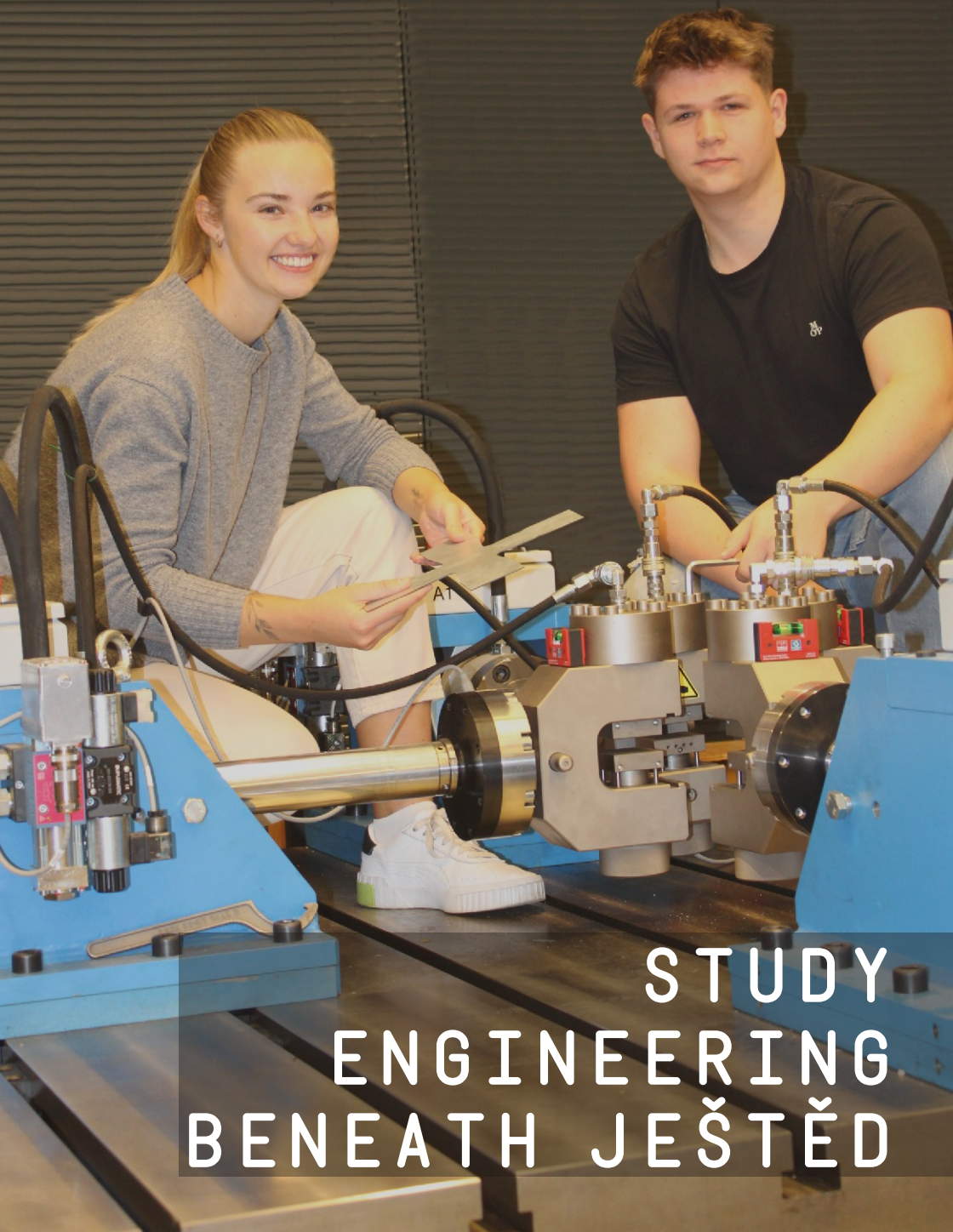


FACULTY OF MECHANICAL ENGINEERING TUL



STUDY  
ENGINEERING  
BENEATH JEŠTĚD

# FACULTY OF MECHANICAL ENGINEERING TECHNICAL UNIVERSITY OF LIBEREC

If you are attracted by technical innovations, fascinated by machines or are looking for a quality education with excellent applicability, Faculty of Mechanical Engineering is the right choice. The study offers a wide range of specializations that reflect current trends in mechanical engineering and technology. Whether you are interested in machine design, applied mechanics, advanced materials, future technologies or production processes, you will find exactly what you are looking for. Study programmes are designed to provide students with not only theoretical skills, but also practical experience necessary for success in technical fields.

## MODERN STUDY PROGRAMS WITHIN REACH

Faculty of Mechanical Engineering offers studies in bachelor's, follow-up master's and doctoral study programmes. The three-year bachelor's study programme is concluded with a state final examination and graduates receive the bachelor's degree (Bc.). Follow-up master's programmes typically last two years, are concluded with a state final examination and graduates are awarded the engineer's degree (Ing.). The state final examination consists of the defense of a bachelor's or diploma thesis and a professional dissertation. Doctoral studies are focused on scientific research and independent creative activity in the field of research. They are spread over four years and conclude with a state doctoral examination, which includes the defense of a dissertation. Graduates are entitled to use the title doctor (Ph.D.).



Bachelor Studies  
MECHANICAL ENGINEERING

Master Studies  
INNOVATION AND INDUSTRIAL ENGINEERING  
MACHINES AND EQUIPMENT DESIGN

Doctoral Studies  
APPLIED MECHANICS  
MACHINES AND EQUIPMENT DESIGN  
TECHNOLOGIES AND MATERIALS

### Faculty of Mechanical Engineering TUL

📍 Studentská 1402/2, 461 17 Liberec 1

Dean's Office and Study Office can be found in the Building G of Technical University of Liberec (Univerzitní náměstí 1410/1).

☎ +420 485 353 767 ✉ fs@tul.cz 🌐 fs.tul.cz

## **TECHNOLOGIES THAT SHAPE THE WORLD |**

Being part of Faculty of Mechanical Engineering means access to modern laboratories, cutting-edge equipment and projects that will bring you closer to the real challenges of industry. The faculty cooperates closely with leading industrial companies and a number of foreign partners with a wide range of study stays and internships. You will connect theory with practice and, in addition to quality education, you will also gain experience and contacts that will open the door to the world of innovation and development.

## **UNIQUE STUDENT LIFE |**

Technical University of Liberec offers not only high-quality studies, but also a unique student life. Liberec is nestled between Ještěd and the Jizera Mountains, ideal for an active lifestyle. It offers sports activities in winter and summer, a rich cultural scene. Student life is full of events, clubs and other options for spending free time. Basically, everyone interested can get a dormitory. They are a 15-minute walk from the university campus, while the campus is a 20-minute walk from the city center.

## **INDIVIDUAL APPROACH TO EACH STUDENT |**

You will not find crowded lecture halls, but smaller groups of students where everyone can fully develop. Faculty of Mechanical Engineering is based on a personal approach to teaching. The teachers are experts in their fields and are ready to devote themselves to each student. You can cooperate with them in solving research projects or participate in the activities of the student design office, which solves specific assignments from industrial practice.

## **PROSPECT OF A GREAT CAREER |**

Even mechanical engineering is a field that has a long-term high demand for experts. Graduates of Faculty of Mechanical Engineering find employment in a wide range of industries - from the automotive industry to energy and high-tech innovations - with above-standard financial rewards.

## **DON'T WAIT FOR TOMORROW |**

Take a step towards your future today and apply to the Faculty of Mechanical Engineering!



Applications for the bachelor's degree programme are submitted via an electronic application in IS STAG.

The admissions fee is \$ 100. The fee for each academic year is \$ 4.000.

Details can be found at [www.fs.tul.cz/en/bachelor-studies-admission](http://www.fs.tul.cz/en/bachelor-studies-admission).



# RECOGNITION OF EDUCATION

Before an applicant can receive an offer of admission, her/his previous education must be evaluated and recognized.

For further information visit:

<https://www.tul.cz/en/admissions/assessment-of-foreign-education/>



WATCH WHAT'S GOING ON @FAKULTASTROJNITUL





# MECHANICAL ENGINEERING

## BACHELOR STUDY PROGRAMME

The study programme emphasizes not only traditional areas of mechanical engineering, but also new knowledge and current trends in creating a competitive mechanical engineering industry. It prepares students to solve problems in industrial practice and graduates acquire the necessary basic theoretical and practical knowledge and skills in natural and technical sciences. A comprehensive and interconnected study provides the basis for successful employment in the labor market or for continuation in subsequent master's study programmes.

Bc.

3 years

full-time



Student formula „Anežka“ by the team FS TUL Racing (Museum of Fine Arts Liberec, 2024)

Students have the opportunity to choose a professional profile within the framework of mandatory elective courses, the subject of professional practice, the focus of the bachelor's project and bachelor's thesis.

Study in the first three semesters includes the common core. From the fourth semester, students can profile themselves by choosing compulsory elective courses, focusing on professional practice, a bachelor's project or a bachelor's thesis in six offered areas.

Year	Semester	Study
1 <sup>st</sup> year	1 <sup>st</sup> semester	Joint study
	2 <sup>nd</sup> semester	
2 <sup>nd</sup> year	3 <sup>rd</sup> semester	Profiling study
	4 <sup>th</sup> semester	
3 <sup>rd</sup> year	5 <sup>th</sup> semester	<b>Robotics and automation</b>
	6 <sup>th</sup> semester	<b>Computer modelling</b>
		<b>Energy engineering</b>
		<b>Sustainable Mobility</b>
		<b>Materials, Technology and Nanotechnology</b>
		<b>Machine and Equipment Design</b>

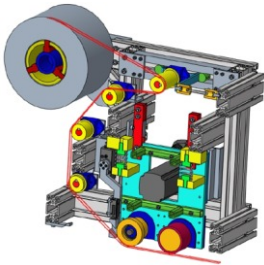
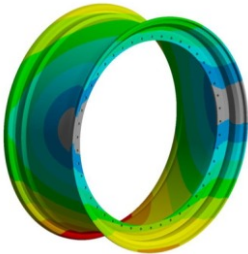
RECOMMENDED COMBINATION OF SUBJECTS ACCORDING TO PROFILE

Students choose one obligatory eligible subject from the offer in each semester according to the intended profile of the study.

Profile	Profiling subjects	
	2 <sup>nd</sup> year, 4 <sup>th</sup> semester	3 <sup>rd</sup> year, 6 <sup>th</sup> semester
Robotics and automation	Industrial Application of Robots	Hydraulic, Pneumatic and Electric Drives
		Manufacturing processes
Computer modelling	Modelling of Mechanical Systems	Fundamentals of Composite Mechanics
Energy engineering	Sustainable Resources in Energy and Transport	Energy and environmentally efficient buildings and processes
Sustainable Mobility	Sustainable Resources in Energy and Transport	Hydraulic, Pneumatic and Electric Drives
		Vehicles, Mobile Platforms and their Systems
Materials, Technology and Nanotechnology	Progressive Engineering Materials, Technologies and Nanotechnologies	Physical Metallurgy
		Manufacturing processes
Machine and Equipment Design	Modelling of Mechanical Systems	Hydraulic, Pneumatic and Electric Drives



Design of a new wheel disc designed for electric vehicles  
(V. Salač, 2024)



The design of a mechanism for laying UD tapes on planar constructions  
(J. Čeřovský, 2024)



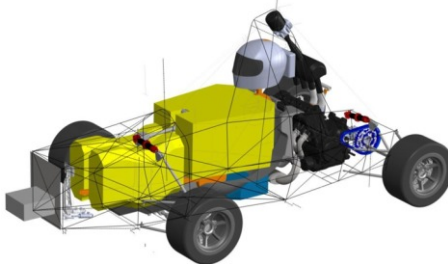
SOFT grippers for non-engineering applications  
(M. Mařík, 2023)



# MECHANICAL ENGINEERING

study plan | 1<sup>st</sup> year

Subject	Weekly	Completion	Number of credits
<b>1<sup>st</sup> semester</b>			
<b>obligatory subjects</b>			
Automatization and Robotics in Mech. Eng.	2+2	ex	4
Mathematics I	2+2	ex	5
CAD - Constructive Geometries	2+2	ex	4
Design I	2+2	ex	4
Materials I	2+2	ex	5
Programming	0+2	cc	3
Mathematical Seminar	0+2	c	1
Mechanical Engineering	0+2	c	2
Chemistry	1+1	cc	3
<b>total per semester</b>		<b>5 ex, 2 cc, 2 c</b>	<b>31</b>
<b>2<sup>nd</sup> semester</b>			
<b>obligatory subjects</b>			
Physics I	2+2	ex	5
Design II	0+2	cc	3
Mathematics II	2+2	ex	5
Materials II	2+2	ex	5
Mechanics I (Statics)	2+2	ex	5
Technology I	2+2	ex	4
Foreign Language I	0+2	c	2
<b>total per semester</b>		<b>5 ex, 1 cc, 1 c</b>	<b>29</b>



Design of Formula Student Frame using FEA  
(O. Polívka, 2023)

## LEGEND

### Abbreviation

2+2 - number of lectures and exercises weekly

### Completion

ex examination  
cc classified credit  
c credit

# MECHANICAL ENGINEERING

study plan | 2<sup>nd</sup> year

Subject	Weekly	Completion	Number of credits
<b>3<sup>rd</sup> semester</b>			
<b>obligatory subjects</b>			
Mathematics III	2+2	ex	5
Introduction to AI and XR	1+1	c	3
Physics II	2+2	ex	5
Mechanics I (Kinematics)	2+2	ex	5
Technology II	2+2	ex	4
Statistics for Engineering	2+2	ex	4
Foreign Language II	0+2	ex	2
<b>total per semester</b>		<b>6 ex, 1 c</b>	<b>28</b>
<b>4<sup>th</sup> semester</b>			
<b>obligatory subjects</b>			
Machine Parts and Mechanisms I	2+2	ex	5
Mechanics III (Dynamics)	2+2	ex	5
Elasticity and Strength I	2+2	ex	5
Thermodynamics and Heat Transfer	3+2	ex	5
Electrotechnics and electronics	2+2	ex	5
Work Experience*	6 weeks	c	5
<b>obligatory eligible subjects I **</b>			
Industrial Application of Robots	0+2	c	2
Modelling of Mechanical Systems	0+2	c	2
Sustainable Resources in Energy and Transport	0+2	c	2
Progressive Engineering Materials, Technologies and Nanotechnologies	0+2	c	2
<b>total per semester</b>		<b>5 ex, 2 c</b>	<b>32</b>



\* Students will carry out professional practice at the turn of the 4th and 5th semester. The internship can be divided into individual semesters and its completion in the prescribed scope can be documented collectively or separately, but it is always necessary to provide a confirmation from the internship provider for the entire prescribed period of 6 weeks, i.e. with an assumed involvement of 8 hours a day, the total time of practice will correspond to 240 hours.

\*\* Students choose one subject from the offer according to the intended profile of the study.

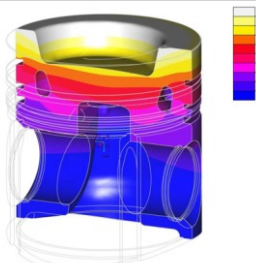


# MECHANICAL ENGINEERING

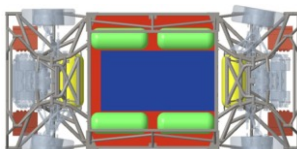
study plan | 3<sup>rd</sup> year

Subject	Weekly	Completion	Number of credits
<b>5<sup>th</sup> semester</b>			
<b>obligatory subjects</b>			
Applied Cybernetics	2+2	ex	4
Machine Parts and Mechanisms II	2+2	ex	5
CAD Structural Design	1+2	cc	3
Fluid Mechanics	2+2	ex	5
Modelling and Simulation	2+2	ex	4
Elasticity and Strength II	2+2	ex	5
Technology III	2+2	ex	4
Bachelor Project I*	0+2	cc	2
<b>total per semester</b>		<b>6 ex, 2 cc</b>	<b>32</b>

<b>6<sup>th</sup> semester</b>			
<b>obligatory subjects</b>			
Experimental Methods	1+2	cc	4
Assembly and Metrology	2+1	ex	4
Bachelor Project II *	50 hours	c	6
Bachelor Thesis	70 hours	c	10
<b>obligatory eligible subjects II**</b>			
Hydraulic, Pneumatic and Electric Drives	2+2	ex	4
Fundamentals of Composite Mechanics	2+2	ex	4
Energy and environmentally efficient buildings and processes	2+2	ex	4
Manufacturing processes	2+2	ex	4
Vehicles, Mobile Platforms and their Systems	2+2	ex	4
Physical Metallurgy	2+2	ex	4
<b>total per semester</b>		<b>2 ex, 1 cc, 2 c</b>	<b>28</b>

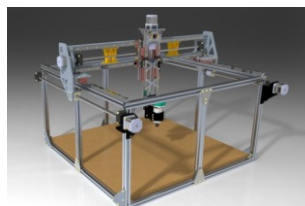


Hydrogen as a fuel - used in various types of vehicles  
(V. Baranik, 2024)

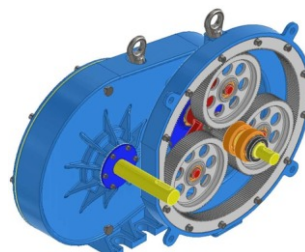


FCEL vehicle powertrain desing  
(M. Václavík, 2022)

Design of open-source  
CNC milling machine  
(F. Svatý, 2022)



Design of a conveyor drive  
for a melting furnace  
(V. Plánička, 2023)



\* Bachelor Project I and II are related to the topic of the bachelor's thesis and the student's profiling.

\*\* Students choose one obligatory eligible subject from the offer according to the intended profile of the study.

# OPPORTUNITIES & CHALLENGES

The faculty offers facilities and financial support for professional creative activities within the framework of the student grant competition. We are also happy to recognize outstanding creative activities of students in the form of creative, research or extraordinary scholarships, e.g. in the **Student Scientific and Professional Activities competition**.

**Student Design Office** will allow you to participate in solving projects, contracts and grants of the Department of Textile Machine Design. Not only will you gain skills in CAD design using the latest technologies, but you will also receive financial rewards. You can also apply to other departments as an auxiliary scientific force.

» [WWW.KTS.TUL.CZ](http://WWW.KTS.TUL.CZ)

You can join the **FS TUL Racing team** of the international Formula Student competition and participate in the complete development of the student formula. You will gain new experience not only in the field of design and construction of racing cars, but also in testing and participation in international competitions. » [FSTULRACING.CZ](http://FSTULRACING.CZ)

For creative activities, you can use the **TULab open laboratory**. There are devices for 3D printing using FDM, SLA and SLS technologies, a 3D scanner, metalworking equipment for post-processing printed parts, and traditional, non-additive manufacturing technologies such as a laser plotter, CNC milling machine, lathe, various saws, drills, and grinders.

» [TULAB.TUL.CZ](http://TULAB.TUL.CZ)



In 2023, Faculty of Mechanical Engineering ranked 3rd among the faculties of universities in the Czech Republic recommended by employers.

**Student Business Club** will help you with your business ideas. The annual START-UP TUL competition also includes prize money to start your own business. » [SBC-TUL.CZ](http://SBC-TUL.CZ)



Infusion lamination of composites by students of FME in cooperation with Fraunhofer-IWU (Zittau, Germany)

# SUPPORT

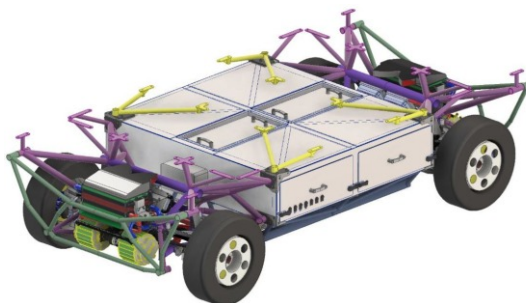
Students with specific needs, psychological and social problems, disabilities or other disadvantages can use the support of **Academic Counseling Center and Support Center**, which ensures the accessibility of studies. »

APC . TUL . CZ

The counseling center also offers individual counseling in the area of career guidance, development courses and workshops. Through the career portal **JobTUL**, it connects you with employers. »

JOB . TUL . CZ

Legal protection and relations with students are guaranteed by the **ombudsman**. He is available to students in the position of an independent observer in case of doubts about the observance of rights and procedures in the areas of equal access.



Design of an autonomous vehicle frame (J. Svatý, 2022)

Faculty of Mechanical Engineering **supports talented and creative students**. During the course of studies, it is possible to obtain a scholarship to support studies, one's own research activities and other related expenses, in accordance with the Scholarship Regulations of the Technical University of Liberec and the directive of the Dean of the Faculty, provided that the predetermined criteria are met. **Benefit Scholarships** are awarded to students who achieve excellent academic results.

**Academic Sports Centre of TUL** offers you the opportunity to use the gym, sauna, participate in regular activities such as yoga, jumping, bos, bodywork, you can also use other sports facilities (football field, basketball or tennis hall) and you can also join a football, floorball, basketball or volleyball league, or you can become a player on the university hockey team. »

ASC . TUL . CZ

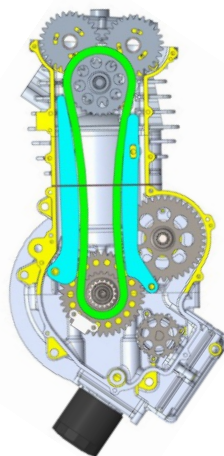
# CONNECTIONS

The university premises are covered by the **LIANE** (Liberec Academic Network) computer network, thanks to which you will have access to high-speed internet. You can also use the Eduroam wireless network, which has the advantage of connecting to **wi-fi** at many other Czech universities involved in this project. » LIANE.TUL.CZ

You will manage your studies, schedule and assessments in **IS STAG**. There is also a university application **TULapp**, which you can find on both the App Store and Google Play. Thanks to it, you will not miss a single class or registered exam.  
» STAG.TUL.CZ

Electronic support for learning can be found on the **elearning platform**, where teachers provide materials, lectures, and often even teaching recordings.  
» ELEARNING.TUL.CZ

You will get free access to the necessary **software** for your studies, including Autodesk products (AutoCAD, Inventor), MATLAB, Creo, MS Office, GSuite for Education, and Grammarly Edu.



Design Adjustment of Cylinder Head  
of Motorcycle Engine Valve Train  
(T. Pacholik, 2022)

Attendance at **lectures** is not mandatory in most cases (except in the first semester), but is strongly recommended. Attendance at **seminars** is mandatory. Any differences can be determined by the course supervisor at the beginning of the semester.

As part of their studies, students earn credits for completing their studies. **Credits** are "units" expressing the importance of a subject for the study program and the level of workload in a given subject. The standard pace is 60 credits per academic year, and to complete a bachelor's degree, it is necessary to earn 180 credits. The condition for advancing to the second semester is to earn at least 15 credits, and for enrolling in the following academic year, at least 35 credits.

The university campus has a **canteen**. Lunch will be provided during classes, and dinner may also be provided in dormitories. » MENZA.TUL.CZ

Basically, everyone interested can get into **Halls of Residence**. Harcov Residence Halls are a 15-minute walk from the university campus. The dormitory fee includes access to high-speed internet in every room.  
» KOLEJE.TUL.CZ

**Faculty of Mechanical Engineering TUL**

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The photographs come from successful bachelor's and master's theses completed at the Faculty of Mechanical Engineering TUL.