Module syllabus: ***Seminar – Department of Genetics***

1. Overall information

Module coordinator	prof. Małgorzata Gaj
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ECTS	**3**
Method for the verification of learning outcomes	The final grade includes the evaluation of the: - presentation on a selected topic (0.4) - survey of research papers and presentation of the selected research works (0.2) - activity during scientific discussions (0.2) - final test (0.2)

2. Description of student activity and work

Presentations of the seminars and reports on selected research papers	
Responsible instructor	prof. Małgorzata Gaj
Groups	Undergraduate students enrolled at the Department of Genetics
Content	Contemporary issues and research methods in the field of genetics and plant biotechnology with special emphasis on *in vitro* cultures and the genetic transformations of plants. Examples of the topics that are presented and discussed include: 1. *In vitro* cultures of plant tissues – terminology, methods and applications in biotechnology 2. Plant micropropagation with special emphasis on trees – the methods used in the forestry 3. Haploid production – anthers and microspore cultures – methods and applications in plant biotechnology 4. "Hairy roots" cultures – applications in biotechnology 5. Protoplasts and somatic hybridisation in plants – methods and goals 6. Agrobacterium as a vector in the genetic transformations of plants 7. Plant transformations without the use of marker genes ("marker free") – the concept, examples, achievements and prospects 8. Reporter genes – characteristics and applications in the production of transgenic plants 9. "Golden Rice" 10. Genetically modified plants (GMP) in agriculture –risk assessment 11. Benefits and risks of GMP – debate (all participants)
Methods and forms of teaching	PowerPoint oral presentations of the selected topics followed by a discussion on the presented problems moderated by the instructor.
Number of teaching hours	30 hours per semester (two-hour classes according to the current schedule).
Number of self-	30 hours

study hours	
Description of student self-study	Preparing an oral presentation based on scientific papers in the form of a Power Point presentation. Topics are independently selected and approved during the consultations with the instructor. Preparing a co-report presentation about a topic selected by the student, scientific papers about an original research in the field. Preparing for a discussion by developing and updating previous knowledge in the field of biotechnology; tracking the current achievements and problems of plant biotechnology.
Location of classes	Seminar room in the Department of Genetics
Mandatory references	Original (Research) and review papers published in high impact factor scientific journals, databases and portals on biotech research. Recommended scientific journals and web pages: Current Opinion in Biotechnology; Trends in Biotechnology; Current Opinion in Plant Biology, Plant Biotechnology; Plant Biotechnology Journal, Plant Biotechnology Reports; Plant Cell, Tissue and Organ Culture, Plant Cell Reports. http://www.biotechnolog.pl/kwartalnik-biotechnologia ; http://www.gmo-compass.org/eng/home/ http://www.cell.com/trends/biotechnology

Presentations of the seminars and reports on selected research papers	
Responsible instructor	prof. Małgorzata Gaj
Group	Undergraduate students enrolled at the Department of Genetics.
Content	Individual consultations to assist in the selection of the topic-relevant literature for preparing the oral presentations; presenting the presentation plan
Methods and forms of teaching	Individual talks with a student, teacher's support in selecting the research papers and understanding the scientific problems
Number of teaching hours	30
Number of self-study hours	10
Description of student self-study	Surveying the research papers on the selected problems and selecting the papers to be used in the presentations
Location of classes	In the Department of Genetics
Additional information	Information about the consultation hours is available on the website of the Faculty of Biology and Environmental Protection and on the information board of the Department of Genetics.