



VRIJE
UNIVERSITEIT
BRUSSEL

Web & Information Systems Programme

<https://wise.vub.ac.be/courses>





WIS Semester 1

Methods for Scientific Research (3 ECTS) – Prof. Bart De Boer

understanding of the scientific method and the process of doing research

Scientific Integrity (3 ECTS) – Prof. Gustaaf Cornelis

understanding of science ethics

Software Architectures (6 ECTS) – Prof. Coen De Roover

architecture definition, architectural patterns, micro-service architectures, ...

Open Information Systems (6 ECTS) – Prof. Jan Hidders

semantic web, ontologies, description logic, ontology-based data integration

Information Theory (3 ECTS) – Prof. Leo Van Biesen

signal theory and the study of communication channels

Next Generation User Interfaces (6 ECTS) – Prof. Beat Signer

interaction design, multimodal interaction, multi-touch, pen-based interaction, tangible interaction, mixed reality, ...

Conceptual Modeling & Design Methods (6 ECTS) – Prof. Olga De Troyer

advanced course on different modeling techniques and design methods

- mandatory core (30 ECTS)
- mandatory WIS + thesis (24 + 30 ECTS)
- elective WIS (min 6 ECTS)
- elective (rest) + free elective (max 6 ECTS)



WIS Semester 2

Declarative Programming (6 ECTS) – Prof. Geraint Wiggins

syntax, semantics and proof theory of clausal logic, advanced reasoning techniques, ...

Theory of computation (3 ECTS) – Prof. Bernard Manderick

Church-Turing thesis, decidability, halting problem, NP-completeness, ...

Web Information Systems (6 ECTS) – Prof. Jan Hidders

advanced web technologies and web systems: crowdsourcing, web search, web crawling, ...

Information Visualization (6 ECTS) – Prof. NN

history, principles, visualization techniques, effectiveness and suitability of the techniques

Advanced Topics in Information Systems (6 ECTS) – Prof. Beat Signer

seminar about recent developments in information systems and information management

Security in Computing (6 ECTS) – Prof. Vincent Naessens

cryptographic protocols, eID and RFID security and privacy, cyber-physical system security, web security, ...

■ mandatory core (30 ECTS)

■ elective WIS (min 6 ECTS)

■ mandatory WIS + thesis (24 + 30 ECTS)

■ elective (rest) + free elective (max 6 ECTS)



WIS Semester 3

Research Training & Master's Thesis (30 ECTS over semester 3&4)
thesis promoted by WISE research lab
Information Retrieval (6 ECTS) – Prof. Jan Hidders
index construction, retrieval result scoring, retrieval feedback integration, PageRank, ...
Cloud Computing and Big Data Processing (6 ECTS) – Prof. Jens Nicolay
properties of big data, MapReduce and other Hadoop-related technologies, cluster-computing with Spark, ...
Data Representation, Reduction and Analysis (6 ECTS) – Prof. Nikolaos Deligiannis
dimensionality reduction, dictionary learning, data mining, ...

- mandatory core (30 ECTS)
- elective WIS (min 6 ECTS)
- mandatory WIS + thesis (24 + 30 ECTS)
- elective (rest) + free elective (max 6 ECTS)



WIS Semester 4





WISE WEB & INFORMATION
SYSTEMS ENGINEERING

Research Training & Master's Thesis (30 ECTS over semester 3&4)

thesis promoted by WISE research lab

Big Data: Distributed Data Management and Scalable Analytics (6 ECTS) – Prof. Jan Hidders

big data management, algorithms, graph analytics, active & deep machine learning for large datasets

-  mandatory core (30 ECTS)
-  mandatory WIS + thesis (24 + 30 ECTS)
-  elective WIS (min 6 ECTS)
-  elective (rest) + free elective (max 6 ECTS)



Other Courses

Database Systems Architecture (5 ECTS) – Prof. Stijn Vansummeren

query optimisation, physical design, secondary memory indexes, cost-based plan estimation, ...

Advanced Databases (5 ECTS) – Prof. Esteban Zimanyi

deductive databases, multimedia databases, temporal databases, data warehouses, ...

XML and Web Technologies (5 ECTS) – Prof. Stijn Vansummeren

XPath, XQuery, DTDs, XML Schema, SAX and DOM, XSLT, RDF and SPARQL, RDF Schema and OWL

- mandatory core (30 ECTS)
- mandatory WIS + thesis (24 + 30 ECTS)
- elective WIS (min 6 ECTS)
- elective (rest) + free elective (max 6 ECTS)



Repair Courses

Gebruikersinterfaces (User Interfaces) (3 ECTS) – Prof. Olga De Troyer
UI design principles, usability, user-centred design, mobile user interfaces
Web Technologies (6 ECTS) – Prof. Beat Signer
HTTP, Web 2.0, RIAs, Web Services, REST, HTML5, JavaScript, CSS, Web 3.0, XML, RDF, web search, security, ...
Databanken (Databases) (6 ECTS) – Prof. Beat Signer
ER model, relational model & algebra, SQL, transactions, concurrency control, storage & access structures, ...

■ mandatory core (30 ECTS)

■ elective WIS (min 6 ECTS)

■ mandatory WIS + thesis (24 + 30 ECTS)

■ elective (rest) + free elective (max 6 ECTS)



Erasmus+



Chalmers University of Technology,
Sweden



École Polytechnique Fédérale de
Lausanne, Switzerland



ETH Zurich,
Switzerland



Technische Universität München,
Germany



Universitat Politècnica de Catalunya,
Spain

- Study a semester abroad at top European universities
 - 3rd Bachelor year (1st semester)
 - Master (default in 3rd semester)
- 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



Erasmus+



Bauhaus University, Weimar,
Germany



University of Konstanz,
Germany

- General information event later this year (November) organised by IRMO
- Feel free to contact me (bsigner@vub.be) if you should have any questions
- Information about possible destinations (also non-EU)
 - <https://my.vub.ac.be/goingabroad/WE/Computerscience>
 - <http://wise.vub.ac.be/erasmus/>