

Computer Science Graduate Program

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TU / **e**

Technische Universiteit
Eindhoven
University of Technology

Where innovation starts

Computer Science Graduate Program overview

Master Programs (2 years)

- Computer Science and Engineering (CSE)
 - Information Security Technology (IST)
 - Data Science in Engineering (DSE)
 - Big Data Management & Analytics
 - EIT Data Science
- Business Information Systems (BIS)
- Embedded Systems (ES)
 - EIT Embedded Systems

PhD Program (4 years)
scientific researcher

PDEng Program (2 years)
designer

Some numbers in 2016/2017

- Business Information Systems: 32

- Computer Science and Engineering: 119
including
 - Data Science and Engineering 27
 - Information Security Technology 16
 - EIT Data Science 33

- Embedded Systems: 73
including
 - EIT Embedded Systems 23

Computer Science and Engineering

- General computer-science program connected closely to our research strengths
- Solid foundation and specialization streams in
 - Software Science
 - Web Science
 - Systems Science
- Special tracks:
 - Data Science in Engineering
 - Information Security Technology



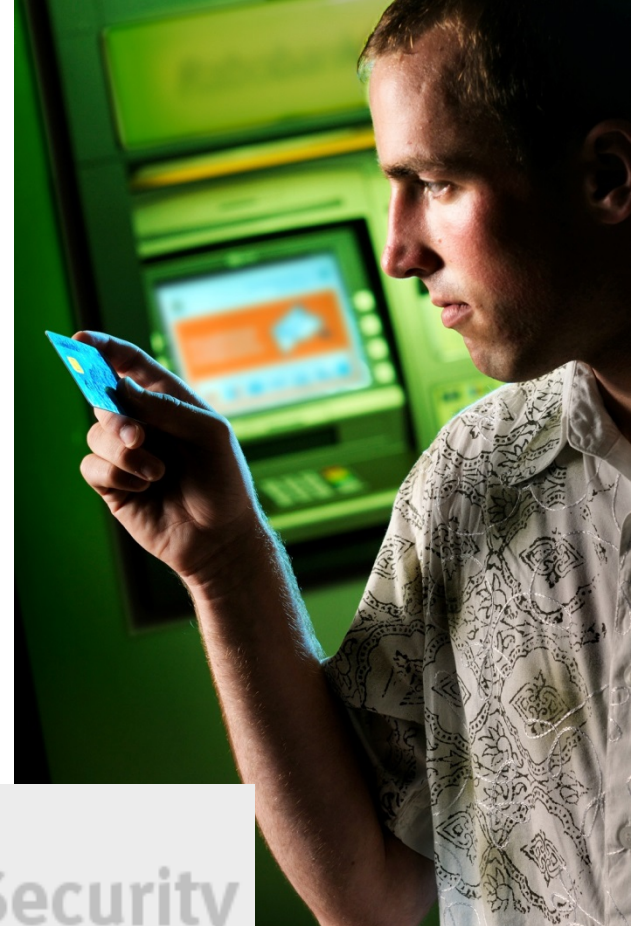
CSE curriculum overview

Software Science	Web Science	Systems Science	Data Science
Advanced Algorithms			
Software evolution	Data engineering	Internet of things	Applied statistics
Program verification techniques	Web information retrieval & data mining	System validation	Visualization
Database technology	Visualization	Automated reasoning	Statistical learning theory
Generic language technology	*Recommender systems	Real-time systems	Advanced process mining
Seminar (Q2 or Q4)			

- Stream electives (20 EC)
- Room for 15 EC international activity in Q4 or Q5
- Seminar prepares for graduation in one of the research groups

Information Security Technology

- Covers theoretical, technical, legal, and ethical aspects of information security technology
- You take courses in Eindhoven (TU/e) and Nijmegen (Radboud University)



TRU/e Master in Cyber Security

IST curriculum overview

TU/e	Radboud University
Cryptology	Software security
Principles of data protection	Security in organizations
Verification of security protocols	Advanced network security
Seminar IST or Privacy seminar	

IST electives

Hacker's hut	Law in cyberspace
Applied crypto	Hardware security
Cryptographic protocols	Crypto engineering
Physical aspects of digital security	

- Core program by TU Eindhoven and Radboud University Nijmegen
- RU courses are in semesters, TU/e courses in quartiles

How does it work with Nijmegen?

- Enrollment
 - Primary @Eindhoven, secondary @Nijmegen
- Travel
 - once a week (on average)
 - Free
 - Dutch: OV-Chipkaart
 - If you do not have one: TU/e reimburses TU/e students
- Exams
 - We are doing our best
 - Re-sit issues: contact us

Business Information Systems

- Multidisciplinary: combines computer science and industrial engineering
- Business process intelligence component
 - 2 variants
- Specialization in
 - Information Management
 - Advanced Modeling and Analysis



BIS curriculum overview

Electronic business		
Business information systems architecture		
Business process management		
Business process simulation		
Business process management systems		
Data engineering		
Variant 1	Variant 2	
Business Intelligence	Foundations of data mining	
Introduction to process mining	Web information retrieval and data mining	
Extra Space 4 International	Information management	Adv modeling and analysis
Software requirements management	Meta-modeling and Interoperability	Visualization
Advanced simulation	Healthcare business networks	Advanced simulation
	Software requirements management	Advanced process mining

Embedded Systems

- Multidisciplinary: combines computer science and electrical engineering
- Broad basis of ES courses and specialization in the computer science department or in the electrical engineering department



ES curriculum overview

Systems on a chip	Embedded software	Embedded networking	Cyber-physical systems
System validation			
Embedded computer architecture			
Quantitative evaluation of embedded systems			
Real-time systems			
Embedded systems laboratory			
Hardware verification	Generic language technology	Architecture of distributed systems	Embedded signal processing systems
Multiprocessors	Parallellism, compilers & platforms	Networked embedded systems	Embedded control systems
Systems on silicon	Automated reasoning	Internet of things	Internet of things
Preparation graduation project			

- Preparation graduation project comprises a feasibility study
- Room for 15 EC international activity in Q5

EIT tracks

- International programs
 - study at two universities in two countries
 - get double degree and EIT certificate
- Only for students with a university degree (BSc)
- Combine technical education with business education on innovation and entrepreneurship
- Many opportunities for international networking
 - kick-off meeting
 - summer school



UNIVERSITY OF TRENTO - Italy



EIT tracks overview

Embedded systems	Data science
Similar to ES	Similar to CSE data science
Innovation & entrepreneurship program	
Technology entrepreneurship	
Corporate entrepreneurship	
Entrepreneurial finance: introduction	
Winter school	
Summer school	
I&E minor thesis	



EIT tracks entry points and specializations

Embedded systems

TU/e
KTH (Sweden)
TUB (Germany)



Data science

TU/e
UNS (Nice, France)
UPM (Madrid)
PoliMi (Milan)



Specializations (exit points)

TU/e
Embedded networking

UNITN (Italy)
Real-time systems & design of cyber-physical systems

TUB (Germany)
Embedded multicore processing

Aalto (Finland)
Mobile cyber-physical systems

TUCS (Finland)
Energy-efficient computing

KTH (Sweden)
Embedded platforms & internet of things

BME (Budapest)
Critical Embedded Systems

TU/e
Process mining in high-tech systems, healthcare, visual analytics,
or big software

KTH (Sweden)
Distributed systems & data mining for really big data

UNS (France)
Multimedia & web science for big data

TUB (Germany)
Design, implementation, and usage of data science instruments

UPM (Madrid)
The internet of things

EIT features

- EU students
 - tuition fee waiver (3000 €)
 - one-time travel and installation support is provided (up to 3000 €)
 - event costs (kick-off, summer school) are covered
 - excellent students can be nominated for monthly scholarship of 500 €
- Application via EIT Digital Master School
 - <http://www.masterschool.eitdigital.eu/>
 - Deadline **April 15, 2017** for EU/EEA citizens
 - admission notifications June 20, 2017



Erasmus Mundus Joint Program: Big Data Management & Analytics

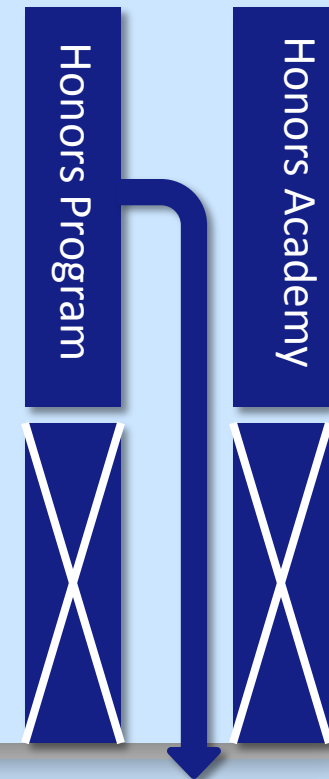
Semester 1	Business Intelligence Fundamentals	ULB	Brussels, Belgium
Semester 2	Big Data Fundamentals	UPC	Barcelona, Spain
Summer School			
Semester 3	Large Scale Data Analytics	TUB	Berlin, Germany
	Business Process Analytics	TU/e	Eindhoven, The Netherlands
	Content and Usage Analytics	UFRT	Tours, France
Semester 4	Thesis	Any partner institution	
Final Event			

<http://bdma.univ-tours.fr/bdma/>

Honors program

Master Programs

- Business Information Systems (BIS)
- Computer Science and Engineering (CSE)
- Information Security Technology (IST)
- Data Science in Engineering (DSE)
- Embedded Systems (ES)
- EIT tracks
 - Embedded Systems
 - Data Science
- Erasmus Mundus
 - Big Data Management and Analytics



Honors program for top students (average grade at least 8)

Two research projects in 2nd and 3rd semester

Honors Academy

Personal development (5EC) + professional development (15EC)

Master's project

- Final 6-month project
- Involves theory, practice, design, or combination
- Perform at the university or in industry
- Consider going abroad

ASML

adver
s i t e
m e n t

de lage landen 

NXP



grexx 

Deloitte.

perceptivesoftware



magnaview
visualize anything • visualize everything

TEIJIN

Human Chemistry, Human Solutions



PHILIPS

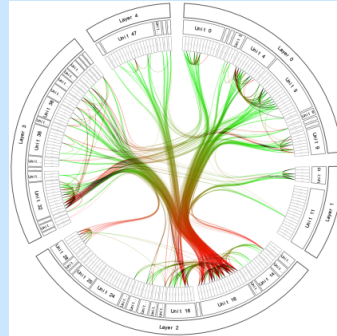
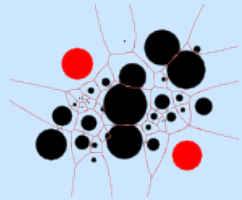
CORDYS



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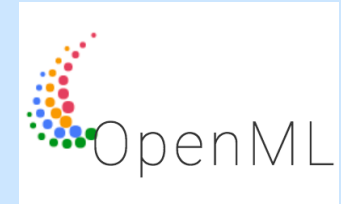
CS Department: who are we

Algorithms & Visualization



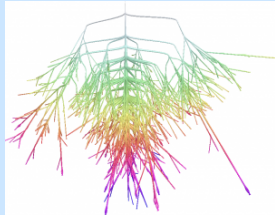
- Algorithms
- Visualization
- Applied geometric algorithms

Information Systems



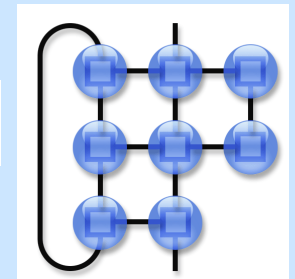
- Web engineering
- Architecture of information systems
- Data mining

Model-Driven Software Engineering



- Formal system analysis
- Software engineering and technology

Security and Embedded Networked Systems






- Security
- System architecture and networking

Job market

- Industry
 - Many job opportunities in Brainport Region and beyond
 - Designer traineeship at the TU/e (PDEng)
- Research
 - PhD positions world wide
 - Industry research divisions



I am interested in...

Computer Science	CSE
Computer Science + Industrial Engineering	BIS
Computer Science + Electrical Engineering	ES
Computer Science + Math (cryptography)	IST
Computer Science + Math (statistics)	DSE
Computer Science + Electrical Engineering + Entrepreneurship	EIT-ES 
Computer Science + Math (statistics) + Entrepreneurship	EIT-DS 
Computer Science + Math (statistics) + Humanities	Erasmus BDMA 

Admission to BIS, CSE, DSE, ES and IST

- Dutch university BSc degree
 - Computer Science: all master programs
 - Industrial Engineering: BIS
 - Electrical Engineering: ES
 - Other: take a deficiency program (individualized) before admission
- Dutch HBO degree
 - Take a pre-master program before admission
 - Focus on mathematics skills
 - Takes half a year up to one year
 - Next year: entrance tests (Math, English) are being discussed
 - HBO-TOP exempted



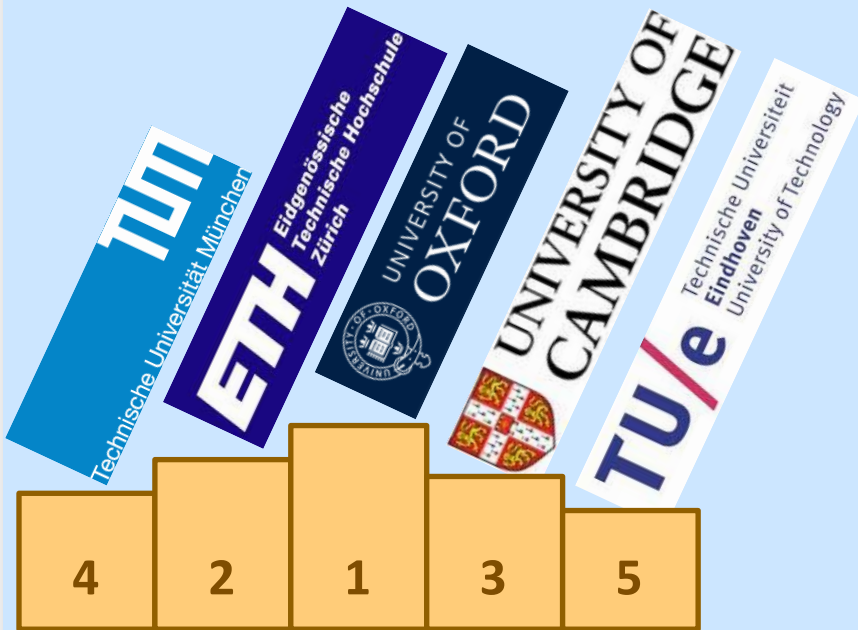
Admission to BIS, CSE, DSE, ES and IST

- Foreign university BSc degree
 - Relevant Bachelor degree
 - GPA $\geq 75\%$
 - English
 - TOEFL ≥ 90 + ≥ 21 for each
 - IELTS ≥ 6.5 + ≥ 6 for each
 - Cambridge CPE/CAE: A-C
 - Bachelor from AU,CA,IE,NZ,UK,US
 - Dutch VWO
 - Belgian ASO
 - NB: Application fee 100€



Why do a Computer Science master in Eindhoven

Top CS dept in Europe (2013)



Great facilities and international environment



Smartest region of the world



Graduate Program: The people



Paul De Bra

director Graduate Program



Alexander Serebrenik

vice-director Graduate Program



Natasha Stash

study advisor
internship coordinator



Elmar Veenendaal

coordinator international
exchange programs



Mark de Berg

coordinator honors program



Julien Schmaltz

CSE



George Fletcher

DSE



Boudewijn van Dongen

BIS



Boris Skoric

IST



Bas Luttk

ES + EIT-ES



Renata Medeiros

EIT-DS+ Erasmus BDMA

More information

- Come to our booth at the market
- Contact
 - <http://www.tue.nl/graduateprograms/cs/>
 - Questions about our programs: information-cs@tue.nl
 - Questions about admission: stu@tue.nl
 - International students: io@tue.nl
 - Questions about pre-master: n.v.stash@tue.nl



Thank you for your attention!

