

Fall 2019

# ME 406-005: Mechanical Laboratory

B. Koplik

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## Recommended Citation

Koplik, B., "ME 406-005: Mechanical Laboratory" (2019). *Mechanical and Industrial Engineering Syllabi*. 101.  
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ME-406 -003, ME-406-005      MECHANICAL LABORATORY      FALL 2019

Thursday :    10:00 AM – 12:50 PM (Section-003)

Thursday:    2:30 PM -- 5:20 PM (Section-005)

INSTRUCTOR: Dr. B. KOPLIK

TEXTBOOK:    Experimental Methods for Engineers, 8<sup>th</sup> Edition, McGraw-Hill 2012, J.P. Holman

Mechanical Laboratory III Manual , ME web-site

COURSE SUPERVISOR : Dr. V. Samardzic

COURSE STRUCTURE : (1-2-2) (Lecture hr/wk - Lab hr/wk - Course Credits)

COURSE DESCRIPTION : An advanced laboratory course for mechanical engineering students. It covers the testing, evaluation and performance of complete mechanical systems.

PREREQUISITES : ME 405 - Mechanical Laboratory II, ME 407 – Heat Transfer

REFERENCES :    1. Thermodynamics, 5<sup>th</sup> Edition, McGraw Hill, Y.A. Cengel and M.A. Boles  
                          2. An Introduction to Heat Transfer, 4<sup>th</sup> Edition, John Wiley and Sons, F.P. Incropera

COMPUTER USAGE: Analysis and acquisition of data, statistical analysis and curve plotting

TOPICS COVERED : Experiments , student reports , final exam and class work on the listed topics

1. Internal Combustion Engine Performance.
2. Refrigeration Cycles and Performance Analysis.
3. Forced and Free Convection Heat Transfer Including Phase Change.
4. Performance of a Concentric Tube Heat Exchanger.
5. Vibration Monitoring to Analyze Resonance and Structural Damping.
6. Design of an Experiment to Compare Parameters of Two Refrigeration Systems.

GRADING : Based on submitted reports, final exam and class work

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|----------------------|---|-----|
| 1. Reports Submitted | - | 60% |
| 2. Final Exam        | - | 30% |
| 3. Class Work        | - | 10% |

