

UNIVERSITY OF NYÍREGYHÁZA

Institute of Engineering and Agricultural Sciences

Department of Transport Sciences and Information Technology

SEMESTER COURSE PLAN

Subject: Digital electronics, **code:** BMI1301

Lecturer: Rafael Ruben Boros PhD, **practical instructor:** Tamás Pásztor

Lecture: 2 hours/week, 28 hours/semester; **practical class:** 4 hours/week, 56 hours/semester

Assessment method: colloquium (semester exam) – see: [below](#)

A pre-assigned (offered) grade can be earned during the semester based on four laboratory exercises (worth 5 points each, totaling 20 points, with no separate minimum requirements).

Cut-off scores and grades:

- | | |
|--------------|----------------|
| – excellent | 18 – 20 points |
| – good | 16 – 17 points |
| – average | 14 – 15 points |
| – sufficient | 12 – 13 points |

If the student does not obtain an offered grade, the end-of-semester exam grade shall be considered the final grade (excluding lab sessions).

Absence (both verified and unverified) from practical sessions more than 3 times during the semester will result in the loss of not only the opportunity to obtain the offered grade, but also the condition for being admitted to the exam (the student will repeat the course next year) – see: [Regulations on Studies and Examinations](#) 8. § (1.).

Absences must be reported - with proof, via email, etc. - no later than the week in which they occurred! NOT two weeks later, and certainly NOT at the end of the semester!
These are NOT accepted such late notifications!

Nyíregyháza, 2026. 08. 28.

Rafael Ruben Boros PhD

course coordinator

Week	Lecture	Hours	Practice	Hours
37.	Binary, decimal & hexadecimal numeric systems	2	Occupational health and safety training	4
38	Fundamentals of Boolean algebra ; De Morgan's laws	2	Practical exercises	4
39.	Design of combinational circuits : truth tables, logic functions, maxterms, minterms, Karnaugh maps	2	Familiarization with measurement techniques; introduction to the <i>DEGEM Systems EB2000</i> .	4
40.	Design of combinational circuits : truth tables, logic functions, maxterms, minterms, Karnaugh maps	2	Analysis of combinational circuits (EB131, EB132)	4
41.	Functional circuits : multiplexers, demultiplexers, comparators, encoders, decoders, and adders.	2	Autonomous practice 1	4
42.	Design of sequential networks : state tables, logic functions	2	Analysis of sequential circuits (EB133)	4
43.	FALL BREAK	-	FALL BREAK	-
44.	Design of sequential networks : state tables, logic functions	2	Autonomous practice 2	4
45.	Counters, storage elements, & shift registers (flip-flops)	2	Diode forward voltage, rectifiers, Zener voltage regulator (EB111)	4
46.	P-type and N-type semiconductors ; Diodes and their applications	2	Transistor current gain, common-emitter configuration (EB111)	4
47.	Bipolar & field-effect transistors : Structure; circuit configurations, characteristic curves.	2	Autonomous practice 3	4
48.	Introduction to simulation environments (<i>FreeCircuitSim</i> , <i>TinkerCAD</i>)	2	Getting started with TinkerCAD	4
49.	Amplifiers, operational amplifiers : Basic configurations, characteristics	2	Getting started with TinkerCAD	4
50.	Integrated circuits : 555 timer, BCD-to-7-segment decoder	2	Autonomous practice 4	4
51.	Getting Started with the Arduino UNO R3 ; Analog-to-Digital & Digital-to-Analog Converters	2	Make-up lab sessions	4

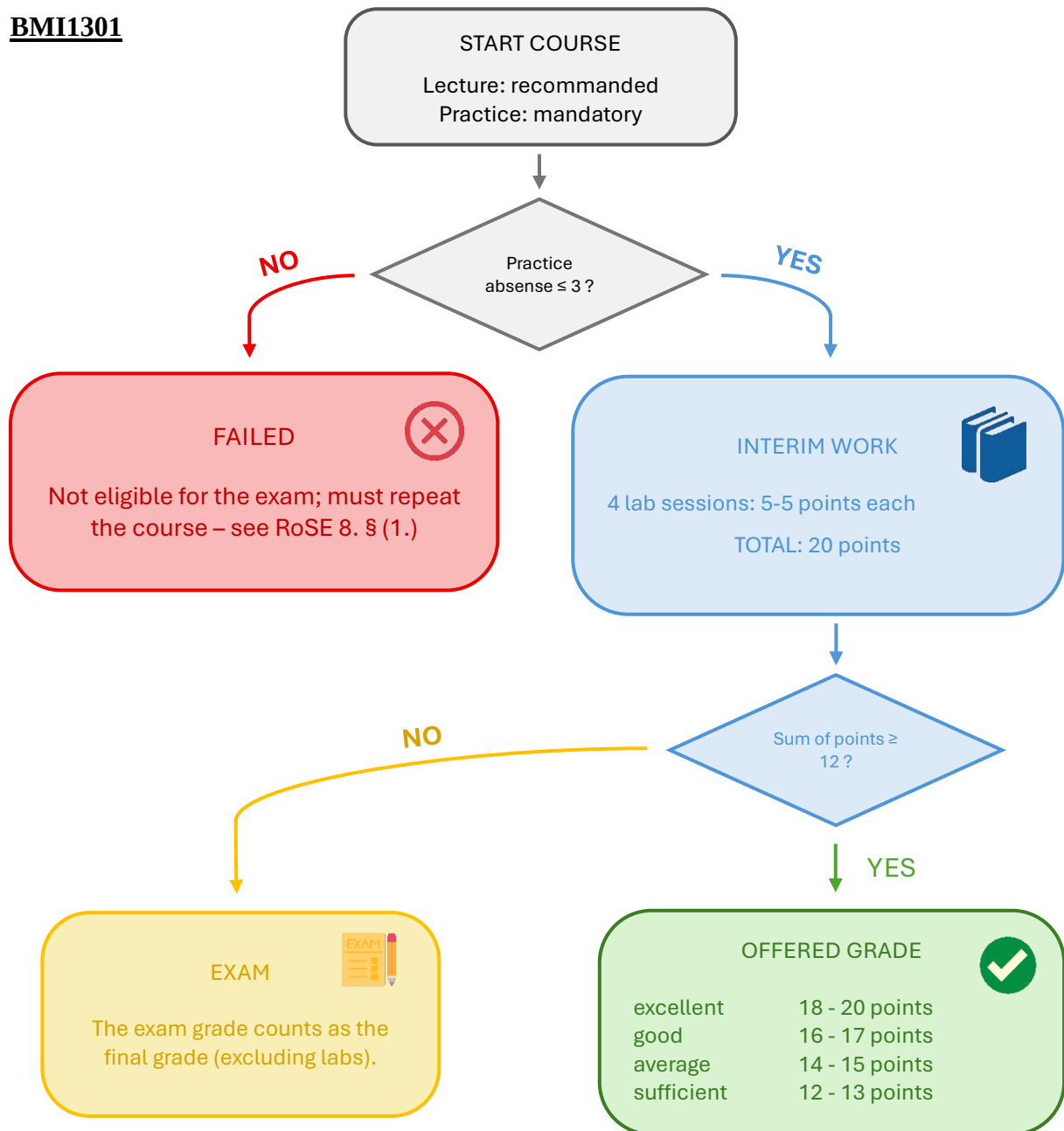
Moodle-course:

[Digital electronics \(BMI1301\)](#)

Recommended reading:

- **Alexander, Charles K. – Sadiku, Matthew N. O.:** *Fundamentals of Electric Circuits*. McGraw-Hill Education, New York, 7th Edition, 2021. ISBN 978-1260226409
- **Chapman, Stephen J.:** *Electric Machinery Fundamentals*. McGraw-Hill Education, New York, 5th Edition, 2011. ISBN 978-0073529547
- **Horowitz, Paul – Hill, Winfield:** *The Art of Electronics*. Cambridge University Press, Cambridge, 3rd Edition, 2015. ISBN 978-0521809269
- **Floyd, Thomas L.:** *Electronic Devices*. Pearson, 10th Edition, 2018. ISBN 978-0134414447
- **Helfrick, Albert D. – Cooper, William D.:** *Modern Electronic Instrumentation and Measurement Techniques*. Pearson Education. ISBN 978-0135935682

BMI1301



- ⇒ Prerequisite for exam registration: a maximum of 3 absences – see RoSE 8. § (1.)
- ⇒ Absences must be reported - with proof, via email, etc.
- no later than the week in which they occur! NOT two weeks later, and certainly NOT at the end of the semester!
Such reports are NOT accepted!

