# IE 585
# Spring 2017
# Requirements Engineering

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Required Texts:
   Delligatti , L., SysML Distilled: A Brief Guide to the Systems Modeling Language, ISBN-13: 978-0321927866, Pearson

   van Lamsweerde, A. Requirements Engineering. John Wiley & Sons, Ltd. UK, ISBN-13: 978-0470012703

Prerequisites:  IE 148,   Graduate Classification

## *Course Description*

Requirements are intended to define the outcome of engineering activities.  This course explores the role of requirements in the product development process including an examination of the nature of requirements and how requirements should be determined using problem definition, problem analysis, requirements analysis and requirements elicitation.

## Importance of requirements engineering

Relentless pressures to reduce the time and costs of product development as well as improve the likelihood of success for a product are the main drivers for improving requirements engineering practice. It has been recognized that the generation, capture, and use of requirements in that process are critical steps for the overall success of a product development effort.

## Learning Outcomes

1. Students will understand the concepts and principles of requirements engineering.
2. Students will understand and demonstrate their knowledge of the requirements engineering process.
3. Students will understand the structure and content of requirements and demonstrate an ability to analyze requirements.
4. Students will be able to engineer, develop, and use requirements for product development.
5. Students will be able to analyze and evaluate problems to determine requirements.

## Grading Policies

| Component | Weight |
| --- | --- |
| Case studies (7) | 100 |

## *Other Policies:*

1. Late submissions for case studies will not be accepted.
2. 0.5% of the total points will be taken off for every spelling or grammatical error.

### *Academic Honesty Statement*

The IMSE Department has an expectation that all students will be honest in their actions and communications. Individuals suspected of committing academic dishonesty will be directed to the Dean of Students Office as per University policy. For more information regarding Academic Misconduct see
http://www.dso.iastate.edu/ja/academic/misconduct.html

### *Professionalism Statement*

The IMSE Department has an expectation that all students will behave in a professional manner during all interactions with fellow students, faculty, and staff. Treating others with respect and having constructive communications are examples of being professional.

### *Topics*

- What is a requirement?
    - Functional, performance, and non-functional requirements
    - Attributes of good requirements (INCOSE)
- Requirements definition process
- Stakeholder Requirements Definition
    - Elicitation of Stakeholder Requirements
    - Definition of Stakeholder Requirements
    - Analysis of Stakeholder Requirements
- Requirements Analysis
    - Definition of system requirements
    - Architectural drivers
    - Architectural constraints
- Architectural Design
    - Physical/Logical modeling of the system
    - Describing **how** the system implements requirements
    - Partitioning the system into hardware and software components
    - Interface definition between components
    - Component behavior