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Michaela Tomanová

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ENGLISH LANGUAGE IN AJEI-H TECHNICAL COURSES
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AUTHOR
AUTOR PRÁCE

Michaela Tomanová

SUPERVISOR
VEDOUCÍ PRÁCE

Mgr. Petra Zmrzlá, Ph.D.

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ABSTRACT

The aim of the thesis is to provide an overview of technically focused courses of the educational program English in Electronics and Communication Technologies, and conduct a specific discourse analysis of available educational materials. The overview consists of methodology of educational courses and their aims, as well as their expected outcomes. Further concerns comprise methods and criteria of evaluation, the structure of the information system's portal E-learning and recommended literature. The teaching approach is depicted at the end of the overview. For discourse analyses were chosen excerpts from presentations, textbooks or recommended literature books. In these analyses a layout of the content, grammatical and lexical cohesion, and the density of terminology is described. These chosen excerpts are also compared with theories of professional scientific style.

KEY WORDS: course overview, discourse analysis, professional scientific style, discourse community, grammatical cohesion, lexical cohesion

ABSTRAKT

Cílem této práce je poskytnutí přehledu technicky zaměřených předmětů vyučovaných programu Angličtina v elektrotechnice a informatice a poskytnout konkrétní diskurzní analýzu dostupných vyučovacích materiálů. Přehled obsahuje metody vzdělávacích kurzů a jejich cíle, stejně jako předpokládané výstupy. Dále se práce zabývá metodami a kritérii hodnocení, strukturou portálu informačního systému E-learning a doporučenou literaturou. Nakonec je popsán vyučovací přístup. Pro diskurzní analýzu byly vybrány výňatky z prezentací, skript nebo knížek doporučené literatury. V těchto analýzách je popsána struktura obsahu, gramatická a lexikální koheze a obsažnost terminologie. Tyto výňatky jsou také srovnány s teoretickými poznatky o profesionálním vědeckém stylu.

KLÍČOVÁ SLOVA: přehled předmětů, diskurzní analýza, profesionální vědecký styl, diskurzní komunita, gramatická koheze, lexikální koheze

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TABLE OF CONTENTS

1. INTRODUCTION

The first part of each chapter in the thesis outlines an overview of the first two years of technically focused courses of the bachelor study program English in Electrical Engineering and Informatics. The overview focuses on courses' educational methodology, aims, and areas of the mastered curriculum. Further, methods and criteria of an evaluation, an overview of the E-learning page, and a recommended literature are mentioned. The availability of the recommended literature is also included.

The second part of each chapter in the thesis builds on the first part by adding discourse analyses to individual courses' overview. These excerpts were picked preferably from presentations used in classes. However, in some cases, textbooks from the recommended literature were applied instead. The analysis is focused on the written discourse, the most preferred medium among electrical engineers.

Discourse community is described by Widdowson as "a group of people who subscribe to the conventions that define a particular kind of language use or genre" (2007:129). The analysis of discourse production among experts reveals stylistic strategies and unique features preferred in the particular academic environment. The style can be described as not easily comprehended by the receiver lacking professional knowledge schemata. Schemata are the way to properly grasp the specific information and correctly interpret the meaning of the subject. According to Widdowson (2007), schemata present frames of references trying to catch the reader's attention and then key the message to the appropriate construction of familiar knowledge.

Another aspect of scientific discourse is a high level of formality. This is given by the fact that formality presupposes professional knowledge. In order to prove it, we can now focus on terminology. Terminology is a system of terms used in specific science and is often a suitable indicator of the formality of a language. Common scientific prose style avoids personality and strives to sound as objective as possible. Objectivity brings the reliability of research results. Impersonality is expressed by actions with an unspecified subject or by omitting references to any person.

The next problem that was focused on is hedging. Hedging, according to Hyland (1998), expresses tentativeness and possibility in communication. Hyland also points out that their use in scientific discourse is critical. In his study, the following description is

depicted: "Hedging is not a strategy to obfuscate or confuse, any more than it is simply a convention of academic style (1998:1)". Lakoff stated the following three politeness principles describing the intentions of producers using this strategy: Do not impose, give an option, and make the audience feel good (1973). Another field of focus is cohesion interlinking the text. The part concerning the grammatical cohesion is focused mainly on referential expressions, pointing on the previous or following utterance and, therefore, ensuring the content continuity. The part focusing on lexical cohesion takes into consideration word repetition and synonyms. The analysis ends with cohesive chains formed by cohesive devices' bonds utilizing cohesive relations and thus creating cohesive ties.

2. PHYSICS IN ELECTROTECHNOLOGY – HFYZ

2.1 COURSE OVERVIEW

The course is divided into two hours of lectures per week, two hours of laboratory classes, and two hours of numerical classes taking turns every other week. The professor at classes and numerical classes is professor Karel Liedermann. Laboratory exercises were instructed by Ph.D. students.

The course aims to clarify the basics of physical terms and laws, especially the fundamentals of electrotechnology. Students get acquainted with the basics of high-current and low-current electrotechnology, mass point, and rigid body mechanics. The subject introduces the theory of the electromagnetic field, oscillations, and optical waves. Towards the end of the semester, lectures are focused on the introduction to quantum mechanics.

The assessment is made up of points for homework and a half-semester test. In order to be allowed to sit the exam, all laboratory exercises have to be completed, and each protocol has to be handed in. In protocols, attention is paid to correct notation. Students are divided into four groups for the laboratory lessons. The students have to obtain at least fifty points.

The overview of the subject is available in the information system's portal E-learning. In the introduction is a folder named *Sylabus* containing the overview of the course, topics of particular lectures, and recommended literature. The recommended book *Fundamentals of physics: extended* is available in the library of the faculty. Other folders contain essential equations required in numerical classes, useful web addresses for the study, and documents necessary for protocols. The web page link *Webový rozcestník Fyzikálního praktika 1* is used for laboratory classes. The page contains instructions for each protocol, assignment to working groups, laboratory rules, and the introduction to measurement.

It was evident that professionals in physics along with many others in technical and scientific fields of study have a specific relationship to the use of language, namely that they give preference to the subject matter over the pronunciation.

2.2 ANALYSIS OF TEACHING MATERIALS

As an example of materials used in this course was chosen a chapter from *General Course of Physics*. The book is listed in the recommended literature and can be found in the E-learning under the title *Mechanics for HFYZ 2012*. The text refers to the first excerpt of the Appendix.

The content satisfies the general characteristics of the technical-scientific style according to a description provided in the book *Parameters of Professional Discourse*. The text is logically structured, outlining the general concepts and distinctions between two elementary forms, followed by a specific example. The book is complemented with figures, tables, and graphs.

The author relied on the fundamental knowledge of professional terminology of his readers. Among specific terms occurring in the text are the following words and collocations: *velocity*, ***scalar quantity***, ***moment of inertia, mass point***.

The text lacks any personal subjects and is, therefore, very impersonal. The example is highlighted in the following sentence: *Moment of inertia **will be dealt with later...*** In the example, an example of referential expressions can be found. These expressions can be understood as cross-references within the text. Such expressions are thus demonstrative pronouns or phrases. Therefore, references point at some previous or following utterance. Example of referential expressions is in the following sentence: *kinetic energy of **this** mass point...* Another phenomenon occurring in the text is hedging. Apart from the typical purpose of expressing politeness, hedging brings a degree of uncertainty into the scientific text and ensures the text does not impose. Examples of hedging from the excerpt are the following: *In the **most common** case, **this may be often difficult*** and *Bodies are **usually** not free in space.*

To ensure continuity of the text, the author used the already mentioned referential expressions, providing connections within the text. This strategy falls under grammatical cohesion. On the other hand, lexical cohesion is explained by Halliday and Hassan as "the repetition of a lexical item, at one end of the scale; the use of a general word to refer back to a lexical item, at the other end of the scale; and a number of things in between – the use of a synonym, near-synonym, or superordinate" (1976: 278). In the extract occurs word repetition. Repetition can be noticed rather frequently in the excerpt. The following

examples of repetitive words and collocations are: ***energy***, ***kinetic energy***, ***potential energy***, and ***force***.

An example of a cohesion chain is in the following example.: *The quantity **I** is called **moment of inertia of a body (also rotational inertia)**. **It** describes the rotational properties of a body...* The *moment of inertia of a body* and *rotational inertia* are lexical equivalents or synonyms of the quantity I. *It* in the following sentence is a grammatical reference and refers to the quantity I, known as a moment of inertia of a body.

3. ELECTROTECHNOLOGY – HELE

3.1 COURSE OVERVIEW

The course includes a lecture every other week and laboratory classes every week. The lecturers of the course are professor Petr Marcoň and professor Martin Čáp.

The course provides students with basic knowledge of electrotechnology and circuits theory required for subsequent specialised courses. Emphasis is put on terminology related to the topic. The laboratory lessons help students better understand the knowledge obtained in lectures. The structure of lessons is laid out in the folder of the information system, titled *Detail předmětu*, alongside with recommended literature and topics for the final state examination. The recommended literature includes four books. Each of these books is available in the faculty library.

The form of evaluation is described in the information system's folder *Detail předmětu* and is also listed in the E-learning. In the semester are written four tests. From each test, students can earn ten points. These tests take place in laboratory lessons and comprise theoretical and computational parts. Credit requirements include completion of all of the laboratory exercises, writing the tests, and earning fifteen points at least. To fulfil the requirements, students have to obtain a minimum of fifty points.

The system of evaluation and requirements for completion of the course are listed on the E-learning web pages. On the web page, there are also presentations and task assignments available for every lesson in the English language. These assignments are added gradually during the semester. At the top of the web page is a folder *notice* containing an overview of the course organization with highlighted dates of midterm tests and instructions for the students repeating the course. Computational examples can be found in the folder *Examples in Learning Electrical Engineering* and *Examples in Learning Electrical Engineering – 2*.

Presentations are complemented with comments and figures. Students are divided into four groups of fifteen for laboratories.

3.2 ANALYSIS OF TEACHING MATERIALS

The samples for analysis were chosen from the fifth presentation. The text refers to the second excerpt of the Appendix.

Although the presentation deals with scientific content, the author decided to use a more attractive format rather than the one more corresponding to the professional scientific style. This strategy was probably used to catch the attention of students. Thus, we can see a substantial amount of colourful figures, images, and highlighted quantities and equations in the excerpt. The example displays appropriate features used in the scientific prose style. The content is laid out by bullet points, and therefore provides order to information and ensures the conciseness. The slides follow a logical scheme, introducing the principles of a magnetic field followed by a description of the basic properties of the given example. The presentation is finished by a description of more specific features.

Each figure is described in detail. In the figures, the directions of forces are indicated when necessary. Equations are highlighted and separated from the text. Overall, the placement of formulas can make the presentation look rather chaotic. Specific expressions, such as: ***moving electric charges***, ***magnetization of the substance***, and ***magnetic lines of force***, are often highlighted in the text. Due to the explanations of all specific terms, it is apparent that the author did not count on the professional knowledge of students.

The author used the impersonal style of writing. In the first slide of the excerpt, the following example of hedging can be observed: ***It is convenient*** *to separate these charges...*

Grammatical cohesion is expressed through referential expressions. Such expressions can be found in the following sentences: *Fields arising magnetic materials.* ***In these,*** *...* and ***this moment*** *is the vector sum...* Expressions of lexical cohesion, including word repetition, synonyms, and whole cohesive chains, are relatively frequent. The example of the most repetitive collocations is: ***magnetic field****.*

In the first slide of the excerpt, a cohesive chain can be observed. The terms included refer to each other as follows: *A magnetic field is represented by* ***magnetic lines of force****.* ***The magnetic lines of force*** *are* ***closed curves*** *... The magnetic lines of force* are a lexical repetition supported by grammatical reference expressed by a definite article *the*.

Closed curves in the following sentence are a lexical equivalent of magnetic lines of force mentioned in the first sentence.

4. MATHEMATICS IN ELECTROTECHNOLOGY – HMA1

4.1 COURSE OVERVIEW

This course consists of two hours of lectures per week and two hours of computational lessons. Unlike lectures, computational lessons are obligatory. The lecturer is professor Petr Fuchs.

Students learn essential terms and procedures from linear algebra, followed by differential and integral computations. Another aim of this course is to learn the correct translation of mathematical texts from the explained areas.

The course overview is listed in the information system's folder *Detail předmětu*. Recommended literature, consisting of materials solely in electronic form, is mentioned on the same web page. One of these books is in Czech, and the other one is bilingual.

Credit requirements include earning at least ten points in midterm tests. These tests are written at the beginning of every computational lesson. It is possible to earn a maximum of thirty points. Another requirement is the activity in lessons. Each student can earn a maximum of ten points for the activity, but it is required to earn at least two. In case of non-fulfilment of any of these conditions, it is not possible to complete the course. The course exam contains computational tasks, as well as a text translation, including mathematical terminology. During the exam, students are allowed to use any printed and hand-written materials. It is compulsory to obtain at least fifty points.

The E-learning web page is not available for this course, and the presentations are not accessible in the information system either. Many problems and correct terminology are pointed out during the classes.

4.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt is from the first chapter of the textbook. The book is available in the information system's folder *Detail předmětu*. However, no relevant bibliographic citation can be found in the system. The analysis refers to the third excerpt of the Appendix.

The style of the book is classified as a popular scientific genre. The density of a professional terminology appropriately corresponds to usual educational materials. Each term mentioned is explained, and therefore, the excerpt is no less informative than

expected. The content is relevant to the logical order. The introduction is followed by examples of notation, and the excerpt is concluded by solving numerical problems.

Since the author explains the terms, it is obvious that he did not rely on the professional knowledge of his readers. Among specific terms occurring in the text are the following collocations with a word: *matrix*, *linear system*, *solution set*. The excerpt itself contains several examples of hedging which are highlighted in the following examples: *The work is **essentially** done, Row operations **can be** applied to..., n **might be** 50 or 5000.* Hedging brings uncommon uncertainty and vagueness into the professional scientific style.

Not usual feature occurring in the excerpt is the evidence of personality. As it was already pointed out in the introduction, the professional scientific style rather neglects the personality using uncertain impersonal subjects. Notice the degree of personality in the following examples: ***Replace** one equation by the sum of itself and multiple of another equation, interchange two equations, and multiply all the terms in an equation by a non-zero constant. After the first example **you will see**..., At the moment, **we are** interested in..., **We say** two matrices are row equivalent...*

Grammatical cohesion is expressed in the text by referential expressions, preventing the reoccurrence of the words, and facilitating a clear arrangement of the content. For instance, we can mention the following references: *...after some practice, **this** type of calculation...* and ***This** system in triangular form...* Lexical cohesion can be found in the text. Its examples are typically word repetition and synonyms. As instances of frequently applied term, we can find the following words: ***numbers**, **matrix** and **equation***. Synonyms occurring in the content, are for example: ***A system of linear equations** and **linear system** or **coefficient matrix of the system**, **matrix coefficients** and **augmented matrix of the system***. Another strategy that enables referencing through the content is signposting. Signposting creates the possibility of pointing to the following or previous operations and paragraphs. In the extract can be found examples such as: ***following**, **previous**, and **Then** use the x2 term.*

In the excerpt, the following example of a cohesive chain is recognizable on page three: *Of course, **two lines** need not intersect in a single point – **they** could be parallel, or **they** could coincide and...* This cohesive chain is created by the two identical grammatical references *they* referring to the two lines.

5. DIGITAL CIRCUITS AND MICROPROCESSORS – HDOM

5.1 COURSE OVERVIEW

The lecturer of the course is professor Pavel Šteffan. Lectures of this course take two hours every week, and computer lessons are assigned for two hours every second week.

The students are acquainted with basic digital circuits, their logical functions, and their applications. In the semester, they also learn how to design and debug microprocessor systems, and the ways, how to connect them with their surroundings. The course overview is listed in the E-learning folder titled *Detail předmětu*. Besides that, the recommended literature comprises two books and a textbook. The questions for the final state examination are mentioned at the bottom of the page.

Credit requirements include attendance in all computer lessons and elaboration of assigned tasks. It is possible to obtain an additional five points from a presentation according to a personal choice. The course is finished with an exam in the English language.

All presentations from lectures as well as the textbook are available in the E-learning. Instructions for computer classes, including presentations and codes essential for programming in lessons, are at the bottom of the page. The students are divided into two groups for computer lessons.

5.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt is from the textbook *Microelectronics in English*, written by Jaromír Kolouch and Vladislav Musil. The textbook is accessible in the information system's folder *Detail předmětu*. Each page of the textbook is written in English and subsequently translated to Czech. The analysis refers to the fourth excerpt of the Appendix.

The chosen example is focused on diodes in pulse circuits. Even though the excerpt is more of the professional scientific style, it also displays a rather small number of unusual features. The textbook is organized into paragraphs and subsections in a logical

order. The brief introduction is followed by the characteristics of semiconductors and their basic properties. The presentation ends with a description of particular examples. With regard to the unexplained terminology it can be assumed that the producers of this particular text relied on the fact that recipients are instructed enough to comprehend the content thoroughly. The text is complemented with graphs and circuits' figures.

The density of the applied terminology is appropriate to the scientific prose style. Among specific terms occurring in the content are the following words and collocations: ***voltage***, ***waveform***, ***P-N junction***, ***forward direction***, and ***breakdown***.

The evidence of usual impersonality in scientific texts can be observed in the excerpt. Example of impersonality can be found in the following sentence: ***it is necessary to be aware…*** Subjects of, rather uncommon, personalisation are for instance: *if we consider*, ***suppose*** and *we often suppose*.

Another feature that should be pointed out is hedging, expressing a level of uncertainty in the professionally oriented genre. In the excerpt are the following examples of hedging: ***In case of fast changes, that are common…***, *Resistor R* ***can be considered…*** and *temperature coefficient is* ***mostly*** *positive*.

Referential expressions are used to ensure the coherence of the text. According to Widdowson coherence is "The interpretation of a text so that it makes sense" (2007:127). Concerning the referential expressions, it must be clear from the context what they refer to. Examples of references in the excerpt are in the following sentences: ***This*** *is valid when…*, *…can be* ***then*** *considered as current source*. Lexical cohesion is represented by repetitive words, for instance: ***diodes***, ***temperature*** and ***breakdown***. In the excerpt, an example of a cohesive chain can be found. Krhutová states that a typical cohesive chain in a professional discourse is "a system of expressions which, associating one another, are based on specific professional knowledge. Therefore, the instructed reader can interpret the appropriate meaning relying on the references of the terms". Such a cohesive chain can be observed on the third page of the excerpt: *The regulating effect of the diode is given by* ***breakdown*** *of its junction. There are two kinds of* ***the breakdown*** *mechanism:* ***Zener breakdown and avalanche breakdown.*** *The temperature coefficient of the breakdown voltage is determined by* ***the prevailing type of breakdown***. *If the breakdown voltage in absolute value is smaller than 6 V,* ***Zener breakdown…****The breakdown* in the second sentence is the lexical repetition of the breakdown mentioned in the first sentence,

supported by grammatical reference in the form of a definite article. *Zener breakdown* and *avalanche breakdown* are lexical equivalents or synonyms with the breakdown. *Type of breakdown* is lexical repetition referring to the two kinds of breakdown mechanisms. *Zener breakdown* is lexical repetition.

6. ELECTRONIC COMPONENTS – HESO

6.1 COURSE OVERVIEW

The course is divided into lectures and laboratory lessons. Lectures take place every week for two hours, whereas laboratory lessons take place every other week. The lecturer is professor Jaroslav Boušek.

The aim of the course is to acquaint students with the basic properties of electronic components and their utilization. The students acquire fundamental knowledge of terminology in English as well as in the Czech language. The course overview is thoroughly listed in the E-learning folder *Detail předmětu*. Recommended literature consists of one book that is unavailable in the library. However, this book is accessible in the information system page *Karta předmětu*. Topics for the final state exam are listed on the same page.

For laboratory lessons, students are divided into two study groups. The attendance in these lessons is compulsory. It is necessary to elaborate each of the tasks given in laboratories and hand in protocols written in English. For the protocols, students can obtain a maximum of twenty points, and thirty points for laboratory tasks. To pass the exam, students have to obtain at least thirty points.

E-learning contains an overview of listed criteria to pass the course along with a presentation, protocols, and topics for the final state exam.

6.2 ANALYSIS OF TEACHING MATERIALS

An excerpt from the textbook *Electronic Devices*, written by the professors Jaroslav Boušek and Michal Horák, was chosen for analysis. The textbook can be found in the information system's folder *Detail předmětu*. The analysis refers to the fifth excerpt of the appendix.

The textbook is divided into sections and subsections based on a logical order. Stylistically it corresponds to the professional scientific prose with minor exceptions. These exceptions include the presence of personality. Even though it seems evident from the excerpt, that the authors counted on the professional knowledge of recipients, the terminology required was already explained in the preceding chapter. The textbook is complemented with circuits' figures, and formulae.

Specific terms included in the excerpt, are for example: ***junction***, ***saturation***, ***emitter***, and ***transistor***. The density of the applied terminology is appropriate to the educational style.

As it was previously mentioned, the excerpt contains expressions of personality. These expressions can be found on the second page and include the following examples: *So, if **we** replaced the NPN transistor with, **we** could just reverse the polarities...* In the following sentences, hedging can be observed: *This effect **can be** used to amplify..., the BE voltage is **too** small for..., we **could** just reverse the polarities.*

The content of the excerpt is interlinked with grammatical cohesion. As an example, referential expressions can be mentioned. References occurring in the text, are for example: ***this** regime is used by... The earliest **transistor types** were...**they** were limited...*

Lexical cohesion is represented by two features – synonyms and word repetitions. Synonyms can be observed in the excerpt in the following examples: ***BJT – bipolar junction transistor***, ***EB junction – emitter-base junction*** and ***CB junction – collector-base junction***. The examples of repetitive words within the content are: ***junction***, ***region***, ***transistor*** and ***emitter***.

In the first paragraph of a section *Technology of bipolar transistors*, an example of a cohesive chain can be observed in the excerpt: *The earliest **transistor types** were **point contact types** made from germanium and were used rather for research and experiments then for a production of electronics. **Their** performance was pure, the current gain was low and **they** were limited not only in reliability but also in high frequency performance and power handling. Point contact types* are hyponymy of transistor types. *Their* and *they* are grammatical references referring to point contact types mentioned in the previous sentence.

The following two errors can be found in the example dealing with cohesive chains. The first error is a misspelled word *than* in the following sentence: *were used rather for research and experiments then for a production of electronics.* The second error is a lexical mistake in the following sentence: ***Their** performance was pure, the current gain was low and **they** were limited not only in reliability...* Where the word *poor* was mistaken for *pure*.

7. MATERIALS AND TECHNICAL DOCUMENTATION – HMTD

7.1 COURSE OVERVIEW

The lecturers of this course are professors Jiří Vaněk, Jiří Maxa, and Ladislav Chladil. Lectures are scheduled every week for two hours. The course is divided into three lectures, each of which deals with a different topic. Each of these topics is taught by one of the professors. Computer lessons take place every other week in the first half of the semester and last for two hours. The lecturer of computer lessons is professor Petr Vyroubal. These lessons are replaced by laboratory lessons in the second half of the semester. The lecturers are professor Ladislav Chladil and professor Jiří Vaněk.

The first part of the course deals with materials used in electrical engineering. Students are acquainted with materials suitable for electrotechnology and electronics, its qualification, and significant properties. At the end of the course, students should be able to understand the terminology in the English language related to the professional sphere. The second part of the course deals with technical documentation in the field of electrical engineering, methods, and requirements for its processing. In practical tasks, students are familiarized with the creation of basic technical documents and get an overview in the field of electrical engineering computer support (CAD, CAM, CAE, PDM).

The evaluation consists of the points earned in computer and laboratory lessons. In computer lessons students can earn the maximum of eighteen points. Students are divided into two groups for these lessons. In laboratory lessons, students can obtain a maximum of twenty-four points. For laboratory lessons, students are split into two groups.

Presentations and the textbook *Electrotechnical materials and production* are available on the E-learning page. However, recommended literature and, once again, presentations are listed in the information system's folder *Detail předmětu*. Recommended literature contains four books, one in Czech and the rest in the English language.

7.2 ANALYSIS OF TEACHING MATERIALS

As an example of materials was chosen an excerpt from the presentation *Insulators and Dielectrics* created by professor Ladislav Chladil. The presentation is accessible in the information system's folder *Detail předmětu*. The analysis refers to the sixth excerpt of the Appendix.

The excerpt structure follows a logical order in sections and subsections. The content is distributed in bullet points, and is, therefore, rather brief. Each section of the presentation is complemented, either with figures, graphs, or essential formulas. It is evident that the author did not rely on professional knowledge of the recipients as the terminology applied is explained.

The density of the applied terminology is appropriate to the educational style. As examples of applied terminology, the following terms van be mentioned: *piezoelectric effect*, *electrostriction*, *dielectric polarization*. In accordance with the professional scientific style, the excerpt lacks subjects of personality. In the text, the following examples of hedging can be observed: *it is possible to write...*, *Piezoelectric effect might be...*, in *some crystals*.

Referential expressions highlighted in the following sentences can be observed in the excerpt: *In some crystals with no centre of symmetry (non-centrosymmetric), which are spontaneously polarized, Their surfaces will carry electric* charges. Expressions of lexical cohesion are also included in the excerpt. These examples are mostly represented by the repetition of words. We can mention, for instance, terms such as: *piezoelectric effect*, *polarization*, and *permittivity*.

The cohesive chain can be found in the following example: *Piezoelectric effect is found only in crystals with anisotropic properties, where the centre of symmetry is missing (non-centrosymmetric)*. *Where* is a grammatical reference referring to the crystals with anisotropic properties. *Non-centrosymmetric* is a lexical specification.

8. COMPUTERS AND PROGRAMMING – HPOP

8.1 COURSE OVERVIEW

This course consists of a two-hours lecture every other week and two hours of computer lessons every week. The lecturer is professor Jan Odstrčilík. The lecturers in computer classes are professor Petra Novotná and professor Vratislav Čmiel.

Students are acquainted with the methods of computing and their practical utilization. The course covers the fundamentals of algorithmization and programming. Further, it deals with numeric and character information display, information encoding, computer nets, computer structures, and fundamentals of programming.

The evaluation consists of points obtained in the mid-term test and the final exam. Students can earn a maximum of thirty-five points in the mid-term test. The attendance in computer lessons is compulsory. The overview is altogether listed four times in the information system's overview folder *Detail předmětu*. Apart from that, the recommended literature is also to be found on the page. The recommended literature consists of three books in Czech and two English web pages. Questions for the final state exam are listed at the bottom of the page.

For computer lessons, students are divided into two groups. The course is taught in the English language.

8.2 ANALYSIS OF TEACHING MATERIALS

The chosen excerpt is from the second presentation *Algorithmization*. The presentation can be found in the information system's folder *Detail předmětu*, in the section *Study materials – Lecture slides*. The author of the presentation is not mentioned. The analysis refers to the seventh excerpt of the Appendix.

The presentation corresponds to the educational style as the terminology applied is typically explained. However, several exceptions can be observed. The content is organized in bullet points and the structure follows a logical order. The text is complemented with figures, graphs, examples, and codes essential for programming in computer lessons. The excerpt also includes a hand-drawn picture, unfortunately not in a sufficient resolution to be fully recognizable.

As it was previously mentioned, the excerpt contains specific terms, for example: *hardware*, *subprogram*, and *debug*. In the excerpt, the following example of personality can be found: *we need a development tool...* A rather substantial number of hedging expressions is used within the text. The examples of hedging are highlighted in the following sentences: *oriented connections **can be** used, write programs that **can be** executed, **more precisely** and **usually**, programs consist of...*

Cohesive expressions are used to interconnect the content of the presentation. These conjunctions applied in the excerpt are highlighted in the following examples: *A computer, **that** interprets the algorithm...* and *A subprogram is a part of a program **that** performs*. Repetitive words observed in the content are features of lexical cohesion. The examples of repetitive words are: *program*, *subprogram*, *language* and *algorithm*.

In the excerpt, the following example of chain cohesion can be observed: ***A program** is a **meaningful sequence of commands** entered into a computer, **which has** predetermined meaning... Meaningful sequence of commands* is a lexical equivalent of the program. *Which* is a grammatical reference concerning the program.

9. ANALOG TECHNOLOGY – HANA

9.1 COURSE OVERVIEW

The course is divided into two hours of lectures and two hours of laboratory lessons, both taking place every other week. The lecturer is professor Vilém Kledrowetz.

Students are acquainted with fundamental functional blocks and active analog components. These components are necessary for an analog signal pre-processing before they are converted into a digital form or post-processing after conversion from digital to the analog signal. At the end of the course, the students should be able to analyse functions of analog systems and the possibilities of their applications. In laboratories, students design functional blocks and then perform their analysis.

The course overview is listed in the first presentation available on a web page *Aktuality z předmětu*. On the same page are uploaded presentations and an updated list of questions for the final state exam. Recommended literature is available in the information system's folder *Detail předmětu*. It comprises three books in the English language. Two of these three books are not available in the faculty library.

Credit requirements include attendance in all laboratory lessons and obtaining at least fifty points. In laboratory lessons, students can obtain forty points for tasks' elaboration, two midterm tests, and additional bonus points. The course is completed with an exam.

The E-learning web page is not available for this course. Students are divided into two groups for the laboratory lessons.

9.2 ANALYSIS OF TEACHING MATERIALS

The chosen excerpt is from the third presentation, *HANA_3 MOSFET, transistor amplifiers*, found in the information system's folder *Aktuality z předmětu*. The author of this presentation is the professor of this course, Vilém Kledrowetz. The analysis refers to the eighth excerpt of the Appendix.

The presentation corresponds to the professional scientific style. A list of the most frequently used terminology with translations is provided on the last slide of the presentation. The text is laid out by bullet points, and therefore, makes the content more

lucid and concise. A significant number of pictures, schemes, graphs, and numerical examples can be found in the presentation. The content follows the previous presentation. The topic introduction passes a description rather briefly and is immediately replaced by enumeration of types, followed by an operation, characteristics, configurations, and is finished with summary and comparison.

The text contains a substantial amount of terminology. Nevertheless, most of the terminology is explained. It is evident that the author did rely on previously acquired professional knowledge. Among specific terms occurring in the text are the following collocations with a word: ***back-to-back diodes, reversed-biased pn diodes, n-type, p-type, subthreshold***.

Even though the authors of professional scientific texts avoid personality, it is possible to observe this phenomenon in the excerpt. The example can be observed in the following sentence: *In simple terms, **we can think** of the threshold voltage as the gate voltage…*. On the contrary, we can mention instances of impersonality, a more usual feature of this style: *If a large enough positive gate voltage **is applied,…*** and *This region of the I_D versus V_{DS} characteristic **is referred to** as the saturation region* and *Determine the region of operation when,…*. Several examples of hedging can be observed in the following sentences: *The MOSFET has become **by far the most** widely used electronic device…, **In simple terms**, we can…*.

The content of the excerpt is interlinked with grammatical cohesion, ensuring the clear arrangement of the content. For instance, we can mention the following highlighted referential expressions: *…**this** layer "connects" the n-source to the n-drain, **This** region of the ID versus VDS characteristic is referred to…, …, **this** transistor is called an enhancement-mode MOSFET.* The excerpt also contains elements of lexical cohesion. As an example, we can mention a word repetition. The following examples are frequently used terms: ***terminal, transistor, threshold voltage*** and ***semiconductor***. Another type of lexical cohesion occurring in the text is synonym. We can observe the following synonyms in the excerpt: **two n-regions** – ***source terminal and a drain terminal** – **two highly conducting n-types semiconductors**, In the ideal MOSFET, **the drain current is constant for** $V_{DS} > V_{DS\,(SAT)}$, This region of the I_D versus V_{DS} characteristic is referred to as the **saturation region**.*

The examples of a cohesive chain can be observed in the excerpt. *The n-type MOSFET consists of a* **two n-regions**, *called* **source terminal and a drain terminal, two highly conducting n-type semiconductor regions** *which are isolated from the p-type substrate by reversed-biased pn diodes* and *In the ideal MOSFET, the drain current is constant for* $V_{DS} > V_{DS\,(SAT)}$, **This region** *of the* I_D *versus* V_{DS} *characteristic is referred to as* **the saturation region.** The *two n-regions* and *source terminal and the drain terminal* are lexical equivalents or synonym. *Two highly conducting n-type semiconductor regions* is a grammatical reference or hyponymy related to the n-regions mentioned in the previous sentence. For another part of the cohesive chain was used lexical repetition supported by grammatical reference *This region*. The expression ending this cohesion chain is *saturation region* which is a lexical specification or synonymy supported by the grammatical reference *the*.

10. MEASUREMENTS IN ELECTROTECHNOLOGY – HMVA

10.1 COURSE OVERVIEW

This course consists of a two-hour lecture held every week in the first half of the semester. In the second half of the semester, they are replaced with laboratory lessons. The lecturer is professor Jan Mikulka.

The subject introduces principles of measuring analog and digital devices, evaluative methods of advantages and disadvantages of particular types of devices. Students learn about evaluation methods of device accuracy, methods of measurement, measuring devices, and electrical active, and passive quantities measuring methods. Students are then knowledgeable of the assessment of the right method for the measurement of magnetic and non-electric quantities. The course also includes the operation of measuring instruments, oscilloscopes, and counters.

The course overview, recommended literature, evaluation criteria, handbook in the English, as well as in the Czech language, and supplements for laboratory lessons are available in the information system folder *Detail předmětu*. The recommended literature includes three books, one in English and two in Czech. Both of the Czech books are available in the faculty library. The course overview is once again described in the E-learning. The textbooks, presentations, and documents necessary for laboratory lessons can be found on the same page.

The assignment is made up of points from handed in protocols. Students can reach a maximum of twenty points. To pass the course, students have to reach a minimum of fifty points.

Students are divided for laboratory lessons into two groups and work in pairs. Every laboratory lesson begins with oral testing of a task assigned to the working pair for the particular lesson.

10.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt is from the third presentation *Measuring Amplifiers: Properties and Application in Measurement Technology – Analog Measurement Devices.*

The presentation is accessible on the E-learning page, and its author is professor Jan Mikulka. The analysis refers to the ninth excerpt of the Appendix.

Although it is evident that the author relied on professional knowledge, the new terms brought up by the topic are thoroughly explained. The style of the presentation is of the professional scientific style. The content sticks to a logical order. The outline is followed by types, specific devices, and measuring systems used in the particular field. The text is laid out in bullet points, ensuring the clear arrangement of information. The slides are complemented with a rather high number of figures, schemes, formulae, and graphs.

As it is expected from the professional scientific text, the excerpt contains a rather high density of terminology. Among specific terms occurring in the text are the following words with a collocation: *coil system, conductor, deflection,* and *shunt*. On the other hand, we can observe a rare feature of this professional style, so-called personalisation. It is relatively frequent in the excerpt. The examples can be observed in the following sentences: *To extend the measuring range, **we can measure the voltage drop across a low-resistance conductor…**, For measurements in a wide measuring range, **we use additional resistors or resistance dividers**, **We are usually interested in the root-mean-square (RMS or effective) values…**. Examples of more usual impersonality are highlighted in the following sentences: **Referred to** as the Depréy d'Arsenval system…, Electromagnetic instruments **are produced** in entire accuracy classes, Various ranges **are** then **obtained by changing the values of the shunt**. The examples of hedging expressing tentativeness can be observed in the following sentences: *The magnetoelectric system **can be** used to measure…, We are **usually** interested in the root – mean – square…*

Grammatical cohesion is expressed in the text by referential expressions, ensuring the clear arrangement of information. The examples are highlighted in the following sentences: ***This** means that scale is linear, **This** can be secured via multiplying the scale by the form factor*. Lexical cohesion is represented by synonyms and word repetitions. The examples of synonyms are evident in the following sentences: *we can measure the voltage drop across a **low resistance conductor** (called a **shunt**) …, We are usually interested in the **root – mean – square** (RMS or **effective**) **values***. The most repetitive terms in the excerpt are: *measuring system, magnetoelectric, range* and *current*.

An example of a cohesive chain is highlighted in the following example: *We are usually interested in the **root – mean – square (RMS** or **effective) values**; the meter is calibrated to **the RMS values**.* The chain is, in this case, expressed by abbreviation *RMS* and a lexical specification – *effective*, in parentheses. *The RMS values* are a lexical repetition supported by grammatical reference in the form of a definite article.

11. SIGNALS AND SYSTEMS – HSIS

11.1 COURSE OVERVIEW

The lecturer of this course is professor Miroslav Jirgl. The course takes place every week for two hours.

Students are acquainted with the theory of continuous and discrete linear signals and systems, as well as their basic analysation principles. In lectures, students are familiarized with time functions, frequency images, Fourier series, sampling, Laplace's, Fourier's and Z transformations, differential equations, and recurrence relation. The basic characteristics of signals and systems are described using these methods: linearity, time invariance, causality, stability, and output.

The course overview can be found in the information system's folder *Detail předmětu*. Recommended literature, presentations, and evaluation summary are on the same page. The recommended literature comprises two books. Both books are written in the English language, and only one of them is accessible in the faculty library. However, another two books are recommended in the introduction of the first presentation.

Credit requirements include obtaining at least ten points out of thirty possible from three homework. Students must obtain a minimum of fifty points.

11.2 ANALYSIS OF TEACHING MATERIALS

An excerpt from the second presentation, Continuous and Discrete Signals (*Description, Operations, and Manipulation*), was picked as an example of materials used in this course. The presentation is available in the already mentioned information system's folder *Detail předmětu*. The author is professor Miroslav Jirgl. The analysis refers to the tenth excerpt of the Appendix.

The presentation follows a logical order, beginning with an outline of general information about the lecture, and then enumerates the issues that will be observed. The content continues with the basics of how to obtain the required form of a signal, operations with them, descriptions, and ends with applied glossary. The text is laid out by bullet points, ensuring conciseness of information. From the text, it is evident that the presentation is of the professional scientific style. Therefore, we can deduce that the author did rely on previously acquired knowledge. However, the text still belongs to the

educational style, therefore, the majority of new terms are thoroughly explained. The slides are complemented with graphs, formulae, and links to videos.

The density of applied terminology is appropriate to the professional scientific style. The following examples of terminology can be observed in the text: ***shifting***, ***flipping***, ***sampling***, ***aliasing***, ***deterministic continuous-time signal***, ***discrete-time signal***. A not so usual phenomenon in this professional style is personalization. Despite that, it occurs in the excerpt. For instance, we can mention examples in the following sentences: *In this course, **we** deal with …*, *After this lecture, **you should be** able to describe the basic signals…*. Several examples of hedging expressing tentativeness occur in the excerpt. These examples are highlighted in the following sentences: *you **should be able to** describe the basic signals, the same rules **can be** applied to the discrete-time…*, and *which **can be** periodic or aperiodic.*

Expressions of grammatical cohesion in the text are used to interconnect the content. These expressions applied in the excerpt are, for example, in these sentences: *Then the multiplication of **these** signals gives a new signal…* – this expression refers to the sentence above: *There are two continuous-time signals f(t) and h(t) defined for t ϵ < -∞, ∞ >; Applying **these** operations to the described signals* – again the expression refers to the bullet point above. It can be noticed that referential expressions are usually demonstrative pronouns. However, one personal pronoun in the excerpt can be observed: *Then the signals f/(t-c) and f(t+c) are the signals with the sane form but **they** are shifted by c.* This word refers to the signals mentioned at the beginning of the sentence. Lexical cohesion can be found in the text and is often represented by a word repetition. The most repetitive terms are for example: ***signal***, ***sampling*** and ***continuous-time signal***.

The following cohesive chain can be observed at the last slide of the excerpt: *There are **two continuous time signals f(t) and h(t)** defined for t∈(-∞, ∞). Then the addition of **these signals** gives a new signal a(t) = f(t) + h(t), the subtraction of **these signals** gives a new signal s(t)= f(t) – h(t).* This cohesive chain is created by two identical lexical repetitions, both supported by grammatical reference expressions – *these*.

12. ELECTRIC MACHINES – HESB

12.1 COURSE OVERVIEW

The course is divided into one hour of lecture and one hour of computational lesson every week. The lecturer is professor Čestmír Ondrůšek.

The course aims to explain the principles of operation and describe the operating characteristics of transformers, asynchronous, synchronous, and direct machines. Another aim is to acquaint students with parts of electric machines, differences between single-phase and three-phase transformers, design of asynchronous machines, etc.

The course overview, evaluation criteria, recommended literature, and questions for the final state exam are to be found in the information system's folder *Detail předmětu*. The recommended literature includes three books, one in Czech and two in English. None of these books is available in the faculty library. The questions for the final state exam comprise ten topics.

It is necessary to obtain a minimum of fifty points to meet credit requirements. Students can obtain thirty points from the tests written during the semester. It is required to get fifteen points to be able to sit the exam.

The lesson is not noticeably divided into the lecture and computational lesson, and the lecturer fluently continues with a lecture that is interspersed with computations. It was evident that professionals in this particular field along with many others in technical and scientific fields of study have a specific relationship to the use of language, namely that they give preference to the subject matter over the pronunciation.

12.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt is from the textbook available in the E-learning under the title *Skripta-ES1-ENGLISH*. The bibliography is not mentioned. However, it is presumable that the textbook is a translation of Czech textbook *Elektrické Stroje*, also available in the E-learning. The analysis refers to the eleventh excerpt of the Appendix.

The style of the textbook corresponds to the professional scientific style. The author relied on the professional knowledge of the textbook's readers. The text is complemented with several figures, formulae, graphs, and schemes. The content sticks to

a logical order. The introduction is followed by fundamentals beneficial for understanding the following text.

As for the professional scientific style, the excerpt contains several terminology expressions. It is possible to observe the following examples: ***electromechanical loss-free system***, ***rigidity***, ***friction***, ***ferromagnetic core***. The excerpt contains personalization, which is an atypical feature of this professional scientific style. Its examples are highlighted in the following sentences: *In the paragraphs above, **we have learnt to derive** an equation for the force produced by…*, *If **we** assume that the coupled magnetic flux…*, ***Let's** assume a friction directly proportional velocity.* More usual than personality in this kind of style is impersonality. We can mention, for instance: ***Having solved** the system with equations…*, ***Applying*** $\frac{\mu_0 * \pi * d * a * N^2}{t} = L'$, *the expression (P1.4.4) will be adjusted….* An expression referring to the previous text via signposting can be observed in the excerpt: ***In the paragraphs above**, we have learnt to derive an equation for the force produced by….* The excerpt also contains several examples of hedging expressing tentativeness. The examples of hedging are highlighted in the following sentences: ***With consideration to (1.6-4, 5, and 6), the expression (1.6-3) can be** written as follows…*

Expressions of lexical cohesion, including word repetition, are relatively frequent. The examples of the most repetitive terms are: ***voltage***, ***equation***, ***electromagnet***, ***magnetic***. As an example of a cohesive chain, we can mention the following text: *For **the basic model of a simple electromechanical system** refer to Fig. 1.6-1. **The model** consists of three parts, i.e. an external electric part, a conservative part (in which the energy conversion takes place), and an external mechanical part. The external electric part is represented by a voltage source μ and a resistor R. For the electric part of **the system**, the following equation applies.* The model is a lexical repetition referring to *the basic model of a simple electromechanical system* mentioned in the first sentence. The expression is supported by grammatical reference in the form of the definite article *the*. The same applies to the highlighted word in the last sentence *the system*. This term also refers back to the system mentioned in the first sentence and is supported by the grammatical reference *the*.

13. ELECTROMAGNETIC WAVES AND ANTENNAS – HEVA

13.1 COURSE OVERVIEW

The course consists of lectures and computer classes taking turns every other week. The lecturer is professor Zbyněk Raida, and the lecturer in computer classes is professor Dominika Warmowska.

The course provides students with fundamentals of electromagnetic waves, electromagnetic field, practical computations of antenna parameters, and transmission lines. Properties of different types of transmission lines and different ways of how to use lines and antennas are explained in lectures. Computer exercises are focused on model simulations of propagation of electromagnetic waves in the free space along with transmission lines, and models of simple antennas' wave radiation. For development simulations are used programs as *HFSS* (High Frequency Simulation Software) and *MATLAB*.

In the information system's folder *Detail předmětu* is available a course overview, evaluation criterion, outline of lectures, and recommended literature. The recommended literature includes two books, one in the Czech and one in the English language. Both of these books are available in the faculty library. More information about the course, computer classes, and projects are accessible on web pages of the Department of Radioelectronics.

A test is written at the beginning of each lecture. Students can get five points from each. In computer classes, students can obtain a maximum of ten points. An individual project is another important aspect of evaluation. Students can obtain a maximum of ten points from this work. Extra points can be earned for the activity in lectures.

The E-learning is not available for this course.

13.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt is from the fifth PDF, *Practical Use of Antennas*, corresponding to the fifth topic of the course. The textbook, split into parts, is accessible

on the page of the Department of Radioelectronics. The bibliography is unknown. The analysis refers to the twelfth excerpt of the Appendix.

The presentation is divided into the Czech and English parts, taking turns after each page. The content sticks to a logical order. The chapter *Practical use of Antennas* starts with a revision of the previous part. Then, a computation is described step by step, and it ends with an implementation of the function into a multi-paradigm numerical computing environment – MATLAB. Parameters of antennas, including input impedance, the angular width of the main lobe, and antenna efficiency are described subsequently. From the used terminology, it is evident that the author did rely on professional knowledge of readers or acquired knowledge based on the preceding part of the textbook. The textbook corresponds to the professional scientific style stylistically. The text is complemented with graphs, formulae, equations, notations in MATLAB programming language, and figures.

As it is expected from the professional scientific text, the excerpt contains a rather high density of terminology. For instance, we can mention: *dipole, radiation*, *reflected wave*, *planar reflector*. In the following sentences occur expressions of personalization: *Let **us** start with a triplet of dipoles, Relation (5.6) enables **us** to recompute the radiation resistance…*. The text evinces a higher number of impersonality examples. Impersonality is in the following sentences: ***Prolonging** the dipole, the main lobe of antenna is narrowed, …, **Following** the procedure described in the previous chapter (relations 4.12 to 4.17), the following **result can be obtained**, **Performing** particular mathematical rearrangements, the following **relation can be obtained***. The excerpt contains several expressions of hedging. These examples are highlighted in the following sentences: *a simple dipole antenna **could be** formed by…, Summing waves radiated by each doublet therefore results in cosine, **obviously**, The radiated power **can be** also computed from…*.

Grammatical cohesion, interlinking the content, is in the excerpt in the form of referential expressions. The examples are in these sentences: *In **this** array, central dipoles (1,2) and (2,2) are excited …, Antennas with low radiation resistance exhibit low efficiency – **these** antennas are usually short compared to the wavelength, **In the previous chapter**, theoretical principles of the operation of antennas…*. Lexical cohesion is in the text noticeable in a predominance of repetitive words. The most repetitive words are: *dipole, antenna, lobe, current*, and *radiation*.

The following example of cohesion can be observed in the excerpt: *The above-specified function is called in the main program which is aimed to visualize directivity patterns in **xz plane** and **yz plane**. **Both planes** are perpendicular to the planar reflector. **The xz plane**, which is perpendicular to the axis of the dipole, is called the **H plane** (according to Ampere's law, magnetic field vectors lie upon). **The yz plane**, which is parallel to the axis of the dipole, is called the **E plane** (electric field vectors lie upon).* In this example, *both planes* refer to the planes *xz* and *yz* mentioned in the previous sentence and are supported by grammatical reference – *both*. In the following sentence is again mentioned *the xz plane*, which is a lexical repetition supported by grammatical reference in the form of definite article *the*. *H plane* is a synonym of the xz plane. The fourth sentence refers back to the first sentence where *the yz plane* is a lexical repetition supported by grammatical reference in the form of the definite article. *E plane* is a synonym of the yz plane.

14. COMMUNICATION SYSTEMS – HKSY

14.1 COURSE OVERVIEW

The lecturer of this course is professor Aleš Prokeš. The course is divided into lectures and seminars, both taking place every other week.

The course aims to acquaint students with the general structure of analog and digital communication systems, explain the activity of their fundamental building blocks, and show examples of typical present systems for the audio signal, video signal, and data transmission. In lectures, students are taught algorithms of signal processing and are provided with an overview of communication systems used in the present.

The course overview, evaluation criteria, recommended literature, and topics for the final state exam are accessible on the information system's page *Detail předmětu*. The recommended literature comprises two books, both are in the English language, and are available in the faculty library. The course announcement, outline of lectures, presentations, handbook, and materials for the seminar are accessible in E-learning.

The assignment is made up of points for presentation in the seminar. It is possible to get a maximum of twenty points for the presentation. Students have to obtain a minimum of fifty points to pass the course.

From the lectures was noticeable that the professionals in communications have also a specific relationship to the use of language, namely that they give preference to the subject matter over the pronunciation.

14.2 ANALYSIS OF TEACHING MATERIALS

The selected excerpt, *Synchronization,* is from the presentation *Communication Systems*, available in the E-learning. The author of the presentation is professor Aleš Prokeš. The analysis refers to the thirteenth excerpt of the Appendix.

The presentation is organized into thirteen chapters and their subchapters in a logical order. Information related to the course, such as classification, presentation references, and content are outlined at the beginning. The content starts with a brief history of communication systems and finishes with data transmission in computer networks. The text is laid out mostly by bullet points. The slides are complemented with figures, examples, problems, graphs, schemes, formulae, and equations.

From the number of applied terms, it is evident that the presentation is of the professional scientific style. However, terms that are considered new to students are explained. The examples of terms are: *demodulation, Costass loop, transmitter*, and *phase locking*.

Unlike in previous excerpts, there is no evidence of personality. Common expressions of impersonality can be found in the following examples: *Marker is searched in the data stream using correlator (acquisition), …specific frame alignment markers (known bit sequences) are identified in a stream of incoming framed data.* The following sentences contain various examples of hedging expressing tentativeness or avoiding imposing: *almost all digital data streams have some kind of frame structure, but they are much more costly and complex*, and *Synchronization techniques can be centralized to*.

Grammatical cohesion features are given in the selected excerpt. For example, we can mention referential expressions which are highlighted in the following sentences: *It is based on the frame alignment marker insertion….* It is evident that the word *it* refers to the subchapter title *Frame synchronization* as it is the first bullet point note. *It uses pre-correction technique.* This time the word *it* refers to the system the pre-correction technique is used in. Therefore, it refers to the *Open-loop system. Closed-loop methods tend to be more accurate, but they are much more costly and complex.* The word *they* refers to the main clauses Closed-loop methods. *Difference between the Early and the Late integrators determines the VCO input (correction) voltage. When both integrator outputs are equal…* The word *both* refers to the two outputs, one output of the Early integrator and one output of the Late integrator. Lexical cohesion can also be found in the text. In the excerpt, it is mostly represented by repetitive words. The most often repeating words are: *recovery, synchronization*, and *data*.

The following cohesive chain is in the presentation divided to bullet points: *It is based on frame alignment marker insertion into the frame header. Receiver knows the alignment marker (bit sequence). Marker is searched in the data stream using correlator(acquisition). The alignment marker* is a lexical repetition supported by grammatical reference in the form of the definite article. In the following sentence, the word *marker* is a lexical repetition of the frame alignment marker.

CONCLUSION

The present thesis compiles an overview of technically focused courses of the first two years of the educational program English in Electronics and Communication Technologies. The overview is focused on the methodology of educational courses, their aims, and expected outcomes. Further research describes methods and criteria of evaluation, the layout of the E-learning portal, and recommended literature, including its availability.

The second aspect that was paid attention to is the specific discourse analysis of the provided materials. The part concerning the grammatical cohesion was focused mainly on referential expressions, pointing on the previous or following utterance and, therefore, ensuring the content continuity. The part focusing on lexical cohesion observed word repetition and synonyms. Another observed feature was hedging, which brings a level of uncertainty and tentativeness to the professional scientific prose. The analyses end with cohesive chains.

A comparison of the first parts of analyses revealed that most of the professors chose to employ the web pages of E-learning. The E-learning is used prevailingly to distribute presentations used in the courses or materials useful for the study. Materials are often complemented with several graphs, images, and schemes. Another finding is that professors tend to recommend literature, which is not necessarily in the English language. In fact, the literature is not always available in the library of the faculty.

The specific discourse analyses revealed that the authors typically rely on the students' previously acquired knowledge. The excerpts correspond to the professional scientific style, as was expected. The authors follow the logical order and do not digress from the topic. From the analyses could be noticed that the excerpts contain a substantial amount of terminology. Even though the scientific prose style avoids using personalization, the phenomenon can be observed in the excerpts rather frequently. The personalization occurs regularly in the form of inclusive we. This form emphasizes the relevance of the information to the reader and tries to increase his interest. It is classified in linguistics as both interpersonal and phatic functions. These functions are used by authors to open the communication channel, indicating that the text refers to the reader too. The text also contains more typical impersonalization. The texts are interlinked with

grammatical and lexical devices creating cohesive ties ensuring the clear arrangement of events.

ROZŠÍŘENÝ ABSTRAKT

Bakalářská práce poskytuje přehled o technických předmětech vyučovaných v programu Angličtina v elektrotechnice a informatice, a dále poskytuje konkrétní diskurzní analýzu dostupných materiálů používaných ve vyučování. Přehled se vztahuje na předměty prvního až čtvrtého semestru programu. Práce je tedy rozdělena do kapitol, z nichž se každá věnuje jednomu předmětu.

První část je zaměřena na samotné předměty, přičemž podává přehled o způsobu výuky i jejich vyučujících. Dalším významným aspektem popisu jsou cíle předmětu a osnova výuky, se kterou se student během studia seznámí. Následuje popis hodnocení, včetně úkolů nezbytných pro úspěšné dokončení předmětu. Tento popis také obsahuje počet bodů pro získání zápočtu, bez kterého by student nebyl připuštěn ke zkoušce. Tyto body studenti získávají nejčastěji za aktivní účast na hodinách, vypracování zadaných úkolů, odevzdání domácích úkolů nebo odevzdání protokolů. První část je ukončena přehledem dostupných materiálů pro studenty. Je zmíněno také využití webového portálu E-learningu, obsahujícího převážně prezentace z hodin a další materiály pro výuku. Správci E-learningových stránek jednotlivých předmětů jsou vyučující a jejich využití je proto individuální. V přehledu dostupných materiálů je zmíněna také doporučená literatura a její dostupnost v knihovně fakulty. Zásadním aspektem je pak jazyk, ve kterém je literatura dostupná.

Druhá část je věnována již zmíněné konkrétní diskurzní analýze dostupných materiálů užitých k vyučování jednotlivých předmětů. Analýza je celkově srovnávaná s teoretickými poznatky o profesionálním vědeckém stylu. Pro analýzu byl vybrán výňatek obsahující přibližně šest stránek, popřípadě podkapitola učiva. V úvodu je zmíněn materiál, ze kterého výňatek pochází a také jeho autor, pokud je známý. Výňatky, ve kterých byla prováděna analýza, se nachází v příloze na konci práce. Na začátku každé analýzy je uvedeno pořadí přílohy, které náleží. Analýza se zabývá také materiálem, nejčastěji prezentací, ze kterého pochází. Je zmíněna struktura textu i vizuální stránka obsahu, a to, jak koresponduje s profesionálním vědeckým stylem. Dále je zmíněn obsah terminologie použitý ve výňatku, a tedy jestli je text snadno pochopitelný. V analýze je také poukázáno na časté použití hedge. Dalším zkoumaným jevem, kterému byla věnována pozornost, je projev personality. Autor tak zmíní nejčastěji čtenáře a projeví tak relevantnost informace pro čtenáře. Tento jev je porovnáván s typičtějším vynecháním

osoby. Nejobsáhlejší částí analýzy je pak gramatická a lexikální koheze. Gramatická koheze byla zkoumána z hlediska referenčních výrazů. Tyto výrazy ukazují v textu na již zmíněné věci, již uplynulé děje, nebo děje nadcházející, jsou proto základem plynulého a přehledného textu. Lexikální kohezí bylo zkoumáno nejčastěji opakování termínů a synonyma. Analýzu uzavírají kohezní řetězce, které propojují větší celky obsahu textu pomocí gramatických referencí i lexikální koheze. Lexikální koheze je v ukázkách kohezních řetězců zastoupena synonymy, opakováním termínu a lexikální specifikací.

Porovnání prvních částí rozborů předmětů vykazuje, že webové stránky E-learningu používá k výuce většina profesorů. V E-learningu zveřejňují jak prezentace, které používají během výuky, tak i materiály potřebné, či užitečné pro studium. V doporučené literatuře bývají navrženy knížky jak v anglickém, tak v českém jazyce, přičemž nejsou nutně dostupné v areálové knihovně fakulty.

V druhé části je pak možné si povšimnout, že materiály poskytnuté studentům odpovídají, profesionálnímu vědeckému stylu. Autoři v mnoha případech spoléhají na již získané znalosti. Tyto znalosti jsou často náplní již probraných předmětů a učivo na ně mnohdy navazuje. Nové poznatky bývají v hodinách vysvětleny. Analýza se pak také zabývá četností terminologie a dohromady pak jsou vhodným měřítkem toho, jak obtížné je pro žáka zorientovat se v materiálech a pochopit požadovanou látku. Obsah textu je vždy formální a řídí se zpravidla logickou posloupností textu. Text je tedy strukturován logicky a nepřeskakuje mezi tématy. Materiály jsou pro názornost doplňovány o obrázky, schémata, grafy, vzorce a příklady. Pro názornost se v textu vyskytují v četnějším počtu, než je pro tento styl obvyklé. Dalším atypickým jevem, který se často v ukázkách vyskytoval, je „personalization". Tedy již zmíněné užití osoby v textu akademického diskurzu. Jeho nejčastější formou v textu bylo zpravidla „inclusive we", které zahrnuje i čtenáře. Tímto se autor snaží v textu zdůraznit relevanci informace pro čtenáře a zvýšit tak jeho zájem a pocit sounáležitosti. Z hlediska lingvistiky se tak jedná o „interpesonal" a „phatic function", tedy funkce sloužící autorům v komunikaci pro ujištění, že se komunikace neváže pouze k nim samotným a otevírají tak komunikační kanál. Mnohem častějším jevem je naopak opomenutí osoby, který se v textu objevuje také. Pro zachování návaznosti textu autoři použili gramatickou kohezi. Gramatická koheze tvoří reference nejčastěji na již zmíněné prvky v textu a upozorňuje tak, že následující text se k nim vztahuje. Lexikální koheze byla ve výňatcích zkoumána z hlediska formy opakování

výrazu a synonym. Posledním jevem, kterému byla věnována pozornost, byly kohezní řetězce, které v textu propojují větší celky a můžou být ve výňatcích pozorovány v početném zastoupení.

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APPENDIX