IFN501 - System Modeling and Simulation

Session 1: Course Overview

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Department of Electrical Engineering
Faculty of Engineering
Universitas Sam Ratulangi

Outline

Course Details

Introduction to Computer Simulation

Next Session

References

Acknowledgement

When not specifically defined, the contents of this presentation are adapted from [1].

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The Rules of the Game

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7. You are college students, please behave with the appropriate attitude.

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Scoring Components

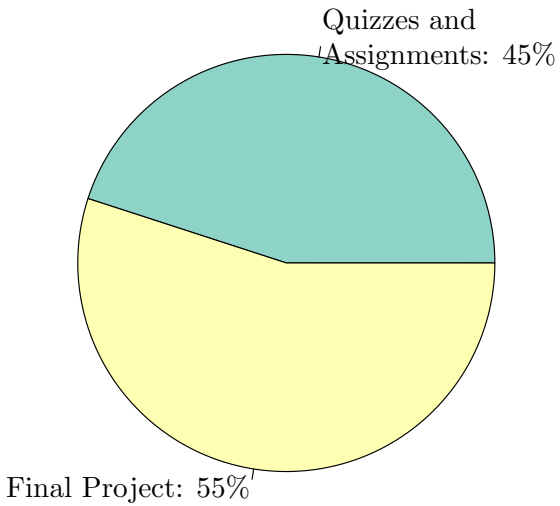

Figure 1 : Scoring components

- Grading system follows faculty regulation:

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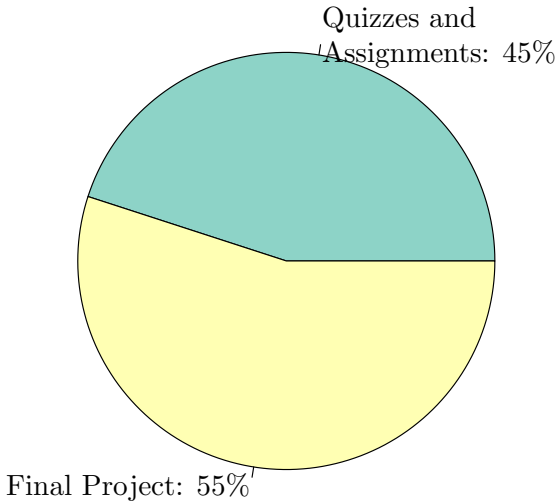

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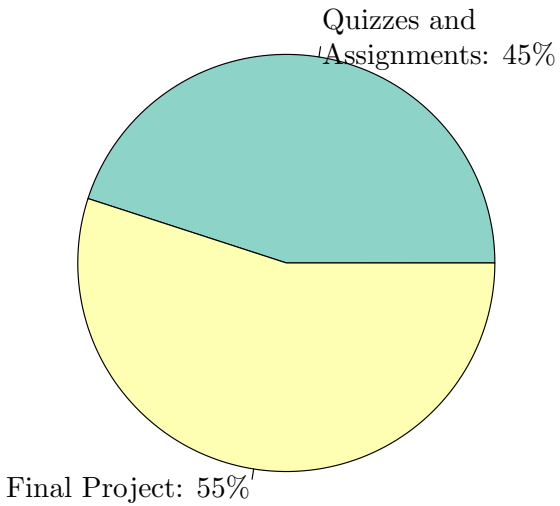

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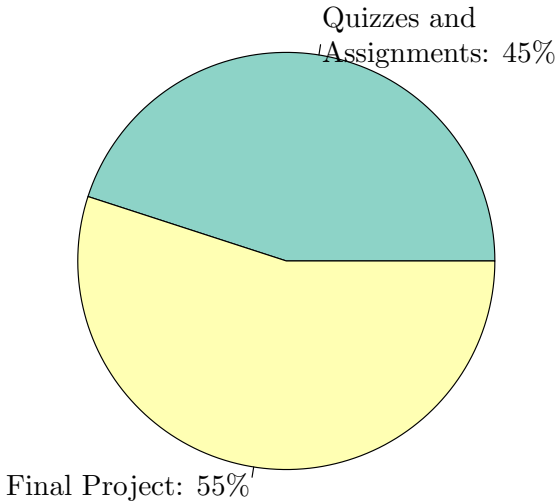

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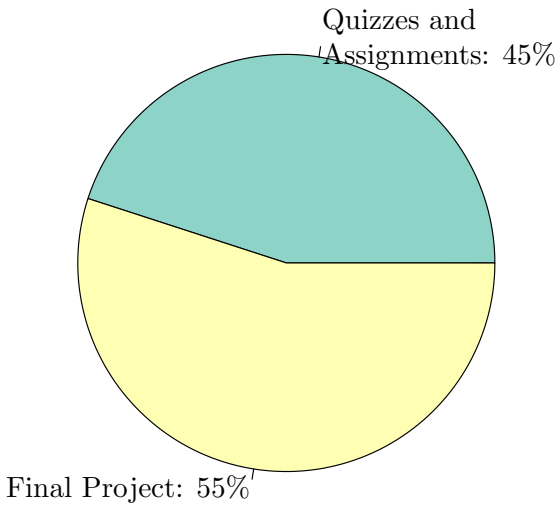

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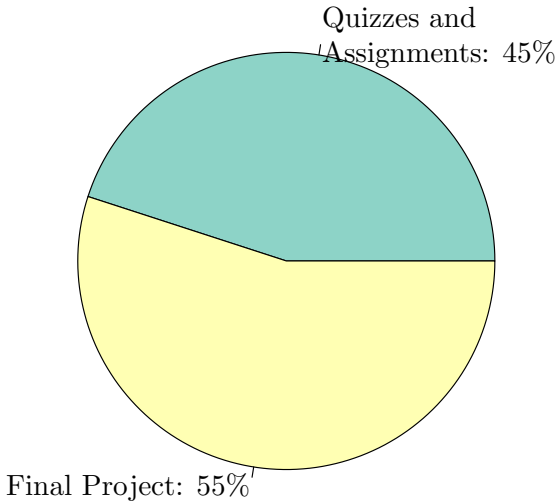

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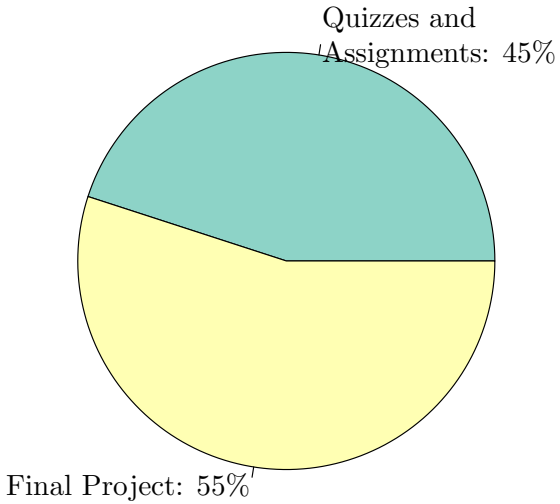

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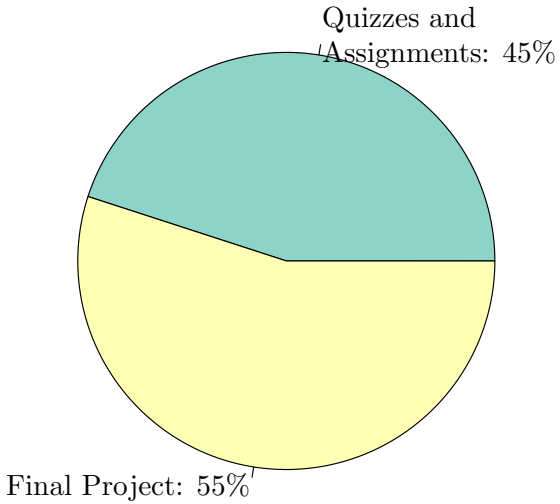

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  - $35 \leq n < 55$ Grade = D
  - $n < 35$ Grade = E

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Introduction to Computer Simulation

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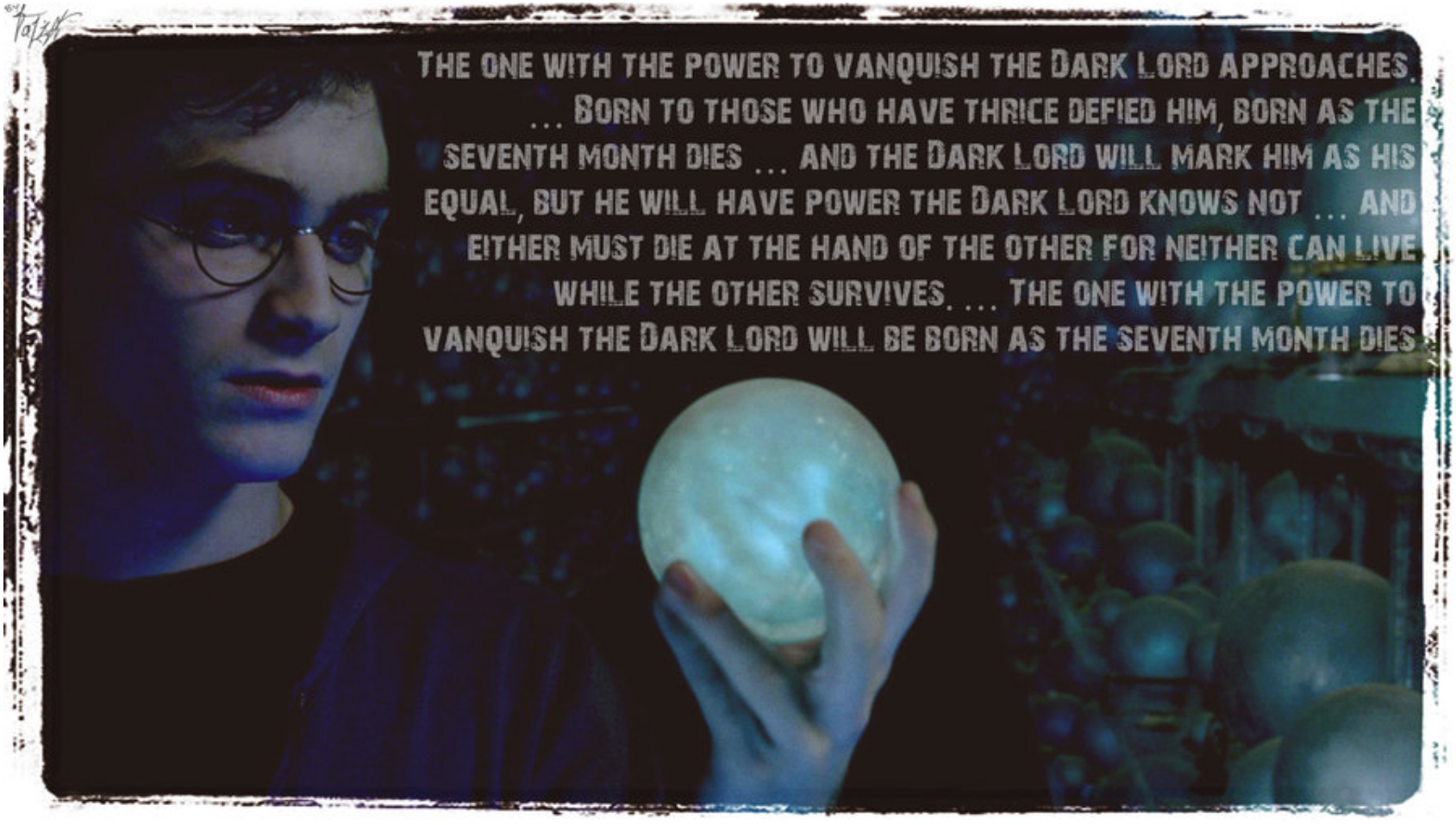
- Decreasing margin of error while increasing precision

Outline

Introduction to Computer Simulation

Simulation Defined



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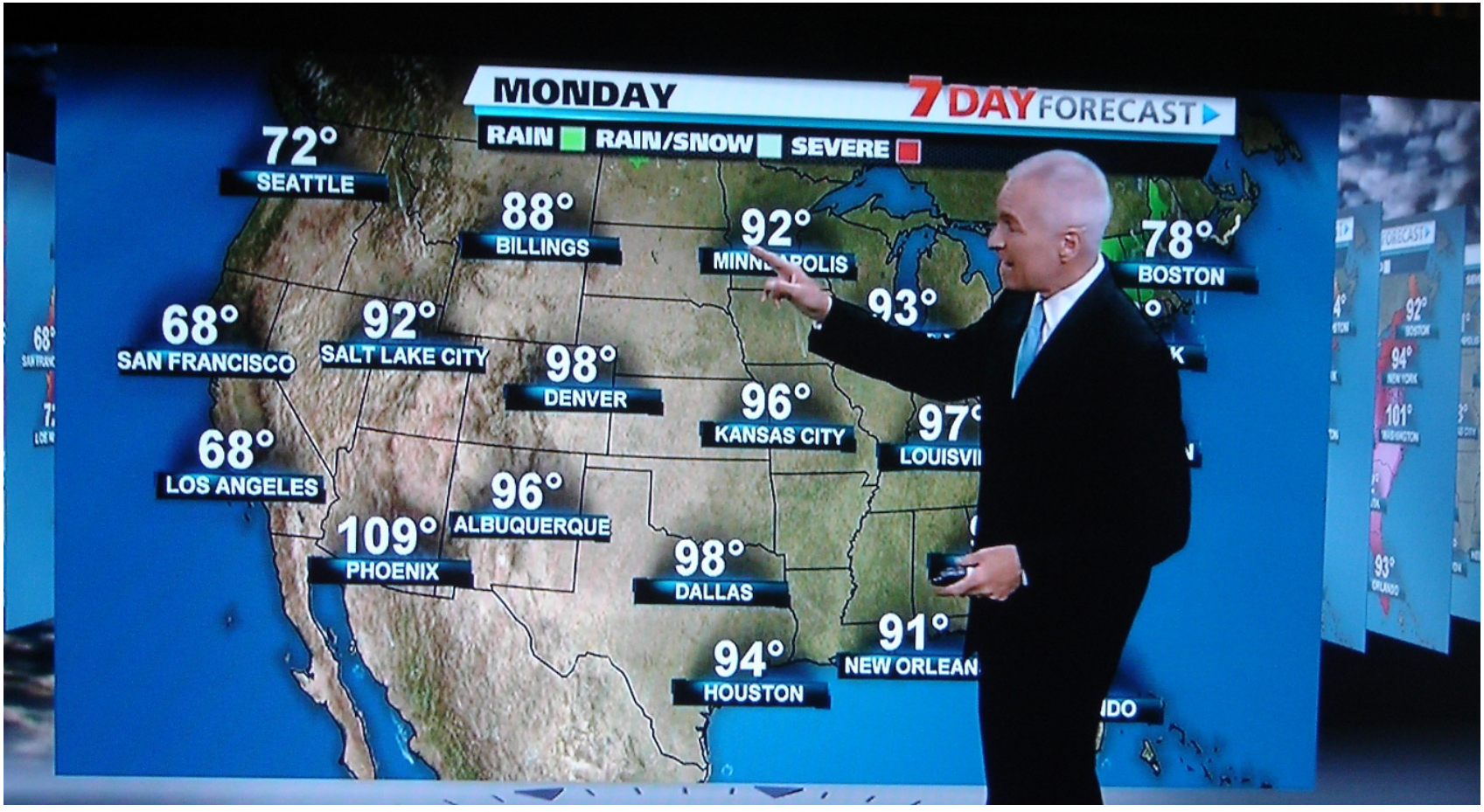

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Introduction to Computer Simulation

Simulation Defined- Basic Nature

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Definition

Using a computer to imitate the operation of a real world process or facility according to appropriately developed assumptions taking the form of logical, statistical, or mathematical relationships which are developed and shaped into a model.

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Introduction to Computer Simulation

Simulation Defined- Usages

Table 1 : Situations warranting computer simulations

General Situation	Examples
Real system does not yet exist and building a prototype is cost prohibitive, time-consuming or hazardous.	Aircraft, production system, nuclear reactor
System is impossible to build.	National economy, biological system
Real system exists but experimentation is too expensive, hazardous or disruptive to conduct.	Proposed Changes to a Materials Handling System, Military Unit, Transportation System, Airport Baggage Handling System
Forecasting is required to analyze long time periods in a compressed format.	Population growth forest fire spread, urbanization studies, pandemic flu spread
Mathematical modeling has no practical analytical or numeric solution.	Stochastic problems, nonlinear differential equations

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Simulation Defined- Pros and Cons

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5. Speed in analysis
6. Force system definition
7. Enhances creativity

Cons

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Introduction to Computer Simulation

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- Topic: Cases Around Us and The Needs for Computer Simulation.

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- The presentation contains only the important points. DO NOT copy-paste the text in your paper to the slides. Such presentation will be REJECTED!

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Paper Outline

- Abstract

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