

May 2011

PROGRAMME
IN ENGLISH LANGUAGE
FOR EXCHANGE STUDENTS

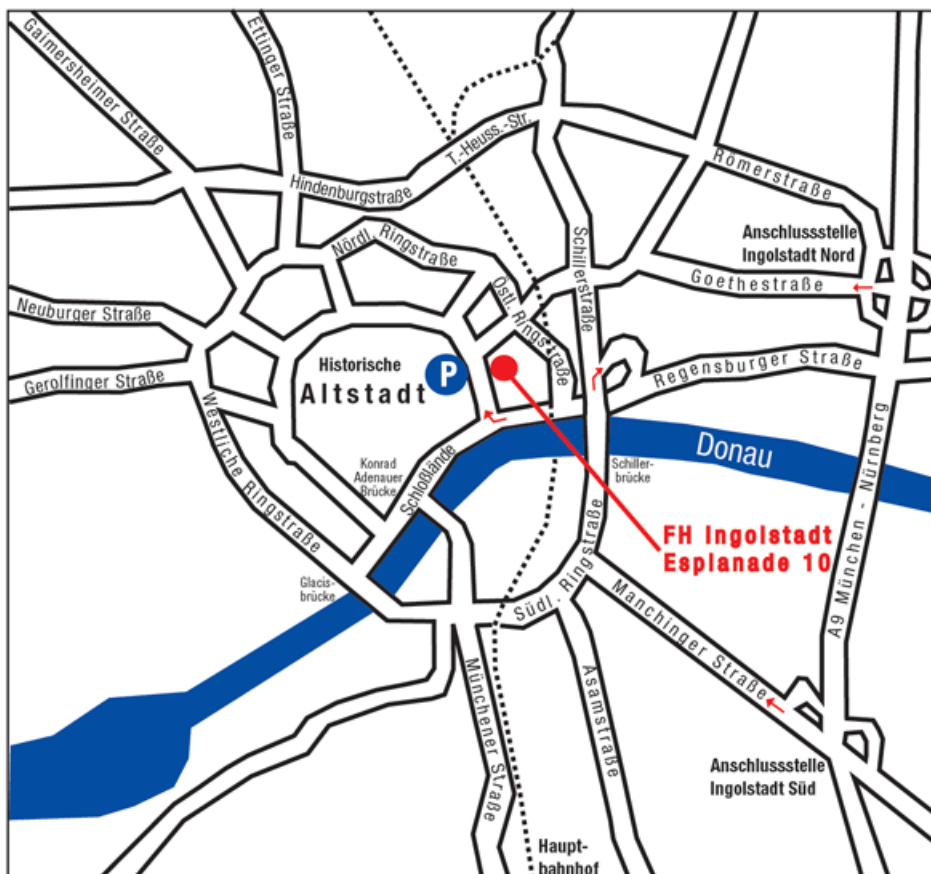
Every semester the Ingolstadt University of applied Sciences offers exchange students a full semester programme in English language offering 2nd and 3rd year modules with a total of 30 European Credits. Please note that classes with less than eight participants can be cancelled.

Basic German, Pre-Intermediate German and Intermediate German are offered as regular classes during the semester. Students fluent in German may, of course, also participate in the regular German programme. Details on lectures can be found on the web under:

<http://www.haw-ingolstadt.de/studium/international/wege-nach-ingolstadt-studium.html> in the download area.

Semester schedule is:

Fall / Winter semester (WS): 1st week in October – End of February
Spring / Summer semester (SS): 3rd week in March – End of July



Courses in English Language

<u>Modules</u>	<u>Subject</u>	<u>Lectures per week</u>	<u>ECTS</u>	<u>Course assessment</u>	<u>Lectures held*</u>	<u>Open for students of</u>
1	Accounting and Reporting Thomas Vogler	4	5	Written exam (90 min) (IRM)	WS	Business
2	Advanced Industrial Engineering Maximilian Schmidt	2	2.5	Written exam (90 – 120 min)	WS	Engineering
3	Advanced Professional Management Michael Jünger Robert Wittmann	3	4	Written exam (90 min)	WS/SS	Business Engineering 3 rd year students only
4	Aerodynamics Sabine Bschorer	2	2,5	Written exam (90 – 120 min.)	WS	Engineering
5	Automotive Control Engineering	4	5		WS	Engineering
6	Automotive Mechanics Armin Arnold	4	5	Written exam (90 – 120 min)	WS	Engineering
7	Automotive Mechatronics Harald Göllinger	4	5	Written exam (90 – 120 min)	WS	Engineering
8	Bionic Materials Thomas Brodbeck	2	2.5	Oral exam (30 min)	WS/SS	Engineering
9	Business Consulting Michael Jünger	2	2.5		WS	Business Engineering
10	Business in Latin America Roxana Orozco	2	5	Written exam (90 min./3 ECTS) seminar paper (2 ECTS)	WS/SS	Business
11	Business Planning Marc Knoppe	2	5	Written & oral exam (3 ECTS) & seminar paper (2 ECTS)	WS/SS	Business Engineering Computer Science
12	Business Report Analysis Karin Schmidt	2	2.5		WS	Business
13	Business Taxation Reiter	2	3	Written exam (90 min) (IRM)	--	Business
14	CAE Jörg Wellnitz	2	2	Written exam (90 min)	WS/SS	Engineering min. 7 participants
15	Control Engineering and Automation & lab (mandatory) Claus Brüdigam	4 2	4 2	Written exam (90 min)	SS	Engineering
16	Corporate Social Responsibility Polzin René Schmidpeter	2	5	Written exam (90 min. 3 ECTS) Presentation (2.5 ECTS)	WS/SS	Business Engineering Computer Science
17	Cost Management Thomas Vogler	4	5	Written exam (90 min) (IRM)	SS 10 seats exchange	Business Engineering Computer Science
18	Cross-cultural Leadership Frank Albritton	2	5	Written exam (90min/3 ECTS) Term paper (2 ECTS)	--	Business Engineering Computer Science

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19	Design and Brand Jörg Wellnitz	2	2.5		WS	Engineering
20	Developing Sales Business Globally Robert Pelzel	4	4	Written exam (90 min)	WS	Business Engineering
21	Digital Hardware Design with FPGA Edwin Naroska	4	4	Oral exam (20 – 30 min)	WS/SS	Engineering
22	E-Technologies Michael Hitzler	2	5	Practical assignment (3 ECTS) Presentation (2 ECTS)	SS	Business
23	European Union Anne-Marie Schnackertz	2	5	Written exam (90 min./3 ECTS) & seminar paper (2 ECTS)	WS/SS	Business Engineering Computer Science
24	Evolutionary Management Peter Augsdörfer	2	3	Presentation	SS	Business Engineering
25	Fatigue and Fracture Mechanics Christian Krä	2	2	Written exam (90 min.)	WS	Engineering
26	Finance and Capital Budgeting Torsten Graap	4	5	Written exam (90 min.) (IRM)	WS	Business
27	Human Resource and Organization Management Marc Knoppe	4	4	Written exam (90 min.) (IRM)	SS 10 seats exchange	Business Engineering Computer Science
28	Intercultural Business Communication James McDonald Anja Rudolph	2	5	Written exam (90 min./3 ECTS) & seminar paper (2 ECTS)	WS/SS	Business Engineering Computer Science
29	Integral M&A Management Kai Lucks	2	5	Written exam (90 min./3 ECTS) seminar paper (2 ECTS)	WS/SS	Business
30	International Brand Management Natarajan Chandrasekhar	2	5	Written exam (90 min./3 ECTS) seminar paper (2 ECTS)	WS/SS	Business
31	International Business Law Andreas Schollmeier Bernd Wegmann	2	5	Term paper / presentation (3 ECTS) additional term paper / presentation (2 ECTS)	WS/SS	Business
32	International Management – Case Studies Bernd Scheed	2	5	Practical exercise / presentation 30min (3 ECTS) term paper (2 ECTS)	SS	Business
33	Introduction to Computer Architecture and Programming Edwin Naroska	2	2	Written exam (90 min.)	WS	Engineering Computer Sciences
34	International Law Andrea Lichtenwimmer	4	5	Written exam (90 min.) (IRM)	WS	Business
35	International Project Management Joachim Walter	4	5	Practical exercise / presentation 30min (3 ECTS) term paper (2 ECTS)	SS	Business Engineering Computer Sciences

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36	Marketing Andrea Raab Bernd Scheed	4	5	Written exam (90 min.)	WS/SS	Business
37	Marketing Natarajan Chandrasekhar	4	5	Written exam (90 min.)	SS	Business
38	Mathematical Modelling and Simulation Andreas Hagerer	4	5	Written exam (90 – 120 min.)	WS	Engineering
39	Maths and Statistics Lars Fend Marc Wagner	2		(IRM)	WS	Business
40	Noise and Vibration Engineering Jörg Bienert	2	2	Written exam (90 – 120 min.)	WS	Engineering
41	Presentation Skills Thomas Vogler	4	3	Short presentation & moderation of group-work	SS	Business
42	Principles of Business Administration Marc Knoppe	4		(IRM)	WS	Business
43	Principles of Business Law Siddharath Lugani	2	3	Written exam (90 min) (IRM)	SS 10 seats exchange	Business
44	Principles of Economics Monika Ruschinski	4	5	Written exam (90 min) (IRM)	WS	Business
45	Product Development and Quality Assurance Robert Pelzel Gerd Schwandner	4	5	Written exam (90 – 120 min)	--	Engineering
46	Project (IAE) Jörn Schlingensiepen	4	5	Presentation	WS/SS	Engineering
47	Purchase and Supply Chain Management Natarajan Chandrasekhar	4	4	Written exam (90 min) (IRM)	WS	Business
48	Renewable Energies Wilfried Zörner	4	4	Written exam (60 min)	WS/SS	Engineering min. 3 participants
49	Statistics Lars Fend	3		(IRM)	WS	Business
50	Strategic Management Peter Augsdörfer Bernd Scheed	3	4	Written exam (90 min.) & presentation	WS/SS	Business Engineering Computer Science
51	Supply Chain Management Andreas Jattke	2	2.5	Written exam (90 – 120 min)	--	Engineering
52	Technology Management Peter Augsdörfer	2	5	Project work	WS/SS	Business Engineering Computer Science
53	Virtual Plant Layout Markus Petry	4	5	Practical exercise, presentation	--	Engineering
54	Basic German A1 Lydia Hinfray-Schmidt	2	2.5	Written exam (60 min.)	WS/SS	Business Engineering Computer Science

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55	Pre-Intermediate German Kreher	2	2.5	Written exam (60 min.)	WS/SS	Business Engineering Computer Science
56	Intermediate German Conversation Julia Kinzel	2	2.5	Written exam (60 min.)	WS/SS	Business Engineering Computer Science

Module 1 Accounting and Reporting

4 SWS

Lecturer: Thomas Vogler

5 ECTS

Objectives: The students are familiar with international accepted rules of accounting. They understand the structure and the content of a balance sheet. They are also familiar with the International Accounting Standards and know how to apply them in bookkeeping and accounting.

Contents:

- Principles of bookkeeping
- Basics of IAS accounting
- Accounting of assets
- Accounting of liabilities
- Calculating of equity
- Profit and loss accounting
- Basics of balance sheet analysis

**Course
Assessment:** Written examination, 90 min.

Literature: Horngren, C.T., Harrison, W.T.; Smith Bamber, L.; 2005, *Accounting*, 6 edn. Prentice Hall, ISBN : 0131435965
Retail Management: A strategic approach, (9th edition Berman and Evans)

Module 2 Advanced Industrial Engineering 2 SWS

Lecturer: **Maximilian Schmidt** **2.5 ECTS**

Objectives: Designing, structuring and optimizing production systems (manufacturing and assembly) by using methodical tools. Knowledge to integrate cost aspects, technical demands, manpower requirements and design for assembly.

Contents:

- Project planning toolbox
- Methodical analysis of industrial systems
- Logical targeting and methods to decide
- Structural design possibilities
- Use of optimization methods (consulting toolbox)
- Process stabilization
- Staff planning, organizing and development
- Designs for assembly
- Case studies and workplace studies

Course Assessment: Written examination, 90 – 120 min.

Literature:

Module 4 Aerodynamics

2 SWS

Lecturer: Sabine Bschorer

2.5 ECTS

Objectives: Knowledge of influence of car design on flow around a car. Knowledge of flow measurement and computational fluid dynamics.

Contents:

- Basics: flow phenomena in aerodynamics
- Experiments with different car designs using flow visualization, velocity measurement and force measurement
- Car design variation using computational fluid dynamics
- Comparison between experiment and calculation

Course Assessment: Written examination (90 – 120 min.)

Literature:

Module 5 Automotive Control Engineering**4 SWS****Lecturer: Rainer Krämer****5 ECTS**

Objectives: Representation and design of discrete time systems. Design of controllers and observers for multiple input / multiple output systems using state space approach. Knowledge of the representation of non-linear systems and the design of non-linear controllers and their application for automotive tasks. Good knowledge of components and functions of engine management systems.

Contents:

- Survey of automotive control systems
- Transformation continuous time systems to discrete time systems
- Design of digital controllers
- Controller design by pole placement
- Riccati design
- State observers
- Representation of non-linear control systems
- Analysis of non-linear control systems
- Survey of engine management systems
- Lab work: design and test of different types of control systems

Course Assessment: Written examination (90 min.)

Literature:

Module 6 Automotive Mechanics

4 SWS

Lecturer: Armin Arnold

5 ECTS

Objectives: Understanding of the vehicle's driving behaviour regarding especially power train and chassis components

Contents:

- Power train influences on vehicle dynamics: front/rear/four-wheel-drive, differential gears
- Chassis/suspension influences on vehicle dynamics
- General vehicle dynamics (one-track-model, tyre behaviour)

Course Assessment: Written examination, 90 – 120 min.

Literature:

Module 7 Automotive Mechatronics

4 SWS

Lecturer: Harald Göllinger

5 ECTS

Objectives: To provide students with foundational concepts in mechatronics and familiarity with common elements of mechatronic systems. A structured design approach is to be obtained: analysis of the technical problem, determination of the structure of the overall system, and selection and dimensioning of organizational components.

Contents:

Mechatronic Systems

- Definition, characteristics and principles
- Control of mechatronic systems

Sensors

- Classification and principles, signals and signal processing
- Measurement chain, integrated and intelligent sensors
- Measurement of physical quantities

Motors and actuators

- Classification and principles, application areas
- DC motors analysis and modelling, stepper motors and synchronous/asynchronous motors
- Pneumatic/hydraulic actuator systems: principles

**Course
Assessment:**

Written examination, 90 – 120 min.

Literature:

Module 8 Bionic Materials

2 SWS

Lecturer: Thomas Brodbeck

2,5 ECTS

Objectives: Good basic knowledge of bionic materials for engineering purposes and smart applications. Deeper knowledge on the area of smart structures, main focus on fibre re-inforced plastics, foam, paper, wood, spidersilk, pearl, bamboo. Knowledge of examples in the area of ultra-lightweight design. Application of materials in special areas. Adherence and glue in nature.

Contents: Introduction to Bionic/Biomimetic
Basics: re-inforced duro- and thermoplastics, cellular materials, carbon, glas, aramide and wooden fibres, plastic and metal foam

- Fibre re-inforced plastics: manufacturing, applications, new principles, 2D biological fibres, 3D woven fabrics
- Cellular metals: cellular foam, aluminium foam, analogy to human bone structures, "Hüthers" lines of compression, application endoprothetic
- Material paper: folding technique "Origami", application in space technology, ultra-lightweight design with new fibres, glued paper "Nomex"

Discrete frameworks: structures of high stiffness, i.e. folded frames for satellites, "twisted tubes" for telescope applications

- Sandwich technology: principle of sandwich construction, core technique with honeycombs, design with wooden materials, several applications
- Exercises: practical exercises on material assessment and manufacturing on bionic structures focused on foam and paper, visit of EADS Centre Ottobrunn on ultra-lightweight components from satellites and excursion to Ingolstadt Central Hospital on endoprothetic surgery
- Nature-made composites like pearl, bamboo, wood
- Spidersilk
- Adherence and glueing in nature
- Technical optimization from nature after the idea from tree-optimization or evolution
- Birds as blueprints for high-tech aircrafts

Course Assessment: Oral exam 30 min. (2.5 ECTS)

Literature: Will be announced at the beginning of the lectures

Module 9 Business Consulting

2 SWS

Lecturer: Michael Jünger

2.5 ECTS

Objectives:

Contents:

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**Course
Assessment:**

Literature:

Module 10 Business in Latin America

2 SWS

Lecturer: Roxana Orozco

5 ECTS

Objectives: The students emerge with an understanding of the potential and the challenges of conducting business in Latin America through practical knowledge in cultural, managerial, economic, political and legal issues.

Contents: Introduction to the Latin American subcontinent:

- geographic scope
- common historic roots

Business in Latin America:

- Latin American cultures: similarities and differences
- Pragmatic overview of classic / contemporary studies on Latin cultures
- Economic outlook for the region
- Foreign direct investment / multinationals

Course Assessment: Written exam (90 min./3 ECTS)
seminar paper (2 ECTS)

Literature: Albert, R. (1996): A Framework and Model for Understanding Latin American and Latino/Hispanic Cultural Patterns. In: Landis, D./ Bhagat, R. (1996, eds.): Handbook of Intercultural Training. 2nd. Ed., pp. 317-348. Sage, Thousand Oaks, 1996.

Ball et al. (2004): International Business, 9th Edition, New York: McGraw-Hill.

Beamish et al. (2003): International Management, Text and Cases, 5th. Edition, New York: McGraw-Hill.

Brake T. and Walker, D. (1995): Doing Business Internationally, Princeton: Training Management Corporation.

House et al. (2004, eds.): Culture, Leadership, and Organizations. The GLOBE-Study of 62 Societies. Thousand Oaks, London, 2004.

Lenartowicz/ Johnson, James (2002): Comparing Managerial Values in Twelve Latin American Countries: An Exploratory Study. In: Management International Review, Vol. 42, p.p. 279-397, 2002/2003.

Moran, Robert (1995): International Business Case Studies for the Multicultural Marketplace. Houston: Gulf Publishing Company.

www.cepal.org

www.youtube.com

<http://www.cyborlink.com/>

Module 11 Business Planning

2 SWS

Lecturer: Marc Knoppe

5 ECTS

Objectives: This lecture shows the critical issues and feasibility of developing a business venture. With actual case studies students will be prepared to develop a strategic frame, an operating model and a systematic roadmap for execution. Students will understand the difficult political and organizational obstacles that accompany every business planning. Upon completion of all the cumulative lessons, the students will understand the process of an entrepreneurial business planning

Contents: Key success factors like strategic planning, information sharing, incentives, budgeting, control, change management or the role of power and influence in a business venture will be discussed.

Effective business planning will be divided in a comprehensive process of:

- Identifying business ideas
- Screening the idea to determine feasibility
- Developing a strategic plan
- Developing an operating model
- Transforming strategies to operational issues

Case studies, practical exercises and presentations

Course Seminar paper (3 ECTS)

Assessment: Presentation (2 ECTS)

Literature: References will be provided in class/can be found on the HI-intranet

Module 12 Business Report Analysis

2 SWS

Lecturer: Karin Schmidt

2.5 ECTS

Objectives:

Contents: -

**Course
Assessment:**

Literature:

Module 13 Business Taxation

2 SWS

Lecturer: Robert Reiter

3 ECTS

Objectives: Students gain an understanding of general international income tax principles, in particular where a person or cooperation is taxed and how a potential double taxation is avoided. Additionally, the students become familiar with the VAT system within the European Union.

Contents: International income taxation principles

- Taxation due to residency
- Taxation at the income source
- Taxation of corporations and their shareholders
- Taxation of business income, rental income, interests, dividends, licenses and employee income

Avoidance of double taxation by cross-border transactions
VAT system within the European Union

Course Assessment: Written exam, 90 min.

Literature: Karayan, J. E.; Swenson, C.V., 2007, *Strategic Business Planning*, 2nd edn, John Wiley & Sons, ISBN: 0-470-00990

Module 14 CAE

2 SWS

Lecturer: Jörg Wellnitz

2 ECTS

Objectives: Introduction into the techniques of Computer Aided Engineering. The ability to solve selected problems of technical calculations as well as the ability to communicate and present the findings. Overview of CAE-techniques in the development process.

Contents:

- Calculation and simulation the field of engineering
- FEM/BEM/MKS
- CAD-FEM interaction and integration
- Digital Mock UP, Rapid Prototyping
- Complexity and benefit of CAE
- Lab

Course Assessment: Final examination 90 min. (2 ECTS)

Literature: Fröhlich, P.: FEM-Leitfaden, Springer Verlag

Miscellaneous: min. 7 participants

Module 15a Control Engineering and Automation 4 SWS

Lecturer: N.N. **4 ECTS**

Objectives: Representation, analysis and design of continuous-time and discrete-time control systems.
Basics of automation in the field production

Contents: Mathematical modelling of systems, transfer function, block diagram, stability, steady-state error and speed of response, control loop, root-locus design, frequency-domain design, empirical design methods, digital control, simulation.
PLC, sensors, drives, pneumatic systems

Course Assessment: Written examination, 90 min.

Literature: W. Bolton: Control Engineering. Prentice Hall, Harlow, 1998, ISBN 0 582 32773-3
W. Bolton: Mechatronics. Prentice Hall, Harlow, 1999, ISBN 0 582 35705-5
R. S. Burns: Advanced Control Engineering. Butterworth-Heinemann, Oxford, 2001, ISBN 0 7506 5100 8

Remarks: Pre-requisite for the admission to the examination is successful completion of the lab work.

Module 15b Control Engineering and Automation LAB 2 SWS

Lecturer: N.N. **2 ECTS**

Objectives: Application of acquired knowledge

Contents: Teaching of mobile/stationary robots; programming of a manufacturing system (PC); PC/PLC-control system; temperature control system (PID); system model (throttle module); micro-controller based position control of throttle module

Course Assessment: Attendance and protocol of six experiments

Module 16 Corporate Social Responsibility

2 SWS

Lecturer: René Schmidpeter

5 ECTS

Objectives: Acquire knowledge about socio-economic perspectives on business administration and management. Discuss possibilities and benefits of strategic corporate social responsibility strategies. Analyse economic and societal challenges of a company and develop sustainable solutions to it.

Contents:

- Socio-economic principles of responsible management (business & society)
- Shareholder and stakeholder management approaches
- Bottom of the pyramid and social entrepreneurship
- Strategic corporate responsibility management
- Corporate responsibility within core business processes
- Community investment strategies
- Linking strategic company goals with societal challenges
- Developing a corporate citizenship approach

Course Group work with presentation (3 ECTS)

Assessment: Written exam, 60 minutes (2 ECTS)

Literature:

- 1) Prahalad, C.K., a.o. (2003) (Eds.) Harvard Business Review on Corporate Responsibility, McGraw-Hill
- 2) Habisch, A.; Jonker, J.; Wegner, M.; Schmidpeter, R. (Eds.) (2005): Corporate Social Responsibility across Europe, Springer

Module 17 Cost Management

4 SWS

Lecturer: **Thomas Vogler**

5 ECTS

Objectives: The students are familiar with the basics of cost accounting and cost management. They know the tools of cost accounting in retail companies and are able to apply their knowledge in some case studies. They are also familiar with some side effects over the whole supply chain and know some of the ECR-tools.

Contents: - Basics of cost accounting
- Cost-type accounting
- Cost centre accounting
- Contribution accounting
- Efficient consumer response

Course Assessment: Written exam, 90 minutes

Literature: References will be provided in class / can be found on the intranet.

Module 18 Cross-Cultural Leadership

2 SWS

Lecturer: Frank Albritton

5 ECTS

Objectives: A study of organizational leadership and decision-making skills essential for all managers in intercultural environments. Theories of culture are examined and applied in relation to leadership style and practices, as well as organizational communication across cultural groups. Development and leadership of teams are explored in an intercultural environment, including leadership of virtual teams. The role of culture in the success of joint ventures and partnerships will be investigated.

The readings target particular aspects of cultural differentiation. Working within those topics, teams of students are asked to describe aspects of leadership in particular cultures based on their research and/or personal experiences. Students use both formal presentations and informal discussions to engage each other in learning about different cultural expectations, with teams assigned a lead role for each week's emphasis. The goal of the course is to help prepare students for leadership in business assignments in multicultural and diverse situations.

Contents:

- Globalization and the Importance of Cross-Cultural Leadership
- Cultural Regions
- Dimensions of Culture
- Cross-Cultural Leadership Effectiveness
- Cross-Cultural Leadership Case Studies

Students Research/Applications on Cross-Cultural Leadership

Course Assessment: Written examination, 90 min. (3 ECTS)
Term paper (2 ECTS)

Literature:

Module 19 Design and Brand

2 SWS

Lecturer: Jörg Wellnitz

2.5 ECTS

Objectives:

Contents: -

**Course
Assessment:**

Literature:

Module 20 Developing Sales Business Globally 4 SWS

Lecturer: Robert Pelzel 4 ECTS

- Objectives:**
- Four steps to become a trusted advisor
 - Key elements of solution selling, the next steps
 - How to address the top management desires

Contents: Managers of tomorrow have to have a clear understanding of cultural differences and need to know second-to-non tools to undertake analysis of international business opportunities quickly. This workshop explains leading theories like Harvard negotiation method and the famous lead lag concept. Hereby and with additional interactive teamwork as well as video analysis the students learn what is key to have success in a global environment. Basically a great challenge for those who are searching for excellence.

- The 7 elements of global business development
- What rules to consider and points to ponder of no go hurdles
- Lead / lag theory, mind your manners
- Checklist to develop strategies globally
- Analysis of the business model of the customer
- Professional negotiation preparation and Harvard principle
- How to attract and delight customers, time and crises management
- Dealing with buying parties and their role models

Course Assessment: Written exam (90 min)

Literature:

Module 21 Digital Hardware Design with FPGA 4 SWS

Lecturer: **Edwin Naroska 4 ECTS**

Objectives: After attending the lecture the student will be able to

- design, implement and test digital hardware solutions using FGPAs
- use VHDL to describe and test digital circuits
- verify functionality and correct operation of complex designs using appropriate test methods

Contents: FGPAs (Field programmable Gate Arrays) are programmable like processors but can implement arbitrary digital circuitry like ASICs (Application Specific Integrated Circuits). FGPAs became more and more advanced during the years. As a result, today's FPGA devices are capable of running complex and performance/throughput driven tasks that are out of reach for processor based solutions. Typical application domains for FPGA designs are signal processing, controlling and communication.

By attending this lecture students will learn how to design and test digital FGPAs based circuits using VHDL. VHDL is a widely used hardware design language that helps developers to efficiently create and test digital circuits. It is similar to typical programming languages with the addition of means to describe concurrency.

The lecture puts a focus on gaining practical "hands-on" experience. In a series of theoretical and hands on sessions students will learn how to write digital designs in order to make maximum use of the capabilities of today's devices. To this end, the hardware design language VHDL is introduced and exploited to create flexible and powerful modules that can be easily and effectively reused. Moreover, the course will show how to verify and test such complex systems. This is an especially important topic as testing eats up more and more of the overall design time.

The lab exercises are based on actual hardware development boards (Nexys2 FPGA Board, <http://www.digilentinc.com/>). As design software the free Xilinx Webpack software suite will be used (<http://www.xilinx.com>).

The topics of the course are listed below:

- Introduction to digital hardware design
- Introduction to VHDL
- Exploiting Xilinx FGPAs
- Using timing constraints to ensure proper interfacing
- Introduction to testing
- Design of complex and self checking test benches

Requirements: Students should have basic programming knowledge (any programming language like Java, C, C++, or C# is fine). No special hardware design knowledge is needed as the course starts with an introduction into digital hardware.

Course Assessment: Oral exam
(20 – 30 min)

Literature: Peter J. Ashenden, The Designers Guide to VHDL, 759 pages, ISBN-10-1558606742, Morgan Kaufmann
Janick Bergeron, Writing Testbenches: Functional Verification of HdI Models, 512 pages, Springer Netherlands

Miscellaneous: Max. 12 participants

Module 22 E-Technologies

2 SWS

Lecturer: Michael Hitzler

5 ECTS

Objectives: Students acquire knowledge to produce a web based E-Learning course

Contents: We are going to have a look at the process needed to be done producing a web based E-Learning course such as video production, video editing / encoding, image processing and basic web development (HTML & JavaScript).

Course Assessment: Practical assignment (3 ECTS)
Presentation (2 ECTS)

Literature:

Module 23 European Union

2 SWS

Lecturer: **Anne-Marie Schnackertz**

3 ECTS

Objectives: The students are introduced to the historical, cultural and institutional background of the European Community. They are familiar with conflicting interests inside and outside the community.

Contents:

- A brief presentation of the 15 old & 12 new member states: population, capital, language, culture, economic indicators and major companies
- European cultural identity (past): unity and diversity
- The history of the European Union
- The single market: objectives, means and instruments
- New member states and enlargement issues
- Schengen and Europol: more internal security for Europe
- Aspects of the monetary union, the EU budget and taxation
- The institutions of the European Union
- Workers' and consumers' rights
- Cultural issues: (e.g. sports, TV, education, arts, the American vs the European dream)
- Study of cases illustrating problems arising from the divergence between national and European interests

Course Assessment: Written examination (90 minutes) (3 ECTS)
Project presentation / term paper (2 ECTS)

Literature: References will be provided in class.
The international press: The Economist, Business Week, FT

Further Comments: Handouts in the intranet at
Fachbereich W / Dozenten / Schnackertz / EU
+ The international press: The Economist, Business Week, FT

Miscellaneous: This course will be taught in English.

Advice: 20 students

Module 24 Evolutionary Management

2 SWS

Lecturer: **Peter Augsdörfer**

ECTS

Objectives: Evolutionary concepts of management are beginning to show an impact in modern business theory. The basic assumption about the corporate stakeholder is that they must be consistent with the common understanding of the evolution of humans. This includes non-conformity about the standard axiom of rationality (“utility maximize”) and dealing with uncertainty. This course provides some general abstract principles to frame investigations into evolutionary processes in the business environment context.

Contents: - Schumpeter’s Concept of Entrepreneurship
 - Evolutionary Management Concept
 - Organisation and Strategy within the evolutionary approach
 - Learning organisation and change management

Course Assessment: Presentation

Literature: - Kirsch et. Al. (2009), Unternehmensführung – eine evolutionäre Perspektive, Schäffer-Poeschel Verlag, Stuttgart
 - Grant, R.M. (2005), Contemporary Strategy Analysis, 5th edition, Blackwell, Oxford
 - Hodgson, G. (2009), Darwinism and Economics, Elgar, Cheltenham

Module 25 Fatigue and Fracture Mechanics

2 SWS

Lecturer: **Christian Krä**

2 ECTS

Objectives: -

Contents: -

Course Assessment: Written examination, 90 min.

Literature:

Module 26 Finance and Capital Budgeting

4 SWS

Lecturer: Torsten Graap

5 ECTS

Objectives: The students

- are able to recognize the significance of the leverage-effect,
- have the ability to estimate and discuss the importance of financial indices,
- gain the competence of using different investment methods,
- can distinguish and understand current types of financing,
- are able to transfer knowledge into an integrative budgeting tool.

Contents:

- Basics of finance and investment
- Optimising capital structure decisions by integrating the leverage effect
- Basics of financial indices (finance controlling)
- Static and dynamic investment methods
- Overview of basic finance types
- Develop a suitable budgeting system

Course Assessment: Written examination, 90 min.

Literature: Ross, S.A.; Westerfield, R.W.; Jordan, D.B., 2005, *Corporate Finance Fundamentals*, 7th edn., McGraw-Hill, ISBN: 071118020

**Module 27 Human Resource and
Organisation Management**

4 SWS

Lecturer: Marc Knoppe

4 ECTS

Objectives: Recent scandals have created a mistrust that has spread through the entire business sector, jeopardizing public confidence in the stock market and economy. Now more than ever, it's important for students to understand the moral foundations, rules, and implications that are vital to the core of business. There is no greater asset to a company than its employees. Business is permanently changing, so students have to know how to (re)organize a firm and to gain a competitive advantage according to business ethics.

Organizational theory, design, and change continues to provide students with the most up-to-date and contemporary treatment of the way managers attempt to increase organizational effectiveness.

Students will learn how to maximize a firm's potential through identifying and keeping the ideal workforce. Today's human resource professionals are not focused solely on administrative tasks. Rather, they work in all levels of the organization, and are aligned with the strategic goals of a firm. The lecture seeks to introduce students to the world of Human Resource and Organization Management. It reveals the strategic function in a practical, realistic manner yet maintains a balance of pragmatism and theoretical concepts. Students will understand the dynamic and exciting environment of Human Resource and Organization Management and the complex decisions that all managers have to make managing their employees and organizations.

Contents:

- Strategic human resource management and leadership
- Staffing, development and performance management
- The organization and its environment
- Organizational design and change
- Business ethics and social responsibility as a critical part of human resource and organization management
- Case studies and realtime projects

Course Assessment: Written exam, 90 minutes

Literature: References will be provided in class / can be found on the HAW intranet.

Module 28 Intercultural Business Communication

2 SWS

Lecturer: James McDonald
Anja Rudolph

5 ECTS

Objectives: The students are familiar with the role of culture and cultural differences and their effects on professional interaction. Students will develop an awareness of factors leading to intercultural misunderstandings and consider methods of overcoming these problems in business communication.

Contents:

- The importance of intercultural communication
- Cultural dimensions
- Intercultural aspects in
 - managing people
 - negotiations
 - presentations
 - advertising
- Comparing cultures, case studies and role plays

Course Assessment: Written examination (90 minutes) (3 ECTS)
Term paper and presentation (2 ECTS)

Literature: References will be provided in class / can be found on the HI intranet.

Miscellaneous: This course will be taught in English.

Module 29 Integral M&A-Management

2 SWS

Lecturer: Kai Lucks

5 ECTS

Objectives: Development of a basic understanding on integral M&A project management structured according internationally operating corporations in a global field of competition

Contents:

- Basics of M&A (reasons, success factors, categories)
- Models of M&A project Management
- Categories of M&A-projects
- Roles and contributions of active players (corporate, consultants, investment bankers ...)
- Management of part processes of M&A
- Integrating the part processes, management of inter-process transfers
- Introduction of most important tools and templates
- Specialities of international M&A projects
- Integral project management and project controlling

Course Assessment: Written examination (90 min) (3 ECTS)
Seminar paper / presentation (2 ECTS)

Literature:

Kai Lucks und Reinhard Meckl: Internationales M&A. Der prozessorientierte Ansatz, Springer-Verlag Heidelberg, 2002.
Kai Lucks: Project Management for Mergers & Acquisitions. Working Paper No. 1, University of Applied Sciences Ingolstadt, 2003.
Kai Lucks: Mergers & Acquisitions: A Systematic Procedure for Success. Working Paper No. 9, University of Applied Sciences Ingolstadt, 2005.
Kai Lucks (editor.): Transatlantic Mergers & Acquisitions. Opportunities & Pitfalls in German-American Partnerships, Publicis Erlangen and Wiley New York, 2005.
Kai Lucks (editor.) M&A in China. Praxisberichte und Perspektiven. Frankfurter Allgemeine Buch, 2006.

Miscellaneous: Block seminar (4 days)
This course will be taught in English.

Module 30 International Brand Management

2 SWS

Lecturer: Natarajan Chandrasekhar

5 ECTS

Objectives: To provide a basic understanding of Product/Brand Management and its important to the organization through examining the analytical, decision making and planning concepts and tools available to the Product Brand Management.

Contents:

- Introduction to Product Management
- Role and function of product management in the organization
- New product development process and strategy
- Understanding a product/brand
- Brand identity/brand extension
- Brand equity
- Brand building strategies
- Brand valuation models – basics
- Why brand?

Course Assessment: Written exam (90 min./2.5 ECTS)
Term paper and presentation (2.5 ECTS)

Literature: Case studies will be provided on the FH intranet
Product Management – Lehmann
Strategic Brand Management – David Aaker Philip
Kotler, P.; Keller, K.L.; Marketing Management, 3rd edn., Upper Saddle River (NJ) 2008

Module 31 International Business Law

2 SWS

Lecturer: **Andreas Schollmeier**
Bernd Wegmann

5 ECTS

Objectives: The students acquire basic understanding concerning the legal conditions for economic transactions with foreign aspects. They gain basic knowledge in forming contracts when international aspects arise.

Contents: - Sales contracts over the border
- Cross-border securisation
- International company law
- European company forms
- Mergers over the border
- Acquisition of companies and business units

Course Assessment: Term paper / presentation (3 ECTS)
Additional term paper / presentation (2 ECTS)

Literature:

Miscellaneous: This course will be taught in English.

Module 33	Introduction to Computer Architecture and Programming	2 SWS
Lecturer:	Edwin Naroska	2 ECTS
Objectives:	-	
Contents:	-	
Course Assessment:	Written examination, 90 min.	
Literature:		

Module 34 International Law**4 SWS****Lecturer: Andrea Lichtenwimmer****5 ECTS**

Objectives: The students gain knowledge of the principles of European and international contract law. They acquire a basic understanding of the fact that different legal systems exist and that the legal approach may differ from system to system. The students will be able to understand the efforts that have been taken to harmonize the private commercial law in the EU and worldwide. The students get an insight into basic information on conflict of law issues. Furthermore the students are familiar with international trade organizations as the WTO.

Contents:

- Principles of European and international contract law
- Harmonization of private commercial law
- Aspects of contract law
-

Course Assessment: Written examination, 90 min.

Literature: Shaw, M.N., 2003, *International Law*, 5th edn., Cambridge University Press, ISBN: 0-521-82473-7

Module 35 International Project Management

4 SWS

Lecturer: **Joachim Walter**

5 ECTS

Objectives: Students gain a general understanding of organizing projects. They learn about staffing, time management, cost control, coordination etc. as well as about tools and instruments to fulfill these tasks. Another emphasis is on how to deal with problems which can occur while working on a project (team conflicts, time delays, budget cuts (etc.)). The students get told how to apply instruments to avoid or solve those problems. They apply what they have learned in hands-on training with case studies.

Students learn about specific problems in international projects arising from cultural differences (e.g. differences in leadership, risk handling, perception of time etc.).

Content: Topics are

- Project Lifecycle (Phases and tasks)
- Forms of project organization
- Project planning (scheduling, resource allocation, cost estimation)
- Project monitoring and control
- Soft skills in project management (communication, motivation, problem solving)
- Specific aspects in an international and intercultural context
- New developments in project management

Exam: Practical exercise / presentation 30min (3 ECTS)
term paper (2 ECTS)

Literature: Kerzner, H., Project Management, John Wiley & Sons, New York, 2003
List to be continued in class

Miscellaneous: Parts of the course can be based on self study material (computer or web-based training, literature etc.)

Module 36 Marketing

4 SWS

Lecturer: **Andrea Raab**
Bernd Scheed

5 ECTS

Objectives: The students will be able to

- define the nature, function and basic principles of marketing.
- describe the strategic planning processes of a company in order to understand marketing as a market driven philosophy.
- apply the marketing research process as a framework to analyze broad and task marketing environment of a company.
- understand the nature of positioning and differentiation.
- describe the concept and key elements of the marketing mix and their application.
- solve case studies on realistic marketing problems.

Contents:

- Nature and function of marketing
- Strategic planning processes
- Corporate strategic planning
- Marketing process
 - Analyzing market opportunities
 - Conducting market research
 - Forecasting and demand measurement
 - Dealing with the competition
 - Identifying market segments
 - Selecting target markets (market targeting)
 - Designing marketing strategies
 - Positioning strategies
 - Differentiation strategies
 - Developing marketing programs
 - Setting the product and branding strategy
 - Developing pricing strategies
 - Managing the marketing effort
 - Designing and managing marketing channels
 - Designing and managing integrated marketing communications

Course Assessment: Written examination, 90 min.

Literature: Kotler, P.: Keller. K. L.: Marketing Management, 13 ed., Upper Saddle River (NJ) 2008
<http://www.prenhall.com/kotler> (Questions)
Raab, A.; Poost, A.; Eichhorn S. (2008): Marketingforschung – Ein praxisorientierter Leitfaden, Stuttgart 2008

Further Comments: Students are asked to do a presentation addressing several questions of the case study; topics are assigned at the beginning of the term.

Miscellaneous: This course will be taught in English.

Module 37 Marketing

4 SWS

Lecturer: **Natarajan Chandrasekhar**

5 ECTS

Objectives: The primary objective of this course is to examine how Marketing and operational strategies can be utilized by retailers to improve performance in highly competitive, challenging and dynamic environment besides providing a conceptual and “how-to”-understanding of key strategic issues in retailing involving different departments.

Contents:

- An introduction to retailing
- Building and sustaining relationships in retailing
- Strategic planning in retailing
- Retail institutions by ownership and store-based strategy mix
- Web-, non-store based and other forms of non-traditional retailing
- Identifying and understanding consumers
- Site selection
- Retail organisation and human resource management
- Operation Management – financial and operational dimensions
- Developing and implementing merchandise plans
- Financial merchandise plans
- Pricing in retailing
- Establishing and maintaining a retail image
- Integrating and controlling the retail strategy
- Promotional strategy

Course Assessment: Written exam, 90 minutes

Literature: Retail Management: A strategic approach, (9th edition Berman and Evans)
Retailing – Dunne (Cengage Learning 2007)
Retailing Management (Levy & Weitz, McGraw Hill 2007)
Case studies available on the intranet of Hochschule Ingolstadt

Module 38 Mathematical Modelling and Simulation 4 SWS

Lecturer: **Andreas Hagerer** **5 ECTS**

Objectives: Introduction to modelling methods: setting up models using appropriate mathematical frameworks and using various techniques for analysing them. At the completion of this course, students should be able to construct dynamical models in a manner suitable for computer solution and use those models to analyze and simulate system behaviour.

Contents: The following topics are covered:

- Modelling of mechanical, electrical, thermo-fluidic and interconnected systems
- Linearity: scaling, superposition and linearization of nonlinear processes
- Laplace transforms, transfer functions, and frequency response analysis, behaviour (forced and unforced time and frequency domain responses) of linear time-invariant (LTI) ordinary differential equations.
- Numerical integration and computer simulation
- Tools: solution of dynamic problems using a digital simulation packages for continuous time/sampled data systems such as MATLAB/Simulink, modelling and simulation of event-driven systems with Stateflow

Course Assessment: Written examination, 90 – 120 min.

Literature:

Module 3 Maths and Statistics

2 SWS

Lecturer: **Lars Fend**
Marc Wagner

2.5 ECTS

Objectives: The students are familiar with basic mathematics for economists. They know mathematical techniques relevant for business administration and are able to apply these techniques in specific business cases.

Contents: The lecture includes

- graphs and functions
- linear equations
- quadratic equations
- differential calculus
- integral calculus
- financial mathematics

Course Assessment: written examination (90 min.) for Maths and Statistics

Literature: Swift, L.; Sally, P., 2005 *Quantitative Methods for Business, Management and Finance*, 2nd edn., Palgrave Macmillan, ISBN: 1403935289

Module 40 Noise and Vibration Engineering

2 SWS

Lecturer: **Jörg Bienert**

2 ECTS

Objectives: -

Contents: -

Course Assessment: Written examination, 90 – 120 min.

Literature:

Module 41 Presentation Skills

4 SWS

Lecturer: **Thomas Vogler**

3 ECTS

Objectives: The students are familiar with presentation tools and know how to apply them. They are able to use several media like beamer, flip-chart, pinboard. They also know how to moderate group-work-sessions. The students have practiced a lot of different presentations which were recorded by cameras and discussed in the group.

Contents: - Basics of presentations
 - Moderating group-works

Course Assessment: Short presentation and moderation of group-work-session.

Literature:

Module 42 Principles of Business Administration 2 SWS

Lecturer: **Marc Knoppe** **3 ECTS**

Objectives: The students have reached skills in essential elements of business organisation, marketing, production, finance, risk and human resource management. Moreover, the students have deepened their understanding as different case studies of globally known organisations are integrated to provide relevant illustrations of theory in practice.

The students have obtained a solid foundation of the core topics by a comprehensive introduction to the themes and functions of business administration and management within the clear process framework of planning, organising, leading, marketing and controlling.

Contents: An introduction to management

- The international context of business
- Business ethics

Principles of management

- Corporate strategy and planning
- Strategic management
- Fundamentals of organizing
- Leadership and human resource management

Principles of marketing and sales management

- Marketing concepts
- Product and marketing process
- Pricing and distribution
- Communication

Financial issues and controlling

- Accounting and financial management
- Information management
- Risk management

Operation management

- Purchasing
- Production

Case studies, practical exercises to develop business skills

Course Assessment: Written examination, 90 min.

Literature: Joseph, G.N.; Parker, D., 2006, *Principles of Business Economics*, 2nd edn., Pearson Education Ltd., ISBN-10: 0-273-69306-9

Module 43 Principles of Business Law

2 SWS

Lecturer: Siddharath Lugani

3 ECTS

Objectives: The students are familiar with legal bearing of business. They understand which points have to be considered when drafting a contract or founding a company. They have a basic knowledge how a legal dispute works.

Contents:

- Source and principle of law
- Sales and purchase conditions
- Dispute resolution
- Incorporation of a business
- Basics of sales rights and anti trust rules
- Liability of executives, BJR with regard to M&A, due diligence

Course Assessment: Written exam, 90 minutes

Literature: References will be provided in class

Module 44 Principles of Economics

4 SWS

Lecturer: Monika Ruschinski

5 ECTS

Objectives: The students are familiar with the fundamental principles of economics. Students will gain experience by applying economic theories and tools to solve actual economic problems. As a result, students will understand:

- what determines demand and supply for a consumer good in a competitive market
- the meaning of the elasticity of demand and supply and the effects of government policies
- the concepts of welfare economics, market efficiency and market failures
- the defining characteristics of public goods and common resources and why private markets fail to provide public goods
- why trade among people or nations can be good for everyone
- how gross domestic product (GDP) and how the consumer prices index (CPI) are defined and calculated
- the factors that determine a country's productivity
- how to build a model to explain an open economy's trade balance and exchange rate

Contents:

- how people make decisions
- how markets work
- markets and welfare
- the economics of the public sector
- firm behaviour and the organization of industry
- the data of macroeconomics

Course Assessment: Written examination, 90 min.

Literature: Mankiw, N.G. (2008), Principles of Economics, South Western

Module 45 Product Development and Quality Assurance

4 SWS

**Lecturer: Robert Pelzel
 Gerd Schwandner**

5 ECTS

Objectives: -

Contents: -

Course Assessment: Written examination, 90 – 120 min.

Literature:

Module 46 Project (IAE)

4 SWS

Lecturer: Jörn Schlingensiepen

5 ECTS

Objectives: -

Contents: -

**Course
Assessment:**

Literature:

Module 48 Renewable Energies

4 SWS

Lecturer: Tobias Bader
Matthias Sonnleitner
Christoph Trinkl

4 ECTS

Objectives: The student will be able to:

- Evaluate nowadays energy supply (heat and electricity) and the impact of renewable energies in its different forms
- Understand components and systems of renewable energy technology such as photovoltaics, solar thermal energy, biogas, solid biofuels, water power and wind energy.

Contents:

- Energy today, resources and environment, potentials of renewable energies, energy policies
- Overview on renewable energy technologies
- Solar energy: energy source sun, global irradiation
- Photovoltaic: operating mode, design and manufacturing of solar cells and solar modules, components of PV-systems, grid connected systems and off-grid systems
- Solar thermal systems: design and operating mode of solar collectors, solar thermal systems in detached houses (domestic hot water and space heating)
- Simulation of solar thermal systems: CARNIT Blockset for Matlab Simulink, modelling and simulation
- Solar cooling: principles of solar cooling, system technology, excursion to a solar air-conditioning plant in Ingolstadt
- Bioenergy basics: energy source bioenergy, bioenergy in the context of renewable energies, overview
- Solid biofuels: wood, wood for energy supply in buildings, different technologies
- Biogas: energy crops, steps of biogas production, biogas utilisation, components of biogas plants, stirring technologies, feeding systems, internal energy consumption, methane emissions
- Wind power: history of wind energy, principles of wind energy, onshore systems, offshore systems, repowering
- Water power: kinds of turbines, calculations, types of water power plants

Course Assessment: Written examination, 60 min.

Literature: J.W. Tester et al. (2005) Sustainable energy-choosing among options. Cambridge. MIT Press
Duffie J.A., Beckmann W.A. (2006) Solar Engineering of Thermal Processes. 3rd edition, Hoboken (USA): John Wiley & Sons, Inc.
Tiwari, G.N. (2002) Solar Energy. Pangbourne (UK): Alpha Science International Ltd.
Hafner, B.; Plettner, J.; Wemhöner, C. (1999) CARNOT Blockset: Conventional and Renewable eNergy systems OpTimization blockset – user's Guide. Solar-Institut Jülich, Aachen University of Applied Sciences (Germany)

Module 49 Statistics

3 SWS

Lecturer: Lars Fend

ECTS

Objectives: The students are familiar with descriptive statistics and fundamentals of multivariate analysis. Students will know about different types of data, how they are collected, and displayed as well as applied and evaluated by using different statistical methods.

Contents: The lecture includes:

- Basics of descriptive statistic like
 - types of data
 - types of measurement scales
 - frequency distributions
- Numerical methods of describing and analyzing data
 - central tendency (mode, median, mean, harmonic & geometric mean)
 - measures of dispersion (range, variance, standard deviation)
 - correlation analysis
 - indices
 - analysis of time series
 - regression analysis

Course Assessment: Written examination (90 min.) for Maths and Statistics

Literature: Swift, L.; Sally, P., 2005 *Quantitative Methods for Business, Management and Finance*, 2nd edn., Palgrave Macmillan, ISBN: 1403935289

Module 50 Strategic Management

3 SWS

Lecturer: **Peter Augsdörfer
Bernd Scheed**

5 ECTS

Objectives: The “learning organisation” is a metaphor, with its roots in the vision of and the search for a strategy to promote a continuously self-transforming organisation. The ability of a firm and its top management team to learn is a critical aspect of the capability to manage strategically. The emphasis of this course is to understand the basics of the corporate learning process for a long-term (and profitable) survival.

Contents: - Evolutionary Management Systems
- Financial and non-financial goal setting
- Competition, dynamic environment and corporate audit
- Strategic intent, tools and implementation
- Learning organisation and change management
- Globalisation strategies

Course Assessment: Written exam, 90 min. (0.3)
Presentation (0.2)

Literature: Grant, R. (2005), Contemporary Strategy Analysis

Miscellaneous: This course will be taught in English.

Module 51 Supply Chain Management

2 SWS

Lecturer: **Andreas Jattke**

2.5 ECTS

Objectives: Process oriented knowledge of overlapping business logistics in the automotive industry in a global market.

Contents: - Supply chain management processes
- Simulation of business logistics processes with practical planning tools
- Advanced planning models

Course Assessment: Written exam (90 – 120 min)

Literature:

**Module 52 Technology Management
(virtual course)**

2 SWS

Lecturer: Peter Augsdörfer

5 ECTS

Objectives: Technological innovation is a key challenge in today's organisations. The students are able to estimate the role of technology-based competencies in corporate competitiveness, strategy and organisation. Also they are familiar with the effective management of research, development and innovative activities undertaken by industrial firms, and the factors that account for difference in performance.

Contents: The purpose of this course is to enable the students to:

- gain a thorough knowledge of technology management issues.
- explain the role of R&D
- recognise the importance of corporate innovation

Content

- Technological change
- Technology strategy planning
- Innovation management
- National system of innovation

Course Assessment: Written examination 60 min. (3 ECTS)
Seminar paper (2 ECTS)

Literature: Pavitt et al. (2003) Managing for Innovation, Wiley
Burgelman, R.A., Maidique, M.A. (1988), Strategic Management of Technology and Innovation, Irwin, USA
Pfeiffer, W., Metze, G., Schneider, W., and Amler, R. (1985), Technologie-Portfolio zum Management strategischer Geschäftsfelder, 3. Auflage, Vandenhoeck & Ruprecht, Göttingen
Freeman, C., (1982), The Economics of Industrial Innovation, 2nd edition, first edition in 1974, Pinter, London
Augsdorfer, P., (1996), Forbidden Fruit: an analysis of bootlegging, uncertainty, and learning in corporate R&D, Aldershot
<http://www.elsevier.nl/homepage/sae/econbase/respol.menu/sht>
<http://www.aom.pace.edu.tim/>
http://sshl.ucsd.edu/science_studies/headtech.html
<http://atschool.eduweb.co.uk/trnity/invent.html>

Registration: Please register by sending your student details per e-mail to: peter.augsdoerfer@haw-ingolstadt.de. You will receive a password with which to access the course.

Miscellaneous: This course will be taught in English.

Module 53 Virtual Plant Layout

4 SWS

Lecturer: Markus Petry

5 ECTS

Objectives: Compiling of a virtual manufacturing layout supported by an engineering software too.

Contents:

- Knowledge about the main planning steps
- Product structure and process plan
- Manufacturing structure an technologies
- Line balancing
- Product costs
- Software training
- Compiling of a virtual manufacturing layout
- Robot programming (lab)

Course Assessment: Practical exercise, presentation

Literature:

Module 54 Basic German (A1)

2 SWS

Lecturer: **Lydia Hinfray-Schmidt**

2.5 ECTS

Objectives: The students will be in command of the basic in the following skills: speaking, listening, reading and writing and able to communicate on an elementary basis. The course is aimed towards students without knowledge of the German language.

Contents: Chapters 1 – 10 from “Deutsch in 30 Tagen”

**Course
Assessment:** Written examination (60 min.)

Literature: Deutsch in 30 Tagen
Langenscheidt, ISBN 978-3-468-28017-17

Module 55 Pre-Intermediate German

2 SWS

Lecturer: Kreher

2.5 ECTS

Objectives:

Contents:

**Course
Assessment:**

Literature :

Module 56 Intermediate German Conversation

2 SWS

Lecturer: Julia Kinzel

2.5 ECTS

Objectives:

Contents:

**Course
Assessment:**

Literature: