

## Tárgytematika / Course Description

### Internal Combustion Engine testing

AJNB\_BMTA015

**Tárgyfelelős neve /**

**Teacher's name:** dr. Tóth-Nagy Csaba

**Félév / Semester:** 2022/23/1

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 3/0/1

**Tárgy féléves óraszám /**

**Teaching hours(sem.):** 0/0/0

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### OKTATÁS CÉLJA / AIM OF THE COURSE

The aim of the course is for the students to receive a comprehensive picture about the field of Measurement technology of internal combustion engines. To fulfil this aim students can come to learn this field from the basics of measurement technology throughout simpler measurement tests of internal combustion engines all the way to the test methods of internal combustion engines used in research and development and type approval.

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### TANTÁRGY TARTALMA / DESCRIPTION

- 1) Basic concepts of measurement technology, measurement units, measurement assessment, measurement errors;
- 2) Basics for measurement of displacement and temperature;
- 3) Basics for measurement of pressure and flow;
- 4) Basics for measurement of force and torque;
- 5) Electronic basics, calculations regarding the operation of internal combustion engines;
- 6) Measurement technology of O<sub>2</sub> and air pollutant content of exhaust gas of an internal combustion engine;
- 7) Test of internal combustion engine during engine production and on engine test bench with an aim of development;
- 8) Automatisation of test and measurement on engine test bench;
- 9) Test methods of engines for type approval and for development;
- 10) Specially designed test benches, component tests;
- 11) Pressure indication in internal combustion engines.
- 12) Test methods for friction of engine, test methods for physicochemical properties of fuels, test method for engine's lubricant consumption.

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### SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Condition for signature:

- successfull written exam during the semester
- certified participation on laboratory practices

### Successful completion of the course:

- successful written exam during the exam period of the semester

### Evaluation of the exam:

- 0-59% - fail
  - 60-69% - pass
  - 70-79% - satisfactory
  - 80-89% - good
  - 90-100% - excellent
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### **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

- Lecture materials (presentations): Available on the website: [szelearning.sze.hu](http://szelearning.sze.hu), in the library belongs to the course;
- MARTYR, Anthony J.; PLINT, Michael Alexander. Engine testing: theory and practice. Elsevier, 2011.;
- Vehicle regulations of the UNECE : <https://www.unece.org/trans/main/welcwp29.html>
- Vehicle regulations of the EU: [https://ec.europa.eu/growth/sectors/automotive/legislation\\_en](https://ec.europa.eu/growth/sectors/automotive/legislation_en)