



Information Sciences MSc

Vrije Universiteit Amsterdam - Faculteit der Exacte Wetenschappen - M Information Sciences - 2016-2017

The Master's in Information Sciences trains you to become an outstanding professional who is capable of independent and team problem solving with regard to the design, application and practical use of complex information systems in organizations.

The program is given in collaboration with the UvA program "Information Studies". This UvA master program admits students with a similar bachelor as the VU IMM bachelor.

The program is set up in such a way that you can still follow the majority of the courses at the VU, if you prefer. VU and UvA courses are scheduled on different weekdays, to prevent travel overhead.

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 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?
- 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? Information Sciences 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 program. 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.

Inhoudsopgave

Business Information Systems	1
Constrained choice period 4(6 EC)	1
Constrained choice period 2 (6 EC)	1
Suggested elective courses	1
Compulsory Courses	1
Web & Media	2
Constrained choice period 4 (6 EC)	2
Constrained choice period 2 (6 EC)	2
Suggested elective courses	2
Compulsory courses	3
Vak: Business Process Analytics (Periode 4)	3
Vak: Business Process Management (Periode 1)	5
Vak: Digital Innovation: New Ways of Organizing and Working" (Periode 2)	7
Vak: E-Commerce Law (Periode 5)	9
Vak: ICT4D: Information and communication technology for Development (Periode 5)	10
Vak: Information Visualization (Periode 4)	12
Vak: Intelligent Interactive Systems (Periode 1)	12
Vak: Interdisciplinary Research Methodology for IS (Periode 2)	12
Vak: Knowledge and Media (Periode 1)	14
Vak: Knowledge Engineering (Periode 2+3)	15
Vak: Master Project Information Sciences (Ac. Jaar (september))	16
Vak: Mobile Systems (Periode 4)	17
Vak: Serious Games (Periode 5)	17
Vak: Service Oriented Design (Periode 1)	18
Vak: Software Architecture (Periode 2)	19
Vak: The Social Web (Periode 4)	20
Vak: Thesis Design (Periode 3)	21
Vak: Visual Search Engines (Periode 2)	22
Vak: Watson Innovation (Periode 2)	23
Vak: Web Search (Periode 4)	24

Business Information Systems

Opleidingsdelen:

- [Constrained choice period 4\(6 EC\)](#)
- [Constrained choice period 2 \(6 EC\)](#)
- [Suggested elective courses](#)
- [Compulsory Courses](#)

Constrained choice period 4(6 EC)

Vakken:

Naam	Periode	Credits	Code
Business Process Analytics	Periode 4	6.0	X_400650
Information Visualization	Periode 4	6.0	XMU_418143
The Social Web	Periode 4	6.0	X_405086

Constrained choice period 2 (6 EC)

Vakken:

Naam	Periode	Credits	Code
Digital Innovation: New Ways of Organizing and Working"	Periode 2	6.0	X_400653
Software Architecture	Periode 2	6.0	X_400170

Suggested elective courses

Vakken:

Naam	Periode	Credits	Code
E-Commerce Law	Periode 5	6.0	R_E.commerc
ICT4D: Information and communication technology for Development	Periode 5	6.0	X_405101
Serious Games	Periode 5	6.0	X_405097
Watson Innovation	Periode 2	6.0	X_405129

Compulsory Courses

Vakken:

Naam	Periode	Credits	Code
Business Process Management	Periode 1	6.0	X_405115
Interdisciplinary Research Methodology for IS	Periode 2	6.0	X_405085
Master Project Information Sciences	Ac. Jaar (september)	18.0	XM_405083
Service Oriented Design	Periode 1	6.0	X_405061
Thesis Design	Periode 3	6.0	X_405087

Web & Media

Opleidingsdelen:

- [Constrained choice period 4 \(6 EC\)](#)
- [Constrained choice period 2 \(6 EC\)](#)
- [Suggested elective courses](#)
- [Compulsory courses](#)

Constrained choice period 4 (6 EC)

Vakken:

Naam	Periode	Credits	Code
Information Visualization	Periode 4	6.0	XMU_418143
Mobile Systems	Periode 4	6.0	XMU_418068
The Social Web	Periode 4	6.0	X_405086
Web Search	Periode 4	6.0	XMU_418130

Constrained choice period 2 (6 EC)

Vakken:

Naam	Periode	Credits	Code
Knowledge Engineering	Periode 2+3	6.0	X_405099
Software Architecture	Periode 2	6.0	X_400170
Visual Search Engines	Periode 2	6.0	XMU_417016

Suggested elective courses

Vakken:

Naam	Periode	Credits	Code
E-Commerce Law	Periode 5	6.0	R_E.commerc
ICT4D: Information and communication technology for Development	Periode 5	6.0	X_405101
Serious Games	Periode 5	6.0	X_405097
Watson Innovation	Periode 2	6.0	X_405129

Compulsory courses

Vakken:

Naam	Periode	Credits	Code
Intelligent Interactive Systems	Periode 1	6.0	XMU_418023
Interdisciplinary Research Methodology for IS	Periode 2	6.0	X_405085
Knowledge and Media	Periode 1	6.0	X_405065
Master Project Information Sciences	Ac. Jaar (september)	18.0	XM_405083
Thesis Design	Periode 3	6.0	X_405087

Business Process Analytics

Vakcode	X_400650 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Leopold MSc
Examinator	dr. H. Leopold MSc
Docent(en)	dr. H. Leopold MSc
Lesmethode(n)	Hoorcollege, Practicum
Niveau	400

Doel vak

After taking this course, the student will:

- be aware of the current possibilities to support BPM with information technology.
- understand and be able to employ process mining techniques for the purpose of process discovery, compliance checking, and improvement.
- know key technologies for analyzing large process model repositories.
- know and be able to employ basic as well as advanced NLP techniques for the purpose of process analysis.
- know and be able to use process model simulation for testing and

improving process design.

Inhoud vak

There is a steadily increasing interest of organizations to use Business Process Management (BPM) for documenting and improving their operations. However, the associated manual effort for thoroughly eliciting, documenting, and updating process knowledge in the form of process models is often considerable.

Within this course, we put an emphasis on the technological and analytical perspective and discuss how they can support organizations in effectively and efficiently implementing BPM. In fact, techniques from the fields of information retrieval, data mining as well as simulation provide valuable foundations to reduce to the manual effort in the context of BPM. Hence, we introduce and discuss four different technological angles and demonstrate how each of these angles can strengthen the different phases of the BPM life cycle. In particular, we address the following technological areas:

1. **Process Mining:** The technology of process mining builds on the analysis of event logs that were generated by information or workflow systems. We discuss how process mining techniques can be used for process discovery, compliance checking, and improvement and elaborate on basic as well as advanced process mining algorithms. In addition, we introduce current process mining tools for the application of process mining in practice.

2. **Process Model Collections:** Many large organizations maintain process model repositories with several hundred process models. Hence, manual analysis efforts are time-consuming and cumbersome. Recognizing this, we introduce key concepts to automatically analyze process model collections. Among others, we discuss techniques for process model comparison, process model search, and behavioral analysis of process models.

3. **Natural Language Analysis:** The automated analysis of natural language, which is referred to as Natural Language Processing (NLP), has been applied in many contexts. As an example, consider Apple's Siri or Google's S Voice, which are capable of interpreting human speech. In fact, also organizations and their business processes may considerably benefit from natural language processing techniques. Hence, we introduce the key NLP techniques that are relevant in the context of BPM. Among others, we discuss techniques for process model content analysis, process model quality insurance, and identification of improvement potential in process models.

4. **Simulation:** The simulation of business processes is a tool that is used to predict performance and to understand the impact of change. It, for instance, allows organizations to test processes before they are actually technically implemented in a system. Due to its usefulness for organizations, we introduce the technological foundations for process simulation and give an overview of process simulation tools.

The various lectures and instructions will be devoted to these technological areas.

Onderwijsvorm

There will be lectures as well as work instructions.

Toetsvorm

The grading for students who follow this course in the scheduled period will be based on two grades:

1. The first grade is based on a number of home assignments. The goal of the assignments is to evaluate whether the students can successfully apply the content from the lecture. Among others, the students will be asked to mine a business process model from a given event log and to automatically infer relevant information using natural language processing tools from a given text.
2. The second grade is gained by participating in the regular exam during the exam week. The exam is a closed book exam, which consists of theoretical questions and small assignments. Selected chapters from the books "Fundamentals of Business Process Management", "Process Mining", and "Speech and Language Processing" will be the basis for this exam.

The overall result for this exam is the rounded, weighted average of the first grade (50%) and the second grade (50%) provided that both grades (unrounded) at least amount to a 5.00. If either of the grades is lower than a 5.00, the overall grade for this course is determined by the rounded, lowest grade of the two.

For all students who fail the course in the scheduled period or decide to follow the course outside this period, the course is graded solely by the grade for the re-exam. This is a full exam similar to the original exam and the assignments. The re-exam is a closed book exam, too.

Literatuur

1. Fundamentals of Business Process Management. Dumas, M., La Rosa, M., Mendling, J., Reijers, H.A. Springer, 2013. ISBN: 978-3-642-33142-8 (Print) 978-3-642-33143-5 (Online).
2. Process Mining. Discovery, Conformance and Enhancement of Business Processes. van der Aalst, Wil. Springer, 2011. ISBN: 978-3642193446.
3. Speech and Language Processing, Jurafsky, Dan, Martin, James H. Pearson International Edition, 2008. ISBN: 978-0135041963.

Aanbevolen voorkennis

Students will, among others, benefit from the knowledge they acquired in the courses Information Management and Business Process Management. Motivated students, however, will be able to master the course without prior knowledge from these courses.

Doelgroep

This is an interdisciplinary course. Any student who is interested in learning how technology can be used to improve business processes in practice is invited to join this course.

Business Process Management

Vakcode	X_405115 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels

Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. H.A. Reijers
Examinator	prof. dr. ir. H.A. Reijers
Docent(en)	prof. dr. ir. H.A. Reijers
Lesmethode(n)	Hoorcollege, Practicum, Werkcollege
Niveau	400

Doel vak

Business Process Management is a rapidly growing field, both in practice and academia. Evidence from the effectiveness of process-oriented approaches is accumulating. Process-aware technologies are used by organizations in all areas of the world, in all sectors.

As an expert in Business Information Systems, it is inevitable that you will get involved in process improvement projects. In your career, you may find yourself in the role of a professional working in a process that is being analyzed, redesigned, or supported by information technology. Alternatively, you may be managing such a process. Even more likely, you may play the role of intermediary, standing between the operational professionals executing a process and higher management that wishes organizational improvement. The knowledge and especially the skills taught in this course provide you with the basic instruments to carry out and understand BPM projects.

This course also gives a view on the scientific challenges that the BPM field is concerned with. This may stimulate you to contribute to the solutions for these challenges, for example as a scientist in this area.

After taking this course, the student will be able to:

- explain the organizational merits of process thinking, in particular in contrast to traditional management thinking;
- identify the different phases in the management of business processes;
- model complex business processes with a formal modeling technique, taking (partly) informal requirements into account;
- communicate process designs to both end-users and IT specialists;
- use process design theory to develop alternatives to existing processes;
- analyze the conformance and performance of process designs before they are put into production;
- understand how business processes can be analyzed on the basis of analyzing event logs;
- describe and understand the main features of process-aware information systems (workflow technology).

Inhoud vak

As a response to increasing competition and more demanding customers, various researchers, practitioners, and management gurus have suggested companies to put less emphasis on hierarchical and functional structures, but instead focus on and improve entire chains of business operations, ranging often from client to client. The orientation on such business processes to manage and improve organizational effectiveness is at the core of this course.

Within this course, there is an emphasis on the role of models and information technology to manage business processes. This means that there will be a focus on the creation and analysis of design artifacts,

in particular process models. Also, the role of IT as an enabling and support technology for process improvement will receive a wide share of attention.

The course on Business Process Management builds on the idea that business processes go through a life-cycle, with different phases:

- Identification: the problem to distinguish which processes in organizations require priority to be actively managed;
 - Discovery: the elicitation and specification of the way that operational processes are carried out;
 - Analysis: the understanding of a process' structural ability to fulfill the requirements it must meet;
 - Redesign: the planned actions to increase the performance and/or conformance of business processes by changing its elements;
 - Implementation: the execution of business processes using advanced IT, such as workflow management systems;
 - Monitoring/control: the day-to-day monitoring of a business process to detect operational problems and violations of regulations.
- The various lectures and instructions will be devoted to these phases.

Onderwijsvorm

Three hours of lectures per week (h) and two hours of work instructions (w).

Toetsvorm

Assignments (O) and a closed-book exam (T). The resit is one integrated, closed-book exam (T).

Literatuur

Fundamentals of Business Process Management. Dumas, M., La Rosa, M., Mendling, J., Reijers, H.A. Springer, 2013. ISBN: 978-3-642-33142-8 (Print) 978-3-642-33143-5 (Online).

Digital Innovation: New Ways of Organizing and Working"

Vakcode	X_400653 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. A. Sergeeva
Examinator	dr. A. Sergeeva
Docent(en)	prof. dr. M.H. Huysman, dr. A. Sergeeva
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

The aim of this course is to develop a

critical academic attitude towards "New ways of working and organizing".

After successful completion, students will

have

- An advanced understanding of the new business environment and workplace practices enabled by digital technologies (Internet, mobile

technologies, virtual worlds);

- An advanced understanding of how working, coordinating, and managing in this new environment is different from traditional workplace
- Being able to analyze the specific requirements of active, successful collaborations and organizing based on the opportunities that digital technologies offer.
- Developed an ability to challenge the technological deterministic perspective on new ways of working and organizing and on latest development in field of digital innovation.

Inhoud vak

New ways of working and organizing refers to new ways in which knowledge workers

collaborate in increasingly distributed and flexible organizational contexts,

instigated by new technologies. These organizational changes come about as a result of an interplay between an increased importance of knowledge in organizations as well as the opportunities that many digital technologies offer. For example, personal mobile devices are increasingly

used for knowledge coordination and communication affording working in flexible

settings, like open internal and third offices. Furthermore, work is increasingly being

done virtual and communication extends more and more to social media and calls for using expertise developed outside the formal boundaries, for example in networks and 'crowds'. The possible consequences of these

new ways of working and organizing are often predicted but not yet fully and

academically understood. Scholars from multiple disciplines, using

different methods and perspectives, are still developing this rising

field that also practitioners are trying to grasp. In this course, these different

aspects and theories related to new ways of working and organizing are discussed. In particular, we address these themes in relation to the emerging phenomenon of digital innovation. The course will start with the basics of 1) what is knowledge and how to share, integrate, coordinate and manage it; and 2) what is technology and how does it effect work and organizing. Subsequently, we discuss the emerging phenomenon of digital innovation as both a way to support organizational processes as well as the organizational implications of developing digital innovation products and services.

Onderwijsvorm

The course consists of six lectures, five group assignments and an exam. Every week is dedicated to a particular topic. The five assignments will have to be made in groups of three to five students, as a follow-up of each lecture. The assignments concern a case study that has to be analyzed with the use of the articles that students need to read for

that particular topic of the week (see schedule below). These assignments will be distributed separately.

Lecture 1 Knowledge and Organization;

Lecture 2 Socio technical perspective on work and organization;

Lecture 3 Mobility and new offices;

Lecture 4 Virtual work and networks;

Lecture 5 Organizing for Digital Innovation;

Lecture 6 Business Model Innovation

Each lecture introduces theoretical aspects of new ways of working and organizing, combined with illustrations from practice. At the end of each lectures, the assignment of the week will be introduced. To make the interactive lectures and understand the assignments, it is important to come to class prepared.

Toetsvorm

The final grade will be determined by your average score for the five assignments (50%) and your individual score for the written exam (50%).

The written examination is based on the academic articles and the lectures.

Literatuur

- Academic papers (these will be offered as links through Blackboard under 'Documents').

E-Commerce Law

Vakcode	R_E.commerc (200942)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Rechtsgeleerdheid
Coördinator	prof. mr. A.R. Lodder
Examinator	prof. mr. A.R. Lodder
Docent(en)	prof. mr. A.R. Lodder
Lesmethode(n)	Lezing, Werkgroep
Niveau	500

Doel vak

The prime goal of the course is to obtain a general understanding of legal issues that occur when doing business online. The European Union directives related to electronic commerce are taken as a starting point in this course.

Inhoud vak

E-commerce conducted between businesses is already quite successful, and so is consumer e-commerce. Current legislation has been drafted for a paper-based society. For the information society services adaptations to existing legislation or drafting of new legislation is necessary. For that purpose the European Commission has enacted several directives over the years. The course gives insight into the main issues on e-commerce such as liability of service providers, electronic contracting, identity theft and online dispute resolution.

Toetsvorm

Paper and assignment

Literatuur

Articles via Blackboard.

Doelgroep

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Overige informatie

The following course objectives are only available in Dutch:

Eindtermen master Rechtsgeleerdheid

De afgestudeerde master beschikt over een academisch werk- en denkniveau;

heeft diepgaande en specialistische kennis van en inzicht in minimaal één deelgebied van het recht

heeft inzicht in de samenhang tussen verschillende onderdelen van het recht, met inbegrip van het nationale en internationale recht

De afgestudeerde master beschikt over de volgende (juridische) vaardigheden:

Analytische vaardigheden:

de juridische en maatschappelijke aspecten van een vraagstuk in hun onderlinge samenhang beoordelen en daarover kritisch nadenken/oordelen zich inzicht verschaffen in de problemen die zich bij rechtsvorming op het gekozen deelgebied voordoen en een bijdrage leveren aan oplossing daarvan

een probleem vanuit verschillende deelgebieden op een integratieve manier benaderen

Probleemoplossende vaardigheden:

complexe casus diepgaand analyseren en interpreteren en zelfstandig juridische oplossingen aandragen

complexe juridische problemen onderkennen, analyseren en oplossen

Onderzoeks- en presentatievaardigheden:

individueel een rechtswetenschappelijk onderzoek op academisch niveau

voorbereiden en uitvoeren (probleemstelling formuleren en afbakenen,

informatie verzamelen, gegevens interpreteren, conclusies trekken,

evalueren en aanbevelingen en suggesties doen voor verder onderzoek)

schriftelijk presenteren van een wetenschappelijk juridisch betoog

met argumenten onderbouwde mening formuleren over een complex juridisch

probleem of een nieuwe ontwikkeling

actief deelnemen aan een wetenschappelijk debat op het deelgebied dat

het masterprogramma beslaat

ICT4D: Information and communication technology for Development

Vakcode	X_405101 ()
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. K.S. Schlobach
Examinator	dr. K.S. Schlobach
Docent(en)	dr. K.S. Schlobach, dr. V. de Boer

Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

In the developed world Computers are ubiquitous, and ICT has rapidly grown into a critical asset for economic, technological, scientific and societal progress. The main objectives of this course are:

1) to make the next generation of Computer Scientists aware of:

- a) The importance of ICTs for the developing world and the unexpected way developing countries are leapfrogging into the information age
- b) The opportunities and challenges that exist for an information scientist in the area of 'development4development'
- c) The influence of context in a typical ICT4D project
- d) The complexity of deploying an ICT project within a development context, and how to tackle this.

2) to equip the students with some initial project management, technological and programming skills specific to an ICT deployment in a developing country.

Positioned at the heart of the VU's vision of social relevance as one of the guiding principles, the core aim of the course is to raise the awareness that we as Computer Scientists can make a significant difference by sharing our expertise according to well established principles of international development.

Inhoud vak

This course gives an introduction to the relatively new field of ICT4D and will be given jointly by experts from the Department of Computer Science (CS) and the Center for International Cooperation (CIS) with lecturers from both backgrounds who will focus on their areas of expertise.

In the course we will give an overview over methodology, technology and the social dimension of the usage of Information Technology in the context of Development. We will introduce a general framework for ICT4Development. Subsequently, lecturers from CIS will teach you how to analyse a development problem and introduce the analytical methods required for an indepth understanding of a potential development support project. Lecturers from CS will provide some initial technological knowledge required for running an ICT project in a developing country, such as Voice technology or database technology on small, inexpensive, hardware. It will give an overview over technology already applied, such as specific networks, connection types, hardware as well as specific software environments, but also introduce basic concepts in project management for ICT projects.

In lectures, you will first be introduced to a number of tools, techniques and programming languages that can be used for ICT4D projects. We will introduce case studies, highlight real-world ICT4D projects, both from inside and outside academia. We will discuss requirements and strategies used in the projects. We will present a number of initiatives in which the VU is involved in. To prepare for the lectures, you will read related literature provided by the lecturers.

In the tutorial lectures, students will first get familiar with the tools and techniques introduced in the practical lectures. We will assess your skills in assignments.

Onderwijsvorm

The course will be a combination of lectures and project work.

Toetsvorm

Practical assignment

Literatuur

Collection of papers.

Doelgroep

mAI, mCS, mIS

Information Visualization

Vakcode	XMU_418143 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2016-2017/zoek-vak/vak/23828>

Overige informatie

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.

Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.

Intelligent Interactive Systems

Vakcode	XMU_418023 (418023)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2016-2017/zoek-vak/vak/23835>

Doelgroep

mIS

Overige informatie

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.

Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.

Interdisciplinary Research Methodology for IS

Vakcode	X_405085 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. J.M. Akkermans
Examinator	prof. dr. J.M. Akkermans
Docent(en)	prof. dr. J.M. Akkermans, dr. D. Ceolin
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

This course helps prepare students for scientific research and particularly their Master research project and thesis.

After completion of the course the student:

- is able to formulate a research design containing appropriate research questions and how they are answered through applicable research methods, the latter covering qualitative, quantitative and constructive methodologies typical to the IS field
- is able to argue for his/her research design with solid argumentation explaining the underlying assumptions, pros and cons etc. of the chosen methods.
- is able to collect and process the research data according to the different IS research methodologies and to critically judge the obtained results in relation to the research questions
- is able to describe and critically discuss the above activities in a written report, and to present and discuss the results to a scientific audience

Inhoud vak

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, in the context of Information Sciences;
- conceptualizing and framing the research questions you want to answer;
- making a research design and planning your research;
- IS 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, IS/ICT artefact system design and development);
- how do you (and others) know that your research results are valid?
- scientific argument, communication and research report writing.

Onderwijsvorm

The focus is on students getting hands-on experience with different research methods applied to open-ended research questions.

The setting of the assignment work is that of a continuing research case investigation that emulates different stages of a scientific research project.

The research case question to be investigated differs from year to year. A representative example is: What is it for systems to be considered "smart" (e.g. smart homes, smart city, smart energy, e-health, etc), and how can we solve problems by making (socio-technical) systems "smarter" with the help of ICT technologies and to the benefit of people? Students receive weekly feedback on their assignments in discussion sessions with staff supervisors, and are able to improve upon them during the course, until the final portfolio has to be handed in at the end of the course.

Toetsvorm

Portfolio containing a set of group and individual assignments. Students receive weekly feedback on their assignments, and are able to improve upon them, until the final portfolio has to be handed in at the end of the course.

Literatuur

Textbook: Colin Robson: Real World Research, 3rd Ed., Wiley, 2011 [Note: this book is available in hardcover, paperback and a digital edition]. Other sources are made available via Blackboard.

Vereiste voorkennis

Basic knowledge of qualitative and quantitative research methods.

Doelgroep

mAI, mIS

Overige informatie

This course is taught jointly with UvA under the name Interdisciplinary Research Methodology for IS

For UvA, see

<http://studiegids.uva.nl/xmlpages/page/2014-2015/zoek-vak/vak/742475>

Knowledge and Media

Vakcode	X_405065 (405065)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. T. Kuhn MSc
Examinator	dr. T. Kuhn MSc
Docent(en)	dr. T. Kuhn MSc
Lesmethode(n)	Werkcollege
Niveau	500

Doel vak

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

Inhoud vak

This course treats the principles and theories that form the foundation of information organization and knowledge-intensive processes, and puts

them in relation to various 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 media will be explored, and various types of applications will be discussed.

Onderwijsvorm

Working lectures

Toetsvorm

Portfolio

Literatuur

Articles announced through Blackboard

Knowledge Engineering

Vakcode	X_405099 ()
Periode	Periode 2+3
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. A.C.M. ten Teije
Examinator	dr. A.C.M. ten Teije
Docent(en)	dr. A.C.M. ten Teije
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

goals:

- 1) to be able to elicitate knowledge from experts by using several elicitation techniques
- 2) to be able to build all CommonKads models that play a role in the development of a knowledge based system, this includes the context of the KBS and the expertise model based
- 3) to be able to implement the expertise model as a prototype
- 4) to be able to reflect on your own process of modelling and building a knowledge based system, and to reflect on your product (=which are the models and the implementation)

Inhoud vak

Knowledge Engineering is a discipline that involves integrating knowledge into a program for solving a complex problem, which requires human expertise. Typical tasks are classification, diagnosis, planning etc. In the course we use CommonKADS as the methodology for the process of modeling the organisation, the context and the knowledge intensive tasks.

This methodology give clear guidelines and concrete templates for modeling the organisational aspects and the expertise model, which is the core model of knowledge based system. The notion of pattern-based knowledge modeling is a key issue in the knowledge modelling process. The goal of the final project is to perform the entire knowledge technology process for a knowledge intensive problem of your own choosing, starting with context analysis, up to a (partial)

implementation of the knowledge based system.

Onderwijsvorm

Lectures, assignments, group project

Toetsvorm

Assignment, project reports.

Literatuur

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

Doelgroep

mAI, mIS, mCS-TAI

Master Project Information Sciences

Vakcode	XM_405083 ()
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. H.A. Reijers
Niveau	400

Doel vak

The Master Project is the culmination of the Information Sciences Master programme. During the project, the scientific and professional skills of the candidate are trained and evaluated. The Master Project will need to incorporate an element of originality or creativity, for example in performing a design task or in contributing to the solution or the analysis of a scientific problem, and needs to be carried out with sufficient academic rigor. Other important elements of the Master Project are the interaction with the business field (and possibly with other students), planning the project, as well as documenting and presenting the final results.

Inhoud vak

The Master Project concludes the Master programme. The typical form is in essence either an internal graduation project in one of the research groups of the Department of Computer Science or an internship within a professional organization. In most cases it will be performed as an individual project, but it can take on the form of a group project as well - as long as the individual contribution can be clearly distinguished. For additional information and rules we refer to the website of the Faculty of Exact Sciences.

There, you will also be able to find links to the web pages of the research groups of the Department of Computer Science, with options for master projects.

Onderwijsvorm

The Master Project always needs to be supervised by a staff member. In the case of an internship, the supervision takes place in cooperation with a company supervisor. An internship proposed by a student always needs prior approval from a staff member who will act as supervisor for

the project. In this way, the scientific depth of the project can be ensured.

Toetsvorm

The final grade will be based on the quality of the performed research, the written thesis, and the oral presentation.

Overige informatie

You will find useful documentation on all aspects of internships and the Master Project at the website of the Internship Office. This office can also give you advise about internships. It also makes sense to check out the web profiles of potential supervisors, e.g. to gather ideas on projects.

Mobile Systems

Vakcode	XMU_418068 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2016-2017/zoek-vak/vak/24874>

Doelgroep

mIS

Overige informatie

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.

Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.

Serious Games

Vakcode	X_405097 ()
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. A.P.W. Eliens
Examinator	prof. dr. A.P.W. Eliens
Docent(en)	prof. dr. A.P.W. Eliens
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Serious games are more and more considered to be an effective means to bring about awareness, acquire skills, change behavior, and influence social patterns. With elementary game development technology, the

students will explore the potential of serious games in a social context, using casual game mechanics, and what recently has been identified as the dynamics of gamification.

Inhoud vak

The course will cover the following topics:

- * an introduction to game design
- * practical skills in game development
- * game mechanics and scoring mechanisms
- * elementary game and utility theory
- * media & communication theory
- * game interaction patterns
- * practical applications of serious games

Students are required to work in teams of 2-4 people, with as a goal the actual development of a serious game, with social network support.

Onderwijsvorm

lectures and practicum

Toetsvorm

essay and practicum assignment(s)

Literatuur

online reference material(s)

Aanbevolen voorkennis

preferably, but not obligatory, project interactive multimedia and multimedia authoring

Doelgroep

Choice for master students CS, IS, and others, with an interest in multimedia and game development

Overige informatie

For information and registration, see: www.cs.vu.nl/~eliens/serious

Service Oriented Design

Vakcode	X_405061 (405061)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. P. Lago
Examinator	prof. dr. P. Lago
Docent(en)	prof. dr. P. Lago
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

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.

Inhoud vak

The lectures explain the concepts related to the Service Orientation software paradigm 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 an assigned SOA design project.

Onderwijsvorm

Lectures (H), group work (w), project (pro).

Toetsvorm

Written reports of the assignments. Teamwork. Presentations.

Literatuur

Material handed out by the lecturer and on Blackboard.

Vereiste voorkennis

Software modeling (knowledge of UML and SoaML preferred).

Aanbevolen voorkennis

Programming.

Doelgroep

mAI, mCS, mIS

Overige informatie

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

Vakcode	X_400170 (400170)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. P. Lago
Examinator	prof. dr. P. Lago
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

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 software

system.

Inhoud vak

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.

Onderwijsvorm

Lectures (H). Group work with a number of assignments (pro). Presentations (pre).

Toetsvorm

Project work (pro). Written exam (T).

Literatuur

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

Doelgroep

mCS, mIS

Intekenprocedure

Registration is compulsory at least 4 weeks before course starts.

The Social Web

Vakcode	X_405086 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. D. Ceolin
Examinator	dr. D. Ceolin
Docent(en)	dr. D. Ceolin
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	400

Doel vak

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.

Inhoud vak

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

Onderwijsvorm

- lectures
- practical sessions
- assignments including final paper

Toetsvorm

Weighted average of group assignments and final individual paper

Literatuur

- course lecture slides
- selected articles, videos and Web links for each lecture

Aanbevolen voorkennis

Basic programming skills

Doelgroep

VU: mIS

UvA: master Information Studies - Human-Centered Multimedia

mCS

mAI

Thesis Design

Vakcode	X_405087 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Leopold MSc
Examinator	dr. H. Leopold MSc
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The goal of a thesis design is to write a research proposal on the subject of your chosen master project. The research proposal will have to consist of the following content:

- State of the art of the literature
- A clearly defined research problem and question
- Project plan
- Methodology
- Time frame

Please note that the maximum length for the proposal is max 4 pages (excl timeline).

Inhoud vak

The first four weeks of the final MSc thesis project are part of the Thesis Design phase (6 ECTS). This is a separate course for which the student will receive a grade. During this phase, they develop their research plan and conduct the literature research. There will be one intervision meeting at the end of week 2 (13 Jan 2017) to discuss progress as part of the Thesis Design phase.

Onderwijsvorm

The supervisor and second reader will grade the thesis design based on the research design (75%) and the presentation (25%). For this, the supervisors will use the Thesis design assessment form. The assessment form is to be signed by the supervisor and second reader and, together with an exam slip ('tentamenbriefje') handed in at the Education office.

After the first month, students submit their research proposal (thesis design). The proposal will contain the context, the problem statement, the research question, the method and a planning formulated on max. 4 pages. In a final presentation meeting at the end of week 4 (30 Jan 2017) students will present this material to the supervisor and other students and their supervisors.

Toetsvorm

The grade is based on the grade for the Thesis Design report and the grade for the final presentation of the report.

Vereiste voorkennis

Prior to the start of the course, students need to register with the Master Coordinator and have also a Master Thesis Supervisor
To start the course students need to have an approved supervisor for their thesis, latest by December 15, 2016.

Aanbevolen voorkennis

Start with exploring the possibilities for a master thesis supervisor as early as possible, so that you are able to start the thesis design course in time

Doelgroep

mIS

Intekenprocedure

Requirements for UvA students

As of this academic year (2016/2017), we will require UvA students to follow the course 'Thesis Design' in case they wish to carry out their master project under the guidance of a VU supervisor. In this way, UvA students will be equally prepared for the master project as our own VU students are. We expect that this will increase the chances of UvA students to successfully complete their project in the allotted time of a one year master program. If you are discussing a master project with an UvA student, do take this new element into account. Once you agree to the supervision of an UvA student, please see to it that the student will include the course in his or her program. Clearly, each UvA student will receive all formal credits upon successfully completing 'Thesis Design'.

The UvA students do a project in block 3 and only have to finish their thesis design by March. Please note that this applies to UvA students only. Those VU students who are supported by an UvA supervisor will of course follow the VU thesis design trajectory

Overige informatie

Lecturers:

Henrik Leopold h.leopold@vu.nl

Victor de Boer v.de.boer@vu.nl

Visual Search Engines

Vakcode	XMU_417016 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2016-2017/zoek-vak/vak/29687>

Overige informatie

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.

Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.

Watson Innovation

Vakcode	X_405129 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. L.M. Aroyo
Examinator	dr. L.M. Aroyo
Docent(en)	dr. L.M. Aroyo, A. Dumitrache MSc
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	400

Doel vak

The Watson Innovation course is a collaboration between the Vrije Universiteit, University of Amsterdam and IBM Netherlands. It offers a unique opportunity to learn about IBM Watson, cognitive computing and the meaning of such artificial intelligence systems in a real world and big data context. Students from Computer Science and Economics faculties will join their complementary efforts and creativity in cross-disciplinary teams to explore the business and innovation potential of these technologies.

Inhoud vak

- Basics of Cognitive Computing and IBM Watson
- Understanding the original IBM Watson
- Develop ideas for Cognitive Computing apps
- Build real prototypes using IBM Watson technologies
- Showcase your ideas to real clients.

Onderwijsvorm

Lectures & practical sessions at locations of the VU Amsterdam and IBM Netherlands.

Toetsvorm

Evaluation of group projects and individual peer-reviews

Literatuur

Course lecture slides and related articles: - What is IBM Watson? (<http://www.ibm.com/smarterplanet/us/en/ibmwatson/what-is-watson.html>) - Building Watson: An overview of the DeepQA project (<http://www.aaai.org/ojs/index.php/aimagazine/article/download/2303/2165>) - CrowdTruth papers (<http://crowdtruth.org/papers/>)

Doelgroep

A balanced mix of Computer Science, AI, Information Science, Business Analytics and Business & Economics students (from VU as well as UvA) in their 3rd year of bachelor or master level.

Intekenprocedure

Places are limited, so sign up as soon as possible. For questions please contact b.timmermans@vu.nl or oana.inel@vu.nl

Overige informatie

Lecturer(s)
dr. L.M. Aroyo, B. Timmermans, O.Inel, A. Dumitrache

Web Search

Vakcode	XMU_418130 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2016-2017/zoek-vak/vak/29853>

Overige informatie

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.
Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.