

Course Title	Information Systems Analysis and Design				
Course Code	DIS501				
Course Type	Compulsory				
Level	Postgraduate				
Year / Semester	1 st Year / 2 nd Semester				
ECTS	7.5	Lectures / week	1	Laboratories / week	-
Course Purpose and Objectives	<p>The general objective of the course is for students to gain an overview of the principles, methods, and techniques of systems development and to gain experience in developing an information system.</p> <p>More specifically, the objectives of the course are:</p> <ol style="list-style-type: none"> 1. Teach students about the organizational and business context of systems development. 2. Explain and apply systems development methodologies, models, tools and techniques for developing quality software. 3. Define, prioritise, and evaluate requirements of an information system as well as build general and detailed models that specify the system requirements. 4. Describe, organize and structure the components of a system, including decisions about the system's hardware, software, and network environment. 5. Design effective user and system interfaces considering human-computer interaction principles. 6. Apply object-oriented design in order to build detailed models that assist programmers in implementing the system. 7. Learn about implementation, software testing and deployment issues. 				
Learning Outcomes	<p>After successfully completing this course, students will have gained comprehensive theoretical knowledge as well as practical skills related to the system development process of information systems. Students who successfully complete the course should be able to:</p>				

	<p>O1. Develop a requirement document that details and models an information system design.</p> <p>O2. Utilize data flow diagramming, entity relationship modeling, and state process modeling in user requirement analysis.</p> <p>O3. Design the architecture and components of the system.</p> <p>O4. Recognize and incorporate user requirements, business rules and constraints into the design of an information system.</p> <p>O5. Solve a wide range of problems related to the analysis, design and construction of information systems.</p> <p>O6. Develop, as part of a team, a specific application to solve an information system problem or opportunity for a real-world company.</p>		
Prerequisites	None	Required	None
Course Content	<p>1st week: Systems, Roles and Development Methodologies – O5 <i>Forum Discussion – O5</i></p> <p>2nd week: Understanding and Modeling Systems – O4 <i>Problem Solving – O4</i></p> <p>3rd week: Information Gathering: Interactive Methods – O1, O6 <i>Role-Based Individualized Simulation – O1, O6</i></p> <p>4th week: Information Gathering: Unobtrusive Methods – O4 <i>Wiki Activity – O4</i></p> <p>5th week: Agile Modeling, Prototyping, and Scrum – O3 <i>Video Activity & Forum Discussion – O3</i></p> <p>6th week: Using Data Flow Diagrams – O2 <i>Case Study Activity – O2</i></p> <p>7th week: Analyzing Systems Using Data Dictionaries – O2 <i>Case Study Activity – O2</i></p> <p>8th week: Process Specifications and Structured Decisions – O2 <i>Case Study Activity – O2</i></p> <p>9th week: Object-Oriented Systems Analysis and Design Using UML – O2 <i>Case Study Activity – O2</i></p> <p>10th week: Designing Effective Input - Output – O1, O3, O4, O5 <i>Demonstration & Role-Playing Activity – O1, O3, O4, O5</i></p>		

	<p>11th week: Human-Computer Interaction and UX Design – O5 <i>Forum Discussion – O5</i></p> <p>12th week: Quality Assurance and Implementation – O5 <i>Peer-Review Assessment Activity – O5</i></p> <p>13th week: Conclusions / Rehearsal – O1, O3, O4, O5 <i>Quiz Activity – O1, O3, O4, O5</i></p>
Teaching Methodology	<p>Mix of distance learning (teleconferences) and active learning techniques and activities. More precisely:</p> <ul style="list-style-type: none"> • Notes and PowerPoint Presentations in digital format through the electronic platform. • Basic textbook(s) and additional bibliography. • Assignments. • Meetings with the instructor(s). • Discussions in Forums through the electronic platform of real word case studies. • Web links. • Critical reflection on research article. • Peer review on group working and discussion in forum. • Educational videos on real world case studies and critical discussion in forum.
Bibliography	<p>Compulsory Bibliography</p> <ul style="list-style-type: none"> • Kendall, K. E., and Kendall, J. E. <i>Systems Analysis and Design</i>. 10th edition, Pearson Prentice Hall, 2018. <p>Additional Bibliography</p> <ul style="list-style-type: none"> • Valacich, J. S., and George, J. F. <i>Modern Systems Analysis and Design</i>. 9th edition, Pearson, 2020. • Tilley, S. <i>Systems Analysis and Design</i>. 12th edition, Cengage Learning, 2019. • Dennis, A., Wixom, B., and Roth, R. M. <i>Systems Analysis and Design</i>. 7th edition, Wiley, 2018.

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- Jonathan Rasmusson "The Agile Samurai: How Agile Masters Deliver Great Software", 2010
- Paul Harmon, "Business Process Change: A Business Process Management Guide for Managers and Process Professionals", 2007.
- Jake Knapp, John Zeratsky, and Braden Kowitz, “Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days”, 2016
- Mike Kuniavsky, “Observing the User Experience: A Practitioner’s Guide to User Research”, 2003.

- Jeff Patton, “User Story Mapping: Discover the Whole Story, Build the Right Product”, 2014.
- Tim Brown, “Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation”, 2009.
- Kristin Briney, “Data Management for Researchers: Organize, Maintain and Share Your Data for Research Success”, 2015.
- James Taylor, “Decision Management Systems: A Practical Guide to Using Business Rules and Predictive Analytics”, 2011
- Alan Cooper, Robert Reimann, David Cronin, and Christopher Noessel, “About Face: The Essentials of Interaction Design”, 2014.
- Jeff Gothelf and Josh Seiden, “Lean UX: Designing Great Products with Agile Teams”, 2016.
- Milind Limaye, “Software Quality Assurance: Integrating Testing, Security, and Audit”, 2016.

In addition, the following is a list of educational materials given in the various thematic units of the course:

- An educational video about the requirements gathering process using the interview technique: <https://youtu.be/I1RIhmf0III>
- The Manifesto for Agile Software Development: [Agile Manifesto](#)
- Two educational videos that explain what data flow diagrams (DFD) are and how they are made:
 - <https://youtu.be/6VGTvgaJlIM>
 - <https://youtu.be/Ik85hZkyYPA>
- Two educational videos explaining what data dictionaries are and how they are practically used in a data repository:
 - <https://youtu.be/r9QTWGJhyMg>
 - <https://youtu.be/MdMsjxT-EoU>
- Two educational videos explaining what decision tables and decision trees are:
 - <https://youtu.be/YIMLS8xOufw>
 - https://youtu.be/ydvnVw80I_8

	<ul style="list-style-type: none"> • An educational video on designing effective input-output: https://youtu.be/DMPxxijmG7M • An introductory presentation on human-computer interaction: https://youtu.be/C_AsBA0oHIE 																																												
Assessment	<p>Your assessment includes final exam as well as the submission of a mandatory mid Term assignment which includes the following:</p> <ul style="list-style-type: none"> • The preparation and design of an interview/questionnaire to retrieve the requirements of a specific information system (grade 30%) • The visualization of the requirements of an information system using a Use Case Diagram (grade 30%) • The design of Data Flow Diagrams, Activity Diagrams and/or Sequence Diagrams (grade 40%) <p>Furthermore, the evaluation process includes also interaction, content of ideas, as well as peer review, participation in various discussion forums, article analysis, videos, quizzes, etc.</p> <p>The final grade is calculated as follows:</p> <p>15% Intermediate <u>compulsory</u> activities (4 x 3.75%)* 25% Project/Assignment* 60% Final exams*</p> <p><i>Assessment methods and mapping with Learning Outcomes:</i></p> <table border="1" data-bbox="496 1435 1481 1664"> <thead> <tr> <th></th> <th>Percentage</th> <th>O1</th> <th>O2</th> <th>O3</th> <th>O4</th> <th>O5</th> <th>O6</th> </tr> </thead> <tbody> <tr> <td>Intermediate activities (4 x 3.75%)*</td> <td>15%</td> <td>√</td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>Project/Assignment*</td> <td>25%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Final exams*</td> <td>60%</td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> </tbody> </table> <p><i>Intermediate graded activities and assignment:</i></p> <table border="1" data-bbox="496 1789 1481 1921"> <thead> <tr> <th>Written Essay</th> <th>Research Papers</th> <th>Software Development</th> <th>Case Study</th> <th>Peer Review</th> <th>Video activity</th> </tr> </thead> <tbody> <tr> <td>√</td> <td>√</td> <td></td> <td>√</td> <td>√</td> <td>√</td> </tr> </tbody> </table> <p><i>Formative Assessment (non-graded):</i></p>		Percentage	O1	O2	O3	O4	O5	O6	Intermediate activities (4 x 3.75%)*	15%	√		√	√	√	√	Project/Assignment*	25%	√	√	√	√			Final exams*	60%		√	√	√			Written Essay	Research Papers	Software Development	Case Study	Peer Review	Video activity	√	√		√	√	√
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<p><i>*The grade should be at least 50% in each assessment method</i></p>									
Language	English								