# SYLLABUS (PENSUMLISTE)

# *PHYS225 – MEASUREMENT TECHNOLOGY*

# AUTUMN 2017

**Textbook**: John P. Bentley: "*Principles of measurement systems*" 4th edition

**Chapter 1 - The general measurement system**

**Chapter 2 - Static characteristics of measurement system elements**

**Chapter 3 - The accuracy of measurement systems in steady state**

**Chapter 4 - Dynamic characteristics of measurement systems**

**Chapter 6 - Signals and noise in measurement systems**

**Chapter 8 - Sensing elements (NOT Ch 8.1.4, 8.8, 8.9 and 8.10)**

**Chapter 9.1 - Signal conditioning elements: Deflection bridges**

**Chapter 12 - Flow measurement systems**

**Chapter 16.4.4 – Ultrasonic transit time flowmeter**

**Compendium**: "*Course Compendium PHYS225 Measurement Technology*"
by B.T. Hjertaker (Autumn 2017)

**The compendium includes (amongst others):**

- Introduction to calculation of measurement uncertainty
- The impulse response
- Graphic representation of the frequency response
- Mathematical modelling of dynamic systems
- The state space model representation
- Solution of linear vector differential equations
- Transition matrix / resolvent matrix/ transfer matrix
- Controllability and observability
- General on control systems (forward- and feedback control)
- The PID controller

**The syllabus also includes all exercise problems given in the course, and all lecture note handouts available at "My UiB"("Mitt UiB").**