VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF MECHANICAL ENGINEERING

Study branch Additive Technology

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Faculty	Faculty of Mechanical Engineering
Study programme	Engineering
Type of study	Bachelor
Language of instruction	English
Code of the branch	S07
Title of the branch	Additive Technology
Regular period of the study	3 years
Cost	50,000 CZK per semester
Coordinating department	Department of Machining, Assembly and Engineering Metrology
Coordinator	prof. Ing.et Ing.Mgr. Jana Petrů, Ph.D.
Key words	composites, rapid prototyping, polymers, 3D printing

About study programme

The specialization "Additive Technology" is part of the Bachelor's degree programme "Mechanical Engineering", where students of this specialization acquire the necessary knowledge in the field of additive manufacturing. Additive Technology provides students with a deeper knowledge and understanding of the technical issues associated with 3D printing.

Professions

- Research team worker
- Researcher
- Project manager
- Production manager
- Research and development
- Scientific researcher for process control
- Technologist
- Rapid prototyping technology engineer
- Industrial engineer
- Research and development specialist
- Production planner
- Leading technologist
- Research team leader
- Teacher and lecturer
- Production system engineer
- Instrument operator

Hard skills

- Managerial knowledge
- Creation of technical reports
- Knowledge in the field of production technologies
- CNC machining technology

- Reading technical documentation
- SW Solid works
- Rapid Prototyping methods
- Orientation in schemes
- Knowledge of contact and contactless surface temperature measurement
- Procedures for production of machined parts
- Knowledge of non-destructive testing
- Drawing and modeling
- Knowledge of technical documentation
- Component design
- Metrology
- Orientation in drawings
- Preparation of production
- Knowledge of process improvement methods
- Evaluation of production and pre-production processes
- Knowledge of technological processes
- Knowledge of machine tool construction

Graduate's employment

The intention of the development of the study programme is to ensure and maintain the quality of all activities carried out, to continue the trend of updating the study with regard to the needs of industry and the employability of graduates in the labour market in the field of 3D printing and prototyping.

Study aims

Students study individual additive manufacturing technologies and their issues while being introduced to modern software to support design work. Students are able to further develop and apply the acquired experience, skills and knowledge in practice. Emphasis is also placed on the ability to use modern technology and computational methods and to effectively evaluate the outputs of engineering measurements. Graduates of this field of study can easily find their way in related engineering fields.

Graduate's knowledge

Within the specialization of Additive Technologies, the student will gain knowledge of the production of models by 3D printing. Within the special subjects, students will learn to construct models with modern and attractive design, program and operate professional 3D printers for prototype and mass production of models made of metal alloys, polymers and composite materials. Students will also learn about 3D scanning and reverse engineering and practical examples and studies where 3D printing has found practical applications.

Graduate's skills

Within the Additive Technology specialisation, the graduate will be able to select the appropriate printing material and appropriate 3D printing technology. The graduate will be able to select the optimal position and orientation of the model for 3D printing, design technological and design modifications with respect to the production technology. The graduate will be able to program and optimize printing parameters, operate 3D printers, digitize models using a 3D scanner and perform reverse engineering. In addition, the graduate will be able to work with professional software for the construction and modification of models (CAD) and programming of print jobs.

Graduate's general competence

Within the Additive Technology specialization, graduates are prepared to select appropriate 3D printing technology and apply the experience, skills and knowledge gained to practical application. Given the advantages and disadvantages of additive technologies,

the graduate will be able to assess whether additive technology makes sense for a given application. The graduate will be prepared to select the appropriate printing material, printing parameters and be ready to design the production process including post-processing treatments (machining, welding, heat treatment, surface treatment, inspection and measurement, etc.). On the basis of practical experience, graduates are able to independently acquire further professional knowledge and skills. Graduates will find employment in engineering companies, the automotive and aerospace industries, healthcare and industrial design.