

Annex 1: English-speaking consecutive degree program Advanced Manufacturing leading to the award of the degree Master of Science

Modules	1. semester (winter term)	2. semester (summer term)	3. semester (winter term)	4. semester (summer term)	Workload/ Credit Points Total
1. Basic modules Advanced Manufacturing (Σ 25 LP)					
220000-614 Mathematics for Engineering Science	150 AS 4 LVS (V2/Ü1/P1) PVL: task complexes PL: Written exam				150 AS / 5 LP
231533-019 Digital Manufacturing	150 AS 4 LVS (V2/P2) PL: Written exam				150 AS / 5 LP
231631-001 Additive Manufacturing	150 AS 4 LVS (V3/S1) PL: Written exam				150 AS / 5 LP
261033-310 Resource Efficiency from an Economic Perspective	150 AS 3 LVS (V2/Ü1) PL: Written exam				150 AS / 5 LP
231035-004 Research Methods	150 AS 2 LVS (S2) ASL: Documentation and Presentation for simulation				150 AS / 5 LP
2. Specialisation modules (Σ 35 LP)					
Students must choose one of the following four specialisations with the corresponding compulsory and elective modules totaling 35 CP (credit points):					
2.1 Hybrid Technologies					
231036-004 Textile Process Chains		150 AS 3 LVS (V2/P1) PL: Written exam			150 AS / 5 LP
231133-013 Recycling of Plastics		150 AS 3 LVS (V2/Ü1) PL: Written exam			150 AS / 5 LP
231431-012 Applied Modelling and Simulation in Solid Mechanics I		150 AS 4 LVS (V2/Ü2) PL: Oral exam			150 AS / 5 LP
231833-007 Surface and Interface Engineering		150 AS 5 LVS (V2/S2/P1) PL: Written exam			150 AS / 5 LP

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231032-018 Calculation of Anisotropic Composite Materials			150 AS 3 LVS (V2/S1) PL: written exam		150 AS / 5 LP
231032-020 Polymer-based Hybrid Structures			150 AS 4 LVS (V2/P2) PL: Written exam		150 AS / 5 LP
One module must be selected from the following modules 231831-012 and 231032-019:					
231831-012 Complex Materials for Manufacturing			150 AS 3 LVS (V2/P1) PL: Written exam		150 AS / 5 LP
231032-019 Composite-based Hybrid Technologies			150 AS 3 LVS (V2/Ü1) PL: Written exam		150 AS / 5 LP
2.2 Smart Production					
231732-011 Joining Technologies and Strategies		150 AS 3 LVS (V2/Ü1) PL: Written exam			150 AS / 5 LP
231537-003 Forming Process Chains		150 AS 4 LVS (V2/Ü1/P1) PL: Written exam			150 AS / 5 LP
231533-020 Machining Technologies			150 AS 4 LVS (V1/Ü1/P2) PL: Written exam		150 AS / 5 LP
231534-007 Efficient Process Chains			150 AS 4 LVS (V2/Ü1/P1) PL: Written exam		150 AS / 5 LP
231539-006 Geometrical Product Specification and Verification		150 AS 4 LVS (V2/Ü1/P1) PL: Oral exam			150 AS / 5 LP
231533-021 Design and Control of Smart Production Systems		150 AS 4 LVS (V2/Ü1/P1) PL: Written exam			150 AS / 5 LP
One module must be selected from the following modules 231032-019 and 231831-012:					
231032-019 Composite-based Hybrid Technologies			150 AS 3 LVS (V2/Ü1) PL: Written exam		150 AS / 5 LP

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231831-012 Complex Materials for Manufacturing			150 AS 3 LVS (V2/P1) PL: Written exam		150 AS / 5 LP
2.3 Work Design and Sustainability Management					
231232-015 Sustainable Smart Manufacturing		150 AS 4 LVS (V2/Ü2) PL: Written exam			150 AS / 5 LP
261033-311 Life Cycle Engineering		150 AS 3 LVS (V2/FS1) 2 PL: Oral presentation, written exam			150 AS / 5 LP
261033-312 Life Cycle-oriented Management		150 AS 3 LVS (V2/Ü1) PL: Written exam			150 AS / 5 LP
261042-301 Sustainability Management		150 AS 3 LVS (V2/Ü1) PL: Written exam			150 AS / 5 LP
261033-313 IT-supported Evaluation of Material Flows and Process Chains			150 AS 2 LVS (FS2) 2 PL: Written paper, oral presentation		150 AS / 5 LP
231035-005 Instrumentation			150 AS 3 LVS (V1/P2) PL: Scientific poster with defense		150 AS / 5 LP
One module must be selected from the following modules 231231-008 and 231231-009:					
231231-008 Innovation and Value Creation			150 AS 2 LVS (S2) PL: Seminar work		150 AS / 5 LP
231231-009 Digital Ergonomics		150 AS 3 LVS (S2/Ü1) PL: Practical work with Colloquium			150 AS / 5 LP

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2.4 Printed Functionalities					
231631-002 Printing Processes		150 AS 4 LVS (V2/P2) PL: Oral exam			150 AS / 5 LP
231631-003 Printed Electronics & Special Topics of Functional Printing		150 AS 4 LVS (V2/S2) PL: Oral exam			150 AS / 5 LP
244038-055 Automotive Sensor Systems		150 AS 4 LVS (V1/S3) 2 PL: Oral exam, written report			150 AS / 5 LP
231631-005 Media Physics		150 AS 4 LVS (V2/S2) PL: Oral exam			150 AS / 5 LP
231631-004 Printing Presses			150 AS 4 LVS (V3/P1) PL: Oral exam		150 AS / 5 LP
231631-006 Research Lab			150 AS 4 LVS (P4) PL: Oral exam		150 AS / 5 LP
212001-335 Surfaces, Thin Films and Interfaces			150 AS 4 LVS (V2/Ü2) PL: Written exam		150 AS / 5 LP
3. Specialisation modules Electives/ Soft skills					
Module 136004-016 is compulsory. Students whose native language is German may alternatively select a module from modules 136001-004 to 136009-002.					
136004-016 Deutsch für Ingenieure (Niveau B1+)			150 AS 6 LVS (Ü6) 2 ASL: Written and Oral exam		150 AS / 5 LP
Modules totalling 15 credit points must be selected from modules 136004-007 to 231231-011 and modules not taken in the fields of study (with the exception of module 261033-313). Modules totalling a maximum of 10 credit points may be selected from the language modules 136004-007 to 136009-002. Language modules in the student's native language may not be selected. Students whose native language is not German and who do not have German language level B1 of the Common European Framework of Reference for Languages must take module 136004-007.					

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136004-007 Deutsch als Fremdsprache III (Niveau B1) <i>(This module can be taken in any semester)</i>		150 AS 4 LVS (Ü4) ASL: Written exam			150 AS / 5 LP
136001-004 Englisch in Studien- und Fachkommunikation III (Niveau C1) <i>(This module can be taken in any semester)</i>	150 AS 4 LVS (Ü4) 2 ASL: Written exam, Oral exam				150 AS / 5 LP
136001-006 Englisch in Studien- und Fachkommunikation V (Niveau C1) <i>(This module can be taken in any semester)</i>		150 AS 4 LVS (Ü4) PVL: Scientific work ASL: Oral exam			150 AS / 5 LP
136001-007 Englisch in Studien- und Fachkommunikation VI (Niveau C1) <i>(This module can be taken in any semester)</i>		150 AS 4 LVS (T4) ASL: Summarization of a scientific text and discussion			150 AS / 5 LP
136005-001 Französisch I (Niveau A1) <i>(This module can be taken in any semester)</i>	150 AS 4 LVS (Ü4) ASL: Written exam				150 AS / 5 LP
136005-002 Französisch II (Niveau A2) <i>(This module can be taken in any semester)</i>		150 AS 4 LVS (Ü4) ASL: Written exam			150 AS / 5 LP
136009-001 Spanisch I (Niveau A1) <i>(This module can be taken in any semester)</i>	150 AS 4 LVS (Ü4) ASL: Written exam				150 AS / 5 LP
136009-002 Spanisch II (Niveau A2) <i>(This module can be taken in any semester)</i>		150 AS 4 LVS (Ü4) ASL: Written exam			150 AS / 5 LP
231833-010 Electroplating and Thermal Coating			150 AS 4 LVS (V2/Ü1/P1) PL: Written exam		150 AS / 5 LP
231431-013 Applied Modelling and Simulation in Solid Mechanics II			150 AS 4 LVS (V2/Ü2) PL: Oral exam		150 AS / 5 LP
231231-011 Angewandte Arbeitswissenschaft Applied Human Factors		150 AS 4 LVS (V2/Ü2) PL: Oral exam			150 AS / 5 LP

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4. Module Applied Engineering Project					
230100-860 Applied Engineering Project			300 AS 3 LVS (PR2/E1) 2 PL: Project work, oral exam		300 AS / 10 LP
5. Module Master-Arbeit					
230100-960 Master Thesis				900 AS 2 LVS (S2) 2 PL: Master Thesis, Oral exam (Presentation und Colloquium)	900 AS / 30 LP
Example Calculations: Total LVS in case of selection of profile area a) 2.1 Hybrid Technologies and the modules 231032-019, 136004-007, 212001-335 (if the module is taken in the 1st semester) and 231231-011 b) 2.2 Smart Production and the modules 231032-019, 136004-007, 231231-008 (if the module is taken in the 1st semester) and 231231-011 c) 2.3 Work Design and Sustainability Management and the modules 231231-008, 136004-007, 231533-020 (if the module is taken in the 1st semester) and 231231-011 d) 2.4 Printed Functionalities and the modules 136004-007, 231231-008 (if the module is taken in the 1st semester) and 231231-011	a) 21 b) 19 c) 21 d) 19	a) 23 b) 23 c) 21 d) 24	a) 19 b) 20 c) 16 d) 21	a)-d) 2	a) 65 b) 67 c) 61 d) 68

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<p>Example Calculations: Total LVS in case of selection of profile area Total AS when choosing specialisation a) 2.1 Hybrid Technologies and the modules 231032-019, 136004-007, 212001-335 (if the module is taken in the 1st semester) and 231231-011 b) 2.2 Smart Production and the modules 231032-019, 136004-007, 231231-008 (if the module is taken in the 1st semester) and 231231-011 c) 2.3 Work Design and Sustainability Management as well as 231231-008, 136004-007, 231533-020 (if the module is taken in the 1st semester) and 231231-011 d) 2.4 Printed Functionalities and the modules 136004-007, 231231-008 (if the module is taken in the 1st semester) and 231231-011</p>	a)-d) 900	a)-d) 900	a)-d) 900	a)-d) 900	a)-d) 3600
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PL Prüfungsleistung (Examination performance)

PVL Prüfungsvorleistung (Pre-examination performance)

ASL Anrechenbare Studienleistung (Recognizable study performance)

AS Arbeitsstunden (Working hours)

LP Leistungspunkte (Credit points)

LVS Lehrveranstaltungsstunden (Teaching hours)

V Vorlesung (Lectures)

FS Fallstudie (Case study)

S Seminar (Seminar)

Ü Übung (Exercise)

T Tutorium (Tutorial)

P Praktikum (Internship)

E Exkursion (Excursion)

K Kolloquium (Colloquium)

PR Projekt (Project)