

Module Descriptions

Mathematics, Natural and Engineering Sciences

- 51000** Modern Technologies
- [51010 Energy Management](#)
- [51020 Engineering Materials and Shape Forming](#)

- 51500** Production and Manufacturing Methods
- [51510 Manufacturing Technology](#)
- [51520 Quality Management in Research and Development](#)
- [51530 Production Systematics / Manufacturing Simulation](#)

Economics, Law and Social Sciences

- 52000** Enterprise Resource Planning (ERP)
- [52010 ERP-Systems - Lab](#)
- [52020 ERP-Systems - Reorganisation](#)
- 52500** Marketing
- [52510 Market Research](#)
- [52520 B2B-Communication](#)
- [52530 Marketing-Mix-Management](#)
- 53000** Global Economy
- [53010 International Finance & Controlling](#)
- [53020 International Business Communication](#)
- [53030 Global Economy II - International Enterprises](#)

Integration Subjects

- 53500** Business Information Systems
- [53510 Business Information Systems](#)
- [53520 e-Business](#)
- 54000** Integrative Management
- [54010 Management of IT-Systems](#)
- [54020 IT-Project Management](#)
- [54030 Innovation and Technology Management](#)

Course:

Energy Management

Module Code: 51010

Credits: 2,5 ECTS (5 GB credits)

Contents:

- Short repetition of basics (energy forms, degree of energy efficiency, degree of utilization, degree of coverage)
- Current and future energy demand (primary energy, world population, gross national product, global energy budget)
- Global resources of conventional energy
- Renewable energies (availability, sustainability and affordability)
- Electrical, mechanical, chemical and thermal forms of energy storage
- Energy transport of different energy types
- Possibilities of reducing energy peak demands and costs through cutting with photovoltaics
- Case studies of future and existing on-off-grid systems with renewable energies (e.g. photovoltaics, wind energy, fuel cells, flywheel, batteries)
- Practical evaluation through the University-owned photovoltaics and inverter test plant

Literature:

„Einführung in die elektrische Energietechnik“ Noack, F., Fachbuchverlag Leipzig
„Einsatzmöglichkeiten von Speichern in EVU-Netzen“ Kleimaier, M., VDI-Berichte 1404
„Energiewirtschaft“ Dittmann, A., Zschernig, J., B. G. Teubner Verlag
„Energieumwandlung in Kraft- und Arbeitsmaschinen“ Kalide, W., Hanser Verlag
„Regenerative Energiesysteme“ Quaschnig, V, 3. Auflage,
Hanser Verlag ISBN 3-446-21983-8
Weitere Lit. Hinweise sind der obigen Quelle zu entnehmen

Course:

Engineering Materials and Shape Forming

Module Code: 51020

Credits: 5 ECTS (10 GB credits)

Contents:

- Modern engineering materials and materials development
- Industrial design processes and their influence on macroscopic materials behaviour
Examples : Casting, Coating, Assembling (laser welding, splicing), special procedures of near net shape manufacturing of components (hydroforming etc.), material processing with laser

Literature:

- BARGEL, SCHULZE: Werkstofftechnik, VDI-Verlag
 - W. BERGMANN: Werkstoffkunde 1 und 2; Carl-Hanser-Verlag
 - ROOS, MAILE: Werkstoffkunde für Ingenieure; Springer-Verlag
 - H. HÜGEL: Strahlwerkzeug Laser; Teubner Studienbücher
1. Materials Science and Engineering
William D. Callister, Jr.
John Wiley & Sons, Inc.
ISBN 0-471-22471-5
 2. The Science and Engineering of Materials
D. R. Askeland
Boston, PWS-KENT
 3. An Introduction to the Mechanical Properties of Solid Polymers
Ward, I. M., and D.W. Hadley
Wiley, New York, 1993
 4. ASM Handbook. Vol. 1, Properties and Selection: Irons, Steels and High-Performance Alloys
ASM International, Material Park, OH 1990
 5. Aluminum: Technology, Applications and Environment
D. G. Altenpohl
The minerals, Metals & Materials Society (TSM)
ISBN 0-87339-406-2
 6. Aluminum and Aluminium Alloys
The Materials Information Society (ASM)
ISBN 0-87170-496-X

Course:

Manufacturing Technology

Module Code: 51510

Credits: 2,5 ECTS (5 GB credits)

Contents:

- Prototypes, casting of metallic materials, casting methods, sintering
- Forming, forming methods, rolling
- Separating, basics of chipping technology, metal cutting with geometrically defined cutting
- Operating resources, machine tools, appliance systematics
- **Lab:** CNC machine tools and CNC control units, handling, casting, wire-cut EDM, cutting force determination and elasticity determination, cutting performance and durability comparison
- **Project work:** programming, manufacturing, tool selection and quality assurance of a work piece

Literature:

A. Herbert Fritz, Günter Schulze: Fertigungstechnik, Springer-Verlag Berlin, Heidelberg, New York
G. Spur, Th. Stöferle: Handbuch der Fertigungstechnik, Carl Hanser Verlag München Wien
Heinz Tschätsch: Praxis der Zerspantechnik, Vieweg Praxiswissen
H. Schönherr: Spanende Fertigung, Oldenburg Verlag München Wien
Bozina Perovic: Fertigungstechnik, Springer-Verlag Berlin Heidelberg New York London Paris Tokyo
Hong Kong Barcelona

Course:

Quality Management in Research and Development

Module Code: 51520

Credits: 2,5 ECTS (5 GB credits)

Contents:

- Basics and requirements of the quality management system TS 16949 (QS 9000, VDA)
- Quality audit according to VDA 6.1
- Process capability key data
- Statistical process control (SPC)
- Six Sigma, group work as part of the TQM philosophy
- FMEA, QFD
- Quality management in automotive product development

Literature:

Ebel B. (Hrsg.: Däumler, Gabe): Qualitätsmanagement, Verlag Neue Wirtschafts-Briefe, Herne, Berlin 2003

Cassel, M.: ISO/TS 16949 umsetzen, Hanser, Berlin 2004

Rehbehn R., Yurdakul, B.: Mit Six Sigma zu Business Excellence. Strategien, Methoden, Praxisbeispiele, Publicis Corporate Publishing 2003

Mockenhaupt, A. et al.: „Werkzeuge im Innovationsmanagement“, Verlag Dr. Harald Winter, ISBN 3-89825-521-2, Berlin 2002 (DVD-ROM mit Video beim Autor)

Course:

Production Systematics / Manufacturing Simulation

Module Code: 51530

Credits: 5 ECTS (10 GB credits)

Contents:

- Virtual modelling of products and processes
- Theory of modelling
- Selected algorithms of geometry oriented and process oriented systems
- Feature classification
- Rapid prototyping
- Data interfaces
- Management concepts for development structures and production structures

Literature:

Spur, G.; Krause, F.-L.: Das virtuelle Produkt, Carl Hanser Verlag
eM-Plant, Reference Manual

Course:

ERP-Systems - Lab

Module Code: 52010

Credits: 2,5 ECTS (5 GB credits)

Contents:

Practical exercises on a PPC system, drawing up of parts lists, material purchasing, work scheduling, establishing of standard operation time, production planning, calculation of costs of the end product, stock posting, processing of customer orders, determination of demand, release of purchase orders and production orders.

Literature:

Eversheim, W.: Organisation in der Produktionstechnik, Band 1: Grundlagen, 2. Auflage, VDI-Verlag, Düsseldorf 1990

Eversheim, W.; Luckzak, H. (Hrsg.): Produktionsplanung und -steuerung, VDI-Verlag, Düsseldorf 1997

Glaser, H.; Geiger, W.; Rohde, V.: PPS Produktionsplanung und -steuerung, Wiesbaden 1991

Handbuch des Übungssystems

Course:

ERP-Systems - Reorganisation

Module Code: 52020

Credits: 2,5 ECTS (5 GB credits)

Contents:

Introduction, ERP reorganization, project implementation, process and structure analysis and optimization, provides students with realistic view of production planning and control, requirements specification, market analysis with pre-selection and final selection, tendering procedure, provider and user test with testing schedules, contract conclusion and technical specifications (supplier), implementation and replacement scenarios, systems maintenance, understanding the specifications of PPC systems, material resource planning and purchasing, work scheduling, establishing of standard operation time, production planning.

Literature:

Eversheim, W.: Organisation in der Produktionstechnik, Band 1: Grundlagen, 2. Auflage, VDI-Verlag, Düsseldorf 1990.

Eversheim, W., Luczak, H. (Hrsg.): Produktionsplanung und -steuerung VDI-Verlag, Düsseldorf 1997

Luczak, H., Eversheim, W. (Hrsg.): Einführung von Standard-PPS-Systemen zur Unterstützung der Auftragsabwicklung, Sonderdruck 11/96 - 1. Auflage 1997 Forschungsinstitut für Rationalisierung (FIR) Aachen

Reinecke, B.: Mit dem Team auf Brautschau - Die systematische Endauswahl von PPS-Systemen durch anwenderorientierte Tests, Sonderdruck, 3. Aufl. 1993 - Forschungsinstitut für Rationalisierung (FIR) Aachen

Course:

Market Research

Module Code: 52510

Credits: 2,5 ECTS (5 GB credits)

Contents:

- 1 Functions and definition of market research
- 2 Excursion formation of hypotheses
- 3 Market research methods -an overview
- 4 Random sampling
- 5 Design of questionnaires, conducting of a survey and evaluation
- 6 Case studies

Literature:

Backhaus, K./Erichson, B./Plinke, W./Weiber, R.: Multivariate Analysemethoden, Eine anwendungsorientierte Einführung, 10. Auflage, Berlin 2003
Kühn, R./Fankhauser, K.: Marktforschung - ein Arbeitsbuch, Wien 1996
Grenn, P./Tull, D.: Methoden und Techniken der Marketingforschung, neueste Auflage, Stuttgart
Meffert, H/Bruhn, M.: Marketing-Fallstudien, Fallbeispiele - Aufgaben - Lösungen, neueste Auflage, Wiesbaden



Course:

Elective (e.g. B2B Communication or other courses)

Module Code: 52520

Credits: 2,5 ECTS (5 GB credits)

To be transferred to the University of Glamorgan.

Course:

Marketing Mix Management

Module Code: 52530

Credits: 2,5 ECTS (5 GB credits)

Contents:

- 1 Introduction (situation of SMEs)
- 2 Marketing mix basics (Theory)
- 3 Localisation and classification of marketing mix interdependences (Theory)
- 4 Working on practical case studies

Literature:

Zollondz, H.-D. (2003): Marketing-Mix, Berlin

Helmke, S./Uebel, M./Dangelmaier, W. (2003): Effektives Customer
Relationship Management, Wiesbaden

Grönroos, C. (2000): Service Management and Marketing , 2. Aufl., New
York u.a.



Course:

Elective (e.g. International Finance and Controlling or other courses)

Module Code: 53010

Credits: 2,5 ECTS (5 GB credits)

To be transferred to the University of Glamorgan.

Course:

International Business Communication

Module Code: 53020

Credits: 2,5 ECTS (5 GB credits)

Contents:

- English as negotiation and communication language (awareness improvement)
- Raising awareness for cultural differences in business contexts and considering them in meetings and negotiations with international business partners
- Becoming aware of behavioural patterns and negotiation strategies and applying them purposefully in business contacts

- Getting to know international negotiation strategies and cultural differences
- Negotiation exercises in groups
- Problem solving strategies with case studies
- Small Talk, international table manners
- Global Village
- Launching a new product: business simulation
- Working abroad

Literature:

- Hollett, Vicky: Business Opportunities, Oxford University Press
- Powell, Mark: in company, Macmillan

Course:

Global Economy II - International Enterprises

Module Code: 53030

Credits: 5 ECTS (10 GB credits)

Contents:

- Basics of international economy - extension (amongst others theory of international trade, macroeconomics of open economies, politics of world trade)
- Basics of foreign trade for enterprises (amongst others strategies of market selection, development of foreign markets, financing of foreign activities, risk limitation)
- Internationalization strategies

Literature:

Krugman P. / Obstfeld M., Internationale Wirtschaft, Pearson 2004
Albaum G. / Duerr E., Internationales Marketing u. Exportmanagement, Pearson 2001
Altmann, J., Außenwirtschaft für Unternehmen, UTB 2001
Hill C., International Business, McGraw-Hill 2003
Branch A., Export Practice and Management, Thomson 2001
Planspiel TOP-SIM EURO

Course: Business Information Systems	
Module Code: 53510	Credits: 2,5 ECTS (5 GB credits)
Contents: <ul style="list-style-type: none">• BIS concepts• Soft computing and intelligent systems• CRM	
Literature: <p>Electronic Business: Innovationen, Anwendungen und Technologien Herausgeber: Anette Weisbecker, Thomas Renner, Stephan Noll Fraunhofer Electronic Business Innovationszentrum Stuttgart 2004, Fraunhofer IRB Verlag</p> <p>Electronic Commerce in Vertrieb und Beschaffung Fallstudien zum Einsatz von internetbasierten Technologien für Vertrieb und Beschaffung Thomas Renner, C. Schwengels (2001) In: Stuttgart: Akademie für Technikfolgenabschätzung, 2000, 57 S. Akademie für Technikfolgenabschätzung in Baden-Württemberg. Arbeitsbericht, 179, ISBN: 3-934629-26-1</p> <p>E-Business Standards: Elektronische Geschäftsdokumente als Basis zur Optimierung der Warenströme Oliver Kelkar, in: B2C Elektronischer Handel - eine Inventur: Unternehmensstrategien, logistische Konzepte und Wirkungen auf Stadt und Verkehr. Opladen: Leske und Budrich, 2003, S. 166-188</p> <p>Ein Referenzmodell für elektronische Geschäftstransaktionen im zwischenbetrieblichen Geschäftsverkehr Oliver Kelkar, Heimsheim: Jost-Jetter Verlag, 2003. (IPA-IAO Forschung und Praxis 381). Zugl.: Stuttgart, Univ., Diss., 2003 ISBN 3-936947-12-0</p>	



Course:

E-Business

Module Code: 53520

Credits: 2,5 ECTS (5 GB credits)

Contents:

- CRM and E-business
- Management simulation game in E-business
- Project work

Literature:

Turowski, K.; Pousttchi, K.: Mobile Commerce - Grundlagen und Techniken. Springer Verlag, Heidelberg 2003

Weiber, R.: Handbuch Electronic Business. 2002

Loos, P.; Gronau, N.: E-Business - Integration industrieller ERP-Architekturen, Göttingen 2002,

Course:

Management of IT Systems

Module Code: 54010

Credits: 2,5 ECTS (5 GB credits)

Contents:

- Introduction / objectives / tasks
- Overview of information systems in industrial enterprises
- Management decisions on information systems
 - Make or Buy
 - Outsourcing
 - Economic efficiency of IT
 - ASP concept
- IT controlling
 - Application of strategic IT controlling tools
 - i. Key data
 - IT key data systems
 - IT balanced scorecard
 - ii. Portfolio management (Life Cycle Management)
 - Application of operative IT controlling tools
 - i. IT cost and activity accounting
 - ii. Service level agreements
 - iii. IT process management
 - Organization of IT controlling in industrial enterprises
 - IT controlling of application systems
 - IT controlling of the infrastructure
- Selected questions and case studies
 - Efficiency of the application of standard software in industrial enterprises

Literature:

von Dobschütz; Barth; Jäger-Goy; u.a. (Hrsg): IV-Controlling
Gadatsch Andreas; Mayer, Elmar: Grundkurs IT-Controlling
Krcmar, H.; Buresch, A.; Reb, Michael (Hrsg.): IV-Controlling auf dem Prüfstand
Gerigk, Jörg: Outsourcing der Datenverarbeitung
Sparrow, Elizabeth: Successful IT-Outsourcing

Course: IT-Project Management	
Module Code: 54020	Credits: 2,5 ECTS (5 GB credits)
Contents: <ul style="list-style-type: none">• Special features of IT projects• Success factors of IT project management• Management guide for IT projects• Methods planning for IT project management• Tools in IT project management (analysis tools, planning tools, presentation tools)	
Literature: <p>Biethahn, J.; Mucksch, H.; Ruf, W. Ganzheitliches Informationsmanagement, Band 1: Grundlagen; 6. Auflage; Oldenbourg 2004 Biethahn, J.; Mucksch, H.; Ruf, W. Ganzheitliches Informationsmanagement, Band 2: Entwicklungsmanagement; 3. Auflage; Oldenbourg 2000 Mangold, P.: IT-Projektmanagement; Spektrum, Akad. Verl. 2002 Heilmann, H.; Etzel, H.-J.; Richter, R. (Hrsg.): IT-Projektmanagement - Fallstricke, dpunkt.verlag; 2. Auflage 2003</p>	

Course:

Innovation and Technology Management

Module Code: 54030

Credits: 2,5 ECTS (5 GB credits)

Contents:

- Basics of product development (incl. requirements / tools of TS 16949)
- Basics of process development
- Customer inspired innovation
- Change management
- Tools of innovation management : rapid prototyping, TRIZ & WOIS
- Specials aspects of innovation management: trade fairs, target costing, product liability
- Case studies: innovative enterprises

Literatur:

Mockenhaupt A. et al.: „Werkzeuge im Innovationsmanagement“, Verlag Dr. Harald Winter, ISBN 3-89825-521-2, Berlin 2002 (DVD-ROM mit Video beim Autor)

Bergmann G. (Hrsg.: Olfert, K.): „Innovation - Kompakt-Training“, Kiehl-Verlag, 2000

Pepels, W.: „Innovationsmanagement“, Cornelsen-Verlag, 1999

Bullinger, H.-J., Warschat, J.: „Forschungs- und Entwicklungsmanagement“, Teubner Verlag, 1997

Herstatt, C., Verworn, B.: „Management der frühen Innovationsphasen“ Gabler Verlag, 2003

E. Enkel, Ch. Kausch: Customer Driven Innovation - KTI-Projekt: Implementierung von Methoden der Kundeneinbindung im Innovationsprozess. Universität St. Gallen, Institut für Technologiemanagement ITEM, Arbeitskreis Marktorientierte F&E durch Kundenintegration



Course:

Master Thesis

Module Code: 61010

Credits: 30 ECTS (60 GB credits)

Contents:

Technology oriented or management oriented.