

Module name: **Electrical Circuits 2**
Module ID: **IS-FEE-10085S**
Module type: **Classes**
Semester: **summer 2023/2024**

Jarosław Forenc, PhD

Białystok University of Technology, Faculty of Electrical Engineering
Department of Electrotechnics, Power Electronics and 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: <http://jforenc.prv.pl/ec2.html>

office hours (consultations):

Tuesday, 10:30-12:00, WE-204
Thursday, 12:00-13:30, WE-204

Module content:

Week	Date	Topic
1.	27.02.2024	AC circuit analysis in complex domain. Active, reactive and apparent power.
2.	05.03.2024	Self inductance and mutual inductance. Analysis of circuits with magnetic coupling. Part 1.
3.	12.03.2024	Self inductance and mutual inductance. Analysis of circuits with magnetic coupling. Part 2.
4.	19.03.2024	Self inductance and mutual inductance. Analysis of circuits with magnetic coupling. Part 3.
5.	26.03.2024	Test no. 1.
6.	09.04.2024	Three-phase systems. Part 1.
7.	16.04.2024	Three-phase systems. Part 2.
8.	23.04.2024	Three-phase systems. Part 3.
9.	30.04.2024	Test no. 2.
10.	14.05.2024	Transient analysis in linear RLC circuits. Part 1: the classical method.
11.	21.05.2024	Transient analysis in linear RLC circuits. Part 2: the Laplace transform.
12.	28.05.2024	Transient analysis in linear RLC circuits. Part 3: the Laplace transform.
13.	04.06.2024	Test no. 3.
14.	11.06.2024	Test no. 1 / 2 / 3.
15.	18.06.2024	(will be used as needed)

Literature:

1. Thomas R.E., Rosa A. J., Toussaint G.J.: The Analysis & Design of Linear Circuits. 8th Edition. Wiley Inc., 2016.
2. Tung L.J., Kwan B.W.: Circuit Analysis. World Scientific, 2001.
3. Irvin J.D., Nelms R.M.: Basic Engineering Circuits Analysis. International Student Version. John Wiley&Sons Inc., 2008.
4. <https://www.electrical4u.com/electrical-engineering-articles/circuit-theory>
5. <https://www.khanacademy.org/science/electrical-engineering>

Method of assessing (classes):

- Three written tests:
 - Test no. 1 (mutual inductance, circuits with magnetic coupling) - 30% of the final grade
 - Test no. 2 (three-phase systems) - 35% of the final grade
 - Test no. 3 (transient analysis) - 35% 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

27.02.2024

Jarosław Forenc, PhD

j.forenc@pb.edu.pl