

(1.) Course Title: INFPHD626 Information systems applications (complex exam preparatory)	Credits: 6
Course Classification: Mandatory chosen	
Theoretical or Practical Nature of the Course, ' <i>training character</i> ' ¹³ : theory-practice ratio 100% (credit%)	
Type of Class: practice and number of hours: 2/week in the given semester, <i>(If the course is not (only) taught in Hungarian, then the language: English)</i> Additional (specific) methods and characteristics ² used in delivering the knowledge <i>(if any)</i> : -	
Assessment Method (Exam / Midterm Grade / Other ³): colloquium Additional (specific) methods ⁴ applied in knowledge assessment <i>(if any)</i> : Continuous mid-year assessment, presentations based on literature review, LMS	
Course Placement in Curriculum (Semester Number): -	
Prerequisites <i>(if any)</i> : -	
Course Description: A concise yet informative description of the knowledge to be acquired.	
1) Basic definitions: Information Systems and their applications a. Information System i. Analytical thinking in the socio-technological environment, communication, business, organization ii. General systems theory, systems theory based approach, holistic, analytic iii. Life cycle models of Information Systems, properties, features, characteristics of development methods b. Structured Analysis and design methods The major techniques, methods (Data Flow Diagram, Logical Data Model, Entity Life Cycle, Effect Correspondence Diagram, Relational Data Analysis) c. Object-oriented analysis and design methods, UML visual language. Use case, class diagram, activity diagram, sequential diagram. communication diagram, state transition diagram. d. Rapid Application Development, Agile methods (SCRUM, Agile System development Method, Rapid Application Development, stb.) 2) ERP (MRP, Material REsource Planning, ERP, Enterprise Resource Planning) a. Major modules, typical application domains. i. Finance, accounting ii. Production logistics iii. Human resource management iv. Customer Relationship Management 3) Enterprise architecture a. Zachman b. TOGAF c. Information Security Architectures 4) Web Technologies in Information Systems a. SOA, Rest, microservices b. Cloud Computing i. SaaS ii. SaaS iii. SaaS	

- 5) Quality management, control of Information System Development
 - a. ISO 9000: 2000
 - b. ISO/IEC 12207: 2000 (Software Life Cycle)
 - c. ISO 6592 (standard for documenting the development)
 - d. ISO 9126 (quality criteria, non-functional requirements)
 - e. Function point analysis, efficiency of defect removal
- 6) Management and governance of Organization and Enterprise, BPR (Business Process Reengineering), BPM /BPMN (Business Process Modelling / Notation)
 - a. Event-driven Process Chain (EPC)
 - b. BPM, BPMN, Petri nets for (business) process modelling
 - c. Workflow and its management

2-5 Most Important Required and Recommended Literature

List of required and recommended literature (notes, textbooks) with bibliographic data (author, title, publication details, (possibly pages), ISBN).

1. Kumar, R.L. 2021. *Internet of Things, Artificial Intelligence and Blockchain Technology*. Springer International Publishing AG.
2. Xu, X., Weber, I. and Staples, M. 2019. *Architecture for Blockchain Applications*. Springer International Publishing.
3. Natarajan, P., Rogers, B., Dixon, E., Christensen, J., Borne, K., Wilkinson, L. and Mohan, S. 2021. *Demystifying AI for the Enterprise: A Playbook for Business Value and Digital Transformation*. Productivity Press.
4. Steven Alter: Information Systems: The foundation of e-Business, Pearson Education, New Jersey, 2002.
5. Langer, A. M. (2007). Analysis and design of information systems. Springer Science & Business Media.
6. Duncan, J., Rackley, L., & Walker, A. (1995). SSADM in practice: a version 4 text. Macmillan.
7. Larman, C. (2012). Applying UML and Patterns: An Introduction to Object Oriented Analysis and Design and Iterative Development. Pearson Education India.
8. Daniel Minoli, Enterprise Architecture A to Z Frameworks, Business Process Modeling, SOA, and Infrastructure Technology, Auerbach Publications, Taylor & Francis Group, ISBN 978-0-8493-8517-9, 2008
9. Gertz, M., & Jajodia, S. (2007). Handbook of database security: applications and trends. Springer.

List of Prescribed Professional Competencies and Competency Elements

(knowledge, skills, etc., KKK Section 8) that the course significantly contributes to developing (highlight the most important ones).

a) Knowledge

- Has a research-level understanding of the general and specific characteristics, major directions, and precisely developed boundaries of the subject area within the discipline, as well as the agreed and debated interrelations.
- Creatively comprehends the interrelations, theories, and conceptual frameworks and terminologies of the given field of study.¹

¹**Section 108**, Article 37 of the National Curriculum Act (Nftv.) 37. lesson: a session (lecture, seminar, exercise, consultation) requiring the personal involvement of the instructor to fulfil the academic requirements specified in the curriculum, the duration of which is at least forty-five minutes and not more than sixty minutes.

- Possesses research methodology knowledge necessary for independent research in the given discipline/field.

b) Skills

- Capable of creative analysis of the field, synthesizing comprehensive and specific interrelations with a new perspective, and conducting appropriate evaluative and critical activities.
- Able to apply and further develop the specialized learning and problem-solving methods of the field.
- Can creatively elaborate on the novel, previously unknown practical implications of theoretical issues.
- Capable of planning and executing new projects, conducting research in the field, and developing new techniques and approaches.
- Able to identify unforeseen professional problems and uncover the detailed theoretical and practical background necessary for their resolution at a research level.
- Can construct and communicate new relations relevant to the field, as well as comprehensive interrelations significant for personal and communal existence.

c) Attitudes

- Represents and further develops the relations that contribute to the process of human self-creation based on the field's characteristics.
- Possesses an interest and learning ability that enable identifying and solving currently unpredictable research problems in the field.
- Demonstrates a firm professional commitment, a continuous dedication to exploring new approaches, and an acceptance of the necessity for persistent effort.

d) Autonomy and Responsibility

- Builds and initiates new knowledge areas with creative independence and proposes new practical solutions.
- Participates in formulating theoretical and practical questions with a leadership role and high-level cooperation.
- Engages as an equal discussion partner with professionals in the field.
- Takes responsibility for raising and addressing new ethical questions concerning theoretical and practical aspects of the profession.

Course responsible (name, position, academic degree): **Dr. Bálint Molnár, Associate Professor, PhD**

Instructor(s) involved in teaching the course (if any) (name, position, academic degree):

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² e.g. case studies, role play, thematic presentations, etc.

³ e.g. continuous debriefing, mid-year report

⁴ e.g. request for case studies, thematic papers, essays, business, organisational plans, etc.