

# Grundlagen der Informatik im Studiengang Wirtschaftsingenieurwesen (berufsbegleitend)

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# Literatur

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- Willibald Dörfler / Werner Peschek: „Einführung in die Mathematik für Informatiker“, Neubearb. Ausg. D. 2bd. Werkes „Dörfler, Mathematik für Informatiker“, München; Wien: Hanser, 1988
- Skript Grundlagen der Informatik – Wirtschafts-Ingenieurwesen, Michael Wilhelm, 2015
- [www.w3schools.com](http://www.w3schools.com), 2015
- <https://wiki.selfhtml.org/wiki/HTML>, 2015

# Inhalte

- Einführung
  - Was ist Informatik?
  - Historische Entwicklung der Informatik
- Informationsdarstellung
  - Bits und Bitfolgen
  - Darstellung von Informationen
- Zahlensysteme
  - Mathematische Grundlagen
  - Zahlendarstellungen
  - Rechnen in Zahlensystemen
- Rechneraufbau
  - Rechnermodelle
  - Resim
- HTML und XML
  - HTML und CSS
  - XML, DTD, XML Schema

# Was ist „Informatik“

- Informatik leitet sich von Information ab
- Entstand in den 60'er Jahren
- Informatik ist die Wissenschaft von der maschinellen Informationsverarbeitung. Die englische Bezeichnung ist Computer Science, also die Wissenschaft, die sich mit Rechnern beschäftigt.

# Teilgebiete der Informatik

- Technische Informatik
  - Beschäftigt sich vorwiegend mit Konstruktion von Rechnern, Speicherchips, Prozessoren, Aufbau von Peripheriegeräten → Hardware
    - Schaltnetze
    - Schaltwerke
    - Prozessoren
  - Mikroprogrammierung
  - Rechnerarchitektur
  - Schnittstellentechnik
  - Rechnernetze
  - Grenze zur Elektrotechnik ist fließend

# Teilgebiete der Informatik

- Praktische Informatik
  - Beschäftigt sich mit den Programmen → Software
    - Programmiermethoden
    - Programmiersprachen
    - Algorithmen und Datenstrukturen
  - Compilerbau
  - Betriebssysteme
  - Softwaretechnik
  - Mensch-Maschine-Kommunikation

# Teilgebiete der Informatik

- Theoretische Informatik
  - Beschäftigt sich mit den theoretischen Grundlagen
    - Formale Sprachen (Grammatiken)
    - Automatentheorie
    - Theorie der Berechenbarkeit
    - Komplexitätstheorie
    - Verifikation
    - Theorie der Programmierung
    - Formale Semantik

# Teilgebiete der Informatik

- Angewandte Informatik
  - Einsatz von Rechnern in den verschiedensten Bereichen unseres Lebens
    - Künstliche Intelligenz
    - Simulation und Modellierung
    - Digitale Signalverarbeitung
  - Spezifische Anwendungen in
    - Wirtschaft, Verwaltung
    - Biologie
    - Medizin
    - ...



# English for Business and Engineering

**The completed script has to be handed in Nov21, 2015.**

lecturer: JSendzik

Wernigerode Nov 21 – 22, 2015

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## 1 Introduction

Whatever your past,  
whatever your future . . .

Dear participants,

with increasing globalization, English has become more and more important in most areas of life – social, business, technical, entertainment and travel. So whether you are continuing with learning and progressing from the A2 to B1 level (according to CEFR), or if you are returning to learning English after a long break, whatever your background is, this course will provide you with the language for communicating in today's working environment.

You have the chance to deal with realistic situations. Furthermore, there is a strong focus on vocabulary and oral speech, because "Without grammar – you can't say much. Without vocabulary – you can't say anything." However, grammar structures are important, too.

As learners, you are expected to contribute to the success of the course as much as you can. You are expected to speak a lot – it's a language class, not a lecture! If you make mistakes – no problem – as long as you can keep the conversation going.

Should there be questions – do not hesitate to ask.

And now – Let's get down to business!

Have success – and fun.

Best regards

Jutta Sendzik

## **1.1 Course objectives**

The overall course objective is to improve your communication ability.

In the context of business and technique, knowledge of vocabulary and language structures is broadened.

A subordinate goal is to overcome language barriers, such as being hesitant and shy. The participants become more confident when using the English language.

Specific course objectives can be found in the “Can do” descriptors for level B1+.

## **1.2 How to handle this material**

After reading the introduction you are now ready to start.

This is the script for your self-study, you are expected to work through it.

In the first part of your script you find the business topics followed by the part Technical English.

You should do business and technical topics in turns. There are also some optional tasks, which you can do if you like. For doing them, you will be awarded some bonus points. At the end of each business topic there is a hint which grammar theory and practice you should cover. These can be found in the grammar appendix.

For your exam, revise the words in the vocabulary lists.

You are strongly advised to do as much listening to English as you can. Use the media to find listening texts that interest you.

Should there be comments on improving the script, do not hesitate to contact me.

## **1.3 What is the CEFR?**

In the introduction and in your materials for learning English you will repeatedly find the acronym CEFR (German: GER). The Common European Framework of Reference for Languages (German: Gemeinsamer Europäischer Referenzrahmen für Sprachen) is a system that was developed by the Council of Europe to provide a common basis for the explicit description of objectives, content and methods in second / foreign language education.

It provides objective possibility to assess language abilities.

So, whether you are in Spain, France, Italy or Germany, your language abilities are assessed in the same way.

There are six levels of language proficiency: A1, A2 (basic user), B1, B2 (independent user), C1, C2 (proficient user). The CEFR also defines three “plus” levels: A2+, B1+, B2+.

By means of so-called “can do” descriptors, it is relatively easy to assess a person’s language skills. You can take these descriptors to check your own language abilities and level. Just have a look at the tables and check yourself.

By the end of this course, you should be able to use English on the B1+ level.

## **Can do B1**

At level B1 you can . . .

- Listening**
- ... follow clearly articulated speech directed at you in everyday conversation.
  - ... generally follow the main points of extended discussion around you.
  - ... understand the main points of simple recorded material on topics of personal interest.
  - ... catch the main points in TV and radio programmes on familiar topics.
  - ... understand simple technical information, such as operating instructions.
- Reading**
- ... understand the main points in short newspaper articles about current and familiar topics.
  - ... read articles or interviews in which someone takes a stand on a current topic.
  - ... guess the meaning of single unknown words from the context.
  - ... skim short texts and find relevant facts and information.
  - ... understand those parts of a letter or email dealing with events, feelings and wishes well enough to correspond regularly.
  - ... understand the plot of a story and recognize what the most important episodes are.
- Speaking**
- ... start, maintain and close simple face-to-face conversation on topics that are familiar.
  - ... deal with situations likely to arise when making travel arrangements.
  - ... ask for and follow detailed directions.
  - ... express and respond to feeling such as surprise, happiness, sadness and interest.
  - ... give or seek personal views and opinions in an informal discussion with friends.
  - ... give detailed accounts of experiences, describing feelings and reactions.
  - ... describe dreams, hopes and ambitions.
  - ... explain and give reasons for your plans, intentions and actions.
  - ... relate the plot of a book and describe your reactions.
  - ... paraphrase short written passages orally in a simple fashion.
- Writing**
- .... Write simple texts about experiences or events.
  - ... write personal letters or emails to friends asking for or giving them news and narrating events.
  - ... express feelings such as grief, happiness, interest, regret and sympathy in a letter.
  - ... convey (e.g. via email) simple information on most topics of everyday life.
- Language Quality**
- ... keep a conversation going comprehensibly.
  - ... convey simple information of immediate relevance, getting across important points.
  - ... use vocabulary to express yourself on most topics of everyday life.
  - ... express yourself reasonably accurately in familiar, predictable situations.

The descriptors might be slightly modified according to business / technical content.