Module name: **Electrical Circuits 1**
Module ID: **IS-FEE-10070W**
Module type: **Class**
Semester: **winter 2024/2025**

Jarosław Forenc, PhD
Białystok University of Technology, Faculty of Electrical Engineering
Department of Electrotechnics, Power Electronics Electrical Power Engineering
Wiejska 45D Street, 15-351 Białystok

room: **WE-204**
e-mail: **j.forenc@pb.edu.pl**
phone: **(+48-85) 746-93-97**
www: **jforenc.prv.pl/ec1.html**

office hours (consultations):

Monday, 12:00-13:00, WE-204
Wednesday, 12:00-14:00, WE-204
Friday, 14:00-15:00, WE-204

Module content:

Week	Date	Topic
1.	07.10.2024	Equivalent resistance. Resistors in series and in parallel. Wye-delta transformation.
2.	14.10.2024	Ohm's Law, Kirchhoff's Voltage and Current Laws. Voltage and current dividers. Voltage and current sources, source transformation (DC).
3.	21.10.2024	Kirchhoff's-Laws method, superposition method (DC).
4.	28.10.2024	Loop-Current method (DC).
5.	04.11.2024	Node-Voltage method (DC).
6.	18.11.2024	Thevenin's Theorem (DC).
7.	25.11.2024	Test no. 1 (DC)
8.	02.12.2024	Phasors, phasor diagrams. Equivalent impedance and admittance.
9.	09.12.2024	Ohm's Law, Kirchhoff's Voltage and Current Laws (AC).
10.	16.12.2024	Kirchhoff's-Laws method, superposition method (AC).
11.	09.01.2025	Loop-Current method (AC).
12.	13.01.2025	Node-Voltage method (AC).
13.	20.01.2025	Thevenin's Theorem (AC).
14.	27.01.2025	Test no. 2 (AC)
15.	03.02.2025	(will be used as needed)

Literature:

1. Irvin J.D., Nelms R.M.: Basic Engineering Circuits Analysis. John Willey & Sons Inc., 2015.
2. Thomas R.E., Rosa A. J., Toussaint G.J.: The Analysis & Design of Linear Circuits. 8th Edition. Wiley Inc., 2016.
3. Tung L.J., Kwan B.W.: Circuit Analysis. World Scientific, 2001.
4. https://www.electrical4u.com/electrical-engineering-articles/circuit-theory
5. https://www.khanacademy.org/science/electrical-engineering

Method of assessing:

- DC part
  - test no. 1 - 40% of the final grade
- AC part
  - test no. 2 - 60% of the final grade
- All tests must be passed.
- The final grade:

Result %	ECTS grade	Local grade	Definition
91 - 100	A	5	EXCELLENT - outstanding performance with only minor errors
81 - 90	B	4,5	VERY GOOD - above the average standard but with some errors
71 - 80	C	4	GOOD - generally sound work with a number of notable errors
61 - 70	D	3,5	SATISFACTORY - fair but significant shortcomings
51 - 60	E	3	SUFFICIENT - performance meets the minimum criteria
0 - 50	F	2	FAIL - some more work required before the credit can be awarded

07.10.2024

Jarosław Forenc, PhD

j.forenc@pb.edu.pl