Ecole Internationale des Sciences du Traitement de l'Information (EISTI)
- Silesian University of Technology, Poland
- Wroclaw University of Technology, Poland
- Uniwersytet Wroclawski, Poland

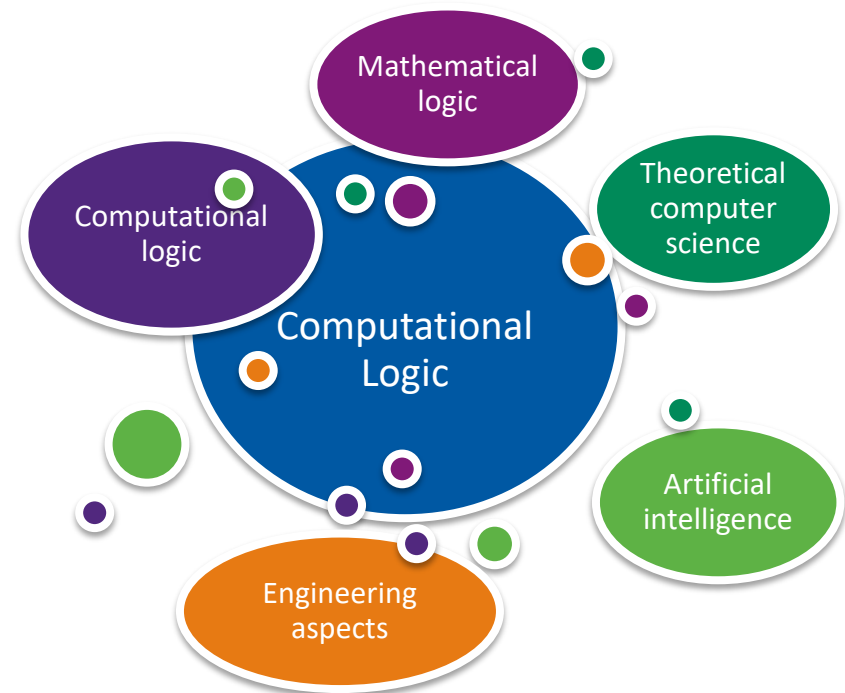
# Computational Logic

# CL Master's Degree Program

**2-year full-time master's degree program**

**focusing on advanced topics of**

- **mathematical logic**
- **theoretical computer science**
- **artificial intelligence,**
- **engineering aspects of logic-based artificial intelligence or computational logic.**



<https://tu-dresden.de/ing/informatik/studium/studienangebot/master-studiengaenge/master-computational-logic>





# CL Curriculum

The International MSc Program in Computational Logic is based on

- seven compulsory basic modules (42cr)
- three selected advanced modules (36cr)
- a project (12cr)
- a research master thesis (30cr)

**TOTAL=120cr**

LECTURES CREDIT POINTS	SEMESTER			
	1	2	3	4
<b>Basic Modules</b>				
Foundations	8	-	-	-
Logic and Constraint Programming	8	-	-	-
Advanced Logics	-	8	-	-
Integrated Logic Systems	-	8	-	-
Presentation and Communication Skills	-	10	-	-
Project	-	-	12	-
<b>Selected Advanced Modules</b>	12	12	12	-
<b>MSc thesis</b>	-	-	-	30
<b>Sum</b>	<b>28</b>	<b>38</b>	<b>24</b>	<b>30</b>
<b>Maximum number of credit points</b>		<b>120</b>		

## Prerequisites for CL Applicants

- A Bachelor's Degree in Computer Science, Mathematics or a comparable university degree
- English-Language certificate (for non-native speakers of English only)
  - **IELTS**: Level 6.0
  - **TOEFL**: IBT (Institutional Testing Program): 550 or iBT (internet-based): 79
- Certificates indicating the achievement "very good" grade in the following areas:
  - **Foundations of Artificial Intelligence**
  - **Declarative Programming**
  - **Theoretical Computer Science**
  - **Foundations of Mathematical Logic**



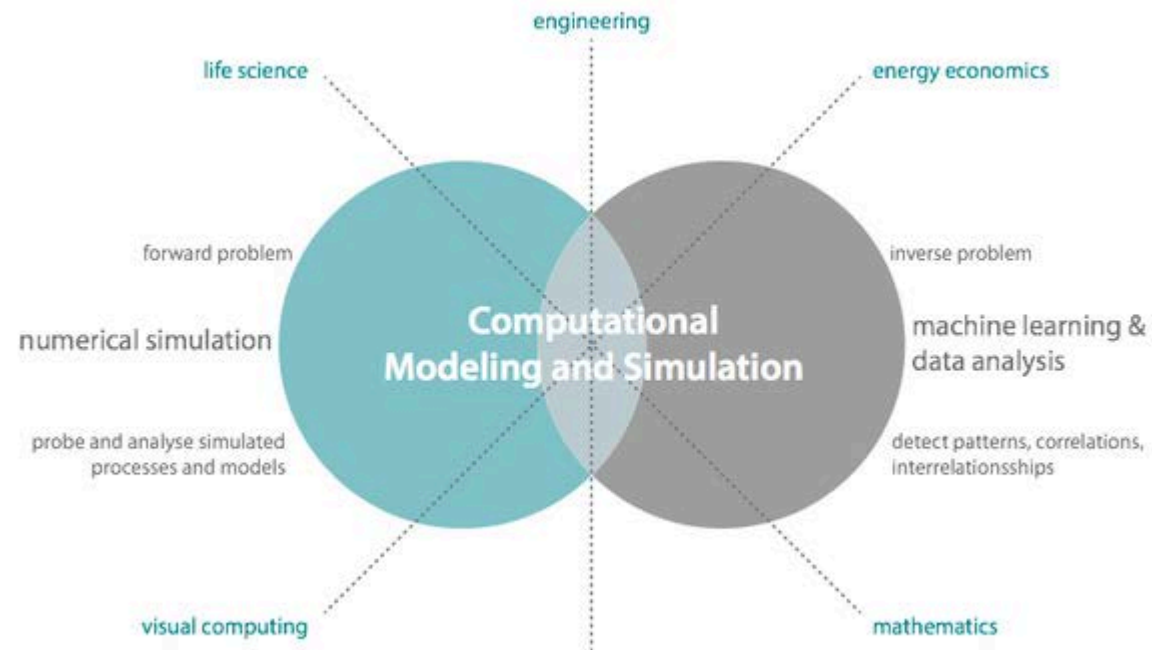
# Computational Modelling and Simulation



# CMS Master's Degree Program

## 2-year full-time master's degree program

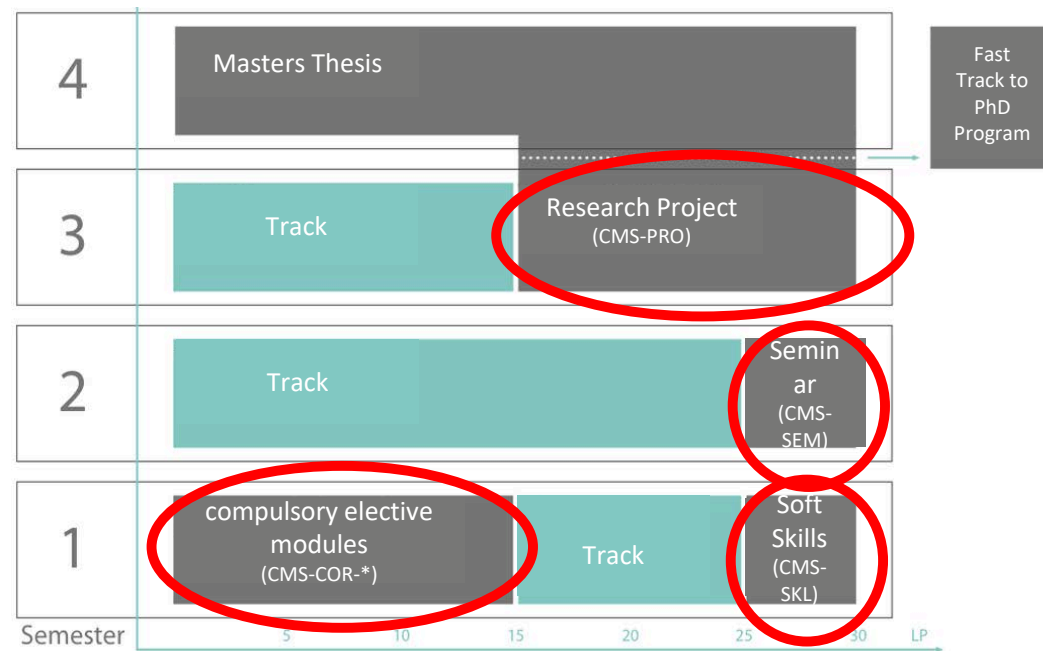
- Computational Life Science
- Computational Mathematics
- Visual Computing
- Computational Modelling in Energy Economics
- Computational Engineering





## CMS Curriculum

- 1<sup>st</sup> semester:
  - Statistical Principles and Experimental Design- 5cr.
  - Basic numerical methods- 5cr.
  - Scientific programming and high-performance computing- 5cr.
  - Machine Learning and Data Mining- 5cr.
  - Stochastic modelling and simulation- 5cr.
  - Introduction to data visualization-5cr.



- 2<sup>nd</sup> semester

The trans-disciplinary seminars, where two seminars from different tracks are to be selected

- 3<sup>rd</sup> semester

Research module for cross-track application of the acquired knowledge in a team project

- 4<sup>th</sup> semester- Master Thesis

**TOTAL= 120cr.**

## Prerequisites for CMS Applicants

- University degree in Computer Science, Mathematics, Natural Sciences, Economics or Engineering (B.Sc. or higher, including M.Sc., German Diplom, B.Hons., etc.)
- Knowledge of English corresponding to at least level B2 of the European Frame of Reference for Language
- Proficiency in computer programming in sequential programming language
- Calculus of functions in one and multiple variables (partial derivatives, integrals, etc.)
- Basics of linear algebra (matrix and vector operations, matrix inversion, decomposition)
- Basics of probability (distributions, elementary probabilities, axioms)
- Basics of physics (classical mechanics, basic electromagnetism, optics)
- Basics of biology (components of a cell, theory of evolution, ecosystems)
- Basics of chemistry (atoms, periodic table, organic molecules (proteins, DNA, ...))

**<https://tu-dresden.de/mn/math/studium/studienangebot/cms-master>**