

Course: **Batteries**
1020-PE000-ISA-0308
Coordinators: **dr hab. inż. Leszek Niedzicki**

Period: **Winter Semester 2023/2024**
2023Z
Approval date: **13.10.2023**

1. Course allocation

Lecture is intended for 5th semester, III year students of Electric and Hybrid Vehicle Engineering at SiMR faculty.

After completion of the course student should have acquired: detailed knowledge on different types of rechargeable galvanic cells and electrodic materials, electrolytes and other necessary components of the cell; knowledge on possibilities of modification and choice of electroactive materials to obtain required parameters for the intended goal; ability to assess composition and structure of the existing cell and propose modifications for adjusting its parameters to the given application; ability to design cell for the application including economic and environmental requirements; ability to predict cause of potential cell failure and propose required modifications in the cell structure or requirements for the battery management system to avoid or minimize the risk of the failure; ability to cooperate and communicate in the interdisciplinary team for the choice of component materials of the cell for the given application.

2. Conducting classes

Lecture is conducted in a stationary form, save from the situations when the remote/different form has been agreed earlier with the group or there are situations of force majeure and other not possible to be foreseen and/or independent from the lecturer.

In case of the remote form of the course:

Lectures take place on the days and hours provided in the course schedule. It means that lecturer is available for students through the remote communication means (email, MS Teams application and Moodle).

Student should prepare workplace for remote work including: computer with the access to the internet, access to the platform/application MS Teams and in case of the test Moodle, and should be able to take part in the video conference (external webcam or webcam integrated into notebook).

Student should work and behave according to the information and directions sent by the lecturer.

Student should regularly check communication channels indicated by the lecturer as the means of communications during lecture/course (email, MS Teams team channel/chat/file repository, Moodle, etc.).

In case of online lecture student should not record the video/audio stream without a clear consent of the lecturer. In case of obtaining such consent, the recording of video/audio stream of the lecture is for personal use only. It is prohibited to share the recording through any electronic channels (Warsaw University of Technology Academic Regulations § 11 point 8).

All internet access issues should be solved individually.

Student writing a test should attach the following statement at the end of the test (filled on Moodle platform or sent to the lecturer's email):

„I hereby declare that this work (constituting the basis for the recognition of achieving educational effects) in the Batteries course has been done exclusively by myself.

[First name and last name], [index number]"

3. Course materials

<http://lniedzicki.ch.pw.edu.pl>

4. Class attendance

According to Warsaw University of Technology Academic Regulations § 11 point 7, attendance in lectures are not compulsory, apart from the lectures on which tests are held.

It is required to justify the absence on the lectures during which the tests are held. Absence is considered justified if student presents written sick leave note signed by the physician or other document which explains the absence. If such a document cannot be presented, decision on justifying the absence can be made by the lecturer responsible for the lecture. In debatable cases decision on justifying the absence of student is made by the Dean of Faculty.

5. Verification of achievement of learning outcomes

During the lecture lecturer is initiating discussions with students and they are encouraged to ask questions regarding the presented issues.

Lecture is passed based on two tests held on days and times confirmed with the students (first test in the middle of the semester, second test usually on the last lecture). Result of one of the tests can be improved in the agreed term of retake test, which is held usually at the

beginning of the exam session. As a special exception, it is possible to hold oral retake test.

6. Aids acceptable for use during verification of achievement of learning outcomes

During the tests it is allowed to have one A4-size sheet of paper with personally written notes (equations/formulae with the symbol denotations). Using any other materials is not allowed. Student should have a calculator on the tests. Each test should be written without anyone's help and in person.

7. Rules for passing the course and for calculating the final grade

Lecture is passed (grade 3) through acquiring at least half of the maximum possible total points from two tests plus one. The higher grades are given for surpassing by one point respective shares of the maximum possible total points from two tests (60% - 3.5; 70% - 4; 80% - 4.5; 90% - 5).

In order to pass the course, one has to pass the lecture, that is to get grade 3.

Final grade from the course is the same as the lecture tests grade.

8. Deadline and procedure for announcing grades

Tests' results are announced to students through USOS system (in case of the final result) and on lectures or during consultation hours (in case of the individual test results).

9. Rules for retaking classes due to failure to pass a course

Positive grades (3 and above) from the passed lecture remain valid for the following years. In special cases (e.g. change of the lecture program, resuming interrupted studies, moving between faculties and/or universities, tests passed outside of the faculty) Dean of the Faculty consent is required for recognizing grade.

Thus, when course is repeated, student does not have to come to the lectures or pass the tests again (if already passed). Transcription of the previously acquired grade requires notice of such intention to the lecturer responsible for the course in the first two weeks of the course in the semester.

10. Other

On course matters not covered by these regulations the final decision is up to the lecturer responsible for the lecture.