SYSTEMS ANALYSIS AND DESIGN

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Objectives

- Master the object-oriented concepts and the unified modeling language (UML) in analysis and design

- Apply UML to analize and design real problems

- Evaluate analysis and design documents

- Develop professional attitude

- Develop problem solving, communication and teamwork skills

Assessment

- Attendance
  - 10%

- Assignments
  - Individual
  - 20%

- Midterm exam
  - Team work
  - 20%

- Final exam
  - Group Project. The final assignment will utilize material learned throughout the course, so it is recommended that you get an early start on forming your groups, and meeting weekly for this purpose.
  - 50%

Plan

- Introduction to object-oriented concepts
  - Objects, classes
  - Encapsulation, inheritance, polymorphism
- An overview of UML
  - Modelling concept
  - Object-oriented modelling methods
  - History of UML
  - Basic elements of UML
- UML and Software development processes
- Requirements modelling
  - Use-case diagrams
- Static structural modelling
  - Class diagram
  - Object diagram

Plan

- Dynamic behavioral modelling
  - Activities diagrams
  - State diagrams
  - Interaction diagrams
- Architecture modelling
  - Package diagrams
  - Component diagrams
  - Deployment diagrams
- Design principles
  - GRASP: assignment of responsibilities
- Implementation
  - Remind of object-oriented programming
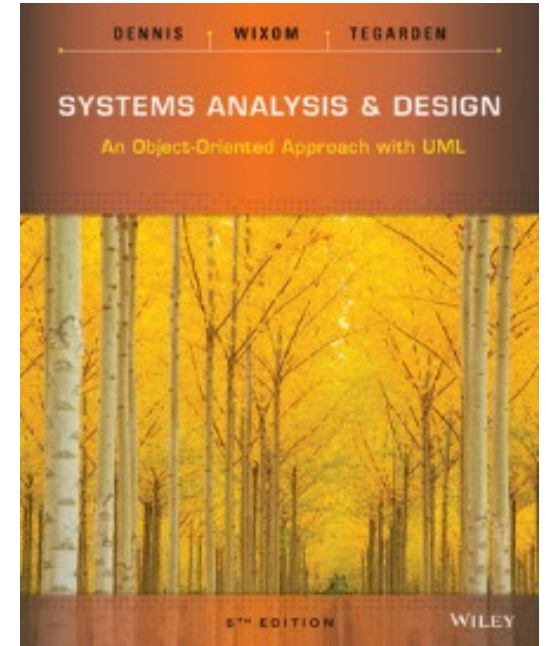- Case study
- Conclusions

References

- Core textbook:
  - [AlanBarDavid, 2015] Alan Dennis, Barbara Haley Wixom, David Tegarden, *System Analysis and Design – An Object oriented approach with UML*, 5th Edition, Wiley, 2015.
- Additional textbooks:
  - [JamIvaGra, 2006] James Rumbaugh, Ivar Jacobson, Grady Booch, *The Unified modeling language reference manual*, Second Edition, Addision-Wesley, 2006.
  - [Mike, 2005] Mike O'Doccherty, *Object - Oriented Analysis – Understanding system development with UML 2.0*, First Edition, John Wiley &Son, 2005.
  - [UML] The Unified Modeling Language, https://www.uml-diagrams.org/

Q&A