Faculty: FACULTY OF TELECOMMUNICATIONS AND MANAGEMENT
Department: GENERAL ENGINEERING
Professional Field: 5.13. GENERAL ENGINEERING
Specialty: DIGITAL ENTREPRENEURSHIP AND HIGH TECHNOLOGY
Educational-qualification degree: BACHELOR

LEARNING COURSE DESCRIPTION

1. Course title: *ELECTRICAL ENGINEERING FUNDAMENTALS*
2. Course code: B.45.003.1
3. Type of the course: *compulsory*
4. Level: *Bachelor*
5. Year of study: *First*
6. Semester: *First*
7. Number of credits: *6*
8. Name of the lecturer: *Assoc. Prof. Lian Nedelchev, PhD, Assist. Prof. eng. Boris Vasilev, PhD, Julia Toneva*
9. Course learning outcomes:

The aim of the course is to give students a systematic basic knowledge in the field of electrical engineering, to present the principles of electrical and magnetic circuits, as well as some widely used electrical appliances and apparatus. The electrical components and devices are also considered in connection with their application in computer and communication technology.

Students who have completed their training in the discipline must acquire:

Basic knowledge of the fundamental theoretical aspects of the analysis of electrical circuits for direct and alternating current, the laws that describe the processes in them and their behavior over time.

Practical skills for reading and understanding technical documentation and electrical diagrams, for compliance with the basic requirements and safety techniques for working with high currents and voltages, skills for preparing and connecting simple electrical circuits and models of devices.

Competencies: Upon completion of the course, students who successfully complete the course must have mastered the basic approaches used in electrical engineering, be able to choose the most appropriate methods, schemes and components to solve a problem, be able to perform electrical measurements and correctly interpret the results obtained.

10. Teaching methods:

The teaching method is in lecture and discussion form, according to the specifics of the subject matter. The emphasis is on the fundamental questions of electromagnetism and electrical engineering, using multimedia.

11. Prerequisites:

Students should have a thorough knowledge of Mathematics in engineering - I, as well as physics and mathematics from the secondary education.

Courses using the discipline are Fundamentals of electronics and the other technical courses in the curricula.

12. Course contents:

The course deals with key topics related to the most important notions in electrical engineering: electromagnetic phenomena and processes, conductive, insulating and magnetic materials, components and processes in electrical circuits for direct and alternating current, methods for analysis of electrical circuits, as well as for measurement of electrical quantities. Examples of applications of electrical components and devices in computer technology and telecommunications are given.

13. Bibliography

Basic literature:

1. **Zulinski B.** Introduction to Electronics, Michigan Technological University, 2019 (http://www.ece.mtu.edu/faculty/ljbohman/onlinetext/elint200.pdf)
2. **Storr W.** Basic electronics Tutorials (Free Edition), 2013. (https://www.electronics-tutorials.ws/pdf/basic-electronics-tutorials.pdf)
3. **Ergul, Ozgur.** Introduction to Electrical Circuit Analysis. Wiley, 2017.
4. **Gilisco S.** Teach Yourself Electricity and Electronics, 4th Ed. McGraw-Hill, NY, 2006.

Additional literature:

1. **Standard 60050 of IEC.**
2. **Бечева М., Златенов И**. Електротехника и електроника, Изд. Матком, 2003.
3. **Куцаров Ст.** Основи на електронните схеми – том 1, изд. НБУ, С., 2016.

14. Assessment methods and criteria:

The course ends with an *exam.* The student's individual and team work is taken into account during the semester - ongoing control during lectures and practical exercises.

1.Requirements for the assessment of the six-point system

The course grade is formed by a point system, the maximum number of points students can receive is 100 (see Table 1). They are formed by problems and assignments, assigned by the lecturer of the course according to the topics of the syllabus (up to 20 points) and assignments during the practical exercises (up to 30 points). With the assessment that is formed by the resulting sum of points (from lectures and exercises), i. e. with ongoing control, the student is formed according to pre-announced criteria.

2. Formation of the final mark

The exam takes the form of a test. In the written exam, each student receives up to 50 points, added to the points obtained during the semester. Finally, a grade is assigned according to the six-point system given in Table 1.

Table 1.

Number of points	**Assessment According to the 6-point Scale System**
0 – 20	Fail 2 **(**F)
20 – 39	Fail 2 (FX)
40 – 49	Satisfactory 3.00 (E)
50 – 59	Satisfactory 3.00 (D)
60 – 69	Good 4.00 (C)
70 – 84	Very good 5.00 (B)
85 – 100	Excellent 6.00 (A)

15. Language of instruction: *Bulgarian*