



Information Sciences MSc

VU University Amsterdam - Faculteit der Exacte Wetenschappen - M Information Sciences - 2012-2013

Information Sciences is the multidisciplinary area bridging Information and Communication Technology (ICT) and its practical use in society. Are you interested in how information is created and processed in companies and institutions? Are you more interested in the application of technology than technology for its own sake? Do you believe it's important not to lose sight of the role people, organizations and cultures play in designing, modelling, communicating and sharing information? Are you fascinated by knowledge and innovation? If so, then the Master's programme in Information Sciences at VU Amsterdam is an excellent choice for you.

Information Sciences (IS, in other countries also called Information Systems) focus on theory development and best practices of effective creation, structuring, processing, communication and sharing of information and knowledge using ICT. Information processes and contexts of organizations and individuals are studied, not just from a technological perspective but also from the social, economic, cognitive and organizational perspectives.

At VU we pay special attention to the latest innovative developments and applications of ICT, related to Internet, World Wide Web, multimedia, intelligent systems, and electronic business. Here are some of the advanced topics that IS researchers at VU currently investigate:

- How can major international artists get e-paid via Web services, when their music is broadcast over Internet radiostations across the whole world?
- How can you make the World Wide Web intelligent so that it becomes much more easy to represent, process and share electronic information and knowledge across companies and communities of interest? (See for example VU's prize-winning FLINK application at prauw.cs.vu.nl:8080/flink/ on social networks on the Web.)
- How do you design multimedia databases for broad user groups on the Internet on, say, some pop music style or museum art collection, including videoclips, sound samples, explanatory notes, and an easily searchable discography or collection overview?
- What are successful networked business models for small and medium-sized enterprises to offer e-services over the Web, for example for sustainable and cost-effective energy management in smart buildings, or electronic support for medical and elderly care at home?

IS at the Vrije Universiteit strikes a healthy balance by combining technology and information with the study of people, culture and organizations. It builds on a solid computer science foundation, but does so in an inherently multidisciplinary approach that continuously crosses and challenges the boundaries between exact and social sciences. Our research is at the international forefront, an achievement directly reflected in the Master's programme. Social, communicative and managerial skills are important in IS. So, during your study you will regularly work in project teams and collaborate with others to solve practical problems regarding complex information systems in real-life settings.

Both the Bachelor and Master programmes in IS are organized by VU's Faculty of Sciences. Information about the Bachelor programme IS or "Informatiekunde" can be found in a separate study guide. All VU studyguides are also available on the Web.

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Business variant

Programme components:

- [Compulsory Optional Courses](#)
- [Compulsory Courses](#)

Compulsory Optional Courses

Constrained choice of listed IS Master courses.

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Programme components:

- [Individuele vakken](#)

Courses:

Name	Period	Credits	Code
Business Semantics	Period 5	6.0	X_405079
E-Commerce Law	Period 5	6.0	R_E.commerc
Knowledge and Media	Period 2	6.0	X_405065
Knowledge Engineering	Period 2+3	6.0	X_405099
Service Oriented Design	Period 1	6.0	X_405061
Software Architecture	Period 2	6.0	X_400170
Software Configuration Management	Period 4	6.0	X_400413
The Social Web	Period 4	6.0	X_405086

Individuele vakken

Compulsory Courses

Programme components:

- [IS vervallen vakken 1-9-2011](#)

Courses:

Name	Period	Credits	Code
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E-Business Innovation	Period 1	6.0	X_405051
Master Project Information Sciences	Ac. Year (September)	18.0	X_405083
Research Methods	Period 2, Period 5	6.0	X_405085
Thesis Design	Period 3	6.0	X_405087

IS vervallen vakken 1-9-2011

Courses:

Name	Period	Credits	Code
Internet Information	Period 4	6.0	X_418048

Web variant

Programme components:

- [Compulsory Optional Courses](#)
- [Compulsory courses](#)

Compulsory Optional Courses

Courses:

Name	Period	Credits	Code
Business Semantics	Period 5	6.0	X_405079
E-Business Innovation	Period 1	6.0	X_405051
Intelligent Interactive Systems	Period 1	6.0	X_418023
Knowledge and Media	Period 2	6.0	X_405065
Knowledge Engineering	Period 2+3	6.0	X_405099
Mobile Systems	Period 4	6.0	X_418068
Multimedia Information Systems		6.0	X_418070
The Social Web	Period 4	6.0	X_405086
Visual Analytics	Semester 2	6.0	X_418074

Compulsory courses

Courses:

Name	Period	Credits	Code
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Master Project Information Sciences	Ac. Year (September)	18.0	X_405083
Research Methods	Period 2, Period 5	6.0	X_405085
Serious Games	Period 1	6.0	X_405097
Thesis Design	Period 3	6.0	X_405087

Business Semantics

Course code	X_405079 ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. P.G.M. De Leenheer
Teaching staff	dr. P.G.M. De Leenheer
Teaching method(s)	Lecture, Seminar
Level	500

Course objective

The course Online Information systems is limited to the study of traditional "closed" information systems intended for a specific organization. The functional requirements are known beforehand and the meaning of business terms and rules are sufficiently clear and uniformly valid within the organizational context. This course broadens the concept of information system to "open" information system where "semantic interoperability" with its environment is a pain point. The origin of the problem lies in the fact that it is not known in advance with which systems in its environment and according to what policies and rules an open system must be able to exchange information. To support semantic interoperability, system owners should govern (reconcile and apply) the meaning of their business terms and rules among participating systems.

Ontologies are dynamic models that capture the meaning of business terms and rules. Hence, they underpin solutions for semantic interoperability and many other semantic applications that are studied in the course Ontology Engineering.

The purpose of this course is to learn the Business Semantics Management methodology that empowers a business community to collaboratively define (read: govern) the meaning of their business vocabularies and rules (read: business semantics) in an ontology. Next, this ontology (formatted in ORM, RDF or UML) is validated in diverse information-technical contexts. By deriving ontologies from business semantics managed on a business level, the entropy in the numerous data translations between business and IT can be partly remedied.

Course content

Short recap of the Online Information Systems terminology. Introduction of the concept of "open information system" and the problem of "semantic interoperability". Introduction of the relationship between "business semantics" and its derivative "ontology" to solve the problem of semantic interoperability on the technical level. Learning to handle the OMG SBVR (<http://www.omg.org/spec/SBVR/1.0/>) standard and the Business

Semantics Management methodology for building business vocabularies and rules in SBVR, and automatically deriving ontologies from them. Validate a variety of ontologies in diverse semantic applications.

Form of tuition

The red thread is a role-playing game in which students form groups each representing a stakeholder organization in a business community. Using the web-based environment for Business Semantics Management, the community collaboratively defines an ontology that enables semantic interoperation between their information systems. This is done step by step by following the BSM methodology. First, a governance model that defined the roles and responsibilities for each of the stakeholders within the community is set. Next, the community determines which are the main terms for which a semantic agreement is necessary. This is followed by a reconciliation process resulting in a unified ontology that captures the meaning of these terms and their associated rules sets. This ontology is then validated by applying it in the community. Finally, we discuss possible extension points for the method and references to other courses such as ontology engineering. Every team conclude their findings in a written report.

Type of assessment

team project

Course reading

Lecture notes, exercises, and slides provided by the lecturer. A web-based software environment for BSM. Thematic papers that elaborate on selected topics.

Recommended background knowledge

online informatiesystemen

Target group

VU: mIS

UvA: master Information Studies - Human-Centered Multimedia

E-Business Innovation

Course code	X_405051 (405051)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. J. Gordijn
Teaching staff	dr. J. Gordijn, dr. P.G.M. De Leenheer
Teaching method(s)	Lecture
Level	400

Course objective

To understand, model and systematically analyze a business model for an innovative e-business idea

To know and understand the notion of business model.

Course content

We will introduce a methodology called e3value for understanding and analyzing business models for networked value constellations.

Moreover, we present recent literature on the notion of ebusiness models.

Form of tuition

Lectures plus project

Type of assessment

Exam, project

Course reading

Reader plus book:

Business Model Management: Design-Instruments-Success Factors, Bernd W. Wirtz, Gabler Verlag, 2011

Recommended background knowledge

Business Modelling and Requirements Engineering and Software Engineering is recommended

Target group

mAI-KTIIA, mAI-TAI, mIS

E-Commerce Law

Course code	R_E.commerc (200942)
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	prof. mr. A.R. Lodder
Teaching staff	prof. mr. A.R. Lodder
Teaching method(s)	Reading, Study Group
Level	500

Remarks

For information on this course please contact prof. mr. A.R. Lodder, a.r.lodder@vu.nl.

Intelligent Interactive Systems

Course code	X_418023 (418023)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Level	400

Course content

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/8272.html>

Target group

mIS

Remarks

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Internet Information

Course code	X_418048 (418048)
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Level	400

Course content

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/11346.html>

Target group

mIS

Remarks

Registration is required via <https://www.sis.uva.nl> until four weeks before the start of the semester.

Knowledge and Media

Course code	X_405065 (405065)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. M.G.J. van Erp
Teaching staff	dr. M.G.J. van Erp
Teaching method(s)	Seminar
Level	500

Course objective

The goal of the course is to provide insight in the concepts of knowledge, ontologies and knowledge processes in relation to various ICT-based media.

Course content

This course treats the principles and theories that form the foundation of knowledge-intensive processes in relation to various multi-media applications. Knowledge processes are those processes that use knowledge (reasoning), document knowledge (representation), acquire knowledge or transfer knowledge (teaching). The relation between knowledge processes and (interactive) media will be explored. Various types of applications will be discussed, such as special purpose search engines, educational systems, serious gaming and mind tools.

Form of tuition

Working lectures, very much based on the Paradigm of Constructivism

Type of assessment

Portfolio

Course reading

Articles distributed through Blackboard

Target group

UvA students and optional course for mCS, mAI and mIS

Knowledge Engineering

Course code	X_405099 ()
Period	Period 2+3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. A.C.M. ten Teije
Teaching staff	dr. A.C.M. ten Teije
Teaching method(s)	Lecture
Level	400

Course content

Knowledge management is a relatively new discipline which has as its aim the efficiency improvement of the production factor "knowledge" and of the related business processes (knowledge creation, distribution, application and maintenance). The course "Knowledge Management and Modeling" is concerned with the organizational aspects of knowledge management, as well as the question how knowledge can be described with the support of modern information-modeling techniques. These knowledge models can be used to develop knowledge based systems. The notion of pattern-based knowledge modeling is a key issue in the knowledge management process.

Students carry out a knowledge-management project in small project groups in a problem domain and organization of choice.

Form of tuition

Lectures, assignments, group project.

Type of assessment

Assignment, project reports.

Course reading

Schreiber, Akkermans, Anjewierden, de Hoog, Shadbolt, van de Velde, Wielinga: Knowledge Engineering & Management. The MIT Press, Cambridge MA, 2000, ISBN 0-262-19300-0.

Target group

mAI-IS, mAI-CS, mAI-WS, mAI-HA

Master Project Information Sciences

Course code	X_405083 ()
Period	Ac. Year (September)
Credits	18.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. P.G.M. De Leenheer
Level	600

Mobile Systems

Course code	X_418068 ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	O.W. Schrofer
Level	400

Course content

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/8034.html>

Target group

mIS

Remarks

Registration is required via <https://www.sis.uva.nl> until four weeks before the start of the semester.

Multimedia Information Systems

Course code	X_418070 ()
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	O.W. Schrofer
Level	400

Course content

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/11381.html>

Target group

mIS

Remarks

Registration is required via <https://www.sis.uva.nl> until four weeks before the start of the semester.

Research Methods

Course code	X_405085 ()
Period	Period 2, Period 5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. J.M. Akkermans
Teaching staff	prof. dr. J.M. Akkermans
Teaching method(s)	Lecture
Level	500

Course objective

This course helps students who want to embark on their Master research project and thesis.

Course content

The course provides an interdisciplinary overview of and hands-on work with different scientific research methods, with an emphasis on ICT/information systems and technologies in interaction with their human, social and organizational contexts.

Topics are:

- scientific research and its goals, the idea of scientific method;
- developing and framing the research questions you want to answer;
- making a research design and planning your research;
- conceptualization, theory formation and validation/triangulation;
- research methods and their assumptions, pros and cons (e.g. interview, observation, case study, field and action research, modelling and simulation, experiment, survey, statistical analysis);
- how do you (and others) know that your research results are valid?
- scientific argument, communication and research report writing.

Form of tuition

In addition to lectures on various aspects of and issues in research methodology, students will get hands-on experience with different research methods. The setting of the practical work is that of a continuing research case investigation that emulates the different stages of a scientific research project. The research case question to be investigated is: What is it for systems to be considered "smart" or intelligent"?

Type of assessment

Research project report, take-home written exam, active course participation (incl. self-report)

Course reading

- Selection from Trochim's Social Research Methods Knowledge Base (<http://www.socialresearchmethods.net/kb/>)
- Natasha Mack et al.: Qualitative Research Methods - A Data Collector's Field Guide
- Andy Field: Discovering Statistics using SPSS
- Digital resource of articles and excerpts on specific topics

Entry requirements

Basic knowledge of qualitative and quantitative research methods

Target group

mAI-CIS, mAI-CS, mAI-HA, mAI-KTIIA, mAI-TAI, mIS

Registration procedure

This course will be offered twice: in semester 1 at the FNWI and in semester 2 at the VU.

Registration for courses at the FNWI is mandatory, but will be done by the Education Service Centre for the 1st year MSc students for courses of the first semester. See also <http://www.student.uva.nl> and choose your master and then 'New procedure 'Registration for courses Faculty of Science'.

Registration for this course in semester 2 at the VU is mandatory and must be done at the VU (Free University)

Serious Games

Course code	X_405097 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. A.P.W. Eliens
Teaching staff	prof. dr. A.P.W. Eliens
Teaching method(s)	Lecture
Level	400

Course content

see: www.cs.vu.nl/~eliens/sg/studiegids.html

Service Oriented Design

Course code	X_405061 (405061)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. P. Lago
Teaching staff	dr. P. Lago
Teaching method(s)	Lecture, Seminar
Level	400

Course objective

Learn advanced design techniques applicable to large service-oriented software systems. Be able to select among them and apply them for a specific system. Be able to reason about and assess the design decisions.

Course content

The lectures explain the concepts related to the emerging paradigm of software Service Orientation and Service Oriented Architecture (SOA). The lectures provide the students with knowledge about how to identify the requirements for a service-oriented software system, how to map them on business services and transform them into complex networks of software services. Special emphasis is given to the design reasoning techniques for crucial decision making, service identification, SOA design and migration. Each year experts from academia and industry are invited to give guest lectures.

The students participate in small teams to piecemeal develop understanding of various service-oriented aspects, and work on and assigned SOA design project.

Form of tuition

Lectures and group work.

Type of assessment

Written reports of the assignments. Teamwork.

Course reading

Material handed out by the lecturer and on Blackboard.

Target group

mAI-CIS, mAI-KTIIA, mAI-TAI, mCS-FMSV, mCS-HPDC, mCS-IWT, mCS-MM, mCS-SE, mCS-TAI

Remarks

Registration for this course is compulsory four weeks prior to the start. Further information on this module will be made available on the Blackboard system <http://bb.vu.nl>.

Software Architecture

Course code	X_400170 (400170)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. J.C. van Vliet
Teaching staff	prof. dr. J.C. van Vliet
Teaching method(s)	Lecture
Level	400

Course objective

Get acquainted with the field of software and information architecture. Understand the drivers behind architectural decisions. Be able to develop and reason about an architecture of a non-trivial system.

Course content

Students work in groups to develop an architecture for a fictitious system. They have to develop different representations (called views) of the architecture. These different representations emphasize different concerns of people that have a stake in the system. Each group will also be asked to assess ("test") the architecture of another

group for certain quality attributes.

Form of tuition

Group work with a number of assignments

Type of assessment

Written reports of the assignments, presentation, exam.

Course reading

Len Bass et al, Software Architecture in Practice, 3rd Edition, 2012

Target group

mAI-CIS, mAI-KTIIA, mAI-TAI, mCS-FMSV, mCS-HPDC, mCS-IWT, mCS-MM, mCS-SE, mCS-TAI

Software Configuration Management

Course code	X_400413 (400413)
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. R.L. Krikhaar
Teaching staff	dr. R.L. Krikhaar
Teaching method(s)	Lecture, Practical
Level	400

Course objective

The goal of the course is to learn the basic concepts and principles of Software Configuration Management and to learn how to select and apply them in a real- world context.

Course content

Software Configuration Management (SCM) is required to control evolving software systems. This course introduces the basic concepts and principles underlying software configuration management, a. o. change control, version management, build management and release management. Tools are inevitable for SCM, therefore a number of SCM tools are compared to the discussed concepts and one or two of them are practiced. New research areas of SCM are discussed: multi- disciplined configuration management, multi- sites CM and CM for multiple products (product families). In addition, the lectures will also cover SCM experiences in industry.

Form of tuition

- lectures;
- working lectures (article reviews);
- practice (workshop with a commercial SCM tool).

Type of assessment

- review of articles (presentation);
- SCM study in industry (paper).

Course reading

- SCM book (to be announced before course starts);
- articles (to be selected during course).

Entry requirements

Bachelor Informatica, especially:

- 400071 Software Engineering;
- 400067 Project Software Engineering.

Target group

mCS

The Social Web

Course code	X_405086 ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. L.M. Aroyo
Teaching staff	dr. L.M. Aroyo, dr. M.G.J. van Erp
Teaching method(s)	Lecture
Level	400

Course objective

In this course the students will learn theory and methods concerning communication and interaction in a Web context. The focus is on distributed user data and devices in the context of the Social Web.

Course content

This course will cover theory, methods and techniques for:

- personalization for Web applications
- Web user & context modelling
- user-generated content and metadata
- multi-device interaction
- usage of social-web data

Form of tuition

- working groups in which literature is discussed
- practical sessions in the VU Intertain Lab
- assignments including final paper

Type of assessment

single grade 0-10: weighted average of assignments and final paper

Course reading

selected articles

Target group

VU: mIS

UvA: master Information Studies - Human-Centered Multimedia

Thesis Design

Course code	X_405087 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. P.G.M. De Leenheer
Teaching staff	dr. P.G.M. De Leenheer
Teaching method(s)	Lecture
Level	500

Visual Analytics

Course code	X_418074 ()
Period	Semester 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	O.W. Schrofer
Level	400

Course content

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/11455.html>

Target group

mIS

Remarks

Opgave via <https://www.sis.uva.nl> tot 4 weken voor aanvang van het semester is verplicht

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>