



Master of Applied Science & Engineering: Computer Science

Master of Science in de Toegepaste Informatica

Vrije Universiteit Brussel 2022–2023

Prof. Dr. Beat Signer

Mail your questions to: questions@dinf.vub.ac.be

Download this presentation: tiny.cc/master-computer-sci-2223







Are You at the Right Place?

Master of Science in Applied Sciences and Engineering: Computer Science/Master of Science in de Ingenieurswetenschappen: Computerwetenschappen (2 years, English)

- advanced CS programme, in-depth scientific study of the field
- jointly organised by Faculty of Sciences and Bio-Engineering Sciences and Faculty of Engineering

Master of Science in de Toegepaste Informatica (1 year, Dutch)

- applied CS programme
- organised by the Faculty of Sciences and Bio-Engineering Sciences

Master of Science in Applied Sciences and Engineering: <u>Applied</u> Computer Science (MACS) (2 years, English)

- for students without a background in Computer Science
- more applied
- organised by the Faculty of Engineering





On the Menu ...

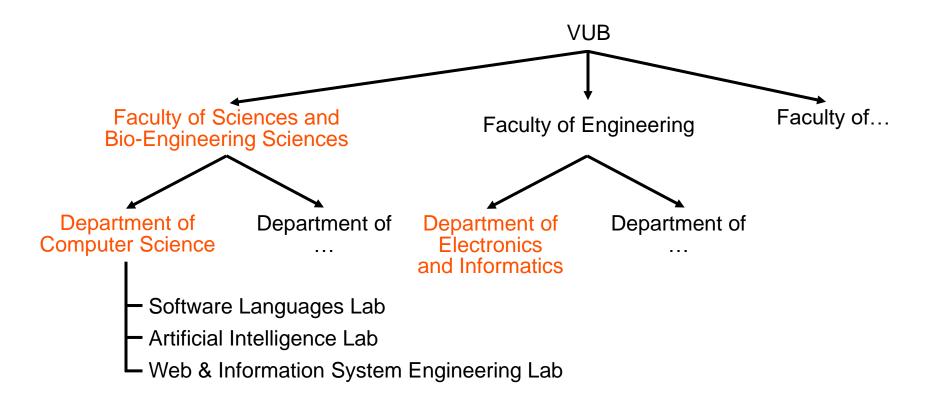
- Part 1: Institutions Behind the Master Programmes
- Part 2: Structure of the Master Programmes
- Part 3: Practical Issues







Organising Departments & Institutions







Organising Departments & Institutions ...

- Department of Computer Science (DINF @ VUB)
 - dinf.vub.ac.be
 - Faculty of Sciences and Bio-engineering Sciences (WE)
 - Building F, 10th floor (SOFT)
 - Pleinlaan 9, 3rd floor (AI, WISE)
- Department of Electronics and Informatics (ETRO @ VUB)
 - www.etrovub.be
 - Faculty of Engineering (IR)
 - Building K
 - Multimedia Specialisation
- Some courses are organised in collaboration with the Université Libre de Bruxelles (ULB)
 - French-speaking Sister University
 - Campus de la Plaine
 - Campus du Solbosch





CS Research Labs @ VUB



- Artificial Intelligence (DINF Al Lab)
 - ai.vub.ac.be
- Multimedia (ETRO)
 - www.etrovub.be
- Software Languages and Software Engineering (DINF SOFT)
 - soft.vub.ac.be
- Web & Information Systems (DINF-WISE Lab)
 - wise.vub.ac.be

Professors of these research labs teach the **courses**

+

You will most probably do your **thesis** work in one of these labs





Acronyms

WE (or WE-BIR)	Faculty of Sciences and Bio-Engineering Sciences, https://www.vub.be/en/about-vub/faculties-institutes-and-campuses/our-faculties/sciences-and-bioengineering-sciences
IR	Faculty of Engineering, https://www.vub.be/en/about-vub/faculties-institutes-and-campuses/our-faculties/engineering
DINF	Department of Computer Science, we.vub.ac.be/en/computer-science-department
ETRO	Department of Electronics & Informatics, www.etrovub.be
SOFT	Software Languages Lab, <u>soft.vub.ac.be</u>
WISE	Web & Information Systems Lab, wise.vub.ac.be
DAMA	Data Management and Analytics, wise.vub.ac.be/dama/
Al	Artificial Intelligence Lab, ai.vub.ac.be





Acronyms ...

VUB	Vrije Universiteit Brussel, <u>www.vub.be</u>
ULB	Université Libre de Bruxelles, <u>www.ulb.be</u>
InfoGroep	CS Student Association, infogroep.be
Canvas	Learning Platform, canvas.vub.be
PointCarré	Old Learning Platform (still in use), pointcarre.vub.ac.be
ECTS	European Credit Transfer System
4F	Secretariat of the Faculty of Sciences (F.4.107)
PL9	Pleinlaan 9
WeAreVub	Student Portal, <u>wearestudent.vub.be</u>





VIPs



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On the Menu ...

- Part 1: Institutions Behind the Master Programmes
- Part 2: Structure of the Master Programmes
- Part 3: Practical Issues



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Structure of the Two-Year MA Programme

120 ECTS (~ 2 academic years), official programme

Courses	Year	ECTS
7 mandatory courses	1 *	30
research training & thesis	2	30
mandatory courses from specialisation	1 + 2	30 or more
electives from specialisation		
electives from other specialisations, other electives	1 + 2	rest

^{*} You can postpone some of these until year 2

- Exam schedules might play a role in your choice
- You can graduate in ((January xor July) or September)



^{**} If you wish to do more than 120 ECTS, you have to pay more and must pass all courses





Four Specialisations

Artificial Intelligence

Machine Learning
Game Theory
Bio-Informatics
Natural Language Processing
Computational Intelligence

Data Management & Analytics

Big Data Management
Scalable Big Data Analytics
Deep Learning and Recommendation
Human-Data Interaction
Information Visualisation

Software Languages & Software Engineering

Language Design and Implementation
Development Tools and Methods
Program Analysis
Program Evolution

Multimedia

Image Processing
Data Compression
Computer Vision
Speech Synthesis and Coding
Video Technology





Composing Your Master Programme

- Requirements for obtaining the diploma (verified at the end of 2nd year)
 - you need to pass for 120 ECTS (deliberation rules allow for some failed courses up to the weighted point deficit (WPD))
 - all mandatory courses (30 ECTS)
 - all mandatory courses of your specialisation
 - at least 30 ECTS in your specialisation (including mandatory ones)
 - thesis & research training (6+24 ECTS) in your specialisation

Typical first year

- take all/most mandatory courses (30 ECTS)
- other courses, within and/or outside your specialisation (30 ECTS)
- choice of specialisation is preliminary (final decision in second year)





Composing Your Master Programme ...

- Electives (all but 6 ECTS) need to come from the Computer Science curriculum
 - www.vub.be/en/studying-vub/all-study-programmes-vub/bachelorsand-masters-programmes-vub/applied-sciences-and-engineeringcomputer-science/programme (or Dutch equivalent)
- Some courses have prerequisites and/or require prior knowledge
 - carefully read course descriptions
- Special electives with limited access (see later)





Case 1: "I Know What I Want: XX"

First Year

All mandatory courses 30 ECTS

All mandatory courses of the XX specialisation 24 ECTS (might vary from 18–24 ECTS)

An elective course of the XX specialisation 6 ECTS

Total first year 60 ECTS

Second Year

Research training and thesis with XX professor 30 ECTS Electives (possibly related to thesis) 30 ECTS

Total second year 60 ECTS

- Think about the balance between 1st and 2nd semester.
- Think about prerequisites and/or prior knowledge
- Make sure that chosen courses do not overlap in timetable
- Postpone courses to the 2nd year if necessary
- Do not take too much course work in the 4th semester





Case 2: "I Cannot Decide Yet ..."

First Year

All mandatory courses	30 ECTS
Some mandatory courses of the YY specialisation	18 ECTS
Some mandatory courses of the ZZ specialisation	12 ECTS
Total first year	60 ECTS

Second Year

Research training and thesis with ZZ professor	30 ECTS
Rest of mandatory courses of the ZZ specialisation	18 ECTS
Electives based on personal preferences	12 ECTS
Total second year	60 ECTS

- Think about the balance between 1st and 2nd semester
- Think about prerequisites and/or prior knowledge
- Make sure that chosen courses do not overlap in timetable
- Postpone courses to the 2nd year if necessary
- Do not take too much course work in the 4th semester.





Electives With Limited Access

- Certain Master-level electives were already taken by many students during their Bachelor studies. They obviously cannot choose them again → "Electives conditional to the agreement of the examination committee"
- However, in case you never took the courses in blue, you "must" take those in year 1 of your Master programme (depending on your specialisation)
- Artificial Intelligence
 - Machine Learning (1002080CNR)
- Multimedia
 - Multimedia Processing Tools (1013729BNR)





Electives With Limited Access ...

- Software Languages and Software Engineering
 - Higher Order Programming (~ Structure & Interpretation of CPs)
 (Advanced Programming Language Concepts)
- Data Management and Analytics (DAMA)
 - Web Technologies (1019888BNR)

Registration via the form 'Application electives outside list' (<u>form.jotform.com/212373299718364/</u>) or contact <u>kevin.pinte@vub.be</u>





Internship



- 'Internship Applied Informatics' (6 ECTS)
- Duration: at least 18 working days
- Often taken during the summer period between the first and second year
- If you are interested, contact Denis Steckelmacher (denis.steckelmacher@vub.be)





Master in Toegepaste Informatica (Dutch)

Big Data technologie

48 ECTS Compulsory

Methoden van Wetenschappelijk Onderzoek
Data en Informatie Management
Security in Computing
Information Visualisation
Cloud Computing en Big Data Processing
Multicore Programming
Masterproef (15 ECTS)

Artificiële intelligentie

48 ECTS Compulsory

Methoden van Wetenschappelijk Onderzoek
Reinforcement Learning
Current Trends in Artificial Intelligence
Declaratief Programmeren
Natural Language Processing
Statistical Foundations of Machine Learning
Masterproef (15 ECTS)

12 ECTS Electives

Selected via the form for elective courses that is available on the faculty website (to be approved)

12 ECTS Electives

Selected via the form for elective courses that is available on the faculty website (to be approved)





Exchange Semester Abroad













University of Warwick, United Kingdom

University of Potsdam, Germany

CY Cergy Paris University,

Technische Universität München, Germany

Universitat Politécnica de Catalunya (UPC), Spain

Possibility to study a semester abroad

- best during 3rd semester of Master studies
 - follow most of the mandatory courses at the VUB during first year
- top European universities via Erasmus+ programme
 - University of Warwick, UPC, CY Cergy Paris University, TU Munich, University of Konstanz, Chalmers University of Technology, Bauhaus University Weimar, Potsdam University, University of Ljubljana, University of Gothenburg





Exchange Semester Abroad ...







Bauhaus University, Weimar, Germany

University of Konstanz, Germany

- non-EEA destinations
 - Canada, South Korea, South Africa, Mexico, Brazil, China, Japan, Chile and Morocco
- General courses or specialisation in areas not offered at the VUB (e.g. security)
- Opportunity to widen your horizon
- Explicitly mentioned on your final diploma





Exchange Semester Abroad ...



- General information event later this year organised by IRMO (currently planned on November 7)
- Information about possible destinations (also non-EU)
 - https://www.vub.be/en/studying-vub/all-study-programmesvub/personal-development-during-your-studies/studyingabroad/eu-destinations-erasmus-exchange/exchange-outgoingin-computer-science-vub
- General information
 - https://www.vub.be/en/studying-vub/all-study-programmesvub/personal-development-during-your-studies/studying-abroad
- Contact persons
 - Faculty coordinator for internationalisation, marjan.maes@vub.be
 - DINF exchange coordinator, <u>beat.signer@vub.be</u>





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Appointment



Message to ALL students who did NOT do their Bachelor (or 'Schakel') at the VUB

Make an appointment with Kevin Pinte kevin.pinte@vub.be

To check your background knowledge for the Master courses





Enrolment & Becoming a VUB Student

- <u>student.vub.be/en</u> (tab 'Administration')
- Enrol via the online application or via the student administration centre
 - deadlines: 1st semester: October 15, 2nd semester: February 15
- Get your student card
- Create your VUB NetID
 - e-mail address
 - student SelfService (<u>cali.vub.be</u>)
 - online learning platform Canvas





Registering for Courses

- Register for your courses
 - via the student SelfService
 - via <u>stbfacwe@vub.be</u> (special cases)
 - deadlines: 1st semester; October 15, 2nd semester: February 28
- Problems?
 - check https://www.vub.be/en/studying-vub/practical-info-for-students/student-administration/help-with-course-registration
 - helpdesk @4F, daily opening hours: 12:30–14:30
- Deviations from standard curriculum
 - application form (e.g. 'Special Electives With Limited Access') available at form.jotform.com/212373299718364
 - trajectory counsellor: Ms. Reen Tallon or Ms. Sharon Eeckhout (<u>stbfacwe@vub.be</u>)
- International students travelling with VISA
 - MUST register for at least 54 ECTS per academic year!
 - an 'Absent' for a course is no longer a problem for an extension





Registering for ULB Courses

- Register the ULB course at the VUB
- Fill in the form <u>Registration as a visiting student at the</u>
 <u>ULB</u> that is available on the Faculty webpage
 - deadlines: 1st semester: October 31, 2nd semester: February 28
 - register as early as possible to get access to the online platform





Thesis & Research Training



- InfoGroep organises "Get to Know the Labs" seminars in March/April
- Thesis topics will be published in late April/early May
- In May, an open lab day will be organised
- You can only register for the thesis after you acquired at least 45 ECTS (~ "2nd year")





Academic Calendar

- 1st semester
 - 1 week without classes (ULB)
 - 13 weeks of classes
 - 2 weeks winter holiday
 - 4 weeks of exams
 - 1 week without classes
- 2nd semester
 - 7 weeks of classes
 - 2 weeks spring holiday
 - 6 weeks of classes
 - 1 weeks for studying
 - 4 weeks of exams
- 2nd exam session
 - 4 weeks of exams

From - till		Week		
19/09/22 25/09/22	Welcome week ^(a) classes for Bruface students	1		
26/09/22 02/10/22	Mon 26.09.22 Tue 27.09.22			
03/10/22 09/10/22			3	
10/10/22 16/10/22			4	
17/10/22 23/10/22			5	
24/10/22 30/10/22			6	
31/10/22 06/11/22	Tue 01.11.22 Wed 02.11.22	Bank Holiday VUB Holiday	7	
07/11/22 13/11/22	Fri 11.11.22	Bank Holiday	8	
14/11/22 20/11/22	Fri 18.11.22	VUB Holiday – Verhaegen Commemoration	9	
21/11/22 27/11/22			10	
28/11/22 04/12/22			11	
05/12/22 11/12/22			12	
12/12/22 18/12/22			13	
19/12/22 25/12/22	Sun 25.12.22	Bank Holiday	14	
26/12/22 08/01/23	Winter Holiday	Winter Holiday		
	Mon 26.12.22 - Sat 31.12.22	VUB closed		
	Sun 01.01.23	Bank Holiday		

vub.be/en/about-vub/key-data-vub/academic-calendar





Timetables



	Mon			Tue	Wed		Thu	Fri
2:30 2:00 3:30 2:00	HOC=led	ture						
:30 0:00 0:30	Ar. litectures 9:00 11:00 (HOC) B.0.31 (80 pl.) 2, 4-14 DE ROOVER Coen			Scientific 9:00 11:00 integrity HOC 9:00 12:00 L.2.03 (104 pl.) 2-6, 8-14 CORNELIS Gustaaf	Theory of Computation 10:00 -000 (HOC+WPO)	weeks 2-6 & {	Declarative Programming 10:00 12:00 (HOC)	Methods for Scientific Research (HOC)
1:00 1:30 2:00 2:30	Onthaal nieuwe 11:00 13:00 Internationale masters CW E.0.10 (91 pl.) 2	Data and Information 11:00 13:00 (WPO2) E.1.4 (36 pl.) 3-14 KETSMAN Bas	Software Architectures 11:00 13:00 (WPO1) E.1.2 (36 pl.) 4-14 DE ROOVER Coen		E.0.04 (64 pl.) 2-6, 8-14 BOGAERTS Bart E.0.06=buildir	ng.floor.room	E.0.06 (62 pl.) 2-14 VINS Geraint	E.0.04 (64 pl.) DE BOER Bart
3:00 3:30 4:00 4:30		Methods for Scientific 14:00 16:00 Research (HOC)		Information Theory 13:00 16:00 (HOC+WPO) D.2.20 (48 pl.) 2-6, 8		Data and Information management 13:00 15:00 (HOC) F.4.111 (63 pl.) 2-6, 8-14 KETSMAN Bas	Declarative Programming 13:00 15:00 (WPO) 5 (36 pl.) 2-14 W IINS Geraint	Software Architectures 13: (HOC) D.3.08 (76 pl.) DE ROOVER Coen
.5:00 .5:30 .6:00		8-9 DE BOER Bart		VAN BIESEN Leo	Data and Information 15:00 17:00 management (WPO1) E (36 pl.) 2-6, 8-14 KE MAN Bas	Software Architectures 15:00 17:00 (WPO2) E.1.7 (28 pl.) 2, 4-6, 8-14 DE ROOVER Coen	WPO=la	Software Architectures 15: (WPO1) E.1.5 Mac (32 pl.) DE ROOVER Coen

ma = maandag = Monday di = dinsdag = Tuesday wo = woensdag = Wednesday

do = donderdag = Thursday

vr = vrijdag = Friday

za = zaterdag = Saturday

student.vub.be/en/timetables-and-exam-schedules





Exams



- Type of examination/evaluation specified in course description
 - caliweb.cumulus.vub.ac.be/caliweb/
 - scroll to the bottom and select the appropriate programme
 - carefully read the course descriptions!
 - written or oral (or both)?
 - online or on-campus?
 - open or closed book?
 - projects(s), written assignments?
- Exam schedules
 - student.vub.be/en/timetables-and-exam-schedules#exam-schedule
 - read emails and Canvas message carefully





Exams ...



- An academic year has 2 exam "sessions" (~ 2 attempts)
 - 1st exam session
 - 1st exam period in January (1st semester courses)
 - 2nd exam period in June (2nd semester courses and full-year courses)
 - 2nd exam session
 - all courses, unless description explicitly mentions that there is no 2nd session!
- Scores announced at the end of exam session
 - score ≥ 10/20 → course passed, you obtain the ECTS
 - score < 10/20 → course failed</p>





Exams ...

- I failed a course
 - redo the exam in 2nd session
 - take the course (or alternative) in the 2nd year
 - (you can do a 5th semester if necessary, requires extra enrolment)
 you must register to finish in January
- Rescheduling in case of force majeure
 - only allowed in specific situations
 - https://www.vub.be/en/studying-vub/practical-info-for-students/exams-and-deliberations/exam-regulations
 - if you get ill, always ask your doctor for a certificate and submit it to the Faculty secretariat @4F







Plagiarism



- Any exchange, copy or reuse of "artefacts"* without proper referencing will be sanctioned by the faculty
- Dedicated tools are used to screen your artefacts!

*image taken from Google :-)





Facilities: WiFi



- VUBnet
 - university-wide hotspots provided by the VUB
 - use VUB NetID
- IG-Airlines
 - best option in computer rooms in building E
 - use VUB NetID
- Eduroam
 - hotspots at many universities (in Belgium and abroad)
 - use VUB NetID
 - append "@vub.ac.be" to username when not at VUB/ULB





Facilities: Canvas



- VUB Learning Platform, <u>canvas.vub.be</u>
- use your VUB NetID
- automatic access to workspace for registered users
- announcements by professors and teaching assistants
- download documents (course notes, slides, ...)
- uploading & handing in assignments
- registering for oral exam slots
- **-** ...





Facilities: Student Organisation



- InfoGroep
 - building E, 1st floor, infogroep.be
- Services
 - maintenance of computer rooms in building E
 - Windows/Linux and macOS
 - for lab sessions and individual use
 - use your VUB NetID
 - supply copies of course notes, slides, ...
 - offer some books at discounts rates
 - can provide help with certain computer-related issues
 - nerdy stuff & social integration with DINF





Facilities: Library & VUBtiek



- Library access is free
 - buildings B and C, 1st floor
 - student.vub.be/en/library
 - student card can be used to borrow books
 - online access to scientific journals
- Course material (e.g. books)
 - Standaard student shop, building B ground floor ("VUBtiek")
 - bol.com
 - amazon.de
 - ...





Representation in VUB Structures



- VUB is a democratic university
 - student participation at all managerial levels
- Studentenraad (Dutch)
 - https://www.vub.be/en/about-vub/vub-university-future/worldneeds-you/studentenraad-project-world-needs-you
- International Student Platform (English)
 - https://www.vub.be/en/studying-vub/why-study-vub/living-andstudying-vub-campuses/student-life/international-student-platform
- Opleidingsraad/Programme Board
 - if you are interested, please contact the programme director (beat.signer@vub.be)
- Other boards and councils
 - Faculty, PR, department, ...





Getting Information



- About a specific course
 - teaching assistant, professor, <u>canvas.vub.be</u>
- Timetables, exam schedule, forms, ...
 - Faculty of Science and Bio-Engineering Sciences
 - room F.4.107 (secretariat "4F")
- Exceptions to curriculum, special electives
 - Reen Tallon and Sharon Eeckhout, stbfacwe@vub.be
- International students & Erasmus exchange
 - Marjan Maes, <u>marjan.maes@vub.be</u>
- Remaining questions (after using the 4 sources above!)
 - Kevin Pinte, <u>questions@dinf.vub.ac.be</u> (DINF coordinator)