Amtliche Bekanntmachungen der TU Bergakademie Freiberg

Nr. 29, Heft 2 vom 5. September 2017

Modulhandbuch

für den

Masterstudiengang

Metallic Materials Technology

Inhaltsverzeichnis

Abkürzungen

KA: schriftliche Klausur / written exam
MP: mündliche Prüfung / oral examination
AP: alternative Prüfungsleistung / alternative examination
PVL: Prüfungsvorleistung / prerequisite
MP/KA: mündliche oder schriftliche Prüfungsleistung (abhängig von Teilnehmerzahl) / written or oral examination (dependent on number of students)

SS, SoSe: Sommersemester / sommer semester
WS, WiSe: Wintersemester / winter semester

SX: Lehrveranstaltung in Semester X des Moduls / lecture in module semester x

SWS: Semesterwochenstunden

Data:	COSTAC. MA. Nr. 3497 / Examination number: 61209	Version: 28.04.2010	Start Year: WiSe 2010
Module Name:	**Cost Accounting & Controlling**		
(English):			
Responsible:	Grosse, Diana / Prof. Dr.		
Lecturer(s):	Grosse, Diana / Prof. Dr.		
Institute(s):	Professor of Innovation Management		
Duration:	1 Semester(s)		
Competencies:	Students will be enabled to apply different methods of cost accounting and controlling to provide the management with guidance for operational and strategic decisions.		
Contents:	Within the MBA IMRE Programme this cluster comprises one main course dealing with financial management in organizations: Cost Accounting and Controlling (First part: Basics of Cost Accounting, Cost Category Accounting, Cost Center Accounting, Cost Unit Accounting, Operating Income Statement. Second part: Basics of Controlling, Operations Management, Strategic Management)		
Literature:	Horngren, C.; Bhimani; A., et al. (2007): Management and Cost Accounting, New Jersey. Horngren, C.; Foster, G.; et al. (2008): Cost Accounting, New Jersey.		
Types of Teaching:	S1 (WS): Lectures (1 SWS) S1 (WS): Exercises (1 SWS)		
Pre-requisites:	**Recommendations:** No previous knowledge of is required.		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Daten:	DEU A1/ 1.Sem. Nr. 948 / Prüfungs-Nr.: 71101	Stand: 26.08.2015	Start: WiSe 2016
Modulname:	**Deutsch A1/ 1. Semester**		
(englisch):	German A 1/ 1st Semester		
Verantwortlich(e):	Bellmann, Kerstin		
Dozent(en):	Paul, Sandra / Diplom-Lehrerin Bellmann, Kerstin		
Institut(e):	Internationales Universitätszentrum		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Im Kurs werden Grundlagen in Phonetik, Orthographie, Grammatik und Lexik vermittelt. Die Teilnehmer erwerben Grundkenntnisse und Grundfertigkeiten im Hören, Sprechen, Lesen und Schreiben auf der Basis der Allgemeinsprache sowie landeskundliche Kenntnisse.		
Inhalte:	Kommunikation im Alltag (Menschen kennen lernen, Einkaufen, Restaurantbesuch, Tagesabläufe, Uhrzeit); Grammatik: zum Beispiel Fragestellungen, Zahlen, Konjugation der Verben, Präsenz und Präteritum, Mengenangaben, Plural der Nomen, Komposita		
Typische Fachliteratur:	Begegnungen A1+, Schubert Verlag		
Lehrformen:	S1 (WS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	**Empfohlen:** Keine Vorkenntnisse der deutschen Sprache notwendig		
Turnus:	jährlich im Wintersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Erfolgreiche aktive Teilnahme an mindestens 80% des Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		

Daten:	DEU A1/ 2. Sem. BA. Nr. 949 / Prüfungs-Nr.: 71102	Stand: 26.08.2015	Start: SoSe 2017
Modulname:	**Deutsch A1/ 2. Semester**		
(englisch):	German A1/ 2nd Semester		
Verantwortlich(e):	Bellmann, Kerstin		
Dozent(en):	Paul, Sandra / Diplom-Lehrerin Bellmann, Kerstin		
Institut(e):	Internationales Universitätszentrum		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Im Kurs werden Grundlagen in Phonetik, Orthographie, Grammatik und Lexik vermittelt. Die Teilnehmer erwerben Grundkenntnisse und Grundfertigkeiten im Hören, Sprechen, Lesen und Schreiben auf der Basis der Allgemeinsprache sowie landeskundliche Kenntnisse.		
Inhalte:	Orientierung in der Stadt beziehungsweise in der Firma, öffentliche Verkehrsmittel, Wegbeschreibung, Berufe und Arbeitsalltag, Körper und Gesundheit, Wohnungssuche und -einrichtung, Lebenslauf, Kleidung; Grammatik: zum Beispiel Präpositionen, Frageartikel, Modalverben, Possessivartikel, Perfekt, Konjunktionen, Demonstrativpronomen, Graduierung und Komparativ		
Typische Fachliteratur:	Begegnungen A1+, Schubert Verlag		
Lehrformen:	S1 (SS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	**Obligatorisch:** Deutsch A1/ 1. Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Sommersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme am Unterricht (mindestens 80%) PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium. Der Zeitaufwand beträgt 120 Stunden und setzt sich zusammen aus 60 Stunden Präsenzzeit und 60 Stunden Selbststudium.		

Data:	EA. MA. Nr. 3572 / Examination number: -	Version: 23.02.2017	Start Year: SoSe 2017
Module Name:	**Experimental Assignment**		
(English):			
Responsible:	Wolf, Gotthard / Prof. Dr.-Ing.		
Lecturer(s):			
Institute(s):	Foundry Institute		
Duration:	2 Semester(s)		
Competencies:	- Analysis of problems - Planning, realisation and evaluation of experiments		
Contents:	Literature and patent research; Installation and modification of experimental station; Planning, realisation and evaluation of experiments		
Literature:			
Types of Teaching:	S1: consultations, experimental works / Practical Application (4 SWS) S2: consultations, experimental works / Practical Application (4 SWS)		
Pre-requisites:			
Frequency:	constantly		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: AP*: Exposition MP*: Colloquium * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP*: Exposition MP*: Colloquium * Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.		
Credit Points:	7		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): AP*: Exposition [w: 2] MP*: Colloquium [w: 1] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.		
Workload:	The workload is 210h. It is the result of 120h attendance and 90h self-studies.		

Data:	MechTest. MA. Nr. 3207 / Examination number: 50409	Version: 28.04.2017	Start Year: WiSe 2018
Module Name:	**Experimental Methods of Materials Characterization and Testing**		
(English):			
Responsible:	Rafaja, David / Prof. Dr. rer. nat. habil. Krüger, Lutz / Prof. Dr.-Ing.		
Lecturer(s):	Krüger, Lutz / Prof. Dr.-Ing. Klemm, Volker / Dr.-Ing.		
Institute(s):	Institute of Materials Engineering Institute of Materials Science		
Duration:	1 Semester(s)		
Competencies:	Students will get familiar with: Experimental Methods to measure the flow stress-, deformation- and failure behavior in a wide range of loading rate, temperature and stress state. Basic principles and examples of the methods for microstructure analysis (optical and scanning electron microscopy, X-ray diffraction).		
Contents:	Most important topics are: Mechanical Testing: hardness tests, methods to measure the flow stress-behavior under tensile, compressive, bending and shear loading, Charpy-impact test, drop weight tear test, Pellini-Test, Robertson test, effect of temperature and strain rate on mechanical properties, brittle and ductile failure, methods to determine fracture toughness properties under quasi-static, impact and cycling loading, fatigue testing (Wöhler test / SN-curve), multiaxial testing methods, high strain rate tests (drop weight test, split Hopkinson bar) Microstructure Analysis: physical background of optical and scanning electron microscopy and X-ray diffraction; phase identification and quantification, determination of the grain and crystallite size, global and local preferred orientation of crystallites		
Literature:	Experimental Methods: Dowling, Norman E.: Mechanical Behavior of Materials – Engineering Methods for Deformation, Fracture, and Fatigue, 2007, Pearson Prentice Hall Meyers, Marc A.: Dynamic Behavior of Materials, John Wiley & Sons, New York, 1994 Microstructure Analysis: V. Randle, O. Engler: Introduction to texture analysis, macrotexture, microtexture and orientation mapping, Gordon & Breach, Amsterdam, 2000. V. Randle: Microtexture determination and its applications, Institute of Materials, London, 1992. Klug, Harold P., Alexander, Leroy E.: X-ray diffraction procedures for polycrystalline and amorphous materials, New York, Wiley, 2nd edition 1974.		
Types of Teaching:	S1 (WS): Lectures (3 SWS)		
Pre-requisites:	**Recommendations:** Profound knowledge of English, basics in materials science, mechanics, advanced mathematics, physics for scientists, crystallography.		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 5 students or more) [MP minimum 30 min / KA 120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen		

	der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 5 und mehr Teilnehmern) [MP mindestens 30 min / KA 120 min]
Credit Points:	4
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies.

Data:	FPD. MA. Nr. 3566 / Examination number: -	Version: 23.02.2017	Start Year: SoSe 2017
Module Name:	**Foundry Process Design**		
(English):			
Responsible:	Wolf, Gotthard / Prof. Dr.-Ing.		
Lecturer(s):	Wolf, Gotthard / Prof. Dr.-Ing.		
Institute(s):	Foundry Institute		
Duration:	2 Semester(s)		
Competencies:	- Acquisition of connections of process cycles in foundries and basics of management - Students are able to apply the knowledge in the professional life		
Contents:	Introduction to production process of foundries; Basics of designs of divisions of foundries; Finishing treatment of castings and non-destructive testing; Introduction in a modern philosophy of quality		
Literature:	Minkhoff, I.: The Physical Metallurgy of Cast Iron. Haifa, John Wiley and Sons, 1983 Dötsch, E.: Inductive Melting and Holding. Vulkan Kurz, W., Fisher, D.J.:Fundamentals of Solidification. Trans Tech Publications, 1989 Campbell, J.: Castings. Butterworth-Heinemann, 2003 Flemings, M.C.: Solidification Processing. McGraw-Hill Series in Materials Science and Engineering		
Types of Teaching:	S1 (SS): Lectures (4 SWS) S2 (WS): Exercises (1 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	7		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 210h. It is the result of 75h attendance and 135h self-studies.		

Data:	FFMAT. MA. Nr. 3569 / Examination number: -	Version: 26.04.2017	Start Year: WiSe 2018
Module Name:	**Fundamentals of Ferrous Materials**		
(English):			
Responsible:	Volkova, Olena / Prof. Dr.-Ing.		
Lecturer(s):	Mola, Javad / Dr.		
Institute(s):	Institute of Iron and Steel Technology		
Duration:	1 Semester(s)		
Competencies:	The students learn to apply their fundamental knowledge of the materials science and engineering to the class of ferrous materials. Upon successful completion of the module, the students are familiar with the standard designation of steels and the heat treatment conditions associated with different microstructure formation processes. The module enables an understanding of the principles and considerations in the design of steels and the possibilities to adjust the microstructure.		
Contents:	Standard Designation of Steels, Structure and Properties of Pure Iron, Phase Diagrams, Constitution of Steels, Solubility Limit and Precipitation, Cast Irons, Ferrous Alloys under Equilibrium and Non-Equilibrium Conditions, Austenite Transformation Products, Hardenability and Transformation Diagrams		
Literature:	• B.C. De Cooman, J. Speer, Fundamentals of Steel Product Physical Metallurgy, Assn. of Iron and Steel Engineers, 1st Ed., 2011. • H.K.D.H. Bhadeshia and R.W,K. Honeycombe, Steels: Microstructure and Properties, Butterworth-Heinemann, 4th Ed., 2017.04.12 W.		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Seminar (1 SWS)		
Pre-requisites:	**Recommendations:** Knowledge of the fundamentals of materials science and engineering		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	4		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies.		

Data:	FUNMICRO. MA. Nr. 3209 / Examination number: 44501	Version: 11.07.2016	Start Year: WiSe 2011
Module Name:	**Fundamentals of Microstructures**		
(English):			
Responsible:	Sandfeld, Stefan / Prof. Dr.		
Lecturer(s):	Sandfeld, Stefan / Prof. Dr.		
Institute(s):	Institute of Mechanics and Fluid Dynamics		
Duration:	1 Semester(s)		
Competencies:	The students will get familiar with the microstructural elements that can be found into real crystalline materials.		
Contents:	Most important ingredients are: Crystallography, Dislocations, Void and Void growth mechanisms, solute atoms and strengthening mechanisms, Inclusion and Eshelby solution, characteristic length scale associated to each elements.		
Literature:	Introduction to dislocations: Hull and Bacon Crystal defects and microstructures: Modeling across length scale. Phillips Strengthening Mechanisms in Crystal Plasticity (Oxford Series on Materials Modelling): Ali S. Argon		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)		
Pre-requisites:	**Recommendations:** None		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 6 students or more) [MP minimum 30 min / KA 120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 6 und mehr Teilnehmern) [MP mindestens 30 min / KA 120 min]		
Credit Points:	5		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 150h. It is the result of 60h attendance and 90h self-studies.		

Data:	FPD. MA. Nr. 3562 / Examination number: -	Version: 22.02.2017	Start Year: SoSe 2018
Module Name:	**Fundamentals of Plastic Deformation**		
(English):			
Responsible:	Kawalla, Rudolf / Prof. Dr.-Ing. Prof. E.h.		
Lecturer(s):	Schmidt, Christian / Dr.-Ing.		
Institute(s):	Institute of Metal Forming		
Duration:	1 Semester(s)		
Competencies:	Consolidated knowledge on the basics of plastic deformation (deformation mechanisms, flow stress, influences on flow stress, classification of forming processes, flow conditions). Students will be capacitated to understand and define strain and tension conditions in forming processes, geometric and kinematic conditions as well as calculating required force and work.		
Contents:	• Introduction into the subject field • Mechanisms of plastic deformation • Definition of forming specific characteristics • Flow stress behavior during hot and cold forming (including influences on flow stress) • Softening and hardening behavior • Methods to determine of flow stress • Constitutive equations in forming • Analytic determination of force and work • Introduction of several forming processes		
Literature:	Gottstein, Günter: Physical Foundation of Materials Science. Springer, 2004 Kachanov, L.M.: Fundamentals of the Theory of Plasticity, Dover Publications Dixit, P.M.: Plasticity Fundamentals and Application, CRC Press, Taylor&Francis Group		
Types of Teaching:	S1 (SS): Lectures (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	MTMP. MA. Nr. 3565 / Examination number: -	Version: 23.02.2017	Start Year: SoSe 2018
Module Name:	**Master Thesis (Metallic Materials Technology)**		
(English):			
Responsible:	Kawalla, Rudolf / Prof. Dr.-Ing. Prof. E.h. Wolf, Gotthard / Prof. Dr.-Ing.		
Lecturer(s):			
Institute(s):	Institute of Metal Forming Foundry Institute		
Duration:	6 Month(s)		
Competencies:	The objective of the master thesis is to give the students the opportunity to apply the knowledge acquired during the studies on a research project.		
Contents:			
Literature:			
Types of Teaching:	S1: Thesis (6 Mon)		
Pre-requisites:	**Mandatory:** Bis auf ein Modul Abschluss aller anderen Module. (All modules have to be passed, expect of one module.)		
Frequency:	constantly		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: AP*: Written thesis MP*: Oral defense on the topic of the written thesis [20 to 60 min] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP*: Masterarbeit MP*: Kolloquium [20 bis 60 min] * Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.		
Credit Points:	30		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): AP*: Written thesis [w: 2] MP*: Oral defense on the topic of the written thesis [w: 1] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.		
Workload:	The workload is 900h. It is the result of 0h attendance and 900h self-studies.		

Data:	MFALCA. MA. Nr. / Examination number: 62402	Version: 15.07.2016	Start Year: SoSe 2017
Module Name:	**Material Flow Analysis and Life Cycle Assessment**		
(English):	Material Flow Analysis and Life Cycle Assessment		
Responsible:	Fröhling, Magnus / Prof.		
Lecturer(s):	Fröhling, Magnus / Prof.		
Institute(s):	Professor of Ressourcemanagement		
Duration:	1 Semester(s)		
Competencies:	The students • analyse material and energy flows from a system's and from a product/service perspective, • use the standardized terminology, • name and describe the steps for conducting MFA & LCA studies, • discuss the achievements and shortcomings of common methodological toolsets and data bases in the field, • gather necessary information, choose suitable methods, and apply these for simple MFA & LCA studies, and • discuss the quality of material flow analysis studies and life cycle assessment studies.		
Contents:	• Systems and life cycle thinking • Material flow networks • Material and energy flow balancing • Material flow modelling • Life Cycle Assessment ◦ Goal and Scope definition ◦ Life Cycle Inventories (LCI) ◦ Life Cycle Impact Assessment (LCIA) ◦ Interpretation and Disclosure • Current trends and developments • Software systems and data bases for material flow analysis and life cycle assessment • Case studies		
Literature:	1. Baccini & Brunner (2012): Metabolism of the Anthroposphere: Analysis, Evaluation, Design, MIT Press 2. Brunner/Rechberger (2004): Practical handbook of material flow analysis, Lewis 3. Guinée (2002): Handbook on Life Cycle Assessment, Kluwer 4. Hauschild/ Huijbregts (2015): Life Cycle Impact Assessment (LCA Compendium - The Complete World of Life Cycle Assessment), Springer 5. Klöpfer, W. (2014): Background and Future Prospects in Life Cycle Assessment, Springer 6. EU International Reference Life Cycle Data System (ILCD) Handbook Series 7. Journals: a. International Journal of Life Cycle Assessment b. Journal of Cleaner Production c. Journal of Industrial Ecology Further literature recommendations will be given in the lecture.		
Types of Teaching:	S1 (SS): Material Flow Analysis and Life Cycle Assessment (lecture) - Material Flow Analysis and Life Cycle Assessment (lecture) / Lectures (2		

	SWS) S1 (SS): Material Flow Analysis and Life Cycle Assessment (tutorial) - Material Flow Analysis and Life Cycle Assessment (tutorial) / Exercises (2 SWS)
Pre-requisites:	
Frequency:	yearly in the summer semester
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: AP*: Assignment KA [90 min] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP*: Aufgabe KA [90 min] * Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.
Credit Points:	6
Grade:	The Grade is generated from the examination result(s) with the following weights (w): AP*: Assignment [w: 1] KA [w: 4] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies.

Data:	MATSCI. MA. Nr. 2919 / Examination number: 51012	Version: 08.05.2017	Start Year: SoSe 2011
Module Name:	**Materials Science**		
(English):			
Responsible:	Leineweber, Andreas / Prof. Dr. rer. nat. habil.		
Lecturer(s):	Wetzel, Marius		
Institute(s):	Institute of Materials Science		
Duration:	1 Semester(s)		
Competencies:	Qualification for cooperation with engineers. The student is able to relate problems from engineering practice to fundamental concepts from Materials Science.		
Contents:	The lectures deal with the basics of materials science (structure, classes of materials), the main properties and the application of materials.		
Literature:	Askeland, D.R., The Science and Engineering of Materials, Chapman and Hall, London etc.Schatt, W.; Worch, H., Werkstoffwissenschaft, Deutscher Verlag für Grundstoffindustrie.W. D. Callister, jr. Materials Science and Engineering – An Introduction, New York etc.: John Wiley & Sons. Inc.		
Types of Teaching:	S1 (SS): Lectures (1 SWS) S1 (SS): Exercises (1 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	WERKMEC. BA. Nr. 253 / Examination number: 41906	Version: 11.07.2016	Start Year: WiSe 2016
Module Name:	**Mechanics of Materials**		
(English):			
Responsible:	Sandfeld, Stefan / Prof. Dr.		
Lecturer(s):	Sandfeld, Stefan / Prof. Dr.		
Institute(s):	Institute of Mechanics and Fluid Dynamics		
Duration:	1 Semester(s)		
Competencies:	Development of an understanding of the deformation behavior and failure mechanisms of technological materials; students will get familiar with elastic, plastic, viscous, viscoelastic and viscoplastic behaviors of materials; development of the ability to assess the behavior of materials and to design structures accordingly.		
Contents:	Most important ingredients are: • continuum mechanics foundations of stress, strain and displpacements • rheological models for elastic, plastic, viscous, viscoelastic, and viscoplastic deformation behavior • multi-axial continuum laws for anisotropic elasticity and plasticity • extended strength and failure theories / criteria for multiaxial loading		
Literature:	J. Lemaitre and J.-L. Chaboche: Mechanics of Solid Materials, Cambridge University Press,2000		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)		
Pre-requisites:	**Recommendations:** Basic knowledge in engineering mechanics		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [120 min]		
Credit Points:	5		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 150h. It is the result of 60h attendance and 90h self-studies.		

Data:	MTF. MA. Nr. 3563 / Examination number: -	Version: 31.01.2017	Start Year: SoSe 2018
Module Name:	**Melting Technology in Foundries**		
(English):			
Responsible:	Wolf, Gotthard / Prof. Dr.-Ing.		
Lecturer(s):	Dommaschk, Claudia / Dr.-Ing. Keßler, Andreas / Dr.-Ing.		
Institute(s):	Foundry Institute		
Duration:	1 Semester(s)		
Competencies:	- Acquirement of knowledge of ferrous and nonferrous alloys in views of heat treatment and metallurgy of melt - Students are able to apply the knowledge in the working life.		
Contents:	Metallurgy of cast iron, cast steel and nonferrous alloys; Design and function of melting furnaces; Melt treatment of ductile iron; melt treatment and degasing of aluminium alloys; Quality inspection of melts; Metallurgical caused casting defects		
Literature:	J. Campbell: Castings. Butterworth-Heinemann, 1991		
Types of Teaching:	S1 (SS): Lectures (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [60 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [60 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	MetMat. MA. Nr. 3213 / Examination number: 50114	Version: 27.06.2016	Start Year: WiSe 2016
Module Name:	**Metallic Materials**		
(English):			
Responsible:	Biermann, Horst / Prof. Dr.-Ing. habil		
Lecturer(s):	Weidner, Anja / Dr.-Ing.		
Institute(s):	Institute of Materials Engineering		
Duration:	1 Semester(s)		
Competencies:	Students will get familiar with metallic materials (ferrous materials, non-ferrous metals, light metals, high-temperature metals), their microstructure and mechanical properties as well as heat treatment. Focus is given to plastic deformation and failure. The module will enable the students to differentiate the different groups of metallic construction materials.		
Contents:	Most important topics are: Ferrous metals (plain carbon steels, high-alloyed steels, cast irons); Non-ferrous metals (e.g. copper, nickel) Light metals (aluminum, titanium, magnesium) High-temperature alloys (superalloys, intermetallic alloys)		
Literature:	M. F. Ashby, D.R.H. Jones, Engineering materials 2, 2nd ed., Butterworth-Heinemann, Oxford, 1998 James F. Shackelford, Introduction to Materials Science for Engineers, 7th ed. Addison Wesley., 2009		
Types of Teaching:	S1 (WS): Metallic Materials / Lectures (2 SWS)		
Pre-requisites:	**Recommendations:** Basic fundamentals of physics, chemistry and solid materials		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	MCT. MA. Nr. 3567 / Examination number: -	Version: 31.01.2017	Start Year: WiSe 2017
Module Name:	**Moulding and Core Technology**		
(English):			
Responsible:	Wolf, Gotthard / Prof. Dr.-Ing.		
Lecturer(s):	Polzin, Hartmut / Dr.-Ing. habil		
Institute(s):	Foundry Institute		
Duration:	1 Semester(s)		
Competencies:	- Knowledge of selection of forming methods depending on range of production in foundries - Competence to optimise the mould and core production in views of economy, quality and ecology		
Contents:	Basics of moulding technology, components of moulding materials, moulding machines for green sand and chemical bounded sand; Bentonite and chemical components for moulds;Chemical components for cores; Regeneration of green sand, chemical bounded sands and cores, secondary use of residuals; Casting defects caused by moulds and cores; Computer simulation of core production		
Literature:	Campbell, J.: Complete Casting. Butterworth-Heinemann, 2011 Polzin, H.: Inorganic Binders. Schiele & Schön, 2014		
Types of Teaching:	S1 (WS): Lectures (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [60 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [60 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	SMF. MA. Nr. 3570 / Examination number: -	Version: 22.02.2017	Start Year: SoSe 2018
Module Name:	**Numerical Simulation in Metal Forming**		
(English):			
Responsible:	Kawalla, Rudolf / Prof. Dr.-Ing. Prof. E.h.		
Lecturer(s):	Schmidtchen, Matthias / Dr.-Ing.		
Institute(s):	Institute of Metal Forming		
Duration:	1 Semester(s)		
Competencies:	Ability to independently simulate and design process chains considering interdependency between material conditions, production technology and property development in every production step.		
Contents:	• Basics in dimensional analyses • Modelling concepts and simulation methods • Numerical Simulation of forming processes (massive forming, sheet metal forming, semi-finished products) • Analyses of process data		
Literature:	• J.G. Lenard, M. Pietrzyk, L. Cser, Mathematical and physical simulation of the properties of hot rolled products, 1. ed, Elsevier, Amsterdam [u.a.] York, 1999. • M.A. Bhatti, Advanced topics in finite element analysis of structures: with Mathematica and MATLAB computations, John Wiley, Hoboken, N.J, 2006. • S. Kobayashi, S. Oh, T. Altan, A. Chaudhary, Metal forming and the finite-element method, J. Mater. Shap. Technol. 8 (1990) 65–65. doi: 10.1007/BF02834794.		
Types of Teaching:	S1 (SS): Lectures (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [60 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [60 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	OPMAN. MA. Nr. 2970 / Examination number: 61304	Version: 06.07.2015	Start Year: WiSe 2016
Module Name:	**Operations Management**		
(English):			
Responsible:	Höck, Michael / Prof. Dr.		
Lecturer(s):	Höck, Michael / Prof. Dr.		
Institute(s):	Professor of Industrial Management, Production Management and Logistics		
Duration:	1 Semester(s)		
Competencies:	Foremost, the module aims to convey to the student problem-solving competencies with a view to putting the student in a position to analyse the complex questions in operations management, to structure them, and to develop solution alternatives.		
Contents:	This course addresses the management of operations in manufacturing and service firms. Diverse activities, such as determining the size and type of production process, purchasing the appropriate raw materials, planning and scheduling the flow of materials and the nature and content of inventories, assuring product quality, and deciding on the production hardware and how it gets used, comprise this function of the company. Managing operations well requires both strategic and tactical skills. During the term, we will consider such topics as: process analysis, workforce issues, materials management, quality and productivity, technology, and strategic planning, together with relevant analytical techniques. This course will provide a survey of these issues.		
Literature:	Davis, M. & Heineke, J. (2005): Operations Management, 5/e, McGraw-Hill Cachon & Terwiesch (2006): Matching Supply and Demand, McGraw-Hill Stevenson (2007): Operations Management, 9/e, McGraw-Hill.		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)		
Pre-requisites:	**Recommendations:** None		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min] PVL: Case Studies PVL have to be satisfied before the examination.		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Fallstudien PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies. Self-study consists of preparation and review of the lectures, independent work on case studies, as well as preparation for the written test.		

Data:	PET. MA. Nr. 3361 / Examination number: 62401	Version: 14.07.2016	Start Year: SoSe 2016
Module Name:	**Plant Economics and Technology**		
(English):			
Responsible:	Fröhling, Magnus / Prof.		
Lecturer(s):	Fröhling, Magnus / Prof.		
Institute(s):	Professor of Ressourcemanagement		
Duration:	1 Semester(s)		
Competencies:	The students are enabled to understand the techno-economic issues associated with the life cycle of industrial plants. This comprises also linked topics of technology assessment and management. After completion of this module the students are able to characterise plant economic tasks and apply exemplary methods to fulfil these. They discuss the achievements and shortcomings of these methods for a practical application. They are able to transfer these contents to an application in practice.		
Contents:	• Introduction to Plant Economics and Technology • Life cycle of industrial plants • Analysis and modelling of industrial production systems • Project management in engineering • Network and facility location planning • Process design • Investment estimation • Cost estimation • Plant and process optimisation • Maintenance and repair • Quality Management • Re-location, dismantling and recycling • Technology assessment and management		
Literature:	Recommended reading: 1. Peters/Timmmerhaus/West (2003): Plant Design and Economic for Chemical Engineers, McGrawHill 2. Chauvel (2003): Manual of Process Economic Evaluation, Edition Technip 3. Couper (2003): Process engineering economics, Marcel Dekker Inc Further literature recommendations will be given in the lecture.		
Types of Teaching:	S1 (SS): Plant Economics and Technology / Lectures (2 SWS) S1 (SS): Plant Economics and Technology / Lectures (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: PVL: Assignments KA [90 min] PVL have to be satisfied before the examination.		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: PVL: Aufgaben KA [90 min] PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	6		

Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies.

Data:	PATA. MA. Nr. 3536 / Examination number: 51014	Version: 07.10.2015	Start Year: WiSe 2015
Module Name:	**Practical Aspects of Thermodynamic Analysis**		
(English):			
Responsible:	Leineweber, Andreas / Prof. Dr. rer. nat. habil.		
Lecturer(s):	Fabrichnaya, Olga / Dr.		
Institute(s):	Institute of Materials Science		
Duration:	1 Semester(s)		
Competencies:	The module provides the knowledge about the diverse experimental approaches for phase diagram constructions. Students will be able to apply thermodynamic calculations for interpretation of thermal analysis data and perform thermodynamic simulation of non-equilibrium processes. They will learn how to apply phase diagrams for development of ceramic and composite materials.		
Contents:	1. Basics of thermal analysis, DTA/HF-DSC, unary systems – application for temperature and enthalpy calibration. 2. Analysis of DTA data for binary alloys – relations to thermodynamics (equilibrium – Scheil approach), eutectic and peritectic reactions, ternary systems. 3. DSC application for heat capacity measurements, other methods 4. Methods for phase equilibrium studies. Influence of kinetics. 5. Applications of phase diagrams for advanced ceramics and composites: directionally solidified eutectic, TBC etc. Practicums: calculations of latent heat – equilibrium case and Scheil approach, calculations of T-zero lines and para-equilibrium, Scheil with fast diffusing elements		
Literature:	Methods for phase diagram determination, J.-C. Zhao (Ed) Elsevier Science (2007) J. LLorca, V. M. Orera “Directionally solidified eutectic ceramic oxides”, Progress in Materials Science 51 (2006) 711-809. Phase diagrams in advanced ceramics. A volume of the treatise on Materials Science and technology. Ed. A.M. Alper, Academic press, Elsevier (1995) Thermo-Calc Examples, TC AB Stockholm, Sweden (2006)		
Types of Teaching:	S1 (WS): Lectures (2 SWS)		
Pre-requisites:	**Recommendations:** Grundlagen der Werkstoffwissenschaft II, 2015-03-30 Grundlagen der Werkstoffwissenschaft I, 2015-03-30		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 10 students or more) [MP minimum 30 min / KA 90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 10 und mehr Teilnehmern) [MP mindestens 30 min / KA 90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	OMIS. MA. Nr. 3202 / Examination number: 62101	Version: 12.12.2013	Start Year: WiSe 2010
Module Name:	**Project Management**		
(English):			
Responsible:	Jacob, Dieter / Prof. Dr.		
Lecturer(s):	Erbe, Anita / Dr.		
Institute(s):	Professor of Construction Management		
Duration:	1 Semester(s)		
Competencies:	Students obtain an understanding of the concept of project management and become familiar with important tasks in relation to the management of projects.		
Contents:	This course presents the principles and techniques of managing projects, primarily engineering projects, from the owner's feasibility study through design and development to completion. It emphasises project management during the early stages of project development because it is at that point that the ability to influence the quality, cost and time of a project is at its highest. It includes project scope definition, development of work plan, planning and scheduling, procurement strategies and highlights the management of the three basic components of a project: quality/scope, budget/cost and time/schedule. A simulation exercise is included to demonstrate working in a group and highlight the importance of communication against a backdrop of determining procurement strategy.		
Literature:	Gilbreath, R.D. (1986): Winning at Project Management, New York, Wiley; Oberlender, G.D. (2000): Project Management for Engineering and Construction, 2nd edition, Boston, McGraw-Hill; Winter, C. (2003) : Contractor-Led Procurement, Wiesbaden, Deutscher Universitäts-Verlag; Walker, A. (2002): Project Management in Construction, 4th edition, Oxford, Blackwell Science; Smith N.J. (2008): Engineering Project Management, 3rd edition, Oxford, Blackwell Publishing		
Types of Teaching:	S1 (WS): Exercises (1 SWS) S1 (WS): Lectures (1 SWS)		
Pre-requisites:			
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Data:	STSSP. MA. Nr. 3218 / Examination number: 42604	Version: 13.07.2016	Start Year: SoSe 2012
Module Name:	**Selected Topics of Solid State Physics**		
(English):			
Responsible:	Rafaja, David / Prof. Dr. rer. nat. habil.		
Lecturer(s):	Rafaja, David / Prof. Dr. rer. nat. habil.		
Institute(s):	Institute of Materials Science		
Duration:	1 Semester(s)		
Competencies:	Basic principles of solid state physics, correlation between the crystal structure, real structure and the electronic, magnetic, optical and thermal properties of solids. Absolving the course, the students should be able to recognise the effect of the structure on materials properties and to apply their knowledge in materials design		
Contents:	Drude model of electrical conductivity; temperature dependence of electrical resistivity in metals and semiconductors; Schottky contact; p-n contact; superconductivity (Landau theory); magnetic susceptibility; dia-, para-, ferro-, antiferro- and ferrimagnetism; optical properties of solids; complex index of refraction; dispersion curves for systems with free and bound electrons; Kramers-Kronig relationship; colour of metals; optical theory of reflection for multilayer systems; thermal expansion; specific heat (Einstein and Debye models); heat conductivity		
Literature:	R.E. Hummel: Electronic properties of materials C. Kittel: Introduction in solid state physics		
Types of Teaching:	S1 (SS): Lectures (3 SWS)		
Pre-requisites:	**Recommendations:** Höhere Mathematik für Ingenieure 1, 2015-03-12 Fundamental of Microstructures, 2010-12-02 Höhere Mathematik für Ingenieure 2, 2015-03-12 Allgemeine, Anorganische und Organische Chemie, 2009-09-02 Einführung in die Kristallographie, 2009-10-14 Physik für Naturwissenschaftler I, 2012-05-10 Physik für Naturwissenschaftler II, 2012-05-10		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 10 students or more) [MP minimum 30 min / KA 120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 10 und mehr Teilnehmern) [MP mindestens 30 min / KA 120 min]		
Credit Points:	4		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies.		

Data:	SPST. MA. Nr. 3568 / Examination number: -	Version: 26.04.2017	Start Year: SoSe 2018
Module Name:	**Special Steel Technology**		
(English):			
Responsible:	Volkova, Olena / Prof. Dr.-Ing.		
Lecturer(s):	Volkova, Olena / Prof. Dr.-Ing.		
Institute(s):	Institute of Iron and Steel Technology		
Duration:	1 Semester(s)		
Competencies:	Upon successful completion of the module, the students will have in-depth knowledge of the equipment and technology of steel casting and special steel treatment processes. This knowledge enables the students to independently solve engineering problems of relevance.		
Contents:	Secondary Steelmaking, Alloying, Mixing, Gas Stirring, Deoxidation, Desulfurization, Degassing, Hydrogen and Nitrogen, Decarburization, Dephosphorization, Reoxidation, Vacuum Methods, Heating, Chemical Heating, Ladle Furnace, Heat Balance During Ladle Charge, Non-Metallic Inclusions, Control of the Composition of Nonmetallic Inclusions, Removal of Non-Metallic Inclusions, Slag Management, AOD Process for Stainless Steel, Electro Slag Remelting, Slag, Fundamentals of Solidification, Ingot Casting of Steel, Continuous Casting of Steel, Mold, Mold Fluxes, Heat Transfer in the Mold, Tundish, Non-Metallic Inclusions Behavior during Continuous Casting, Near Net Shape Casting		
Literature:	• F. Oeters, Metallurgy of steelmaking, Verlag Stahleisen GmbH, Berlin 1994 • G. Stolte, Secondary Metallurgy, Verlag Stahleisen GmbH, Düsseldorf 2002 • S. Seetharaman, TREATISE ON PROCESS METALLURGY, Volume 3: Industrial Processes, Part A, Elsevier, 2014		
Types of Teaching:	S1 (SS): Lectures (3 SWS) S1 (SS): Seminar (1 SWS)		
Pre-requisites:	**Recommendations:** Knowledge in chemistry, natural science or other relevant areas.		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP [45 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP [45 min]		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP [w: 1]		
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies.		

Data:	SCM. MA. Nr. 937 / Examination number: 61305	Version: 06.07.2015	Start Year: SoSe 2016
Module Name:	**Supply Chain Management**		
(English):			
Responsible:	Höck, Michael / Prof. Dr.		
Lecturer(s):	Höck, Michael / Prof. Dr.		
Institute(s):	Professor of Industrial Management, Production Management and Logistics		
Duration:	1 Semester(s)		
Competencies:	In this course students will view the supply chain from the point of view of a general manager. Logistics and supply chain management is all about managing the hand-offs in a supply chain - hand-offs of either information or product. The design of a logistics system is critically linked to the objectives of the supply chain. Our goal in this course is to understand how logistical decisions impact the performance of the firm as well as the entire supply chain. The key will be to understand the link between supply chain structures and logistical capabilities in a firm or supply chain.		
Contents:	Supply Chain Management (SCM) deals with the planning, implementing and controlling of efficient flow and storage of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption. Issues discussed in the course will include the total logistics cost approach, supply chain network design and optimizing the overall performance. Effective logistics systems aim towards coordination of transportation, inventory positioning and supply contracts to provide quick service efficiently.		
Literature:	Chopra, S.; Meindl, P. (2006): Supply Chain Management, 3rd Ed., Pearson Prentice Hall, New York. Cachon, G.; Terwiesch, C. (2006): Matching Supply with Demand, McGraw-Hill, Boston.		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (2 SWS)		
Pre-requisites:	**Recommendations:** Keine		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min] PVL: Case Studies PVL have to be satisfied before the examination.		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Fallstudien PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies. Letzteres umfasst Vor- und Nachbereitung der Vorlesungen, die selbständige Bearbeitung von Fallstudien sowie die Vorbereitung auf die Klausur.		

Data:	TIS. MA. Nr. 3564 / Examination number: -	Version: 26.04.2017	Start Year: WiSe 2018
Module Name:	**Technology of Iron and Steel**		
(English):			
Responsible:	Volkova, Olena / Prof. Dr.-Ing.		
Lecturer(s):	Gutte, Heiner / Dr.		
Institute(s):	Institute of Iron and Steel Technology		
Duration:	1 Semester(s)		
Competencies:	Upon successful completion of the module, the students will have ready-to-use knowledge of the crude iron production, alternative technologies of iron- and steelmaking, and the chemical reactions involved. This knowledge enables the students to independently evaluate and solve application-oriented engineering problems.		
Contents:	Ironmaking, Ore Preparation, Coke, Blast Furnace Process, Blast Furnace Reactions, Injectants, Behavior of Minor Elements and Impurities, Formation of Hot Metal and Slag, Energy and Materials Balance of Blast Furnace, DRI Processes, Smelting Reduction Processes, New Developments of Ironmaking Technologies, Hot Metal Pretreatment, Converter Steelmaking, Process Phenomena in Converter Steelmaking, Slag Formation, Postcombustion, Reactions in Converter Process, Energy and Materials Balance of Converter Process, Electric Furnace Steelmaking, AC and DC Furnaces, Electrodes, Foaming Slag, Energy and Materials Balance of EAF Process, Special Furnace Constructions, Hybrid Process for Steelmaking of Scrap and Hot Metal, Secondary Steelmaking, Continuous Casting of Steel		
Literature:	• F. Oeters, Metallurgy of steelmaking, Verlag Stahleisen GmbH, Berlin 1994 • A. Babich, D. Senk, H.W. Gudenau, Ironmaking, Verlag Stahleisen GmbH, Duesseldorf, 2016 • S. Seetharaman, TREATISE ON PROCESS METALLURGY, Volume 3: Industrial Processes, Part A, Elsevier, 2014		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Seminar (1 SWS)		
Pre-requisites:	**Recommendations:** Knowledge in chemistry, natural science or other relevant areas.		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP [45 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP [45 min]		
Credit Points:	4		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP [w: 1]		
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies.		

Data:	TLFP. MA. Nr. 3571 / Examination number: -	Version: 22.02.2017	Start Year: SoSe 2018
Module Name:	**Technology of Long and Flat Products**		
(English):			
Responsible:	Kawalla, Rudolf / Prof. Dr.-Ing. Prof. E.h.		
Lecturer(s):	Ullmann, Madlen / Dr.-Ing. Kawalla, Rudolf / Prof. Dr.-Ing. Prof. E.h.		
Institute(s):	Institute of Metal Forming		
Duration:	2 Semester(s)		
Competencies:	Part 1 (Long Products): Profund transfer of knowledge for the development of material-specific technologies including plant concepts for producing hot rolled long products combined with quality and economic aspects. Different methods of thermomechanical treatment, specifics of important metals and alloys as well as their further processing to semi-finished products and finished products by cold forming will be addressed. Part 2 (Flat Products): Profund transfer of knowledge for a material-specific development of technologies for the production of flat products as well as the ability to sketch the necessary plant concepts. That knowledge allows to choose the most economical way of production with the highest quality of the product.		
Contents:	Part 1 (Long Products): The components of a technological process chain will be demonstrated and their subject matter will be discussed. This includes material-specific knowledge (forming behavior, hardening and softening kinetics, phase transformation, precipitation, microstructure development at room temperature and the mechanical properties), quality characteristics of the products to be produced according to applicable standards and the plant design. The different methods of thermomechanical treatment will be covered for rolling of rods, wire and profiles. The necessary requirements on plant technology and the function of several units with its technical data will be discussed. This is followed by teaching product manufacturing methods from cast ingot to semi-finished product by hot and cold forming for selected metals and alloys. Part 2 (Flat Products): After a short repetition of technological methods, flat products will be specified according to their condition of delivery and application. Additionally, necessary manufacturing equipment will be introduced. Several plant components will be presented in terms of their ability to alter material properties. Based on content of Part 1, material-specific knowledge for processes such as heating, hot forming (hardening and softening, precipitation and transformation behavior, microstructure), cooling, cold forming and heat treatment will be expanded to flat product specific contents.		
Literature:	Teil 1: Hensel, Poluchin: Technolgie der Metallformung – Eisen- und Nichteisenmetalle; Deutscher Verlag für Grundstoffindustrie, Leipzig 1990; Kawalla: Herstellung von Stabstahl und Draht, Tagungsband MEFORM 2002; R. Kawalla: Herstellung von Rohren und Profilen, Tagungsband MEFORM 2001; R. Kawalla: Innovation Draht, Tagungsband MEFORM 2007; Teil 2: Béranger: The Book of Steel, Lavoisier Publishing Inc. 1996; Kawalla: Herstellung von Bändern und Blechen, MEFORM 2000		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S2 (WS): Lectures (2 SWS) S2 (WS): Seminar (1 SWS)		
Pre-requisites:	**Recommendations:**		

	Fundamentals of Plastic Deformation
Frequency:	yearly in the summer semester
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP [45 min]
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP [45 min]
Credit Points:	7
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP [w: 1]
Workload:	The workload is 210h. It is the result of 75h attendance and 135h self-studies.

Data:	TM. MA. Nr. 3222 / Examination number: 51015	Version: 30.06.2016	Start Year: WiSe 2016
Module Name:	**Thermodynamics of Materials**		
(English):			
Responsible:	Leineweber, Andreas / Prof. Dr. rer. nat. habil.		
Lecturer(s):	Fabrichnaya, Olga / Dr.		
Institute(s):	Institute of Materials Science		
Duration:	1 Semester(s)		
Competencies:	The students understand thermodynamic properties of materials and are able to apply calculation methods of phase diagrams.		
Contents:	Most important topics are: Thermodynamic laws and quantities Thermodynamic properties of materials Calculation of complex equilibria in multiphase and multicomponent systems Optimization of phase diagrams		
Literature:	Mats Hillert, “Phase equilibria, phase diagrams and phase transformations”, 2nd Ed., Cambridge (2009) Robert de Hoff, “Thermodynamics in Materials Science", 2nd Ed., Taylor & Francis (2006) Hans Leo Lukas, Suzana Fries, Bo Sundman, “Computational Thermodynamics, the CALPHAD method”, Cambridge (2007)		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Practical Application (1 SWS)		
Pre-requisites:	**Recommendations:** Background in physical chemistry and materials science		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 6 students or more) [MP minimum 30 min / KA 120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 6 und mehr Teilnehmern) [MP mindestens 30 min / KA 120 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 90h. It is the result of 45h attendance and 45h self-studies.		

Freiberg, den 31. August 2047

gez.
Prof. Dr. Klaus-Dieter Barbknecht
Rektor

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