



# Modulhandbuch

## STUDIENGANG

B. Eng. Maschinenbau (Fertigungstechnik)  
mit Goethe-Zertifikat B2



### **Kooperativer Studiengang**

der University of Shanghai for Science and Technology  
(USST) und der HAW Hamburg  
am Shanghai-Hamburg College (SHC)  
genehmigt vom Fakultätsrat TI am 11. Februar 2021

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## VORBEMERKUNG

Die Modulbeschreibungen sind bis auf wenige Ausnahmen in Englisch erstellt worden, da in den ingenieurwissenschaftlichen Modulen die Kommunikation zwischen den deutschen und chinesischen Lehrkräften mehrheitlich in englischer Sprache erfolgt.

Die Studierenden besitzen zu Beginn des Studiums englische Schulkenntnisse, in der Regel jedoch keine Deutschkenntnisse.

### Prüfungsformen

Prüfungs- und Studien- beziehungsweise Prüfungsvorleistungen werden durch folgende Prüfungsarten erbracht:

a) Klausur (K) (kontrollierte Form der Leistung)

Eine Klausurarbeit ist eine unter Aufsicht anzufertigende Arbeit, in der die Studierenden ohne Hilfsmittel oder unter Benutzung der zugelassenen Hilfsmittel die gestellten Aufgaben allein und selbstständig bearbeiten. Klausuren nach dem Multiple-Choice-Verfahren sind ausgeschlossen.

Die Dauer einer Klausurarbeit beträgt mindestens 90, höchstens 180 Minuten.

b) Mündliche Prüfung (mPr) (kontrollierte Form der Leistung)

Eine mündliche Prüfung ist ein Prüfungsgespräch, in dem die Studierenden darlegen müssen, dass sie den Prüfungsstoff beherrschen.

Die Dauer einer mündlichen Prüfung beträgt mindestens 15, höchstens 45 Minuten.

c) Hausarbeit (H)

Eine Hausarbeit ist eine schriftliche Bearbeitung einer gestellten Aufgabe, die den Stoff der betreffenden Lehrveranstaltung erweitert oder vertieft. Die Bearbeitungszeit beträgt höchstens sechs Wochen.

d) Referat (Ref)

Ein Referat besteht aus einem schriftlichen und einem mündlichen Teil. Im schriftlichen Teil sind die wichtigsten Ergebnisse zusammenzufassen, im mündlichen Teil sind sie auf der Grundlage des schriftlichen Teils frei vorzutragen und in einer anschließenden Diskussion zu vertreten. Der mündliche Vortrag dauert mindestens 15, höchstens 45 Minuten.

e) Laborabschluss (L)

Ein Laborabschluss ist erfolgreich erbracht, wenn die Studierenden die vom Prüfer festgelegten experimentellen Arbeiten erfolgreich durchgeführt haben und ihre Kenntnisse durch versuchsbegleitende Kolloquien und/ oder anhand von Versuchsprotokollen und/ oder durch schriftliche Aufgabenlösungen nachgewiesen haben. Die schriftlichen Ausarbeitungen (Versuchsprotokolle, Aufgabenlösungen) sind innerhalb einer vom Prüfer festgesetzten Frist abzugeben. Diese Frist endet spätestens mit Ablauf des jeweiligen Semesters, in dem die zugeordnete Lehrveranstaltungsart (Laborpraktikum) durchgeführt wird.

f) Laborprüfung (Lp) (kontrollierte Form der Leistung)

Eine Laborprüfung besteht aus einem Laborabschluss und am Ende der Lehrveranstaltung aus einer abschließenden Überprüfung der Leistung. Bei dieser Überprüfung sollen die Studierenden eine

experimentelle Aufgabe allein und selbstständig lösen. Die Dauer der Überprüfung beträgt mindestens 90, höchstens 240 Minuten.

g) Sprachprüfung (Sp) (kontrollierte Form der Leistung)

Die Sprachprüfungen werden als externe Prüfungen durch das Goethe Institut (Goethe-Zertifikat B1 und Goethe-Zertifikat B2) nach deren Durchführungsbestimmungen abgenommen.

h) Zwischenprüfung (Zp) (kontrollierte Form der Leistung)

Die Zwischenprüfung ist eine Sprachprüfung (Sp), mit der der erste Studienabschnitt (Erwerb grundlegender Sprachkenntnisse) abgeschlossen wird.

i) Test (kontrollierte Form der Leistung)

Ein Test ist eine unter Aufsicht anzufertigende Arbeit in Form einer Klausur, in der die Studierenden ohne Hilfsmittel oder unter Benutzung der zugelassenen Hilfsmittel die gestellten Aufgaben allein und selbstständig bearbeiten. Tests nach dem Multiple-Choice-Verfahren sind ausgeschlossen.

Die Dauer eines Tests beträgt mindestens 15, höchstens 90 Minuten.

### **Types of examination**

The following types of examination are used to provide preliminary examination and study work:

a) written examination (K) (controlled form of performance)

A written examination is a work to be carried out under supervision in which the students work alone and independently on the tasks set without any aids or using the aids admitted. Exams based on the multiple-choice procedure are excluded.

The duration of a written examination is a minimum of 90 minutes and a maximum of 180 minutes.

b) Oral examination (mPr) (controlled form of performance)

An oral examination is an oral examination in which students must demonstrate that they have mastered the subject matter of the examination.

The duration of an oral examination is a minimum of 15 minutes and a maximum of 45 minutes.

c) Homework (H)

A term paper is a written work on a given task, which extends or deepens the material of the course in question. The maximum processing time is six weeks.

d) Presentation (Presentation)

A presentation consists of a written and an oral part. In the written part the most important results are to be summarised, in the oral part they are to be freely presented on the basis of the written part and to be represented in a subsequent discussion. The oral presentation lasts a minimum of 15 minutes and a maximum of 45 minutes.

e) Laboratory degree (L)

A laboratory degree is successfully obtained if the students have successfully carried out the experimental work specified by the examiner and have demonstrated their knowledge by means of colloquia

accompanying the experiments and/or test protocols and/or written task solutions. The written papers (test protocols, task solutions) must be submitted within a period specified by the examiner. This period ends at the latest at the end of the respective semester in which the assigned course type (laboratory internship) is carried out.

f) Laboratory test (Lp) (controlled form of performance)

A laboratory examination consists of a laboratory degree and at the end of the course a final performance review. During this examination the students should solve an experimental task independently and on their own. The duration of the examination is a minimum of 90 and a maximum of 240 minutes.

g) Language examination (Sp) (controlled form of performance)

The language exams are taken as external exams by the Goethe Institute (Goethe-Zertifikat B1 and Goethe-Zertifikat B2) according to its implementing regulations.

h) Intermediate examination (Zp) (controlled form of performance)

The intermediate examination is a language examination (Sp), which completes the first stage of studies (acquisition of basic language skills).

i) Test (controlled form of achievement)

A test is a work to be carried out under supervision in the form of an examination in which the students work alone and independently on the tasks set without any aids or using the aids admitted. Multiple-choice tests are excluded.

The minimum duration of a test is 15 minutes and the maximum 90 minutes.

**SPRACHAUSBILDUNG**

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## DEUTSCH I

Name of module	<b>Deutsch I</b> <b>German I</b>	Number	M1
Courses	Seminaristischer Unterricht: Deutsch D1 Übung: Deutsch ÜD1	Semester/ duration	1
Workload	Seminaristischer Unterricht: 340 Std, Selbststudium 170 Std Übung: 60 Std, Selbststudium 30 Std	Credits	17 CP + 3CP
Module responsibility	Mike Bernd	Attendance hours	340h + 60h
Lecturers	Liu Beibei, Wang Ye, Zheng Yu, Zhuang Li zusammen mit muttersprachlichen Dozenten	Language	Deutsch und Chinesisch
Prerequisites	-	Offered	Every academic year
Learning outcomes	Elementare Sprachverwendung auf dem Niveau von A1/A2 (gemäß Stufen des gemeinsamen europäischen Referenzrahmens): Seminaristischer Unterricht <ul style="list-style-type: none"> <li>- Anwendung und Verstehen von einfachen Sätzen, die in der Alltagskommunikation notwendig sind</li> <li>- Beherrschung von Redemitteln zum Austausch von Informationen (eigene Person und Umgebung)</li> <li>- Erfassen der Hauptunterschiede zwischen Eigen- und Fremdkultur</li> </ul> Übung <ul style="list-style-type: none"> <li>- Festigung des erlernten Stoffes</li> </ul>		
Learning content	Seminaristischer Unterricht <ul style="list-style-type: none"> <li>- Phonetische und intonatorische Regeln der deutschen Standardlautung</li> <li>- Vermittlung eines Grundwortschatzes von 2000 Wörtern</li> <li>- Vermittlung der Grundstruktur der deutschen Sprache</li> <li>- Lesen und Erfassen von kurzen literarischen und feuilletonistischen sowie Sachtexten</li> <li>- Lesen und Beherrschung von Dialogen</li> <li>- Hörverstehen: Abspielen von langsamen Gesprächen Grundlegende Kenntnisse der deutschen Landeskunde und Kultur</li> <li>- Schreiben von kurzen Briefen und Aufsätzen</li> </ul> Übung <ul style="list-style-type: none"> <li>- Studierende können durch verschiedene Lernstationen (Grammatik, Hörverstehen und Partnerübungen) und Arbeitsblätter ihre Wissenslücken füllen und den erlernten Stoff wiederholen</li> <li>- Anschließende Besprechung, Erklärungen und Klären von Fragen</li> </ul>		
Type of Media	Seminaristischer Unterricht: Beamer, PC		

Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL) Übung ÜD1: erfolgreiche Bearbeitung aller Aufgaben (mPr) (PL)
Literature	<ul style="list-style-type: none"> <li>- Professor Dr. Hermann Funk, Dr. Oliver Bayerlein, Dr. Silke Demme, Dr. Christina Kuhn, Studio d A1 – Deutsch als Fremdsprache, Cornelsen Verlag &amp; Shanghai Foreign Language Press, 2005</li> <li>- Passwort Deutsch, Klett Verlag &amp; Foreign Language Leaching And Research Press, 2002</li> <li>- Wang, Liming u.a., Stichwort Deutsch, Verlag der Tongji-Universität, 2002</li> <li>- Michael Dreke &amp; Wolfgang Lind, Wechselspiel Neu, Langenscheidt Verlag, 2013</li> <li>- Monja Knirsch, Hören &amp; Sprechen A1, Hueber Verlag, 2010</li> </ul>

## DEUTSCH II

Name of module	<b>Deutsch II</b> <b>German II</b>	Number	M5
Courses	Seminaristischer Unterricht: Deutsch D2 Übung: Deutsch ÜD2	Semester/ duration	2
Workload	Seminaristischer Unterricht: 340 Std, Selbststudium 170 Std Übung: 60 Std, Selbststudium 30 Std	Credits	17 CP + 3CP
Module responsibility	Mike Bernd	Attendance hours	340h + 60h
Lecturers	Liu Beibei, Wang Ye, Zheng Yu, Zhuang Li zusammen mit muttersprachlichen Dozenten	Language	Deutsch und Chinesisch
Prerequisites	Empfohlen: Teilnahme an Deutsch I	Offered	Every academic year
Learning outcomes	<p>Selbständige Sprachverwendung auf dem Niveau von B1</p> <p>Seminaristischer Unterricht</p> <ul style="list-style-type: none"> <li>- Grundkenntnisse der deutschen Umgangssprache</li> <li>- Beherrschung von Redemittel, die notwendig sind, um Alltagssituationen sprachlich sicher meistern zu können</li> <li>- Sprachlich sicherer Ausdruck bezüglich Erfahrungen und Gefühlen</li> <li>- Interkulturelle Kompetenz</li> </ul> <p>Übung</p> <ul style="list-style-type: none"> <li>- Erfolgreiche Vorbereitung auf das „Zertifikat Deutsch B1“ des Goethe Instituts</li> </ul>		
Learning content	<p>Seminaristischer Unterricht</p> <ul style="list-style-type: none"> <li>- Grundwortschatz von 1500 Wörtern</li> <li>- Hörverstehen</li> <li>- Lesen und Erfassen von längeren literarischen und feuilletonistischen sowie Sachtexten</li> <li>- Mündl. Grundkompetenz: Meinungsäußerung, Beherrschung Diskussions- und Gesprächsredemittel</li> <li>- Beschreibung von Statistiken und Grafiken</li> <li>- Hörverstehen: Interviews, Gespräche und Ansagen in langsamer bis normaler Sprachgeschwindigkeit</li> <li>- Schreiben von Briefen und kurzen Texten</li> <li>- Basiswissen Landeskunde (polit. u. soz. System deutschsprachiger Länder)</li> </ul> <p>Übung</p> <ul style="list-style-type: none"> <li>- Studierende werden durch verschiedene Lernstationen (Grammatik, Hörverstehen und Partnerübungen ) und Arbeitsblätter gezielt auf das Zertifikat Deutsch vorbereitet</li> <li>- Anschließende Besprechung, Erklärungen und Klären von Fragen</li> <li>- Prüfungssimulation</li> </ul>		

Type of Media	Seminaristischer Unterricht: Beamer, PC
Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL) Übung ÜD2: erfolgreiche Bearbeitung aller Aufgaben (mPr) (PL)
Literature	<ul style="list-style-type: none"> <li>- Professor Dr. Hermann Funk, Dr. Silke Demme, Dr. Christina Kuhn u.a., Studio d A2 – Deutsch als Fremdsprache, Cornelsen Verlag &amp; Shanghai Foreign Language Press, 2006</li> <li>- Professor Dr. Hermann Funk, Dr. Oliver Bayerlein, Dr. Silke Demme, Dr. Christina Kuhn, Studio d B1 – Deutsch als Fremdsprache, Cornelsen Verlag &amp; Shanghai Foreign Language Press, 2005</li> <li>- Passwort Deutsch, Klett und Foreign Language Leaching And Research Press, 2002</li> <li>- Wang, Liming u.a., Stichwort Deutsch, Verlag der Tongji-Universität, 2002</li> <li>- Claudia Ignatiadou-Schein, David Kapetanidis &amp; Karin Vavatzanidis, So geht's noch besser zum Goethe-/ÖSD-Zertifikat B1, Klett Verlag, 2013</li> <li>- Hubert Eichheim &amp; Günther Storch, Mit Erfolg zum Zertifikat Deutsch, Klett Verlag, 2010</li> <li>- Johannes Gerbes &amp; Frauke van der Werff, Fit fürs Zertifikat B1, Hueber Verlag, 2013</li> <li>- Anneli Billina, Hören &amp; Sprechen A2/B1, Hueber Verlag, 2012 &amp; 2013</li> </ul>

## Deutsch III

Name of module	<b>Deutsch III</b> <b>German III</b>	Number	M10
Courses	Seminaristischer Unterricht: Deutsch D3	Semester/ duration	3
Workload	Seminaristischer Unterricht 160 Std, Selbststudium 80 Std	Credits	8 CP
Module responsibility	Li Shushan	Attendance hours	160 h
Lecturers	Zhang Bing, Wang Ye, Li Shushan zusammen mit muttersprachlichen Dozenten	Language	Deutsch und Chinesisch
Prerequisites	Empfohlen: Teilnahme an Deutsch I und Deutsch II	Offered	Every academic year
Learning outcomes	<p>Erreichen des Sprachniveaus B2.1 Fachsprache u. Wissenschaftliches Arbeiten auf Sprachniveau B2.1:</p> <p>Seminaristischer Unterricht Die Studierenden sind in der Lage</p> <ul style="list-style-type: none"> <li>- sich in für sie fachlich relevanten Alltagssituationen richtig und situationsangemessen auszudrücken,</li> <li>- sich an Gesprächen des täglichen Berufslebens und an einfachen Diskussionen zu beteiligen</li> <li>- gehörten und gelesenen Fachtexten relevante Informationen zu entnehmen</li> <li>- hochschulrelevante Textsorten kennen</li> </ul>		
Learning content	<p>Seminaristischer Unterricht Allgemeinsprache: Hauptkurs em neu (Niveaustufe B2)</p> <p>Fachsprache:</p> <ul style="list-style-type: none"> <li>- Lesen und Verstehen von Fachtexten aus den jeweiligen Fachvorlesungen</li> <li>- Vermittlung fachspezifischer Lexik, Morphologie und Syntax</li> <li>- Fachsprachlich relevante Grammatik</li> <li>- Lernstrategien für Hörverstehen</li> </ul> <p>Kommunikation im Studium I:</p> <ul style="list-style-type: none"> <li>- hochschulrelevante schriftliche Textsorten (u.a. Email, Protokoll, Bericht, Zusammenfassung)</li> <li>- mdl. Hochschulkommunikation (z.B. Sprechstundengespräch)</li> <li>- Grammatik, die häufig in Berichten benutzt wird z.B. indirekte Rede und Passiv</li> <li>- Redemittel zur Beschreibung von Tätigkeiten</li> </ul>		
Type of Media	Seminaristischer Unterricht: Beamer, PC		
Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL)		

Literature	<ul style="list-style-type: none"> <li>- Michaela Perlmann-Balme &amp; Susanne Schwalb, Hauptkurs em neu, Hueber Verlag, 2000</li> <li>- Grit Mehlhorn, Studienbegleitung für ausländische Studierende an deutschen Hochschulen, Iudicium Verlag, 2009</li> <li>- Maria Steinmetz, Heiner Dintera, Deutsch für Ingenieure, Springer Vieweg Verlag, 2014</li> <li>- Jörg Bartenaschlager, Josef Dillinger, Walter Escherich u.a., Fachkunde Metall, Europa-Lehrmittel Verlag, 2013</li> <li>- Shushan Li, Fang Xu, C. Niederhaus, Fachdeutsch im Fach Elektrotechnik, 2008</li> <li>- Erich Zettl, Jörg Janssen &amp; Heidrun Müller, Aus moderner Technik und Naturwissenschaft, Hueber Verlag, 1999</li> </ul>
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## DEUTSCH IV

Name of module	<b>Deutsch IV</b> <b>German IV</b>	Number	M18
Courses	Seminaristischer Unterricht: Deutsch D4	Semester/ duration	4
Workload	Seminaristischer Unterricht 160 Std, Selbststudium 80 Std	Credits	8 CP
Module responsibility	Li Shushan	Attendance hours	160 h
Lecturers	Zhang Bing, Wang Ye, Li Shushan zusammen mit muttersprachlichen Dozenten	Language	Deutsch und Chinesisch
Prerequisites	Empfohlen: Teilnahme Deutsch I-III, erfolgreiche Prüfung ZD	Offered	Every academic year
Learning outcomes	Seminaristischer Unterricht Erreichen des Sprachniveaus B2.2 Fachsprache u. Wissenschaftliches Arbeiten auf Sprachniveau B2.2: <ul style="list-style-type: none"> <li>- Vertiefung und erweiterte Anwendung der fachsprachlichen Kenntnisse</li> <li>- Selektives &amp; detailliertes Verstehen fachbezogener Zeitungsartikel</li> <li>- Einführung in die Hochschulkommunikation 2</li> </ul>		
Learning content	Seminaristischer Unterricht Allgemeinsprache: Hauptkurs em neu (Niveaustufe B2)  Fachsprache: <ul style="list-style-type: none"> <li>- Lesen und Verstehen von Fachtexten aus den jeweiligen Fachvorlesungen</li> <li>- Vermittlung fachspezifischer Lexik, Morphologie und Syntax</li> <li>- Fachsprachlich relevante Grammatik</li> <li>- Lernstrategien für Hörverstehen</li> </ul> Kommunikation im Studium I: <ul style="list-style-type: none"> <li>- hochschulrelevante schriftliche Textsorten (u.a. Email, Protokoll, Bericht, Zusammenfassung)</li> <li>- mdl. Hochschulkommunikation (z.B. Sprechstundengespräch)</li> <li>- Grammatik, die häufig in Berichten benutzt wird z.B. indirekte Rede und Passiv</li> <li>- Redemittel zur Beschreibung von Tätigkeiten</li> </ul>		
Type of Media	Seminaristischer Unterricht: Beamer, PC		
Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL)		

Literature	<ul style="list-style-type: none"> <li>- Michaela Perlmann-Balme &amp; Susanne Schwalb, Abschlusskurs em neu, Hueber Verlag, 2000</li> <li>- Grit Mehlhorn, Studienbegleitung für ausländische Studierende an deutschen Hochschulen, Iudicium Verlag, 2009</li> <li>- Maria Steinmetz &amp; Heiner Dintera, Deutsch für Ingenieure, Springer Vieweg Verlag, 2014</li> <li>- Jörg Bartenaschlager, Josef Dillinger, Walter Escherich u.a., Fachkunde Metall, Europa-Lehrmittel Verlag, 2013</li> <li>- Shushan Li, Fang Xu, C. Niederhaus, Fachdeutsch im Fach Elektrotechnik, 2008</li> <li>- Erich Zettl, Jörg Janssen &amp; Heidrun Müller, Aus moderner Technik und Naturwissenschaft, Hueber Verlag, 1999</li> </ul>
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## DEUTSCH V

Name of module	<b>Deutsch V</b> <b>German V</b>	Number	M26
Courses	Seminaristischer Unterricht: Deutsch D5	Semester/ duration	5
Workload	Seminaristischer Unterricht 80 Std, Selbststudium 40 Std	Credits	4 CP
Module responsibility	Li Shushan	Attendance hours	80 h
Lecturers	Zhang Bing, Wang Ye, Li Shushan, Dozenten des Deutschkollegs der Tongji Uni	Language	Deutsch und Chinesisch
Prerequisites	Empfohlen: Teilnahme Deutsch I-IV, erfolgreiche Prüfung ZD	Offered	Every academic year
Learning outcomes	Seminaristischer Unterricht Allgemeinsprache: Freie sowie kompetente Sprachverwendung auf Sprachniveau B2 und Vorbereitung auf das Goethe-Zertifikat B2 <ul style="list-style-type: none"> <li>- Verstehen von längeren, anspruchsvolleren Texten</li> <li>- Spontane Sprachproduktion</li> <li>- Flexibler Gebrauch der Sprache im gesellschaftlichen und beruflichen Leben</li> </ul> Anfertigung von Bewerbungsschreiben für Praktika Erfolgreiches Bestehen von Praktikainterviews Fachsprache auf Sprachniveau B2: <ul style="list-style-type: none"> <li>- Vertiefung und erweiterte Anwendung der fachsprachlichen Kenntnisse</li> </ul>		
Learning content	Seminaristischer Unterricht Vorbereitungen auf das Goethe-Zertifikat B2 <ul style="list-style-type: none"> <li>- Training der vier Sprachfertigkeiten: Leseverstehen, Hörverstehen, Schriftlicher Ausdruck und Mündlicher Ausdruck entsprechend dem Prüfungsinhalt beim Goethe-Zertifikat B2</li> <li>- Wortschatzerweiterung aus verschiedenen Themenbereichen der Wissenschaft, Kultur und Alltag</li> <li>- Training von mündlichem Ausdruck in Form von Kurzvorträgen, Diskussionen und Übungen sowie das Verfassen von Texten gemäß dem Prüfungsformat des Goethe-Zertifikats B2</li> <li>- Vermittlung von Lerntechniken im Hinblick auf das Goethe-Zertifikat B2</li> <li>- Prüfungssimulation</li> </ul> Fachsprache: <ul style="list-style-type: none"> <li>- Lesen und Verstehen von Fachtexten entsprechend den jeweiligen Fachvorlesungen</li> <li>- Vermittlung und Anwendung von Fachwortschatz</li> <li>- Arbeit an fachspezifischer Grammatik</li> </ul>		

	Bewerbungstraining: <ul style="list-style-type: none"> <li>- Wie schreibe ich eine Bewerbung? Formale und inhaltliche Kriterien eines Bewerbungsbriefes und eines Lebenslaufes</li> <li>- Gemeinsame Korrektur</li> <li>- Interviewsimulation mit Firmenvertretern und anschließende Bewertung</li> </ul>
Type of Media	Seminaristischer Unterricht: Beamer, PC
Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL)
Literature	<ul style="list-style-type: none"> <li>- Michaela Perlmann-Balme &amp; Susanne Schwalb, Abschlusskurs em neu, Max Hueber Verlag, 2000</li> <li>- Grit Mehlhorn, Studienbegleitung für ausländische Studierende an deutschen Hochschulen, Iudicium Verlag, 2009</li> <li>- Maria Steinmetz &amp; Heiner Dintera, Deutsch für Ingenieure, Springer Vieweg Verlag, 2014</li> <li>- Jörg Bartenaschlager, Josef Dillinger, Walter Escherich u.a., Fachkunde Metall, Europa-Lehrmittel Verlag, 2013</li> <li>- Shushan Li, Fang Xu, C. Niederhaus, Fachdeutsch im Fach Elektrotechnik, 2008</li> <li>- Erich Zettl, Jörg Janssen &amp; Heidrun Müller, Aus moderner Technik und Naturwissenschaft, Hueber Verlag, 1999</li> <li>- Evelyn Frey, Fit fürs Goethe-Zertifikat B2, Hueber 2007</li> <li>- Uta Loumiotis &amp; Adalbert Mazur, So geht's zu B2: Vorbereitungskurs auf das Goethe-/ÖSD-Zertifikat B2, Klett Verlag, 2016</li> <li>- Gabi Baier &amp; Roland Dittrich, Prüfungstraining DaF: B2-Goethe-Zertifikat, Cornelsen Verlag, 2007</li> <li>- Andrea Frater &amp; Angélique Thabar, Mit Erfolg zum Goethe-Zertifikat B2, Klett Verlag, 2008</li> </ul>

## DEUTSCH VI

Name of module	<b>Deutsch VI</b> <b>German VI</b>	Number	M35
Courses	Seminaristischer Unterricht: Deutsch D6	Semester/ duration	6
Workload	Seminaristischer Unterricht 80 Std, Selbststudium 40 Std	Credits	4 CP
Module responsibility	Li Shushan	Attendance hours	80 h
Lecturers	Zhang Bing, Wang Ye, Li Shushan zusammen mit muttersprachlichen Lehrkräften	Language	Deutsch und Chinesisch
Prerequisites	Empfohlen: Teilnahme Deutsch I-V	Offered	Every academic year
Learning outcomes	Seminaristischer Unterricht Grundlegendes Arbeiten auf Sprachniveau C1 und Vorbereitung auf das Goethe- Zertifikat B2 <ul style="list-style-type: none"> <li>- Verständnis von längeren, anspruchsvolleren Texten mit komplexen sprachlichen Strukturen</li> <li>- Spontane und fließende Sprachproduktion</li> <li>- Flexibler und variabler Gebrauch der Sprache im gesellschaftlichen und beruflichen Kontext</li> </ul> Fachsprache: Vertiefung und erweiterte Anwendung der fachsprachlichen Kenntnisse <ul style="list-style-type: none"> <li>- Befähigung zum fachsprachlichen Handeln</li> <li>- Diskursstrategien</li> <li>- Fachsprachliche Kompetenz</li> </ul> Wissenschaftliches Arbeiten: <ul style="list-style-type: none"> <li>- Wissenschaftliches Arbeiten</li> <li>- Produktion von Berichten</li> </ul>		
Learning content	Seminaristischer Unterricht Vorbereitungen auf das Goethe-Zertifikat B2 <ul style="list-style-type: none"> <li>- Training der vier Sprachfertigkeiten: Leseverstehen, Hörverstehen, Schriftlicher Ausdruck und Mündlicher Ausdruck entsprechend dem Prüfungsinhalt beim Goethe-Zertifikat B2</li> <li>- Wortschatzerweiterung aus verschiedenen Themenbereichen der Wissenschaft, Kultur und Alltag</li> <li>- Training von mündlichem Ausdruck in Form von Kurzvorträgen, Diskussionen und Übungen sowie das Verfassen von Texten gemäß dem Prüfungsformat des Goethe-Zertifikats B2</li> <li>- Vermittlung von Lerntechniken im Hinblick auf das Goethe-Zertifikat B2</li> <li>- Prüfungssimulation</li> </ul>		

	<p>Fachsprache:</p> <ul style="list-style-type: none"> <li>- Lesen und Verstehen von Fachtexten entsprechend den jeweiligen Fachvorlesungen</li> <li>- Vermittlung und Anwendung von Fachwortschatz</li> <li>- Arbeit an fachspezifischer Grammatik</li> <li>- Mündliche und schriftliche Reproduktion von eigenen Fachtexten</li> </ul> <p>Wissenschaftliches Schreiben:</p> <ul style="list-style-type: none"> <li>- Textsorten: Seminararbeit und Abschlussarbeit</li> <li>- Kriterien und Bestandteile zu einer wissenschaftlichen Arbeit</li> <li>- Zusammenfassung einer Abschlussarbeit verfassen</li> </ul>
Type of Media	Seminaristischer Unterricht: Beamer, PC
Type of Assessment	Seminaristischer Unterricht: Benotete Klausur (PL)
Literature	<ul style="list-style-type: none"> <li>- Michaela Perlmann-Balme &amp; Susanne Schwalb, Abschlusskurs em neu, Max Hueber Verlag, 2000</li> <li>- Grit Mehlhorn, Studienbegleitung für ausländische Studierende an deutschen Hochschulen, Iudicium Verlag, 2009</li> <li>- Maria Steinmetz &amp; Heiner Dintera, Deutsch für Ingenieure, Springer Vieweg Verlag, 2014</li> <li>- Jörg Bartenaschlager, Josef Dillinger, Walter Escherich u.a., Fachkunde Metall, Europa-Lehrmittel Verlag, 2013</li> <li>- Shushan Li, Fang Xu, C. Niederhaus, Fachdeutsch im Fach Elektrotechnik, 2008</li> <li>- Erich Zettl, Jörg Janssen &amp; Heidrun Müller, Aus moderner Technik und Naturwissenschaft, Hueber Verlag, 1999</li> <li>- Evelyn Frey, Fit fürs Goethe-Zertifikat B2, Hueber 2007</li> <li>- Uta Loumiotis &amp; Adalbert Mazur, So geht's zu B2: Vorbereitungskurs auf das Goethe-/ÖSD-Zertifikat B2, Klett Verlag, 2016</li> <li>- Gabi Baier &amp; Roland Dittrich, Prüfungstraining DaF: B2-Goethe-Zertifikat, Cornelsen Verlag, 2007</li> <li>- Andrea Frater &amp; Angélique Thabar, Mit Erfolg zum Goethe-Zertifikat B2, Klett Verlag, 2008</li> </ul>

## TECHNISCHES ENGLISCH I

Name of module	<b>Technisches Englisch I</b> <b>Technical English I</b>	Number	M11
Courses	Taught seminar: Technical English I TE1	Semester/ duration	3
Workload	40 h attendance, 20 h self-study	Credits	2
Module responsibility	Cui Jiankun	Attendance hours	40 h
Lecturers	Cui Jiankun, Luo Yanjie	Language	Chinese, English
Prerequisites	Recommended: Knowledge of Physics, Engineering Drawing and basic 3D-CAD, Engineering Mechanics I	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- master the English vocabulary concerning engineering materials such as iron and steels, alloy ; the heat treatment of steel; heat metal forming</li> <li>- master the English vocabulary concerning technical drawing</li> <li>- master the English vocabulary concerning stress and strain; strength and ductility of materials; type of beams</li> <li>- master the basic English grammar</li> <li>- make a short speech and simple writing ability in technical English</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Stress and strain; strength and ductility of materials; type of the beams</li> <li>- Steel; sand casting; heat treatment of metal; forging; welding</li> <li>- Layout and main parts of automobiles; engine construction</li> <li>- Translation exercises</li> </ul>		
Type of Media	Taught seminar: Beamer, PC		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Shi Ping (2016): Subject-Based English for Mechanical Engineering, Electronic Industry Press</li> <li>- Zhang Yue (2011): Technical English for Mechanical Engineering, China Machine Press</li> </ul>		

## TECHNISCHES ENGLISCH II

Name of module	<b>Technisches Englisch II</b> <b>Technical English II</b>	Number	M19
Courses	Taught seminar: Technical English II TE2	Semester/ duration	4
Workload	40 h attendance, 20 h self-study	Credits	2
Module responsibility	Cui Jiankun	Attendance hours	40 h
Lecturers	Cui Jiankun, Luo Yanjie	Language	Chinese, English
Prerequisites	Recommended: Knowledge of Technical English I, Engineering Mechanics I,II, Engineering Material	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- master the reading and understanding of English</li> <li>- master the English vocabulary concerning mechanism design and analysis, machinery elements; fit and tolerance; roughness and measuring, hydraulic and pneumatic system etc</li> <li>- master the basic English grammar of technical english</li> <li>- explain some main ideas in English both in oral and writing</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Shaft design; couplings, clutches; bearings, casting; gears; belt drives; chain drives; cams</li> <li>- The automobile parts; the construction of the engine</li> <li>- Fit and tolerance; roughness and measuring</li> <li>- Hydraulic and pneumatic system; search the information from the Internet</li> <li>- Translation Exercises</li> </ul>		
Type of Media	Taught seminar: Beamer, PC		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Shi Ping (2016): Subject-Based English for Mechanical Engineering, Electronic Industry Press</li> <li>- Zhang Yue (2011): Technical English for Mechanical Engineering, China Machine Press</li> </ul>		

### TECHNISCHES ENGLISCH III

Name of module	<b>Technisches Englisch III</b> <b>Technical English III</b>	Number	M27
Courses	Taught seminar: Technical English III TE3	Semester/ duration	5
Workload	40 h attendance, 20 h self-study	Credits	2
Module responsibility	Ma Yanyan	Attendance hours	40 h
Lecturers	Ma Yanyan, Shen Jingfeng	Language	Chinese, English
Prerequisites	Recommended: Knowledge of Technical English I,II, Machine Design I,II, Measurement Technology and Quality Assurance, Manufacturing Technology I	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- master reading and understanding of English I, II</li> <li>- master the English vocabulary concerning mechanisms, machine tool frames; shafts and associated parts, manufacturing accuracy; tolerances; surface roughness; mechanical design; lathes; milling machines; grinding machines; drilling operations etc.</li> <li>- explain technical problems in English with the aid of PPT</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Concepts of Mechanisms; Machine Tool Frames; Gears; Belts; Chains</li> <li>- Shafts and Associated Parts; Couplings; Splines; Clutches; Brakes</li> <li>- Fundamentals of Manufacturing Accuracy; Tolerances and Surface Roughness</li> <li>- Mechanical Design; Engineering Design; Some Rules for Mechanical Design; Computer Applications in Design and Graphics</li> <li>- Lathes; Milling machines; Grinding machines; Drilling operations</li> </ul>		
Type of Media	Taught seminar: Beamer, PC		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Shi Ping (2016): Subject-Based English for Mechanical Engineering, Electronic Industry Press</li> <li>- Zhang Yue (2011): Technical English for Mechanical Engineering, China Machine Press</li> </ul>		

## TECHNISCHES ENGLISCH IV

Name of module	<b>Technisches Englisch IV</b> <b>Technical English IV</b>	Number	M36
Courses	Taught seminar: Technical English IV TE4	Semester/ duration	7
Workload	40 h attendance, 20 h self-study	Credits	2
Module responsibility	Ma Yanyan	Attendance hours	40 h
Lecturers	Ma Yanyan, Shen Jingfeng	Language	Chinese, English
Prerequisites	Recommended: Knowledge of Technical English I,II,III, Machine Design I,II, Manufacturing Technology I, II, Material Handling Technology Including Industrial Robots, CAD/CAM- Technologies	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- master the reading and understanding of Technical English I, II, III</li> <li>- master the English vocabulary concerning manufacturing methods; manufacturing technology; CAD/CAM/CAP technologies; numerical control; the motion of robots; industrial robots; etc</li> <li>- explain technical problems in English with the aid of PPT; write a brief abstract</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Gear Manufacturing Methods; Nontraditional manufacturing processes; Developments in manufacturing technology</li> <li>- Computers in Manufacturing</li> <li>- Computer Applications in Design and Manufacturing</li> <li>- Computer-Aided Analysis of Mechanical Systems</li> <li>- Computer Aided Process Planning</li> <li>- Numerical control</li> <li>- Industrial Robots; Robotics</li> <li>- Basic Components of an Industrial Robot</li> </ul>		
Type of Media	Taught seminar: Beamer, PC		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Shi Ping (2016): Subject-Based English for Mechanical Engineering, Electronic Industry Press</li> <li>- Zhang Yue (2011): Technical English for Mechanical Engineering, China Machine Press</li> </ul>		

## TECHNISCHE PFLICHTMODULE

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## MATHEMATIK I

Name of module	<b>Mathematik I</b> <b>Mathematics I</b>	Number	M2
Courses	Taught seminar: Mathematics I MA1	Semester/ duration	1
Workload	96 h attendance, 84 h self-study	Credits	6
Module responsibility	Tiansi Zhang	Attendance hours	96 h
Lecturers	Tiansi Zhang, Zhixian Yu	Language	Chinese
Prerequisites	Recommended: Basic knowledge of elementary mathematics and elementary physics	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- have fundamental knowledge of calculus</li> <li>- recognise mathematics-related problems, analyze and solve them</li> <li>- apply mathematical methods in many fields</li> <li>- have abstraction ability and to think in a conceptual, analytical and logical manner</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Limits of Sequences and Functions</li> <li>- Derivatives of Functions</li> <li>- Differentiation Rules</li> <li>- The Chain Rule</li> <li>- Mean Value Theorem</li> <li>- L'Hospital's Rule</li> <li>- Monotonicity and Concave-convex of Functions</li> <li>- Maximum and Minimum Values</li> <li>- Indefinite Integrals</li> <li>- Substitution Rule and Integration by Parts</li> <li>- Property of Definite Integrals</li> <li>- Techniques of Definite Integrals</li> <li>- Improper Integrals</li> <li>- Application of Integration</li> <li>- One Order Ordinary Differential Equations</li> <li>- High Order Ordinary Differential Equations</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, slides		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Tongji University (2014): Higher mathematics 1, Higher education press, seventh edition</li> <li>- James, S. (2008): Calculus, Sixth Edition, McMASTER University</li> </ul>		

## MATHEMATIK II

Name of module	<b>Mathematik II</b> <b>Mathematics II</b>	Number	M8
Courses	Taught seminar: Mathematics II MA2	Semester/ duration	2
Workload	96 h attendance, 84 h self-study	Credits	6
Module responsibility	Tiansi Zhang	Attendance hours	96 h
Lecturers	Tiansi Zhang, Zhixian Yu	Language	Chinese
Prerequisites	Recommended: Basic knowledge of elementary mathematics and elementary physics, Mathematik I	offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand theory and methods of derivative and integral for functions of several variables,</li> <li>- are able to compute partial derivatives and multiple integrals,</li> <li>- are able to apply theories and skills to practice, e.g. problems in geometry and physics,</li> <li>- are able to think in a conceptual, analytical and logical manner</li> </ul>		
Learning content	Taught seminar: <ul style="list-style-type: none"> <li>- Vector Algebra</li> <li>- Equations of Lines and planes</li> <li>- Partial Derivatives and Total Differential of Multivariable Functions</li> <li>- Differentiation Rules of Multivariable Composite Functions</li> <li>- Geometric Application and Extreme value of Multivariable Functions</li> <li>- Double Integrals</li> <li>- Triple Integrals</li> <li>- Applications of Integrals</li> <li>- Line Integrals and Green's Theorem</li> <li>- Surface Integrals and Gauss Formula</li> <li>- Constant Series and Convergence</li> <li>- Power Series</li> <li>- Convergence Domain of Power Series</li> <li>- Representations of Functions as Power Series</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, slides		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Tongji University (2014): Higher mathematics 2, Higher education press, seventh edition</li> <li>- James, S. (2008): Calculus, Sixth Edition, McMASTER University</li> </ul>		

## LINEARE ALGEBRA

Name of module	<b>Lineare Algebra</b> <b>Linear Algebra</b>	Number	M16
Courses	Taught seminar: Linear Algebra: LA	Semester/ duration	3
Workload	32 h attendance, 28 h self-study	Credits	2
Module responsibility	Liu Xiping	Attendance hours	32 h
Lecturers	Liu Xiping , He Changxiang, Hu Jianhua	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- master the basic concepts and principles of linear algebra</li> <li>- calculate determinants, operations between matrices, eigenvalues and eigenvectors</li> <li>- solve systems of linear equations and make out the structure of solutions of systems of equations</li> <li>- find a basis of n-dimensional linear space, especially find the normal orthogonal basis</li> <li>- master the method to diagonalization of matrices</li> <li>- transform the quadratic forms into their standard forms</li> <li>- use some models of linear algebra to solve some practical problems</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Determinant</li> <li>- Matrices and their operations</li> <li>- n-dimensional vector</li> <li>- System of linear equations</li> <li>- Eigenvalues and eigenvectors of matrices</li> <li>- Quadratic form</li> </ul>		
Type of Media	Taught seminar: Blackboard, multimedia in the classroom		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Liu Xiping ,Cao Weili and Yu Zhengsheng (2013): Linear algebras, Science Press</li> <li>- Office of Engineering Mathematics of USST (2014): Learning guidance of Linear Algebras, Science Press</li> <li>- Department of mathematics of Tongji University (2007): Linear Algebras, High education press</li> </ul>		

Name of module	<b>Physik Physics</b>	Number	M12
Courses	Taught seminar: Physics PY Laboratory: Physics PYP	Semester/ duration	3
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Zhengtian Gu	Attendance hours	64 h + 16 h
Lecturers	Zhengtian Gu, Jianqi Shen, Jun Chen, Haitao Yu, Qun Zhou, Luofang Guo	Language	Chinese
Prerequisites	Recommended: Basic Knowledge of Mathematics I, II, Linear Algebra	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- master the basic concepts and principles in mechanics, electromagnetism, wave optics and fundamentals of quantum theory</li> <li>- acquire the ability of abstract thinking and improve self-study ability</li> <li>- acquire the ability to analyze and solve problems capable of computing and judging</li> <li>- acquire the ability to use mathematical tools to solve general problems in physics, calculation and estimation are included</li> <li>- understand the use of physical instruments in mechanics, electromagnetism, wave optics</li> <li>- measure and understand physical quantities in early quantum theory</li> <li>- establish dialectical materialist world view and scientific attitude to seek truth</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Kinematics</li> <li>- Newton's Laws of Motion</li> <li>- Momentum and Angular Momentum</li> <li>- Work and Energy</li> <li>- Rotation of a rigid body</li> <li>- Electrostatic Field in Vacuum</li> <li>- Conductors and Dielectrics in Electrostatic Field</li> <li>- Magnetic Field of Steady Current in Vacuum</li> <li>- Magnetic Field in the Medium</li> <li>- Electromagnetic Induction and Electromagnetic Field</li> <li>- Interference of Light</li> <li>- Diffraction of Light</li> <li>- Polarization of Light</li> <li>- Fundamentals of Quantum Mechanics</li> </ul>		

	<p>Laboratory</p> <ul style="list-style-type: none"> <li>- Slit width and light intensity distribution measurement of single slit diffraction</li> <li>- Frank Hertz experiment</li> <li>- The adjustment and usage of the spectrometer</li> <li>- Optical lever measuring metal linear expansion coefficient</li> <li>- Millikan oil drop experiment</li> <li>- Measuring moment of inertia by torsional pendulum method</li> <li>- The principle and usage of the oscilloscope</li> <li>- Hall effect</li> <li>- Digital optical fiber communication experiment</li> <li>- Measurement of Planck's constant by photoelectric effect</li> <li>- Measuring R H of H atom by grating spectrometer</li> <li>- Measuring capacitance by ballistic galvanometer</li> <li>- Measurement of low resistance by double bridge</li> <li>- The measurement of metal electron work function</li> <li>- The measurement of the speed of sound</li> <li>- The adjustment of Michelson interferometer</li> </ul>
Type of Media	<p>Taught seminar    Tuition in seminars, blackboard, slides, computer simulation</p> <p>Laboratory:        Experiment-practical course</p>
Type of Assessment	<p>Taught seminar:    Successful passing in written exam (PL)</p> <p>Laboratory:        Successful participation of all tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Chen Jun ,Huangfu Quansheng ,Yan Feinan (2017): Fundamental College Physics, Tsinghua University Press</li> <li>- Zhu Feng.(2015): College Physics, Tsinghua University Press</li> <li>- Gu Zhengtian, Chen Jun (2016): College Physics Synchronous Tutorship Review and Self-testing, China Machine Press</li> <li>- Wang Xiaoping, Wang Lijun (2015): College Physics Experiment, China Machine Press</li> <li>- Zhou Qun, Yang Xin, Lu Jian (2016): College Physics Creative Design Experiment, XiDian University Press</li> </ul>

## PROGRAMMIEREN

Name of module	<b>Programmieren Programming</b>	Number	M15
Courses	Taught seminar: Programmieren Pr Laboratory: Programmieren PrP	Semester/ duration	3
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Sarah Hallerberg	Attendance hours	40 h + 40 h
Lecturers	Sarah Hallerberg, N.N.	Language	German or Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Basic knowledge of computer technology, Partial knowledge of Linear Algebra	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- analyse simple mathematical/physical problems</li> <li>- describe solutions to problems by means of flow charts or equivalent methods</li> <li>- solve problems, by transferring the problem description in a computer language, i.e. C for instance, and by running the program</li> <li>- detect programming errors systematically and to correct them</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Fundamental concepts of computer hardware and operating systems</li> <li>- File systems</li> <li>- Digital encoding of numbers and characters</li> <li>- Storage and handling of different data types (variables, constants, pointer, arrays)</li> <li>- A modern programming language (currently C with some C++ elements)</li> <li>- Working with program libraries</li> <li>- Creating own functions</li> <li>- Working with files (create, read, write)</li> <li>- Current developments in software tools (e.g. new programming languages, object orientated programming, programming interfaces, MatLab)</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- writing and compiling "Hello World"- programmes in C/C++, declaring and using different types of variables</li> <li>- assigning values to variables, using mathematical and logical operators and mathematical functions</li> <li>- using input and output functions</li> <li>- controlling the flow of a programm</li> <li>- using and writing functions</li> <li>- using arrays and pointers</li> <li>- understanding and using common strategies for algorithm development</li> <li>- working with strings</li> </ul>		

	<ul style="list-style-type: none"> <li>- reading from and writing to files</li> <li>- using dynamic memory allocation</li> <li>- using dynamic memory allocation II</li> <li>- defining and using structures and new data types</li> <li>- defining and using classes</li> <li>- defining and using classes II: inheritance</li> <li>- working with dynamic memory allocation based on containers</li> </ul>
Type of Media	<p>Taught seminar: Tuition in seminars, blackboard, slides, computer simulation</p> <p>Laboratory: Computer-practical course</p>
Type of Assessment	<p>Taught seminar: Successful passing in written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Own lecture notes (copy template or digital)</li> <li>- Oualine, S. (1997): Practical C Programming (Nutshell Handbooks)</li> <li>- Wolf, J. (2015): Grundkurs C++, Rheinwerk Computing</li> <li>- Dankert, J. (1997): Praxis der C-Programmierung, B.G. Teubner</li> <li>- Prata, S. (2008): C Primer Plus, Sams Publishing</li> </ul>

Name of module	<b>Technische Mechanik I</b> <b>Engineering Mechanics I</b>	Number	M14
Courses	Taught seminar: Engineering Mechanics TM1 Exercises Engineering Mechanics TM1Ü	Semester/ duration	3
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Thomas Grätsch	Attendance hours	60h + 20 h
Lecturers	Rainer Stank, Thomas Grätsch, N.N.	Language	German
Prerequisites	Recommended: Knowledge of Mathematics I and II German Language Level B1/B2	Offered	Every academic year
Learning outcomes	Students are able to <ul style="list-style-type: none"> <li>- formulate and solve equilibrium systems based on the notion of forces and moments for rigid-bodies</li> <li>- determine systems under the influence of friction</li> <li>- compute internal forces and moments for linear structures and as a result evaluate the internal loads</li> <li>- compute stresses distributions for the basic load cases (straight bending and torsion)</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Basics of Vector Calculus and Force Vectors</li> <li>- Equilibrium of a Particle, Force System Resultants, Principle of Moments</li> <li>- Equilibrium of a Rigid Body: Conditions for Rigid-Body Equilibrium, Free-Body Diagrams and Equation of Equilibrium</li> <li>- Structural Analysis: Simple Trusses, Method of Joints, Zero-Force Members and the Method of Sections</li> <li>- Internal Forces: Internal Loadings, Shear and Momentum Equations and Diagrams, Relations between Distributed Load, Shear and Momentum, Cables</li> <li>- Center of Gravity and Centroid</li> <li>- Friction: Characteristics of Dry Friction, Wedges, Frictional Forces on Screws and Cables</li> <li>- Moments of Inertia: Definition of Moments of Inertia for Areas, Parallel-Axis Theorem for an Area, Moments of Inertia for Composite Areas and Mohr's Circle for Moments of Inertia</li> <li>- Virtual Work: Principle of Virtual Work</li> <li>- Stress and Strain: Stress, Average Normal in Axially Loaded Bars and Average Shear Stress, Deformation and Strain</li> <li>- Mechanical Properties of Materials: Hook's Law and Poisson's Ratio, Shear Stress-Strain Diagram, Elastic Deformations</li> <li>- Axial Load: Saint-Venant's Principle, Elastic Deformation of an Axially Loaded Member, Statically Indeterminate Axially Loaded Member, Thermal Stress</li> <li>- Torsion: Torsional Deformation of a Circular Shaft, Torsion Formula,</li> </ul>		

	<p>Angle of Twist and Thin-Walled Tubes</p> <ul style="list-style-type: none"> <li>- Bending: Shear and Moment Diagrams, Bending Deformation of a Straight Member and Flexure Formula, Unsymmetric Bending</li> <li>- Transverse Shear: Shear in Straight Members, Shear Formula and Shear Flow in Built-Up or Thin-Walled Members</li> </ul>
Type of Media	Taught seminar: Computer with Beamer, Black Board, Overhead and Problem Sheets
Type of Assessment	<p>Taught seminar: Successful passing in written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Hibbeler, Russell C.: Technische Mechanik 1 Statik, 12. Auflage, Pearson, 2012</li> <li>- Hibbeler, Russell C.: Technische Mechanik 2 Festigkeitslehre, 8. Auflage, Pearson, 2013</li> <li>- 静力学（第12版）(美)希伯勒著,李俊峰,吕敬,袁长清 机械工业出版社 2013</li> <li>- Hibbeler, Russell C.: Engineering Mechanics: Statics, 13th Edition, Pearson, 2013</li> <li>- Hibbeler, Russell C.: Mechanics of Materials, 9th Edition, Pearson, 2014</li> <li>- Dankert, J.; Dankert, H.: Technische Mechanik: Statik, Festigkeitslehre, Kinematik/Kinetik, Springer, 2013</li> <li>- Gross, D., Hauger, W., Schröder, J., Wall, W.A.: Technische Mechanik, Band 1-4, Springer 2014</li> </ul>

## TECHNISCHE MECHANIK II

Name of module	<b>Technische Mechanik II</b> <b>Engineering Mechanics II</b>	Number	M21
Courses	Taught seminar: Engineering Mechanics TM2 Exercises Engineering Mechanics TM2Ü	Semester/ duration	4
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Thomas Grätsch	Attendance hours	60 h + 20 h
Lecturers	Rainer Stank, Thomas Grätsch, N.N.	Language	German
Prerequisites	Recommended: Knowledge of Mathematics I, II and III German Language Level B1/B2 Engineering Mechanics I	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- compute strains distributions for the basic load cases (straight bending and torsion)</li> <li>- can analyse the stability of straight bars under compressive loads and evaluate on the basis of the buckling forces</li> <li>- analyse the motion of particles and rigid-bodies and they can specify the equations of motion in different reference systems. They may derive the kinematic quantities velocity or acceleration</li> <li>- determine and analyse motions and the forces which are generated by these motions</li> <li>- derive the equation of motion including inertia forces</li> <li>- use the inertia parameters of a system</li> <li>- apply the principle of the conservation of mechanical energy for conservative systems</li> <li>- solve impact problems</li> <li>- evaluate simple vibration problems</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Stress Transformation: Plane-Stress and General Equations of Plane-Stress Transformation, Maximum In-Plane Shear Stress and Mohr's Circle-Plane Stress</li> <li>- Strain Transformation: Plane-Strain and General Equations of Plane-Strain Transformation, Maximum In-Plane Shear Strain and Mohr's Circle-Plane Strain</li> <li>- Buckling of Columns: Critical Load, Columns with Pin Supports or Various Types of Supports</li> <li>- Kinematics of Particles: General Curvilinear Motion in Rectangular Components, in Normal and Tangential Components and in Cylindrical Components</li> <li>- Relative-Motion of two Particles</li> <li>- Planar Kinematics of Rigid Bodies: Planar Rigid-Body Motion with Translation, Rotation and absolute Motion Analysis, Relative-Motion Analysis and Instantaneous Center of Zero Velocity</li> </ul>		

	<ul style="list-style-type: none"> <li>- Kinetics of Particles: Newton's Second Law of Motion, Equation of Motion for one Particle and for a System of Particles, Analysis of the Equation of Motion for Rectangular Coordinates, Normal and Tangential Coordinates as well as for Cylindrical Coordinates, Absolute Dependent Motion Analysis of two Particles, Principle of Linear Impulse and Momentum for two Particles and a System of Particles, Impact, Principle of Angular Impulse and Momentum.</li> <li>- Kinetics of Rigid Bodies: Moment of Inertia, Planar Kinetic Equations of Motion and General Plane Motion</li> <li>- Vibrations: Undamped free and forced Vibrations</li> </ul>
Type of Media	Taught seminar: Computer with Beamer, Black Board, Overhead and Problem Sheets
Type of Assessment	Taught seminar: Successful passing in written exam (PL) Laboratory: Successful participation of all tasks (PVL)
Literature	<ul style="list-style-type: none"> <li>- Hibbeler, Russell C.: Technische Mechanik 2 Festigkeitslehre, 8. Auflage, Pearson, 2013</li> <li>- Hibbeler, Russell C.: Technische Mechanik 3 Dynamik, 12. Auflage, Pearson, 2012</li> <li>- 动力学（第12版）(美)希伯勒著. 李俊峰, 袁长清译, 机械工业出版社 2014</li> <li>- Hibbeler, Russell C.: Mechanics of Materials, 9th Edition, Pearson, 2014</li> <li>- Hibbeler, Russell C.: Engineering Mechanics: Dynamics, 12th Edition, Pearson, 2010</li> <li>- Dankert, J.; Dankert, H.: Technische Mechanik: Statik, Festigkeitslehre, Kinematik/Kinetik, Springer, 2013</li> <li>- Gross, D., Hauger, W., Schröder, J., Wall, W.A.: Technische Mechanik, Band 1-4, Springer 2014</li> </ul>

## STRÖMUNGSMECHANIK

Name of module	<b>Strömungsmechanik Fluid Mechanics</b>	Number	M13
Courses	Taught seminar: Fluid Mechanics	Semester/ duration	3
Workload	32h attendance, 28h self-study	Credits	2
Module responsibility	Yang Chengsan	Attendance hours	32h
Lecturers	Yang Chengsan, Yu Huijie	Language	Chinese
Prerequisites	Recommended: Mathematics 1 + 2; basic physical knowledge	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- apply fluid-engineering principles</li> <li>- apply flow-physics models for the analysis of technical systems</li> <li>- to carry out all necessary theoretical calculations for the fluid dynamic design of engineering devices</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Fluid properties</li> <li>- Hydrostatics</li> <li>- measurement of pressure</li> <li>- Bernoulli's equation</li> <li>- flow rate, continuity equation</li> <li>- Kinematics of Fluid Motion</li> <li>- Dynamics of Fluid Motion</li> <li>- Momentum equation</li> <li>- Laminar and Turbulent Flow</li> <li>- Flow conditions in pipes</li> <li>- Boundary Layer, Compressible Flow</li> </ul>		
Type of Media	Taught seminar: Beamer, PC with simulation software		
Type of Assessment	Taught seminar: Written examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- He Chuan: Fluid Mechanics, China Machine Press, 2013</li> <li>- H. Kuhlmann, Strömungsmechanik: Eine kompakte Einführung für Physiker und Ingenieure, Pearson Studium – Physik, 2014</li> </ul>		

## WERKSTOFFKUNDE

Name of module	<b>Werkstoffkunde Engineering Material</b>	Number	M22
Courses	Taught seminar: Engineering Material WK Laboratory: Engineering Material WKP	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Shahram Sheiki	Attendance hours	60 h + 20 h
Lecturers	Alexander Steinmann, Shahram Sheiki, N.N.	Language	German
Prerequisites	Recommended: Knowledge of fundamentals of chemistry and physics.	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- distinguish between different material properties</li> <li>- select problem-specific materials in general, steel and cast in particular, non-ferrous metals, and plastics</li> <li>- develop a deep understanding of classification and nomenclature of steel</li> <li>- design and construct corrosion-free</li> <li>- apply modifications of material properties due to different heat treatment methods</li> <li>- conduct material testing and interpretate the results</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Structure and Properties of Materials</li> <li>- Fundamentals of Metal</li> <li>- Corrosion of Metal</li> <li>- Fundamentals of Steel</li> <li>- Heat Treatment of Steel</li> <li>- Steel Groups</li> <li>- Casting Materials</li> <li>- Non-Ferrous Metals</li> <li>- Fundamentals of Plastics</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- Tensile and Compression Test</li> <li>- Impact Test</li> <li>- Heat Treatment and Measurements of Hardness</li> <li>- Metallographic Inspection and Micro Measurement of Hardness</li> </ul>		
Type of Media	<p>Taught seminar: Lecture Notes (Handout), Slides, Board</p> <p>Laboratory: Seminar and Laboratory Lecture Notes (Handout)</p>		
Type of Assessment	<p>Taught seminar: Written Examination (PL)</p> <p>Laboratory: Working Out Laboratory Report (PVL)</p>		

## Literature

- Own lecture notes
- W. Seidel: Werkstofftechnik (Werkstoffe - Eigenschaften - Prüfung - Anwendung), Hanser Verlag, 2014.
- W. Weißbach: Werkstoffkunde (Strukturen, Eigenschaften, Prüfung). Springer Verlag, 2015.
- H.-J. Bargel: Werkstoffkunde. Springer Verlag, 2013.

## THERMODYNAMIK UND WÄRMEÜBERTRAGUNG

Name of module	<b>Thermodynamik und Wärmeübertragung Engineering Thermodynamics and Heat Transfer TH</b>	Number	M23
Courses	Taught seminar: Thermodynamics TH Laboratory: Thermodynamics Lab THP	Semester/ duration	4
Workload	64h attendance, 56h self-study	Credits	4
Module responsibility	Yang Chengsan	Attendance hours	60h+4h
Lecturers	Yang Chengsan, Feng Jinzhi	Language	Chinese
Prerequisites	Recommended: Mathematics1,2;basic physics, selfstudy of the guide book for the experiment	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- understand the first law of thermodynamics</li> <li>- understand the second law of thermodynamics</li> <li>- understand the principle of the heat transfer process in a power plant, boiler furnaces, Internal combustion engine, air compressor and refrigeration cycles</li> <li>- analyze the experiment data of the typical thermal energy components and systems</li> <li>- understand the performance and thermodynamic process of the ideal gases; vapor, air and vapor flowing</li> <li>- understand the working principle and the basic structure of a combustion engine (four strokes and four cylinders);</li> <li>- assemble / disassemble the components of a combustion engine (four strokes and four cylinders)</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- introduction of the basic concepts of thermodynamics and heat transfer and the basic knowledge of the thermal equipments</li> <li>- the first law of thermodynamics</li> <li>- performance and thermodynamic process ideal gases</li> <li>- the second law of thermodynamics,</li> <li>- vapor, air and vapor flowing,</li> <li>- Fundamental of heat transfer</li> <li>- Power plant and boiler furnaces</li> <li>- Internal combustion engine</li> <li>- Air compressor and refrigeration cycles</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- Disassembly of the components of a combustion engine</li> <li>- Clean the main components of a combustion engine</li> <li>- Oil the driving or driven parts of a combustion engine</li> <li>- Assembly the components of a combustion engine</li> <li>- Adjust a combustion engine</li> </ul>		

Type of Media	<p>Taught seminar: Beamer, PC with simulation software</p> <p>Laboratory: Laboratory equipment</p>
Type of Assessment	<p>Taught seminar: Written examination (PL)</p> <p>Laboratory: Lab Report (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- H.D. Baehr, S. Kabelac, Thermodynamik: Grundlagen und technische Anwendungen, 2016</li> <li>- Chen Yi and Wu Weilong: Thermal Engineering, Higher Education Press, 2014</li> <li>- Shen Weidao: Engineering Thermodynamics, Higher Education Press, 2015</li> </ul> <p>Experiment instructions</p>

## HYDRAULIK UND PNEUMATIK

Name of module	<b>Hydraulik und Pneumatik</b> <b>Hydraulic and Pneumatic Technology</b>	Number	M38
Courses	Taught seminar: Hydraulic and Pneumatic Technology HYP Laboratory: Hydraulic and Pneumatic Technology HYPP	Semester/ duration	5
Workload	48h attendance, 42h self-study	Credits	3
Module responsibility	Mai Yunfei	Attendance hours	40 h +8 h
Lecturers	Mai Yunfei, Luo Yanjie	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Basic knowledge of Fluid Mechanics, Partial knowledge of Physics	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand basic knowledge of hydraulic and pneumatic components</li> <li>- design and analyze hydraulic and pneumatic transmission circuits</li> <li>- solve problems, by calculation</li> <li>- do system troubleshooting systematically</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Fundamental concepts of fluid mechanics including Bernoulli equation and momentum equation</li> <li>- Hydraulic pumps and hydraulic motors</li> <li>- Hydraulic and pneumatic cylinders</li> <li>- Hydraulic and pneumatic control valves</li> <li>- Ancillary components of hydraulic and pneumatic system</li> <li>- Basic circuits including pressure control, speed control, direction control</li> <li>- Typical hydraulic transmission system analysis</li> <li>- Design and calculation of hydraulic system</li> <li>- system troubleshooting</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- Hydraulic components assembly and disassembly experiments</li> <li>- Hydraulic circuits experiments</li> <li>- Pneumatic circuit experiments</li> </ul>		
Type of Media	Taught seminar: blackboard, slides or ppt projection, computer simulation. Laboratory: Computer-practical course		
Type of Assessment	Taught seminar: Successful passing in written exam (PL) Laboratory: Successful participation of all tasks (PVL)		
Literature	<ul style="list-style-type: none"> <li>- Own lecture notes (copy template or digital)</li> <li>- Zuo Jianmin. (2016): Hydraulic and pneumatic transmission (5 edition), China Mechanical Industrial Press</li> <li>- Liu Yanjun. (2010): Hydraulic and pneumatic transmission, Tsinghua University Press</li> </ul>		

Name of module	<b>Elektrotechnik I</b> <b>Electrical Engineering I</b>	Number	M34
Courses	Taught seminar: Electrical Engineering I EL1 Laboratory: Electrical Engineering I ELP1	Semester/ duration	4
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Li Haiying	Attendance hours	60 h + 20 h
Lecturers	Li Haiying, Liu Jian	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Physics, Partial knowledge of Linear Algebra	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand the concepts and laws of circuits and general analysis methods</li> <li>- analyze sinusoidal AC circuits containing mutual inductors</li> <li>- do time-domain analysis of first- and second-order circuits</li> <li>- do frequency-domain analysis of circuits</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- The Model and The Law of Circuits</li> <li>- The Equivalent Transformation and Analysis of Resistive Circuits</li> <li>- Energy Storage Elements</li> <li>- Time Domain Analysis of First-order Circuits and The Second-order Circuits</li> <li>- Phase Method</li> <li>- Sinusoidal Steady-State Analysis of Circuits</li> <li>- Circuits Containing Coupled Inductors</li> <li>- Frequency Response of Circuits</li> <li>- Three-phase Circuits</li> <li>- Non-sinusoidal Current Circuits and Signal Spectrum</li> <li>- Complex Frequency Domain Analysis of Linear Dynamic Circuits</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- Validation of Kirchhoff's Laws and Superposition Theorem</li> <li>- Research of First-order Circuit Transient Process</li> <li>- Research of AC Series Circuit</li> <li>- Measurement of Three-phase Circuit Voltage and Current</li> </ul>		
Type of Media	Taught seminar: Beamer,PC with simulation software Laboratory: Laboratory equipment		
Type of Assessment	Taught seminar: Successful passing in written exam (PL) Laboratory: Successful participation of all tasks (PVL)		
Literature	<ul style="list-style-type: none"> <li>- Qiu Guanyuan, Circuit Theory, 5th edition, Higher Education Press, 2006</li> <li>- Tang Yujun, Experiments for Electric Circuits. University of Shanghai for Science and Technology, 2007</li> </ul>		

## ELEKTROTECHNIK II

Name of module	<b>Elektrotechnik II</b> <b>Electrical Engineering II</b>	Number	M40
Courses	Taught seminar: Electrical Engineering II EL2 Laboratory: Electrical Engineering IIELP2	Semester/ duration	5
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Li Haiying	Attendance hours	60 h + 20 h
Lecturers	Li Haiying, Liu Jian	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Physics, Partial knowledge of Linear Algebra, Electrical Engineering I	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand the principles of amplifiers</li> <li>- design circuits using semiconductors and operational amplifiers</li> <li>- design combinational logic circuits</li> <li>- design sequential logic circuits</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- PN Junction, Semiconductor Diodes and Transistors, Field-Effect Transistors;</li> <li>- Integrated operational amplifier and applications;</li> <li>- Differential amplifiers;</li> <li>- Feedback;</li> <li>- Power amplifier;</li> <li>- Signal generation circuits;</li> <li>- Power supplies.</li> <li>- Fundamentals of Digital Logic, Boolean Algebra and Logic Simplification</li> <li>- Combinational Logic Circuits</li> <li>- Latches, Flip-Flops, Timers and Sequential Logic Circuits</li> <li>- Memory and Storage</li> <li>- Producing and Changing of Pulse Wave</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- Amplifier circuits and Feedback amplifier;</li> <li>- Integrated operational amplifier and Differential amplifier;</li> <li>- The Design of Combinational Logic Circuit</li> <li>- Bidirectional Shift Register Experiment</li> </ul>		
Type of Media	Taught seminar: Beamer,PC with simulation software Laboratory: Laboratory equipment		
Type of Assessment	Taught seminar: Successful passing in written exam (PL) Laboratory: Successful participation of all tasks (PVL)		
Literature	<ul style="list-style-type: none"> <li>- Robert Boylestad, Louis Nashelsky. Electronic Devices and Circuit Theory, Pearson Prentice Hall, 2008, ISBN: 0136064639</li> <li>- Zhang Jianhua, Digital Electronic Technique, 2nd edition, China machine</li> </ul>		

press, 2001

- Analog and Digital Electronic Technique Experiments Guide Book  
(Handout by Instructor)

## TECHNISCHES ZEICHNEN MIT CAD

Name of module	<b>Technisches Zeichnen mit CAD</b> <b>Engineering Drawing and basic 3D-CAD</b>	Number	M7
Courses	Taught seminar: Engineering Drawing and basic 3D-CAD TZC Laboratory: Engineering Drawing and basic 3D-CAD Lab TZCP	Semester/ duration	2
Workload	64h attendance, 56h self-study	Credits	4
Module responsibility	Yang Chengsan	Attendance hours	40h+24h
Lecturers	Yang Chengsan, Feng Hemin	Language	Chinese
Prerequisites	Recommended: basic computer knowledge	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- understand GB standards and rules of drawings</li> <li>- master the basic principles and applications of the orthographic projection</li> <li>- master the regular description methods of machine parts</li> <li>- master the description methods of fasteners, gears, keys etc</li> <li>- read detail drawings and assembly drawings</li> <li>- make detail drawings and assembly drawings</li> <li>- build 3D solid single part models and convert it into engineering drawings</li> <li>- build 3D solid assemblies and convert it into engineering drawings</li> <li>- to build 3D solid models</li> <li>- make detail drawings and assembly drawings with computer drafting software</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- introduction to GB standards and rules of drawings</li> <li>- the fundamentals of projection</li> <li>- the projection of solids</li> <li>- the basic principles and methods of 3D solid modeling</li> <li>- six principal views, auxiliary views, sectional and conventional views</li> <li>- the description methods of fasteners, gears, keys etc.</li> <li>- views selection in detail drawings</li> <li>- dimensioning and writing notes in detail drawings</li> <li>- brief introduction of technology of parts</li> <li>- 3D solid modeling and conversion to detail drawings</li> <li>- description methods in assembly drawings</li> <li>- dimensioning and writing notes in assembly drawings</li> <li>- brief introduction of technology of assembly</li> <li>- making 3D solid assembly and conversion to assembly drawings</li> </ul>		

	Laboratory <ul style="list-style-type: none"> <li>- the basic methods of 3D solid modeling</li> <li>- the application of 3D standard parts library</li> <li>- 3D solid modeling and conversion to detail drawings</li> <li>- making 3D solid assemblies and conversion to assembly drawings</li> </ul>
Type of Media	Taught seminar: Computer, CAD- software, Multimedia Laboratory: Computer, CAD- software, Multimedia
Type of Assessment	Taught seminar: Written Examination (PL), Test on computer (PVL)
Literature	<ul style="list-style-type: none"> <li>- Qiu wenyan and Qu yuanshang, Mechanical Drawing, Higher Education Press 2010</li> <li>- Solidworks Teaching book, 2012</li> <li>- Autocad Teaching book, 2013</li> </ul>

## CAD/CAM

Name of module	<b>CAD/CAM</b> <b>CAD/CAM</b>	Number	M39
Courses	Taught seminar: CAD/CAM CM Laboratory: CAD/CAM CMP	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Alexander Piskun	Attendance hours	40 h + 40 h
Lecturers	Alexander Piskun, Arne Freytag	Language	German
Prerequisites	Recommended: Ability to read, understand and create technical drawings, i.e. from the course "Engineering Drawing and basic 3D-CAD"	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- know the application areas and use possibilities of 3D CAD / CAM systems</li> <li>- apply 3D CAD systems for object wire, solid and surface modelling</li> <li>- build CAD models according to methodological specifications</li> <li>- understand and evaluate three-dimensional geometric problems</li> <li>- have a specific knowledge and competence of methods to structure CAD parts and assemblies</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Parametric Associative Modelling</li> <li>- Building up a single part model by use of an OEM method</li> <li>- Building up of a single part model structure</li> <li>- Structuring a model accordingly to an IPO principle (Input /Processing/Output)</li> <li>- Sketch operations: definition, development and check. Degrees of freedom, planar constraints</li> <li>- Handling operations: transfer, rotate, symmetry, mirror, affinity, scaling, offset, extrapolation, connect, crop, smooth</li> <li>- Wire modeling functions: plane, point, line, circle, ellipse, conic sections, curves, profiles, radii</li> <li>- Surface modelling functions: model: translation, rotation, profile area, free-form area, offset, fillet, edge areas</li> <li>- Volume modelling functions: sphere, cylinder, cube, prism, cone, profile, combined projection, boolean operations</li> <li>- Model properties: material, dimensional features, shape, analysis, names.</li> <li>- Assembly Structure Principles: Top-Down (Adapter Methodology) / Bottom-Up (Assembly Conditions)</li> <li>- Context in Assembly Structures: publications, multi-model links, context links</li> <li>- Partial diversity: new parts, repeated part copies, design tables, rules</li> <li>- Application diversity: parameters, rules and macros</li> </ul>		

	<ul style="list-style-type: none"> <li>- Process-oriented design: implementation of manufacturing steps: blank, demoulding, processing state, assembly order</li> <li>- Laboratory</li> <li>- Working with two-dimensional sketches</li> <li>- Modelling of three dimensional objects, consisting of and represented by wire geometry, later surfaces and volumes</li> <li>- Modelling of three-dimensional objects, consisting of thin surfaces or solids</li> <li>- Modelling of complex solids applying parameters, design tables and rules</li> <li>- Coding macros to create new geometry features</li> <li>- Modelling of complex assemblies according to assembly structure principles</li> </ul>
Type of Media	<p>Taught seminar: printed handouts, class board, power point presentation, projected computer work</p> <p>Laboratory: printed handouts, class board, projected computer work</p>
Type of Assessment	<p>Taught seminar: A design task to model and upload for a midterm evaluation as well as an assembly structure to concept, model and upload within a given time frame for a final exam. (PL)</p> <p>Laboratory: Submission of at least two predefined tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Ronald List: CATIA V5 Grundkurs für Maschinenbauer: Bauteil- und Baugruppenkonstruktion, Zeichnungsableitung, 7., aktualisierte und erweiterte Auflage. - Wiesbaden : Vieweg+Teubner Verlag, 2015</li> <li>- Rembold, Rudolf W.; Brill, Michael; Deeß, Ralf: Einstieg in CATIA V5: objektorientiert konstruieren, 5., überarb. und erw. Aufl. - München : Hanser, 2011</li> <li>- Maik Hertha: CATIA V5: Flächenmodellierung, 2., aktualisierte Aufl. - München : Hanser, 2009</li> <li>- CAD mit Catia (R) V5: Handbuch mit praktischen Konstruktionsbeispielen aus dem Bereich Fahrzeugtechnik (3., ERW. AUFL. 2011) (GERMAN, ENGLISH) BY TRZESNIOWSKI, MICHAEL (AUTHOR), Paperback, Vieweg+Teubner Verlag, 2010</li> </ul>

## MASCHINENELEMENTE I

Name of module	<b>Maschinenelemente I</b> <b>Machine Design I</b>	Number	M24
Courses	Taught seminar: Machine Design I ME1 Laboratory: Machine Design I MEP1	Semester/ duration	4
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Shen Jingfeng	Attendance hours	60 h + 20 h
Lecturers	Shen Jingfeng, Wang Xinhua	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Engineering Mechanics I,II, Basic knowledge of Engineering Material	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- understand the working principles of common mechanism, such as planar links, cams and gears</li> <li>- draw motion sketches of mechanisms</li> <li>- analyse the movement characteristics of mechanisms</li> <li>- analyse and calculate a gear system</li> <li>- accomplish the analysis of mechanism planning</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Introduction: the basic concepts of mechanics; the object of this subject; research purposes and learning methods</li> <li>- motion sketch of mechanisms</li> <li>- freedom of mechanisms</li> <li>- working principles of common mechanisms including planar links, cams and gears</li> <li>- movement characteristics of a mechanism</li> <li>- the analysis and calculation of a four-bar link</li> <li>- the analysis and calculation of a cam</li> <li>- the analysis and calculation of a gear</li> <li>- the analysis and calculation of a gear system</li> <li>- the velocity fluctuation adjustment of a machine</li> <li>- the balance of a rotor</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- Mechanism mapping</li> <li>- Gear experiment</li> <li>- Balance experiment</li> <li>- Mechanism comprehensive</li> <li>- Gear mapping</li> </ul>		
Type of Media	<p>Taught seminar: Beamer, PC with simulation software</p> <p>Laboratory: Laboratory equipment</p>		
Type of Assessment	<p>Taught seminar: Successful passing in written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>		

Literature	<ul style="list-style-type: none"> <li>- Sun Heng, Chen Zuomo(2015): Mechanisms and Machine Theory, Higher Education Press</li> <li>- Yang Kezhen, Cheng Guangyun(2013): Fundamentals of Mechanical Design, Higher Education Press</li> <li>- Experiment instructions</li> </ul>
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## MASCHINENELEMENTE II

Name of module	<b>Maschinenelemente II</b> <b>Machine Design II</b>	Number	M29
Courses	Taught seminar: Machine Design II EA Laboratory: Machine Design II	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Hans-Joachim Beyer	Attendance hours	60 h + 20 h
Lecturers	Hans-Joachim Beyer, Anna Usbeck, Udo Pulm	Language	German
Prerequisites	Recommended: Knowledge of Taught seminars "Technical Drawing Using 3D-CAD", "Engineering Mechanics I"; "Machine Design I"	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- use extended standard parts in the design process. These are springs and spring systems, clutches, coupling and breaks, belt and chains, gears and gearboxes</li> <li>- calculate the design data of systems of belts, chains and gears according to ISO and EN standards</li> <li>- calculate the basic design data of spur gear systems and planetary gear sets</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- shaft-hub joint and their standard design calculations</li> <li>- bearing and their standard design calculations</li> <li>- seals and gaskets and their standard design calculations</li> <li>- design of shaft and bearing</li> <li>- threads, screws and screw connections and their standard design calculations</li> <li>- bolts; rivets</li> <li>- springs and spring systems and their standard design calculations</li> <li>- clutches, coupling and breaks and their standard design calculations</li> <li>- belt and chains and their standard design calculations</li> <li>- gears and gearboxes their standard design calculations</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- Design of a machine or machine part with a clutch, coupling, belt or chain and gears</li> <li>- Stress analysis of the used machine elements which can be calculated by the formulas learnt in the taught seminar</li> </ul>		

Type of Media	<p>Taught seminar:</p> <p>Presentation with beamers, black board, sample pieces of each machine element</p> <p>Laboratory:</p> <p>Group work in the laboratory; hardware examples of the design project, PC pool for CAD</p>
Type of Assessment	<p>Taught seminar: Written examination (PL)</p> <p>Laboratory: Documentation of design process including drawings (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Newest edition of Roloff/Matek Maschinenelemente (German), Springer Vieweg Press Germany</li> <li>- Newest edition of Roloff/Matek Maschinenelemente (Chinese), China Machine Press i.e: edition 16, 2003, ISBN 979-7-111-32530-7</li> <li>- Newest edition of Decker Maschinenelemente (German) Hanser Verlag, Germany</li> </ul>

Name of module	<b>Regelungstechnik Machining Control and PID</b>	Number	M45
Courses	Taught seminar: Machining Control and PID RT Laboratory: Machining Control and PID TRP	Semester/ duration	7
Workload	64 h attendance, 56 h self-study	Credits	4
Module responsibility	Mai Yunfei	Attendance hours	48 h + 16h
Lecturers	Mai Yunfei, Luo Yanjie	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I,II, Basic knowledge of computer technology, Partial knowledge of Linear Algebra	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- have time response, frequency response approach and state-space approach to analysis and design of control systems</li> <li>- master root locus, Nyquist and Bode plots, and stability analysis approach</li> <li>- solve problems, with continuous-time control systems theory</li> <li>- solve all computational problems with MATLAB</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Introduction to control systems</li> <li>- Fundamental concepts of control systems</li> <li>- Mathematical modeling of control systems</li> <li>- control systems in state space</li> <li>- Transient and steady-state response analyses</li> <li>- Control systems analysis by the frequency-response method</li> <li>- Stability analysis and relative stability analysis</li> <li>- PID controllers and two-degrees-of-freedom control</li> <li>- Transformation of system models with Matlab</li> <li>- Design of control systems with PID and with observers in state space</li> <li>- Example problems and solutions of mechanical, fluid systems and electrical systems</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- Working with an experiment environment, be familiar with the lab instruments</li> <li>- Programming of PID, temperature, liquid level, hydraulic and pneumatic PID control</li> <li>- Virtual control in LabVIEW or MATLAB software</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, PPT slides, computer simulation  Laboratory: Lab instruments and Computer-practical		
Type of Assessment	Taught seminar: Successful passing in written exam (PL)		

	Laboratory:      Successful participation of all tasks (PVL)
Literature	<ul style="list-style-type: none"> <li>- Dong Jingxin. (2015): Fundamentals of Control Engineering (4th Edition), Tsinghua University Press</li> <li>- Katsuhiko Ogata. (2011): Modern Control Engineering (5th Edition) (English), Prentice Hall</li> </ul>

## FINITE ELEMENTE METHODEN

Name of module	<b>Finite Elemente Methoden</b> <b>Finite Element Method</b>	Number	M33
Courses	Taught seminar: Finite Element Method FEM Laboratory: Finite Element Method FEMP	Semester/ duration	5
Workload	32h attendance, 28h self-study	Credits	2
Module responsibility	Yu Huijie	Attendance hours	24 h + 8 h
Lecturers	Yu Huijie, Wang Xinhua	Language	Chinese
Prerequisites	Recommended: Mathematics I, II; Engineering Mechanics I+II; Engineering Materials; Linear Algebra; Machine Design I.	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- create suitable FEM-meshes on single parts</li> <li>- calculate strain and stress on single parts using linear theory</li> <li>- use finite element analysis software for structural analysis , carry out simple structure analysis of strength or stiffness</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Knowledge of linear Elasticity Mechanics</li> <li>- Mathematical and Mechanical Foundations of FEM</li> <li>- Meshing procedures</li> <li>- Analysis of link and beam with linear FEM</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- Element analysis of a simple pull-bar or bending beam</li> <li>- Element analysis of plane stress problems</li> <li>- Element analysis of three-dimensional solid</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, slides, computer simulation Laboratory: Computer-practical course		
Type of Assessment	Taught seminar: Successful passing written exam (PL) Laboratory: Successful participation of all tasks PVL		
Literature	<ul style="list-style-type: none"> <li>- Own lecture notes (copy template or digital)</li> <li>- Zeng Pan. (2009): Fundamentals of Finite Element Analysis ,Higher Education Press</li> <li>- Tirupathi R. Chandrupatla, Ashok D. Belegundu, (2011): Introduction to Finite Elements in Engineering (4th Edition), Prentice Hall.</li> </ul>		

## KONSTRUKTIONSPROJEKT

Name of module	<b>Konstruktionsprojekt Machine Design Project</b>	Number	M44
Courses	Project: Machine Design Project KP	Semester/ duration	5
Workload	32h attendance, 28h self-study	Credits	2
Module responsibility	Cui Jiankun	Attendance hours	32h
Lecturers	Shen Jingfeng, Wang Xinhua, Cui Jiankun	Language	Chinese
Prerequisites	Recommended: Machines Design I, II; Mathematics I, II, III; Engineering material	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- conduct a design project independently</li> <li>- apply the means of design methodology</li> <li>- present their project outcomes</li> </ul>		
Learning content	Project <ul style="list-style-type: none"> <li>- Introduction to a specific design, e.g. a gearbox</li> <li>- Disassembly and assembly of a gearbox</li> <li>- Design the structure of a gearbox</li> </ul>		
Type of Media	Project: Written exam		
Type of Assessment	Project: Successful passing in written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Chen Xiuning (2012): Course Design of Mechanical Design, Zhejiang University Press</li> <li>- Wang Xinhua, Shen Jingfeng(2015): Mechanical Design Basis, Chemical Industry Press</li> </ul>		

Name of module	<b>Fertigungstechnik I Manufacturing Technology I</b>	Number	M30
Courses	Taught seminar: Manufacturing Technology I FT1 Laboratory: Manufacturing Technology I FTP1	Semester/ duration	6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Enno Stöver	Attendance hours	60 h + 20 h
Lecturers	Enno Stöver, Dietmar Pähler, Christian Stark	Language	German
Prerequisites	Recommended: Engineering material, Mathematics I, II	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- analyse systematically the manufacturing processes according to DIN 8580</li> <li>- compare manufacturing procedures</li> <li>- analyse the technical usability of a manufacturing process at the initial state of a design</li> <li>- evaluate and rate manufacturing procedures based on purchasing, implementation, shop floor construction and production</li> <li>- to compile a written technical report according to scientific standards</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Systematics; systems of order, terminology</li> <li>- Primary Shaping (casting of metals)</li> <li>- Molding material, model, core, selected manufacturing processes of sandcasting/permanent mold casting</li> <li>- Primary Shaping (powder metallurgy): Powder production, forming and pressing, sintering, post-treatment, fields of application</li> <li>- Additive Manufacturing (AM, Rapid Prototyping RP, 3-D-Printing 3DP): Fundamentals, fields of application, selected manufacturing processes</li> <li>- Forming (Metal Forming): States of stress, distortion, plastic deformation, rigidity, force, work, selected manufacturing processes of sheet metal forming and massive forming</li> <li>- Metal Cutting: Overview of manufacturing processes, punchcutting</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- The taught seminar's content is accompanied by laboratory works where the theoretical knowledge is reproduced and deepened by exemplary experiments</li> <li>- Founded on basic acquaintance the students have gained extended comprehension by planning the experiments and carrying them out independently in groups conducted under guidance.</li> <li>- Additive Manufacturing – Production, examination and analysis of Rapid</li> </ul>		

	prototyped parts - Forming (Metal Forming): Production, examination and analysis of deep drawing parts
Type of Media	Taught seminar: Seminar lecture, blackboard, projector Laboratory: hands-on work, demonstration of machines, self-reliant writing of a laboratory protocol
Type of Assessment	Taught seminar: Written exam (PL) Laboratory: Successful participation of all tasks (PVL)
Literature	- Own lecture notes (copy template or digital) - Sun K N. (2014): Fundamental of Modern Engineering Materials Forming and Manufacturing Technology, Higher Education Press - John Biehler, Chen Q C. (2016): 3D Printing, China Machine Press

## FERTIGUNGSTECHNIK II

Name of module	<b>Fertigungstechnik II</b> <b>Manufacturing Technology II</b>	Number	M37
Courses	Taught seminar: Manufacturing Technology II FT2 Laboratory: Manufacturing Technology II FTP2	Semester/ duration	6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Enno Stöver	Attendance hours	60 h + 20 h
Lecturers	Enno Stöver, N.N.	Language	Chinese, German
Prerequisites	Recommended: Engineering material, Mathematics I, II	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- analyse systematically the manufacturing processes according to DIN 8580</li> <li>- compare manufacturing procedures</li> <li>- analyse the technical usability of a manufacturing process at the initial state of a design</li> <li>- evaluate and rate manufacturing procedures based on purchasing, implementation, shop floor construction and production</li> <li>- to compile a written technical report according to scientific standards</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Subtractive Manufacturing: Systematics; systems of order, terminology</li> <li>- Basic rules on cutting with geometrically determined and non-determined cutting edge – Process parameters such as cutting speed, cutting feed, Chip size, tool wear, tool life, cutting force, cutting output, cutting materials</li> <li>- Cutting with geometrically determined cutting edge: Selected manufacturing processes</li> <li>- Cutting with geometrically non-determined cutting edge: Selected manufacturing processes</li> <li>- Metal Cutting: Overview of manufacturing processes: turning, milling, drilling, grinding</li> <li>- Metal Cutting: Overview of machine tools: Lathes, milling machines, drill presses</li> <li>- Metal Cutting: Overview of advanced machining techniques: Precision CNC, electrical discharge machining (EDM), electro-chemical erosion, laser cutting, water jet cutting</li> </ul> <p>Laboratory</p> <ul style="list-style-type: none"> <li>- The Taught seminar's content is accompanied by laboratory works where the theoretical knowledge is reproduced and deepened by exemplary experiments</li> <li>- Founded on basic acquaintance the students have gained extended</li> </ul>		

	<p>comprehension by planning the experiments and carrying them out independently in groups conducted under guidance.</p> <ul style="list-style-type: none"> <li>- Subtractive Manufacturing: – Cutting with geometrically determined cutting edge: Verification of the cutting force and tool wear during turning; Preparing a laboratory protocol according to scientific standards</li> <li>- Process chain of turning or milling: Planning of a machining procedure, tool selection, definition of process parameters, programming of machine tools, production of a workpiece by turning or milling, testing the geometry on a 3D-coordinate measuring machine; Preparing a laboratory protocol according to scientific standards</li> <li>- Electrical discharge machining (EDM): Investigations on a machine tool in operation by changing Parameters und measuring the output; Preparing a laboratory protocol according to scientific standards</li> </ul>
Type of Media	<p>Taught seminar: Seminar lecture, blackboard, projector</p> <p>Laboratory: Hands-on work, demonstration of machines, self-reliant writing of a laboratory protocol.</p>
Type of Assessment	<p>Taught seminar: Written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Own lecture notes (copy template or digital)</li> <li>- Lu B H. (2015): Fundamental of Manufacturing Technology, China Machine Press</li> </ul>

## VORTRÄGE AUS DER PRAXIS

Name of module	<b>Vorträge aus der Praxis</b> <b>Seminar in Machinery Engineering (with report about presentations)</b>	Number	M32
Courses	Taught seminar: Seminar in Machinery Engineering	Semester/ duration	5
Workload	16 h attendance, 14 h self-study	Credits	1
Module responsibility	Cui Jiankun	Attendance hours	16 h
Lecturers	Cui Jiankun, Ma Yanyan, Yang Chengshan	Language	Chinese
Prerequisites	Recommended: Engineering Material, Machine Design I, II, Manufacturing Technology I, II, CAD/CAM	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- understand the main trends and key technologies of the modern machinery manufacturing technology development</li> <li>- understand the composition and technical characteristics of industrial robots, and its applications in the mechanical manufacturing systems</li> <li>- understand the process of modern machine system design and mechanical system performance analysis and research methods</li> <li>- understand the development trend of CNC machining technology and foundations of an automated manufacturing technology</li> <li>- understand the automobile structure, the basic performance of the car and the development of the world automobile industry</li> <li>- understand learning technology research report writing and PPT file compiling for presentation</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- The history of the machinery industry and the technological development</li> <li>- The basic structure of the car and the development of the automobile industry</li> <li>- Industrial Robot Technology and Its Application</li> <li>- Modern vehicle power and transmission technology</li> <li>- The Latest Development of NC Machining Technology</li> <li>- Mechanical automatical technology and its application</li> </ul>		
Type of Media	Taught seminar: Projector, PC		
Type of Assessment	Taught seminar: Evaluated from a technical report over 5000 words, and a 5 minutes presentation of every student (SL)		
Literature	<ul style="list-style-type: none"> <li>- Reports of the Developments in the field of Mechanical Engineering, Zhejiang University Press, 2011</li> </ul>		

## MESSTECHNIK UND QUALITÄTSMANAGEMENT

Name of module	<b>Messtechnik und Qualitätsmanagement</b> <b>Measurement Technology and Quality Assurance</b>	Number	M31
Courses	Taught seminar: Messtechnik und Qualitätsmanagement MQ Laboratory: Messtechnik und Qualitätsmanagement MQP	Semester/ duration	5
Workload	64 h attendance, 56 h self-study	Credits	4
Module responsibility	Wu Shu	Attendance hours	56 h + 8 h
Lecturers	Wu Shu, Feng Heming	Language	Chinese
Prerequisites	Recommended: Knowledge of engineering drawing and basic 3D-CAD, metalworking practice, Mathematics I, Mathematics II	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- select geometric tolerance and its match according to the functional requirements of machines and parts</li> <li>- check tolerance tables introduced in this course</li> <li>- use common measuring instruments</li> <li>- measure geometric parts</li> <li>- evaluate product and process quality</li> <li>- use statistical techniques to do quantitative analysis</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Geometric measurement basis</li> <li>- Hole shaft tolerances and detection</li> <li>- Surface roughness and its detection</li> <li>- Tolerance and fit of rolling bearing</li> <li>- Tolerance and detection of cylindrical thread</li> <li>- Tolerance and detection of cylindrical gears</li> <li>- Tolerance and detection of key and spline</li> <li>- Basic methods of quality management</li> <li>- System of quality management</li> <li>- Quality management in designing process</li> <li>- Quality inspection and sampling inspection</li> <li>- Quality improvement and 6<math>\sigma</math> management</li> <li>- Quality cost optimization and management</li> <li>- Quality supervision</li> </ul> Laboratory <ul style="list-style-type: none"> <li>- shaft measurement by optical comparators</li> <li>- surface roughness measurement by optical sectioning microscopy</li> <li>- screw parameters measurement by tool microscope</li> </ul>		

Type of Media	<p>Taught seminar: Tuition in seminars, blackboard, slides</p> <p>Laboratory: Experiments</p>
Type of Assessment	<p>Taught seminar: Successful passing in written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>
Literature	<ul style="list-style-type: none"> <li>- Gan Yongli,(2013): Geometric tolerances and detection, Shanghai Science and Technology Publishing</li> <li>- Huang Zhenchang,(2001): Interchangeability and measurement technology, South China University of Technology Publishing</li> <li>- ISO 2768-2:1993 General tolerances-Part 2: Geometrical tolerances for features without individual tolerance indications</li> <li>- Sun Jing, (2013): Quality management Science, Higher Education Press</li> <li>- Yu Xiao ling, Chen Shihua, (2011): Quality management, Higher Education Press</li> </ul>

## PRAXISAUSBILDUNG UND PRAXIS-KOLLOQUIUM

Name of module	<b>Praxisausbildung und Praxis-Kolloquium Industrial Training with Colloquium</b>	Number	M47
Courses	Praxisausbildung und Praxiskolloquium PRA	Semester/ duration	7,8
Workload	Total 756 h attendance, 144 h self study	Credits	27+3
Module responsibility	Hans-Joachim Beyer	Attendance hours	756 h
Lecturers	Mentoring professors from USST, HAW, SHC	Language	Chinese, German
Prerequisites	Recommended: Prior to practical education, the number of failed courses shouldn't exceed 3 which doesn't include basic courses	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- have certain understanding about the operation, management, culture of enterprises</li> <li>- have certain understanding about the relevant production equipments, process procedures, product testing, logistics warehousing, material procurement, and after-sales service</li> <li>- improve their ability of teamwork and cross-cultural communication</li> <li>- further enhance the abilities of combining theory and practice</li> <li>- give a written report about their internship in Chinese and German language</li> <li>- give an oral presentation regarding their practical education</li> <li>- report frequently about their progress in the internship</li> <li>- apply the principles of technical writing/presentation</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- In the practical education, students should apply the theoretical knowledge learned in class to their job realities, solving the actual problems with their job position.</li> <li>- The students develop their own abilities to raise questions, analyze questions and solve practical problems.</li> <li>- With increased familiarity with the work, the students further play subjective initiative to adapt to the company's working mechanism</li> <li>- dependent on the specific tasks during internship</li> <li>- applying their theoretical knowledge to the means of the job</li> <li>- the relevance with courses learned in class</li> <li>- the gains from the internship and positive advice of the position</li> </ul>		

Type of Media	Projector, PC
Type of Assessment	In general, students should submit internship reports in Chinese and German to both Chinese and German teachers every four weeks. Final reports should be submitted at the end of the Practical education. Referat (PL),
Literature	-

## Bachelorarbeit und Bachelor-Kolloquium

Name of module	<b>Bachelorarbeit und Bachelor-Kolloquium</b> <b>Bachelor Thesis and Bachelor Colloquium</b>	Number	M48, M49
Courses	Bachelorarbeit BPP Bachelor-Kolloquium BPR	Semester/ duration	8
Workload	18 h attendance BPR 432 h self-study (360h BPP + 72 h BPR)	Credits	12+3
Module responsibility	Hans-Joachim Beyer	Attendance hours	18
Lecturers	Mentoring professors from SHC, USST, HAW Hamburg	Language	German, Chinese
Prerequisites	Required: Prerequisite for the issue of the bachelor thesis is the proof of successful participation in all study, examination and exam performances of the first seven semesters and successful practical training.	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- apply the relevant theoretical knowledge gained in the proceeding bachelor thesis topics to solve a practical or experimental problems in their specific environment</li> <li>- write technology report, drawings or programs after the bachelor thesis is done</li> <li>- improve their ability of expressing the questions and presentation skills in German and in Chinese</li> <li>- improve their ability of applying the relevant theoretical knowledge gained into comprehensive application</li> </ul>		
Learning content	<ul style="list-style-type: none"> <li>- applying the relevant theoretical knowledge gained into comprehensive application</li> <li>- the main content, process, difficulties and the methods to solve them, and the final conclusion and harvest of their bachelor thesis in German and in Chinese</li> <li>- bachelor thesis is an theoretical, technical and experimental or practical written thesis</li> <li>- express the main content, process, difficulties and the methods to solve them, and the final conclusion and harvest of their bachelor thesis in German and in Chinese</li> <li>- the time for the presentation is in 15 to 20 minutes in each language</li> <li>- answer the German or Chinese teachers' questions thoroughly and correctly</li> </ul>		
Type of Media	Projector, PC		

Type of Assessment	<p>Successful passing in written report, drawings or programs: 12 CP (PL)</p> <p>Successful passing in presentation and Colloquium (Oral Exam): 3 CP (PL)</p>
Literature	<p>Depending on the different bachelor thesis topics and general literature:</p> <ul style="list-style-type: none"> <li>- H. Corsten, J. Deppe: Technik des wissenschaftlichen Arbeitens. 3. Auflage. München 2008.</li> <li>- N. Franck, J. Stary: Die Technik wissenschaftlichen Arbeitens. Eine praktische Anleitung, 15. Aufl., Paderborn, 2009.</li> <li>- M. Kornmeier: Wissenschaftlich schreiben leicht gemacht: für Bachelor, Master und Dissertation, 4. Aufl., UTB (Haupt-Verlag), Bern 2011.</li> <li>- A. Brink: Anfertigung wissenschaftlicher Arbeiten. 3. Aufl. München/Wien 2007.</li> <li>- T. Plümper: Effizient Schreiben: Leitfaden zum Verfassen von Qualifizierungsarbeiten und wissenschaftlichen Texten, Oldenbourg Verlag, 2003</li> </ul>

## **WAHLPFLICHTMODULE (TECHNISCH)**

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## MATERIALFLUSSTECHNIK UND INDUSTRIEROBOTER

Name of module	<b>Materialflusstechnik und Industrieroboter Material Handling Technology including Industrial Robots</b>	Number	M42.1
Courses	Taught seminar: Material Handling Technology incl. Industrial Robots MFT Laboratory: Material Handling Technology incl. Industrial Robots MFTP	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Henner Gärtner	Attendance hours	60 h + 20h
Lecturers	Henner Gärtner, Gong Chikun, Wu Shu	Language	German
Prerequisites	Recommended: Manufacturing Technology I	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- plan, design, dimension, evaluate and realize transport, warehouse and industrial robot systems after design, technical, organizational and economic points of view in material handling systems including order picking and warehouse areas</li> <li>- carry out tasks e.g. in the areas of development, design, planning and production process of material handling technology and industrial robots in manufacturing and trading companies</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Systematic of the material handling technology</li> <li>- Calculation basis of material handling technology</li> <li>- Structure and function of continuous handling equipment</li> <li>- Structure and function of discontinuous handling equipment</li> <li>- Systematic and structure of warehouse technology</li> <li>- Structure and kinematic of industrial robots</li> <li>- Characteristic parameters of industrial robots</li> <li>- Gripper and tools for industrial robots</li> <li>- Use of industrial robots in material flow and logistics</li> <li>- Simulation of material handling systems</li> </ul>		
Type of Media	Taught seminar: Power point presentations and films with beamer, blackboard		
Type of Assessment	<p>Laboratory: Successful participation of all tasks (PVL)</p> <p>Taught seminar: Written examination (PL)</p>		
Literature	<ul style="list-style-type: none"> <li>- Lecture notes</li> <li>- Materialflusstechnik, Martin, H., Vieweg-Verlag, 2008</li> <li>- Transport- und Lagerlogistik, Martin, H., Vieweg-Verlag, 2011</li> <li>- Materialflusssysteme, Jünemann, R., Springer-Verlag, 2007</li> <li>- Grundlagen der Handhabungstechnik, Hesse, S., Hanser-Verlag, 2013</li> <li>- Robotik, Montage, Handhabung, Hesse, S., Hanser-Verlag, 2016</li> </ul>		



## MODERNE ANTRIEBSTECHNIK (E-MOBILITY)

Name of module	<b>Moderne Antriebstechnik (e-Mobility)</b> <b>Modern Automotive Technology (e-Mobility)</b>	Number	M42.2
Courses	Taught seminar: Modern Automotive Technology BFC Laboratory: Modern Automotive Technology BFCP	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Achim Schmidt	Attendance hours	60 h + 20h
Lecturers	Achim Schmidt	Language	German
Prerequisites	Recommended: Knowledge of fundamentals of thermodynamics, physics, electrical engineering	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- have basic knowledge of automotive drive technologies including conventional internal combustion engines as well as electric respectively hybrid driving</li> <li>- understand the demands of energy-efficient, clean drive technologies</li> <li>- classify electrical/hybrid vehicles and their components with respect to their design and their requirements</li> <li>- understand the working principle of an electrical energy storage system and can draft the technical requirements including sub-components</li> <li>- understand the working principle of a fuel cell system and can draft the technical requirements</li> <li>- integrate new technical components in a vehicle concept</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Requirements of clean, energy efficient mobility</li> <li>- Fundamentals of conventional drive technology – Internal combustion engine</li> <li>- Waste heat recovery systems</li> <li>- Fundamentals of electrical/hybrid vehicles</li> <li>- Comparison of the drive technologies</li> <li>- Basics and requirements of electrical energy storage systems (Li-Ion technology)</li> <li>- Basics and requirements of fuel cell technology</li> <li>- Vehicle integration</li> </ul>		
Type of Media	<p>Taught seminar: Lecture Notes (Handout), Slides, Board</p> <p>Laboratory: Exercises according to the topics of the taught seminar</p>		
Type of Assessment	<p>Taught seminar: Written exam (PL)</p> <p>Laboratory: Successful participation of all tasks (PVL)</p>		

Literature	<ul style="list-style-type: none"> <li>- Lecture notes</li> <li>- Reif / Noreikat / Borgeest: Kraftfahrzeug-Hybridantriebe - Grundlagen, Komponenten, Systeme, Anwendungen Springer Vieweg Verlag, 2012, ISBN 978-3-8348-0722-9</li> <li>- Weydanz / Jossen: Moderne Akkumulatoren richtig einsetzen, Reichardt Verlag, ISBN: 978-3-939-35911-1</li> <li>- Tschöke: Die Elektrifizierung des Antriebsstrangs, Springer Verlag, ISBN: 978-3-658-04643-9</li> <li>- Töpler / Lehmann: Wasserstoff und Brennstoffzelle, Springer Verlag, ISBN: 978-3-642-37414-2</li> </ul>
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## METHODISCHE PRODUKTENTWICKLUNG

Name of module	<b>Methodische Produktentwicklung Productdesign Methodology</b>	Number	M42.3
Courses	Taught seminar: Productdesign Methodology DM Laboratory: Productdesign Methodology DMP	Semester/ duration	4 or 5 or 6
Workload	80 h attendance, 70 h self-study	Credits	5
Module responsibility	Hans-Joachim Beyer	Attendance hours	60 h + 20h
Lecturers	Hans-Joachim Beyer, Anna Usbeck, Udo Pulm	Language	German
Prerequisites	Recommended: Machine Design I, II	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand the product development process including typical process stages and milestones. Then the student will know the most important methods and the will be able to use these in different stages of engineering design.</li> <li>- apply and discuss these knowledges at a new Product in Laboratory</li> <li>- know the tasks of a design engineer in industry and the most important strategies of collaboration in project teams</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Product development process in industry: general problem solving, workflow during the development phase.</li> <li>- Product market analysis</li> <li>- Clarification and definition of the new product, market specification book</li> <li>- Product planning: Function structure, demand list, product cost definition, design cost definition, design time planning</li> <li>- Finding for technical solutions, assessment at solutions, sketch for the best solution</li> </ul>		
Type of Media	Taught seminar: Power point presentation with beamer, blackboard, worksheets and process sheet  Laboratory: Training sessions of product development steps.		
Type of Assessment	Taught seminar: Written exam (PL) Laboratory: Successful participation of all tasks (PVL)		
Literature	<ul style="list-style-type: none"> <li>- Lecture notes</li> <li>- Pahl,G.; Beitz, W.; Feldhusen, J.; Grote, K.-H.: Konstruktionslehre; Grundlagen erfolgreicher Produktentwicklung; Springer Verlag Berlin, 8. Aufl., 2013</li> <li>- Conrad, K.-J.: Grundlagen der Konstruktionslehre; Carl Hanser Verlag München, 6. Aufl., 2013</li> </ul>		

## **WAHLPFLICHTMODULE (NICHT-TECHNISCH)**

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## PRODUKTIONS- UND BETRIEBSMANAGEMENT

Name of module	<b>Produktions- und Betriebsmanagement</b> <b>Production and operation management</b>	Number	M46.1
Courses	Taught seminar: Production and operation management	Semester/ duration	7
Workload	48h attendance, 42h self-study	Credits	3
Module responsibility	Lv Wenyuan	Attendance hours	48 h
Lecturers	Lv Wenyuan, Wu Jizhong	Language	Chinese
Prerequisites	Recommended: Basic knowledge of economic management, Operational knowledge, General Probability Theory	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- Understand the development process of modern production management, master the basic concepts of production management, basic principles and basic methods.</li> <li>- Master the production process planning and design, production planning and control, procurement inventory, equipment management.</li> <li>- Master the basic principles of MRP and JIT, to master their application in the enterprise.</li> <li>- Use the knowledge and technology you have learned to solve practical problems in process management related to process planning, production planning, improvement and control.</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Production operation management objectives, content and processes; production operation and management of the structural framework</li> <li>- The importance of strategy and strategic management; the principles and methods of corporate strategy development; the content of production operations strategy</li> <li>- Qualitative prediction method, quantitative forecasting method</li> <li>- Characteristics, types and conditions of water production; organization design of single object pipeline; organization design of multi-object variable pipeline</li> <li>- Production plan strategy and system, production plan basis, master plan preparation, MTS enterprise annual plan development, MTO enterprise annual plan development, revenue management (Yield Management)</li> <li>- Inventory management business process, inventory control system, inventory basic model, the revision of the basic inventory model, ABC inventory management methods</li> <li>- MRP principle, MRP system structure and system processing</li> <li>- Work plan standard, workshop production plan between the preparation of the workshop, the production of internal production plan</li> <li>- Production control of the content and requirements, production operations statistics and in-process management, production schedule</li> </ul>		

	control and production scheduling work <ul style="list-style-type: none"> <li>- Typical maintenance theory and methods, basic maintenance decisions</li> <li>- Optimal Production Technology (OPT), JIT, Reengineering Process, Supply Chain Management</li> </ul>
Type of Media	Taught seminar: Projector, PC
Type of Assessment	Taught seminar: Written exam (PL)
Literature	<ul style="list-style-type: none"> <li>- Ye Chunming, Production planning and control. Higher Education Press, 2005, 12.</li> <li>- Richard B. Chase, Operations management for competitive advantage. 9th ed.</li> <li>- Chen Rongqiu, Ma Shihua, Production and operation management. Higher Education Press, 2002, 2</li> </ul>

## UNTERNEHMENSFÜHRUNG

Name of module	<b>Unternehmensführung Enterprise Management</b>	Number	M46.2
Courses	Taught seminar: Enterprise Management EM	Semester/ duration	7
Workload	48 h attendance, 42 h self-study	Credits	3
Module responsibility	Si Chengyong	Attendance hours	48 h
Lecturers	Si Chengyong, Gu Jin	Language	Chinese
Prerequisites	Recommended: Basic knowledge of Mathematics and Quality Assurance	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- grasp the elementary knowledge of enterprise management</li> <li>- grasp the important tool in enterprise management</li> <li>- solve the problems in business management</li> <li>- function effectively as an individual and as a member of a team</li> <li>- demonstrate an awareness of project management and business practices, such as risk and change management, and understand their limitations</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Industrial business and management</li> <li>- Business management and operations</li> <li>- Production process organization and control</li> <li>- Production planning and control</li> <li>- Business human resource management</li> <li>- Resource management and inventory control</li> <li>- Quality control and management</li> <li>- Equipment management</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, slides		
Type of Assessment	Taught seminar: Written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Fanghua W. (2007): Enterprise Management, Fudan University Press</li> <li>- Botang H., Pingdan Z. (2011): Enterprise Management Control System, Higher Education Press</li> <li>- Xiangnan L. (2009): Project Planning and Control, second edition, China Machine Press</li> </ul>		

## LOGISTIKMANAGEMENT

Name of module	<b>Logistikmanagement</b> <b>Logistics Management</b>	Number	M46.3
Courses	Taught seminar: Logistics Management LMA	Semester/ duration	7
Workload	32 h attendance, 28 h self-study	Credits	2
Module responsibility	Wu Shu	Attendance hours	32 h
Lecturers	Wu Shu, Guo Jianquan	Language	Chinese
Prerequisites	Recommended: Knowledge of Mathematics I, Mathematics II	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- understand the practical value of logistics and transportation/handling/packaging and storage technology in logistics management</li> <li>- understand the basic situation of all kinds of mature technology in modern logistics management process</li> <li>- master the application of logistics system planning and logistics distribution technology in practice</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Logistics system</li> <li>- Container unit technology and equipment</li> <li>- Transportation technology and equipment</li> <li>- Material handling technology and equipment</li> <li>- Conveying equipment</li> <li>- Sorting technology and equipment</li> <li>- Logistics information collection technology</li> <li>- Information guidance technology</li> </ul>		
Type of Media	Taught seminar: Tuition in seminars, blackboard, slides		
Type of Assessment	Taught seminar: Written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Huo hong, Liu Li, (2011) : Logistics management, Higher Education Press</li> <li>- Huang Fuhua, Zhou Min, (2016): Enterprise logistics management, Higher Education Press</li> <li>- Cheng Guoquan, (2007): Technology and equipment of logistics, Higher Education Press</li> </ul>		

## NICHT-TECHNISCHE MODULE

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## TECHNISCHES SCHREIBEN UND PRÄSENTATIONSTECHNIK

Name of module	<b>Technisches Schreiben und Präsentationstechnik</b> <b>Technical Writing and Presentation</b>	Number	M46.5
Courses	Taught seminar: Academic Writing and Presentation TWP	Semester/ duration	7
Workload	32 h attendance, 28 h self-study	Credits	2
Module responsibility	Hans-Joachim Beyer	Attendance hours	32 h
Lecturers	External lectures at HAW	Language	German
Prerequisites	-	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- apply the basic principles of academic work</li> <li>- work with scientific literature and filter the required information</li> <li>- write well structured papers and theses from the formal point of view</li> <li>- give a well-structured presentation</li> <li>- quote correctly</li> <li>- express their thoughts in technical discussions clearly</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Quality criteria in science</li> <li>- Scientific methods</li> <li>- Literature search, evaluation and citations</li> <li>- Writing scientific papers</li> <li>- Preparing and conducting a presentation</li> <li>- Moderate and participating a technical discussion</li> </ul>		
Type of Media	Taught seminar: Lecture Notes (Handout), Slides, Board		
Type of Assessment	Taught seminar: Written Examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Lecture Notes</li> <li>- Karmasin / Ribing: Die Gestaltung wissenschaftlicher Arbeiten: Ein Leitfaden für Seminararbeiten, Bachelor-, Master-, Magister- und Diplomarbeiten sowie Dissertationen, UTB GmbH, ISBN 978-3825248222</li> <li>- Balzert / Schäfer / Schröder / Kern: Wissenschaftliches Arbeiten, W3L GmbH, 2008, ISBN 978-3937137599</li> <li>- Franck / Sary: Die Technik wissenschaftlichen Arbeitens: Eine praktische Anleitung, UTB, 2009 , ISBN 978-3825240400</li> </ul>		

## SPORT I-IV

Name of module	<b>Sport I-IV</b> <b>Physical education I-IV</b>	Number	M4, M9, M17, M25
Courses	Taught seminar: Physical education1-Physical education4	Semester/ duration	1,2,3,4
Workload	32 h attendance	Credits	0,5CP*4
Module responsibility	Ni Wei	Attendance hours	32 h
Lecturers	Ni Wei, Yuan Yong, Zhu Xiaoling	Language	Chinese
Prerequisites	-	Offered	Academic Year
Learning outcomes	-		
Learning content	<p>Sport course is required to be hold at every Chinese university, according to the regulation of the central government of Beijing: Sport Regulation from 29,08.1995; effective since 01.10.1995</p> <p>Second Part: Sport at education institutions Art. 17: Sport is one part of education. The goal of education is to stimulate the development of students in all dimensions, especially in morality, intelligence and health.</p> <p>Art. 18: Education institutions must provide sport course. Sport course is part of the curriculum, which is to be evaluated. Education institutions should provide students with disabilities with occasion of doing sport, considering their disabilities.</p> <p>Education law since 18.03.1995, effective since 01.09.1995 Art. 5: The goal of education is to educate the new forces for the purpose of modernization of socialism in close relation to production and work. In this case it is to stimulate the development of students in all dimensions, especially in morality, intelligence and health.</p>		
Type of Media	-		
Type of Assessment	Sport tests (PL)		
Literature	-		

## MODERNE EUROPÄISCHE GESCHICHTE

Name of module	<b>Moderne europäische Geschichte</b> <b>Modern European history</b>	Number	M46.6
Courses	Taught seminar: Modern European history MEH	Semester/ duration	7
Workload	32 h attendance, 28 h self-study	Credits	2
Module responsibility	Hans-Joachim Beyer	Attendance hours	32 h
Lecturers	External lectures at HAW	Language	German
Prerequisites	-	Offered	Every academic year
Learning outcomes	The Students are able to <ul style="list-style-type: none"> <li>- know and understand the definition of history and culture of Europe</li> <li>- know and understand the development of selected European regions</li> <li>- know and understand Europe and its historic and cultural diversity</li> <li>- describe the history and culture of Europe in an intercontinental context</li> <li>- analyse causes and consequences of historic conflicts</li> <li>- analyse the challenges of a modern European Community with respect to education/culture/business</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Definitions to history and culture in Europe</li> <li>- History of selected European regions and countries</li> <li>- Culture of selected European regions and countries</li> <li>- European history and culture in an international context</li> <li>- Idea of a European Community and Economic and Monetary Union</li> <li>- Visit of museum/theatre/exhibitions</li> </ul>		
Type of Media	Taught seminar: Lecture Notes (Handout), Slides, Board		
Type of Assessment	Taught seminar: Written Examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Lecture Notes</li> <li>- Schmale: Geschichte und Zukunft der Europäischen Identität, Kohlhammer W., GmbH, ISBN 978-3170201002</li> <li>- Quenzel: Konstruktionen von Europa: Die europäische Identität und die Kulturpolitik der Europäischen Union, transcript, ISBN 978-3899424140</li> <li>- Landwehr / Stockhorst: Einführung in die Europäische Kulturgeschichte, UTB, ISBN 978-3825225629</li> <li>- Preuß: Hafen Hamburg: Geschichte – Zahlen – Menschen (Wissen im Norden), Wachholtz, ISBN 978-3529076060</li> </ul>		

## CHINESISCHE GESCHICHTE

Name of module	<b>Chinesische Geschichte</b> <b>Chinese history (obligatory courses according to the education law of March, 2005)</b>	Number	M3
Courses	Taught seminar: Chinese history CG	Semester/ duration	1
Workload	32 h attendance including examination	Credits	1
Module responsibility	Liu Ke	Attendance hours	32 h
Lecturers	Liu Ke, Song Qinghong	Language	Chinese
Prerequisites	-	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- distinguish the western phase of historical development of China in 19th and 20th century</li> <li>- relate the individual phase of historical development to the respective social and economic conditions</li> <li>- describe the political, social and economic factors leading to historical transformation</li> <li>- reflect the newest development and modernization of the People's Republic of China under the background of modern Chinese history</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- from the first opium war to the May 4th Movement</li> <li>- from the May 4th Movement to the founding of the People's Republic of China</li> <li>- the founding and the period of socialistic development of the People's Republic of China</li> <li>- Opening and new period of development of modernization</li> </ul>		
Type of Media	Taught seminar: Presentation, blackboard		
Type of Assessment	Taught seminar: Written examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Leitfaden der modernen Geschichte, High Education Publishing House. 2007</li> </ul>		

## POLITIK UND SOZIALES I

Name of module	<b>Politik und Soziales I</b> <b>Politics and society - Marxism principle</b> <b>(obligatory courses according to the</b> <b>education law of March, 2005)</b>	Number	M20
Courses	Taught seminar: Politics and society - Marxism principle PSI	Semester/ duration	4
Workload	32 h attendance including examination	Credits	1
Module responsibility	Xu Shuihua	Attendance hours	32 h
Lecturers	Xu Shuihua, Zhang Yu	Language	Chinese
Prerequisites	-	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- explain the main features of the more current pragmatic reforms of the People's Republic of China</li> <li>- describe the political measures, which are taken since Deng Xiaoping's term of office in the economic, social and cultural revolution</li> <li>- illustrate the systematic and political coordination between planned and market-oriented economy</li> <li>- relate the improvement of living standards in the People's Republic of China to the development of productivity since 1978</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Opening and reform of the Chinese Socialism</li> <li>- socialist economic, politics and culture with Chinese characteristics</li> <li>- to build a harmonious socialist society</li> <li>- economic development and measures to stimulate the per capita income: focus on the development of productivity</li> <li>- international strategy and diplomatic policy</li> </ul>		
Type of Media	Taught seminar: Course, Presentation		
Type of Assessment	Taught seminar: Written examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Wang, Ronghua, Theorie von Deng Xiaoping, Shanghai Education Publishing House, 2003.</li> <li>- Wang, Ronghua, Einleitung zu Drei Repräsentanten, Shanghai People Publishing House, 2003</li> </ul>		

## GRUNDZÜGE DER CHINESISCHEN RECHTSORDNUNG

Name of module	<b>Grundzüge der chinesischen Rechtsordnung Law Base (obligatory courses according to the education law of March, 2005)</b>	Number	M28
Courses	Taught seminar: Law Base RO	Semester/ duration	5
Workload	32 h attendance including examination	Credits	1
Module responsibility	Liu Ke	Attendance hours	32 h
Lecturers	Liu Ke, Song Qinghong	Language	Chinese
Prerequisites	-	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- distinguish between moral and legal questions and know about the principle of moral standards</li> <li>- illustrate the basic concept and the relationship of public law and private law</li> <li>- demonstrate the importance of private law and criminal law for commercial trade</li> <li>- analyze simple and practical cases</li> <li>- consider alternative dispute resolution in practice</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- Introduction: law and moral</li> <li>- moral basics</li> <li>- basis of public law</li> <li>- basis of criminal law</li> <li>- civil- and criminal procedural law</li> </ul>		
Type of Media	Taught seminar: Presentation		
Type of Assessment	Taught seminar: Written examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Chen Dawen, Die Grundlagen des Rechts, Fudan</li> <li>- Moralische Grundsätze und Grundzüge der chinesischen Rechtsordnung, Higher Education Publishing House, 2007</li> </ul>		

## POLITIK UND SOZIALES II

Name of module	<b>Politik und Soziales II Economics and Marketing (Deng Xiaoping Theory) (obligatory courses according to the education law of March, 2005)</b>	Number	M41
Courses	Taught seminar: Economics and Marketing (Deng Xiaoping Theory) PSII	Semester/ duration	5
Workload	64 h attendance including examination	Credits	2
Module responsibility	Xu Shuihua	Attendance hours	64 h
Lecturers	Xu Shuihua, Zhang Yu	Language	Chinese
Prerequisites	none	Offered	Every academic year
Learning outcomes	The students are able to <ul style="list-style-type: none"> <li>- explain the main features of the “political economy”</li> <li>- analyse modern market economy based on the theoretical knowledge</li> <li>- reflect the concrete working conditions, considering the background of political economy</li> </ul>		
Learning content	Taught seminar <ul style="list-style-type: none"> <li>- the origin and the emergence of the “political economy”</li> <li>- currency and money</li> <li>- the transformation of money into capital</li> <li>- production of absolute surplus value</li> <li>- production of relative surplus value</li> <li>- production of absolute and relative surplus value</li> <li>- work income</li> <li>- the process of accumulation of capital</li> </ul>		
Type of Media	Taught seminar: Course, Presentation (PL)		
Type of Assessment	Taught seminar: Written examination (PL)		
Literature	<ul style="list-style-type: none"> <li>- Feng, Jingju, Einführung in die Grundlagen marxistischer Theorie, Higher Education Press 2008.</li> <li>- Gu, Hailiang, Grundsätze maxisischer politischer Ökonomie, Higher Education Press 2007.</li> </ul>		

## WERTPAPIERANLAGEN UND PRAXIS

Name of module	<b>Wertpapieranlagen und Praxis</b> <b>Securities Investment and Practice</b>	Number	M46.4
Courses	Taught seminar: Securities Investment and Practice	Semester/ duration	7
Workload	32h attendance, 28h self-study	Credits	2
Module responsibility	Gao Guangkuo	Attendance hours	32 h
Lecturers	Gao Guangkuo, Lu Jin	Language	Chinese
Prerequisites	Microeconomics, macroeconomics, finance	Offered	Every academic year
Learning outcomes	<p>The students are able to</p> <ul style="list-style-type: none"> <li>- systematically and comprehensively grasp the basic knowledge of the securities market and securities investment, be familiar with the securities market and the corresponding investment use and management measures</li> <li>- use and serve the government departments, financial institutions, securities institutions, Engaged in personal activities of investment activities, training with securities business operation ability,</li> <li>- have a certain degree of securities investment analysis and financial management of the basic knowledge of the type, operational talents.</li> </ul>		
Learning content	<p>Taught seminar</p> <ul style="list-style-type: none"> <li>- Introduction</li> <li>- Securities investment instruments</li> <li>- Securities market</li> <li>- Operation and supervision of securities market</li> <li>- Securities trading</li> <li>- Analysis of Securities Investment Value</li> <li>- Fundamental Analysis of Securities Investment</li> <li>- Analysis of Securities Investment Technology</li> <li>- Portfolio theory</li> <li>- Securities investment practice</li> </ul>		
Type of Media	Taught seminar: Board, projector, PC		
Type of Assessment	Taught seminar: Written exam (PL)		
Literature	<ul style="list-style-type: none"> <li>- Gao Guangkuo Editor: "Securities investment theory and practice", Shanghai University of Finance and Economics Press, 2007 edition</li> <li>- Zhou Zhaoxiong, Zhao Guangjun, Gao Guangkuo Editor: "Securities Investment", Shanghai University of Finance and Economics Press, 2005 edition</li> <li>- China Securities Industry Association: "Securities Investment Analysis", China Finance and Economics Press, 2005 edition.</li> </ul>		