

M.Sc. Mechanics 2024					 TECHNISCHE UNIVERSITÄT DARMSTADT		
This table is for overview purposes on the available modules in TUCan. Further details can be obtained in the module handbook / TUCan. Further questions, please contact studium@mechanik.tu-darmstadt.de FM: Fluid Mechanics, SM: Solid Mechanics, NN: Numerics; Please note that some modules are listed in German, but will be provided in English on demand. Contact the lecturer for more information.							
Module No.	Module Title	CP	Term	Language	Focus		
Elective Area A - Advanced modules in Mechanics					SM	FM	NN
Mechanics Department							
13-I2-M001	Betriebsfestigkeit	6	SoSe	Ger	x		
13-I2-M002	Bruchmechanik	6	WiSe	Ger	x		
13-E1-M019	Computational Plasticity	6	SoSe	Eng	x		x
13-E1-M018	Finite Elements III: Stabilized Methods	6	SoSe	Eng	x		x
Engineering Department							
16-11-5060	Aerodynamics II	6	SoSe	Eng		x	
16-19-5040	Angewandte Strukturoptimierung	4	WiSe	Ger	x		
16-11-3214	Basic Phenomena of Multiphase Flows	4	WiSe	Eng		x	
16-11-3224	Dynamics of Interfacial Flows	4	SoSe	Eng		x	
16-64-5120	Fortgeschrittene Strömungsmechanik II	6	SoSe	Ger		x	
16-64-3264	High Accuracy Methods for Computational Fluid Dynamics	6	SoSe	Eng		x	x
16-64-5130	Introduction to Turbulence	6	SoSe	Eng		x	
16-98-4094	Maschinendynamik	6	WiSe	Ger	x		
16-64-5230	Mathematische Methoden in der Strömungsmechanik: Exakte u. Symm. Meth	6	SoSe	Ger		x	x
16-64-3254	Mathematische Methoden in der Strömungsmechanik: Störungsrechnung	6	WiSe	Ger		x	x
16-64-5220	Mehrphasenströmungen	6	WiSe	Ger		x	
16-71-3024	Modeling of turbulent Flows	8	SoSe	Eng		x	
16-15-5190	Nano- und Mikrofluidik I	4	WiSe	Ger		x	
16-15-5220	Nano- und Mikrofluidik II	4	SoSe	Ger		x	
16-25-5160	Nichtlineare Dynamik	6	SoSe	Ger	x		
16-11-5091	Numerische Methoden der Aerodynamik	6	SoSe	Ger		x	x
16-25-5150	Numerische Methoden der Technischen Dynamik	6	SoSe	Ger	x		x
16-11-5141	Numerische Modellierung von Transportprozessen in Fluiden	6	WiSe	Ger		x	x
16-19-5020	Numerische Strömungssimulation	6	WiSe	Ger		x	x
16-19-5100	Weiterführende Methoden der Strömungssimulation	4	SoSe			x	x
Material Science Department							
11-01-1023	Fortgeschrittenenpraktikum		SoSe	Ger			
11-01-1031	Materialwissenschaften IV: Mechanisches Verhalten		SoSe	Ger			
11-01-4109	Micromechanics for Materials Science		WiSe	Eng			
Elective Area B - Advanced modules in Mathematics							
04-10-0226/en	Complex Analysis	5	WiSe	Eng			
04-10-0507/en	Differential Geometry	9	WiSe	Eng			
04-10-0507/de	Differentialgeometrie	9	WiSe	Ger			
04-10-0044/de	Einführung in die Mathematische Modellierung	9	SoSe	Ger			
04-10-0040/de	Einführung in die Optimierung	9	WiSe	Ger			
04-10-0036/de	Funktionalanalysis	9	WiSe	Ger			
04-10-0395	Discontinuous Galerkin Methods	4	SoSe	Eng			
04-10-0511	Geometrische Variationsprobleme		WiSe	Ger/Eng			
04-10-0291	Mathematische Modellierung fluider Grenzflächen I	5	SoSe	Ger/Eng			
04-10-0309	Mathematische Modellierung fluider Grenzflächen II	5	WiSe	Ger/Eng			
04-11-0074	Nichtlineare Optimierung	9	WiSe	Ger/Eng			
04-10-0391	Numerik partieller Differentialgleichungen		WiSe	Eng			
04-11-0043/de	Numerische Lineare Algebra	5	SoSe	Ger/Eng			

04-10-0384	Numerische Strömungsdynamik	9	SoSe	Ger/Eng			
04-30-0045/en	Probability Theory	9	WiSe	Eng			
04-30-0045/de	Wahrscheinlichkeitstheorie	9	WiSe	Eng			
Elective Area C - Engineering Specialization							
Structural Mechanics and Dynamics							
16-12-3174	Composite Structures	4	WiSe	Eng			
16-12-3134	Energy Methods in Structural Mechanics						
16-26-5070	Grundlagen der Maschinenakustik	6	WiSe	Ger			
16-12-5040	Lightweight Engineering I	4	SoSe	Eng			
16-12-5050	Lightweight Engineering II		SoSe	Eng			
16-12-3194	Schalentheorie						
16-12-3144	Theory of Elastic Stability	4	WiSe	Eng			
Experimental Mechanics							
13-I2-M006	Experimentelle Methoden der Mechanik	4	SoSe	Ger			
16-11-5160	Messtechniken in der Strömungsmechanik	4	WiSe	Ger			
16-25-3194	Methoden der analytischen und experimentellen Strukturmechanik	6	SoSe	Ger			
Environmental and Bio-Mechanics							
03-05-0057	Biomechanik		SoSe	Ger			
13-L2-M009	Gewässerdynamik		WiSe	Ger			
13-C0-M041	Numerical Simulations in Geotechnical Engineering		SoSe	Eng			
13-L2-M006	Numerische Modellierung im Wasserbau		SoSe	Ger			
Mechanics of Earth Systems							
13-E2-M008	Mechanik von Gletschern und Eisschilden	6	WiSe	Eng			
13-K8-M001	Pollutants in the Water Cycle	6	SoSe	Eng			
13-H0-M044	Satellite Geodesy	6	SoSe	Eng			
Mechanics of modern Materials							
16-17-3294	Biomaterials and Tissue Engineering						
13-M3-M003	Glass and Polymers I: Glass Structures	6	WiSe	Eng			
13-M2-M011	Glass and Polymers II: Mechanics of Polymers	6	SoSe	Eng			
16-08-5120	High Temperature Materials Behaviour		WiSe	Eng			
13-I2-M003	Schweißen und Schweißsimulation		SoSe	Ger			
Artificial Intelligence and Digitalization in Mechanics							
13-F0-M003	Engineering Informatics I	6	WiSe	Eng			
13-F0-M004	Engineering Informatics II	6	SoSe	Eng			
04-10-0598	Mathematische Grundlagen des Maschinellen Lernens		SoSe	Ger			
16-73-4144	Physics-Aware Machine Learning	6	SoSe	Eng			
16-98-4084	Smart Products, Engineering & Services	6	SoSe	Eng			
Mechanics in Aeronautics and Astronautics							
16-23-5110	Avionics System Safety	4	SoSe	Eng			
16-12-3174	Composite Structures	4	WiSe	Eng			
16-23-5040	Flight Mechanics II: Dynamics		SoSe	Eng			
16-23-3134	Fundamentals of Space Systems	4	WiSe	Eng			
16-23-3204	Global Satellite Navigation Systems and Orbit Determination		SoSe	Eng			
16-23-3164	Space Debris - Risks, Surveillance and Mitigation		SoSe	Eng			
16-23-4234	Space Flight Mechanics	6	WiSe	Eng			
Mathematical Methods in Mechanics							
Everything that has not been done in elective area B...							

This document does not claim to be correct and serves only as an overview. In case of doubt, the entry in the course catalogue applies.