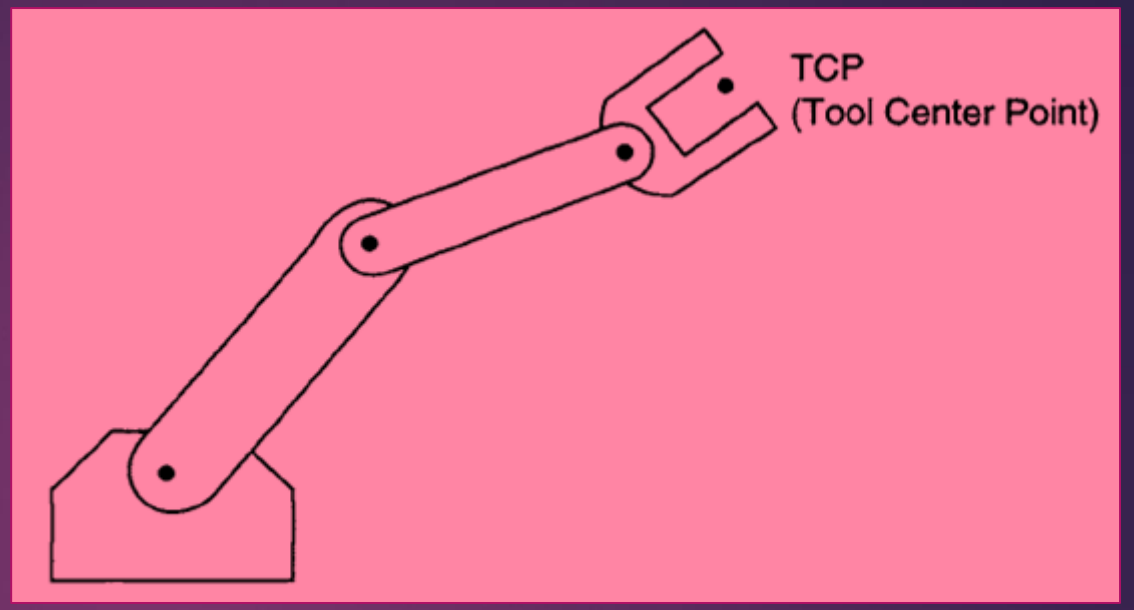


MECHATRONICS

PROF. DR. DADAN RAMDAN, M.ENG., M.SC.

Kontrak Kuliah

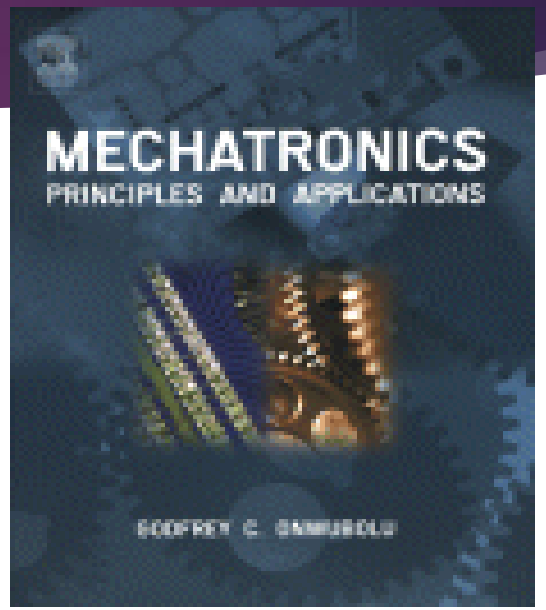
- **Jadwal Kuliah Kelas Pagi: Selasa Jam 14.40 – 16.20**
- **Jadwal Kuliah Kelas Malam: Jum'at Jam 19.00 – 20.30**
- **Kehadiran 10% (min. 75% kehadiran atau min. 10 kali pertemuan)**
- **Tugas Kelompok 50% (Laporan, Presentasi, Membuat Alat)**
- **UTS 15%**
- **UAS 25%**
- **Terlambat masuk kelas maks. 15 menit (Kls. Malam) 30 menit (Kls. Pagi) (Mhs. dan Dosen)**
- **Kalau nilai sudah memenuhi standar minimal (75) tidak diwajibkan UAS.**

Book

- Mechatronics
  Principles and Applications

  Author(s): Godfrey C. Onwubolu
- Mekatronika

  Universitas Gunadharma
- Oleh: **Dr. Lussiana ETP, Ssi., MT.**



PHK-I
UNIVERSITAS GUNADARMA

Gunadarma
UG University

MEKATRONIKA

Mater

- Introduction to mechatronics
- Electrical components and circuits
- Semiconductor electronic devices
- Digital electronics
- Analog electronics
- Microcomputers and Microcontroller
- Data acquisition
- Sensors

Mater

- Electrical actuator systems
- Mechanical actuator systems
- Interfacing microcontrollers with actuator
- Control theory modeling
- Control theory analysis
- Control Theory
- Robotic systems
- Integrated circuit and printed circuit board manufacture

1. Introduction to mechatronics

Chapter objectives

- **trace the origin of mechatronics;**
- **understand the key elements of mechatronics systems;**
- **relate with everyday examples of mechatronics systems;**
- **appreciate how mechatronics integrates knowledge from different disciplines in order to realize engineering and consumer products that are useful in everyday life.**

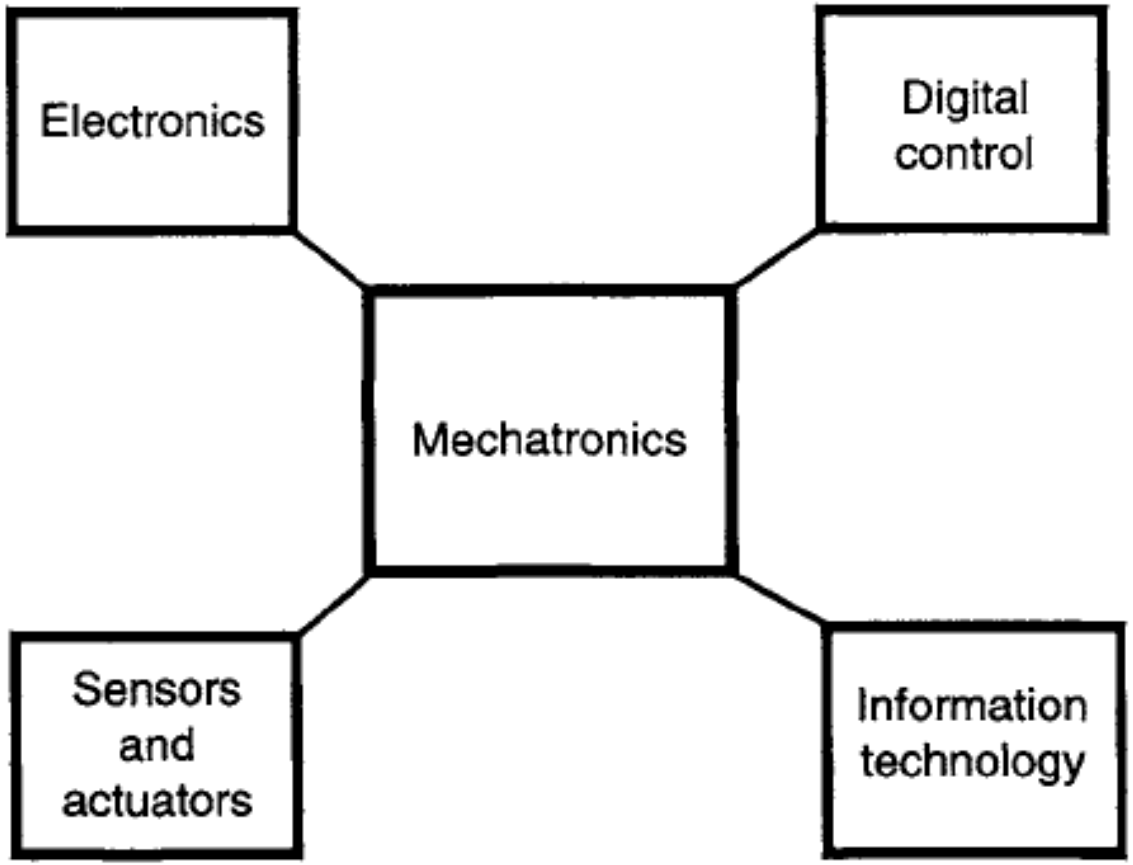
Mater

- **Historical perspective**
- **Key elements of a mechatronic system**
- **Some examples of mechatronic systems**

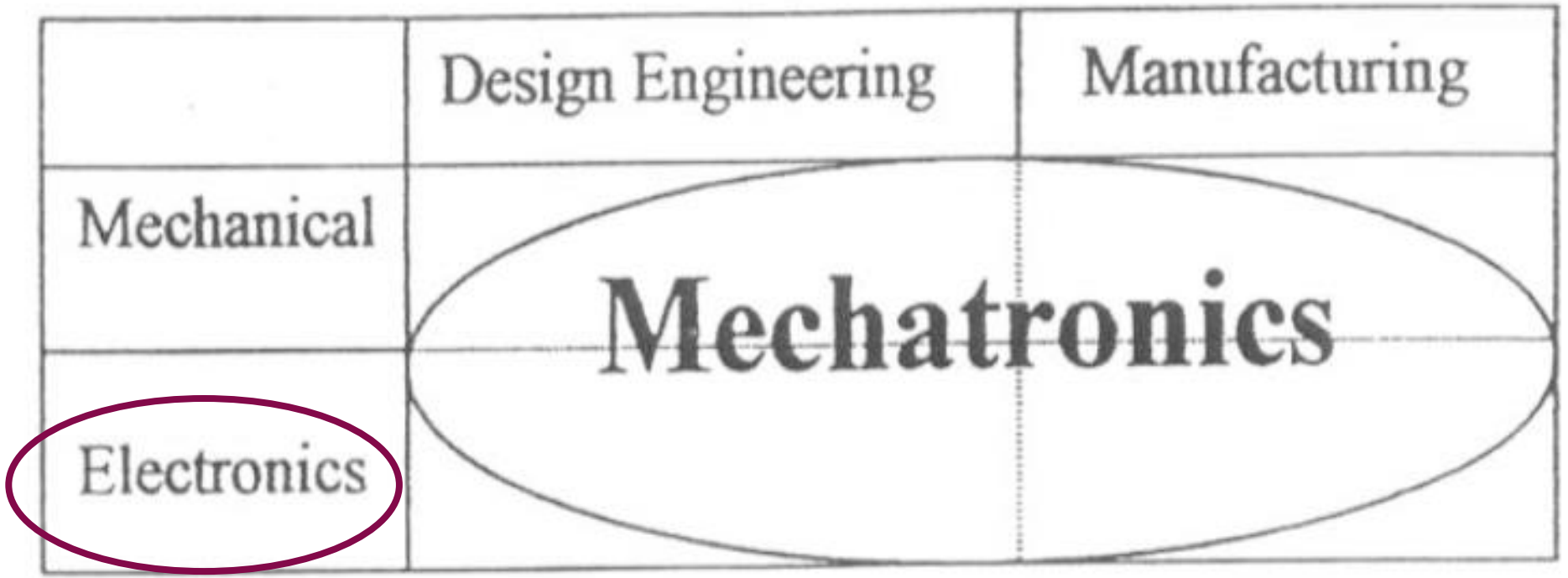
Key elements of a mechatronic system

- **Electronics (Semiconductor devices)**
- **Digital control (Transfer function, Closed-loop system, Forward-loop system, Open-loop system)**
- **Sensors and actuators (Sensors, Electrical actuators, Mechanical actuators)**
- **Information technology (Communication)**

Main components of a mechatronic system

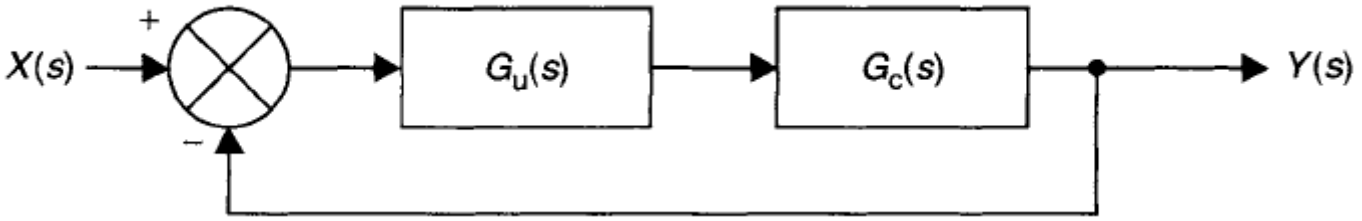


A graphical representation of Mechatronics



Closed-loop system

Block diagram of closed-loop system with unity gain.

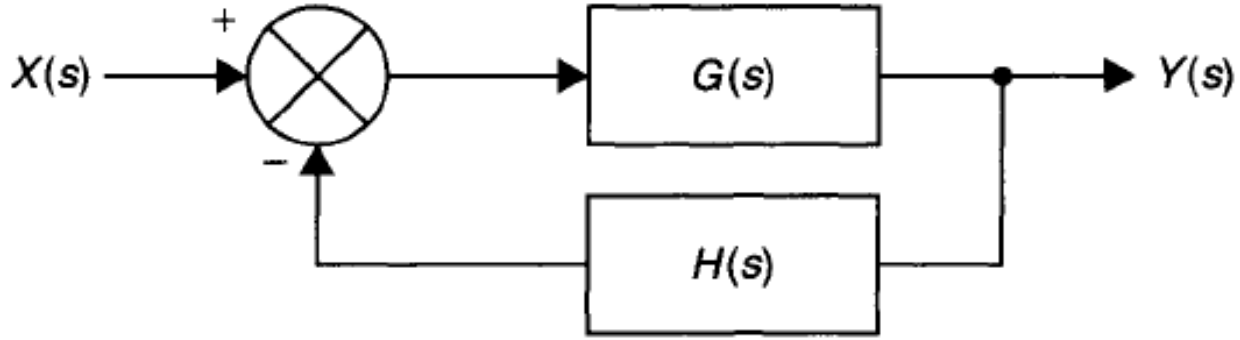


$$Y(s) = \frac{G_c(s)G_u(s)}{1 + G_c(s)G_u(s)} X(s).$$

Tugas Kelompok (5%)

Closed-loop system

Block diagram of closed-loop system with transfer function in feedback loop.



$$Y(s) = \frac{G(s)}{1 + H(s)G(s)} X(s).$$

Tugas Kelompok (5%)