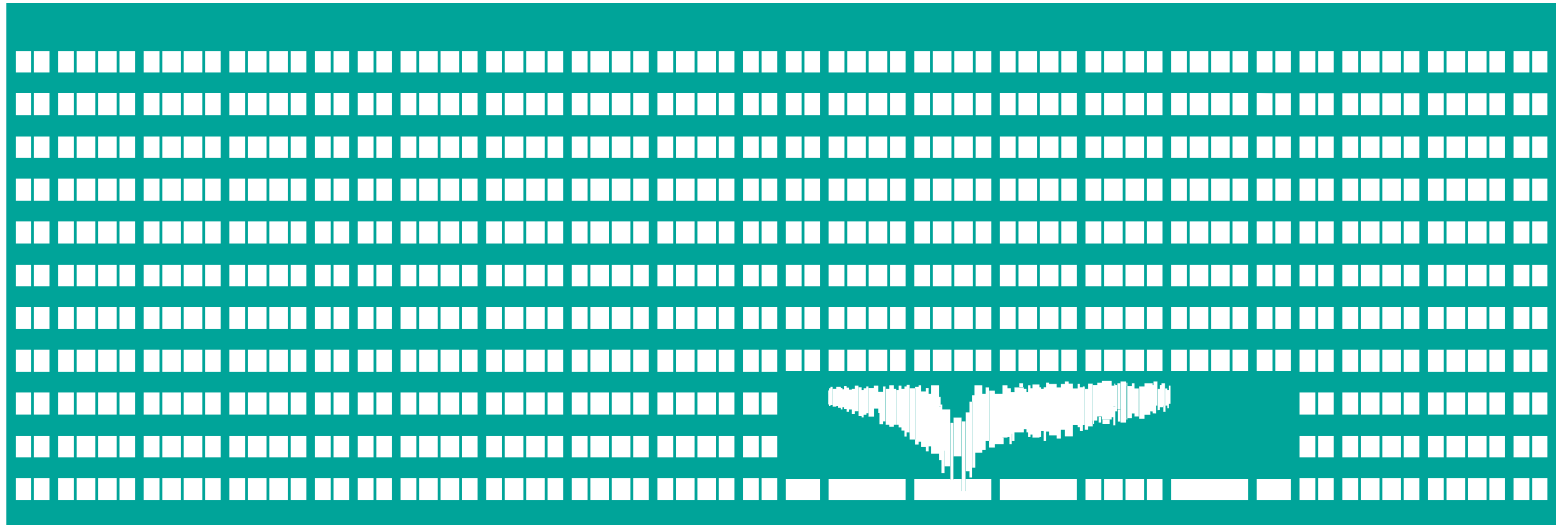
VŠB TECHNICKÁ UNIVERZITA OSTRAVA

VSB TECHNICAL UNIVERSITY OF OSTRAVA



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Study Programme Accreditation

Additive Technology

Basic Information

Type of study:	**Master´s Degree**
Program name:	**Additive Technology**
Study guarantor:	**Assoc. Prof. Marek Pagáč, PhD**
Form of study:	**Full-time/Combined**
Language of study:	**Czech/English**
Standard study time:	**2 years**
Area of education:	**27 – Mechanical engineering, technologies, and materials (100 %)**

Characteristics of the Specialization:

- The aim of the specialization is to introduce students to additive technologies (3D printing) through practical demonstrations, industrial studies, and results of science and research.
- Using professional infrastructure in order to create case studies.
- Multidisciplinary issues and the possibility of collaboration across the university.
- Development of modern trends, which consist of topological optimization, designs of bionic structures and lattice structures, and multi-material printing.
- Following current trends and company requirements.
- Synergy with Industry 4.0, Smart Materials, Multimaterials, Sustainability, and others.

Graduate Profile and Employment

- Graduates of the specialization will be prepared for a wide range of professions in the field of additive manufacturing and can deal with multidisciplinary issues.
- Graduates will be able to:
  - Work independently and creatively in accordance with industry safety standards.
  - Occupy positions requiring knowledge of additive technology.
  - Orient in the domain of legislation, operational and economic indicators.
  - Interpret and apply the results of current research into practice.
  - Keep up with the literature in the field and continue to develop professionally.
  - **Continue studying for a PhD in Mechanical Engineering Technology.**

Ensuring Expertise According to Specialization Requirements

Teacher	Experience in mechanical engineering	Study	Publication activity
prof. Jana Petrů, PhD	25 years	prof. – 2019	WoS and Scopus 40×J_{imp}
prof. Robert Čep, PhD	27 years	prof. - 2018	WoS and Scopus 45×J_{imp}
Assoc. Prof. Marek Pagáč, PhD	19 years	Habilitation – 2021 PhD – 2016	WoS and Scopus 31×J_{imp}
Jiří Hajnyš, PhD	15 years	PhD – 2019 Habilitation procedure will start in 2024	WoS and Scopus 16×J_{imp}
Lenka Čepová, PhD	21 years	PhD – 2010 Habilitation has started in (2023)	WoS and Scopus 10×J_{imp}
Jakub Měsíček, PhD	11 years	PhD – 2021	WoS and Scopus 11×J_{imp}
Jan Jansa, MSc	8 years	Doctoral studies started in 2020	WoS and Scopus 2×J_{imp}

New Subjects

- Additive Technology
- 3D modeling and designing II
- Materials for Additive Technologies
- Case Studies in Additive Manufacturing
- Machines and Equipment for Additive Manufacturing
- Additive Technologies for Practice
- Diploma Project II

Objectives of Study in the Program

- The aim of the study is to provide students with appropriate higher education and professional qualifications in the field of additive manufacturing.
  - Designer taking into account modern industrial design.
  - Technologist taking into account the advantages of additive technologies.
  - Application Engineer.
  - Computer simulations for additive technologies (printing process, residual stress, cooling process, etc.).
  - 3D printer programmer.
  - Production process planner.
  - Sales department employee in companies implementing additive technologies.
  - Other economic and technical positions in the administration.

Number of Accepted Students

- On the basis of previous experience with the study program Engineering Technology, on which the proposed study specialization is based, a **maximum of 40 students** will be accepted for study in this specialization **in the full-time and combined form of study**. This number is based on the capacity of the Department of Machining, Assembly, and Engineering Metrology, which provides teaching of the study program.

Examples of Diploma Theses Themes

- 3D printing of Nitinol: Technology, Microstructural, and Macrostructural Characteristics
- 3D printed metal foams as ballistic protection plates in heavy armor
- Finishing process technology for parts produced by metal 3D printing.
- Microstructural and macrostructural properties of MarM509-A material produced by additive L-PBF technology
- Simulation and stress prediction of metal alloys 3D printed by Powder Bed Fusion.
- Optimization of process parameters of additive L-PBF technology
- Bimetallic 3D Printing: research and development of process parameters

The Intention of the Program Further Development

- Development of cooperation with companies and realization of internships.
- The implementation of case studies as inspiration for thesis development and application potential.
- Interdisciplinary cooperation with the Academy of Sciences.
- The harmonization of study plans aims to motivate students to take one-semester trips to partner universities.
- Supporting the personal growth of the teachers that teach key study subjects.
- Project management of term papers.
- Consistency with the Long-term Intersectoral Cooperation Strategy.
- Internationalization with cooperation on conferences, teaching activities, workshops,etc.

Study Specialization Guarantor

Assoc. Prof. Marek Pagáč, PhD

Year of Birth	1986
Affiliation	VSB-TUO, Faculty of Mechanical Engineering, Department 346
Employment Relationship	VSB-TUO: 40 h/week, permanent contract
Qualifications	2011 – VSB-TUO, Faculty of Mechanical Engineering, Scope: mechanical Engineering, MSc 2015 – VSB-TUO, Faculty of Mechanical Engineering, Scope: mechanical Engineering, Ph.D. 2021 – VSB-TUO, Faculty of Mechanical Engineering, Scope: mechanical Engineering, Assoc. Prof.
Professional Focus	Additive technologies and their use in practice, Optimization of process parameters for Powder Bed Fusion technology
H-index	Scopus: 10, WoS: 9
Publication Activity	WoS: 50 publications, Scopus 55 publications
Testimonials	Web of Science: 285 (without autocitations) Scopus: 442 (without autocitations)
Management of Final Theses	Bachelor Theses: 21 Diploma theses: 27 Supervisor of 3 PhD students in AY 2022/2023
Involvement in SS teaching	Additive Technology, 3D modeling and designing II , Additive Technologies for Practice

Thank You for Your Attention