



## Advanced techniques in automotive engineering



<b>FACULTY</b>	<i>Automotive, Mechatronics and Mechanical Engineering</i>
<b>FIELD OF STUDY</b>	<i>Automotive Engineering</i>
<b>LANGUAGE</b>	<i>English</i>
<b>DEGREE AWARDED</b>	<i>Master of Science (MSc)</i>
<b>DURATION</b>	<i>4 Semesters/2 Years</i>
<b>CREDIT POINTS</b>	<i>120 + 10 ECTS</i>

### OBJECTIVES

Education must keep up the accelerating pace and equip open minded, flexible and motivated individuals with skills, vision and competence – young engineers who are characterized not only by outstanding technical competence, but also by their communicativeness and ability to work in a team. As a multi- and interdisciplinary field, the automotive world can be exploited only through teamwork, due to the complexity of processes for designing, developing and industrializing modern vehicles.

- Continue the study in the Automotive Engineering domain;
- Understand and conceive technical solutions in the Automotive domain;
- Work in a team and interact with specialists from different domains;
- The ability to work with simulation programs such as AVL CRUISE, KULI, MATLAB Simulink, IPG CakMaker, CATIA, and AVL BOOST.

## GRADUATES

The specialists trained in this program will:

- have the ability to proactively and efficiently approach the automotive engineering problems;
- be able to address the design and product development issues by using advanced methods, methodologies and technologies;
- be able to carry out studies, research and design of some high performance vehicles and/or subassemblies;
- able to collaborate and interact with national and international teams of automotive engineering specialists;

## CURRICULA

### Year one - semester I (30 ECTS)

- Internal combustion engine electronic management (4 ECTS)
- Theory and automatization of the automotive components I (4 ECTS)
- Auxiliary internal combustion engine components (5 ECTS)
- Communication BUS architecture (4 ECTS)
- Vehicle noise, vibration and harshness (3 ECTS)
- Research activity I (10 ECTS)

### Year one - semester II

- Electric and hybrid powertrains (4 ECTS)
- Hardware and software in the loop (4 ECTS)
- Theory and automatization of the automotive components II (4 ECTS)
- Vehicle dynamics (5 ECTS)
- Electric vehicle battery (3 ECTS)
- Research activity II (10 ECTS)

### Year two - semester III (30 ECTS)

- I.C.E. and transmission / Vehicle powertrain CAD/CAE (4 ECTS)
- Thermal management of vehicle powertrain (5 ECTS)
- Vehicle body structures (6 ECTS)

- CAM engineering in manufacturing (5 ECTS)
- Ethics and academic integrity (2 ECTS)
- Research activity III (8 ECTS)

### Year two - semester IV (30 + 10 ECTS)

- Research activity IV (20 ECTS)
- Dissertation development (10 ECTS)
- Dissertation support (10 ECTS)

## ADMISSION REQUIREMENTS AND PROCESS, TUITION FEES

Admission is based on an interview (English) and the average grade (project and knowledge) of the bachelor thesis/work.

Program administrative costs:  
<http://bri.utcluj.ro/en/fees.php>

For admission of EU citizens please access:  
[http://bri.utcluj.ro/en/admission\\_eu.php](http://bri.utcluj.ro/en/admission_eu.php)

For admission of non-EU citizens please access:  
[http://bri.utcluj.ro/en/admission\\_neu.php](http://bri.utcluj.ro/en/admission_neu.php)

## JOB OPENINGS

- Simulation engineer;
- Application engineer;
- Test engineer;
- Testbed engineer;
- HIL/MIL engineer;

## CONTACT

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