

Instrumentation, Measurement and Control in Biological Systems

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Author Information

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Course Details

Description

This course uses MATLAB to connect the computer to various measurement systems using different communication protocols (USB, RS232C and GPIB). The drivers for the instruments were all within standard capabilities of MathWorks products, namely MATLAB, Data Acquisition Toolbox, and Instrument Control Toolbox. MathWorks provided some guidance with the specific instruments used in this course. Their efforts are appreciated. Further details on the course can be found [here](#).

Original Course Documents

[Source file URL](#)

Course Contents

Lab 1. MATLAB Introduction

- [MATLAB Multimeter Basics Lab Handout](#)
- [Student Multimeter Exercise worksheet](#)
- [Spreadsheet for Importing Data and Graphing in MATLAB](#)

Lab 2. Temperature Lab

- [Temperature Measurement Lab Handout](#)
- [MATLAB file to read data from a Fluke 289 Multimeter \(via a Fluke Datalogger\) MATLAB File Exchange Entry: Fluke 289 Multimeter/Datalogger File Reader](#)

Lab 3. Optical Measurement

- [Optical Measurement Lab Handout](#)

Lab 4. Fast Fourier Transformation

- [FFT Lab Handout](#)
- [FFT of Real Data from a Microphone fft_live_data.m File](#)

- [FFT of a Simulated Sine Wave fft_sinewave.m File](#)

Lab 5. Hardware Interface

- [Hardware Interface Handout](#)
- [MATLAB and RS232C: Connecting to a Minolta Tristimulus Colorimeter \(Model CR300\) through RS232C interface MATLAB File Exchange Entry: RS232C Communication with Minolta CR300 Colorimeter](#)
- [MATLAB and GPIB: Connecting to a Tektronix Oscilloscope TDS2022B through GPIB interface: oscscopeTektronix.m File](#)

Lab 6. pH Measurement

- [pH Measurement Lab Handout](#)

Lab 7. Data analysis (Chromatography)

- [Data Analysis Lab Handout](#)
- [MATLAB file to read: data: real_life.m](#)
- [Chromatography Data](#)

Lab 8. Pressure Measurement

- [Pressure Measurement Lab Handout](#)
- [MATLAB file to connect NI USB 6008 Datalogger and MATLAB file to get depth measurement from a pressure sensor MATLAB File Exchange Entry: Single shot NI-USB6008 DAQ](#)

Lab 9. Flow Measurement

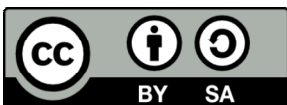
- [Flow Measurement Lab Handout](#)

Lab 10. Force (Strain Gauge) measurement

- [Force Measurement Lab Handout](#)
- [Strain Gauge Installation Handout](#)
- [Strain Gauge Surface Preparation Handout](#)

Lab 11. Gas pressure monitoring

- [Biogas Production Lab Handout](#)
- [Statistics Help Handout](#)
- [MATLAB Code for Manometer Readout MATLAB File Exchange Entry: Fisher Science Digital Manometer Serial Driver](#)



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