

*In the name of God*

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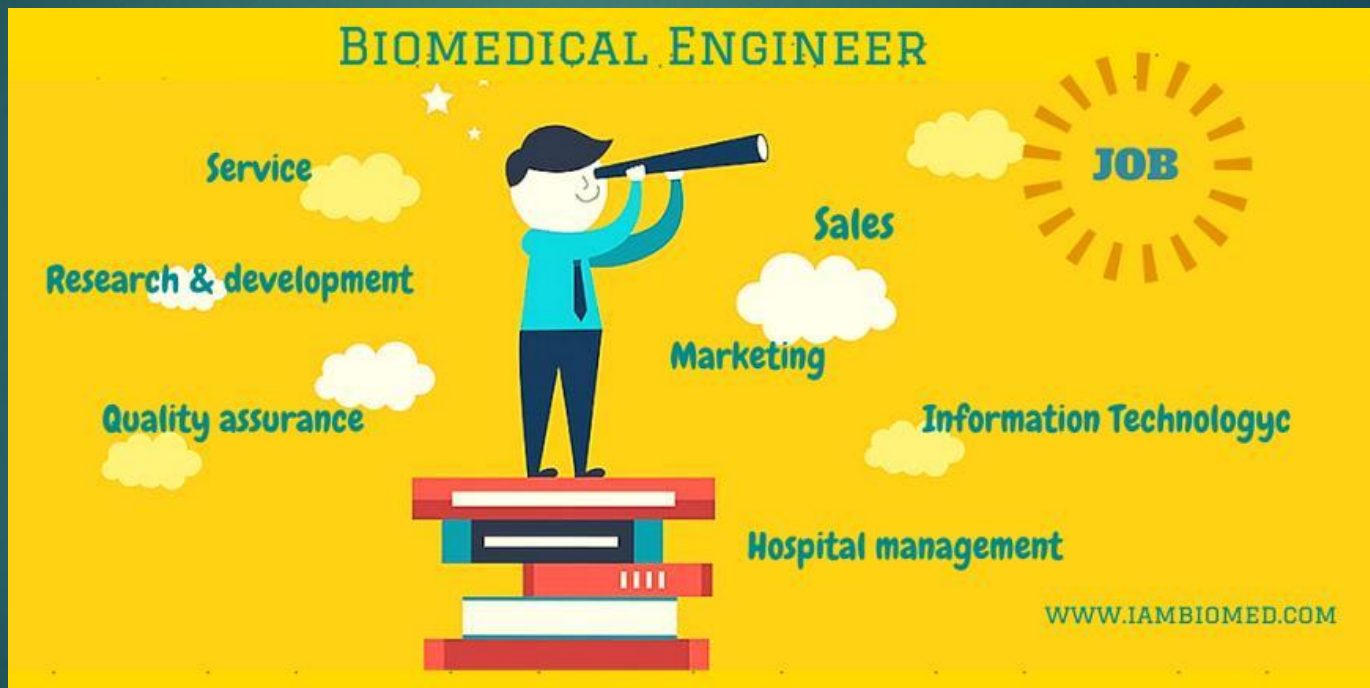
# Modelling biological systems

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# First important Question!

What is Biomedical Engineering?



# Prerequisites for the course

- ▶ Signal analysis.
- ▶ Probability and Mathematical Statistics.
- ▶ Simulation with MATLAB software.

# Syllabus

- ▶ **preface**
- ▶ **Introduction to System Modeling and Identification Theories**
- ▶ **Methods**
- ▶ **Pre-processing of data before modeling**
- ▶ **Choosing the right structure to evaluate the model**
- ▶ **Applications**
  - Cardiovascular system
  - Circulatory system
  - Respiratory system
  - Human musculoskeletal system & . . .
- ▶ **Chaos models**

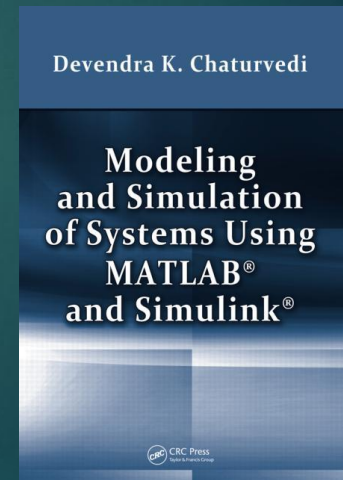
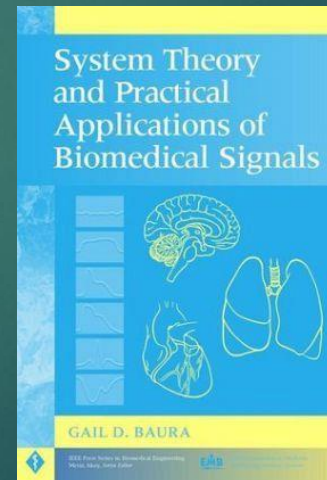
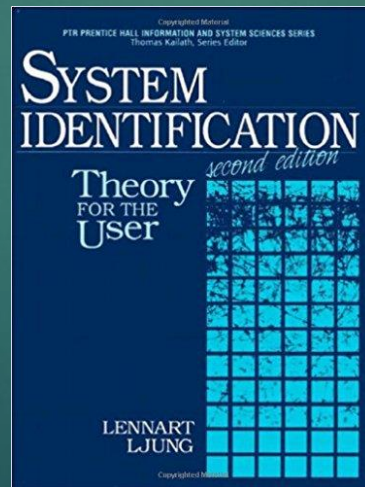
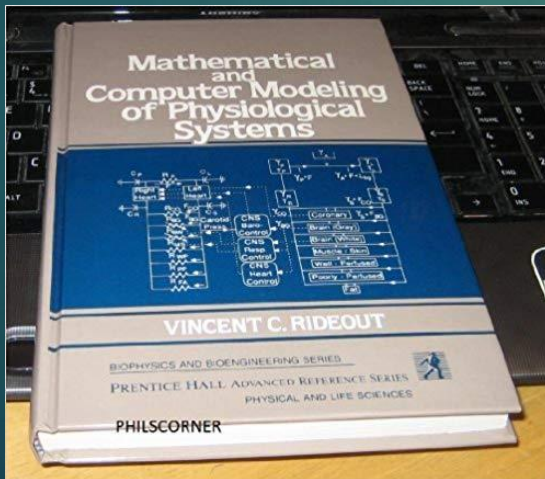
# Objectives and Goals

- ▶ System analysis.
- ▶ Controller Design and System Modelling.
- ▶ Prediction.
- ▶ Training.
- ▶ Reducing Construction and design Costs.



# References

1. L. Ljung, “System Identification”
2. G. D. Baura, “ System Theory and Practical Applications of Biomedical signals”
3. V. C. Rideout, “ Mathematical and Computer Modeling of Physiological Systems”
4. Devendra K. Chaturvedi “Modeling and Simulation of Systems Using MATLAB and Simulink”
5. Various published papers
6. Using Courses related to Dr.Hashemi Golpayegani, Dr.Mahdi Azarnooh, Dr.Hamidreza Kobravi.



# Students Evaluation

- Final exam 10 points
- Presentation 4.5 points
- Homework (Simulation projects) 5.5 points
- Submitting your accepted article 2 points **Extra**
- **It is important to understand that guidelines.**

contact us

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