University of Gdańsk

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Applied Phycology - laboratory classes, PG_00201287 | | |
| Field of study | Aquaculture – Business And Technology | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2028/2029 |
| Education level | Bachelor's studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to practical vocational preparation |
| Mode of study | full-time studies | Mode of delivery | at the university |
| Year of study | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 2.0 |
| Learning profile | practical | Assessment form | credit |
| Conducting unit | Department of Marine Ecosystems Functioning -> Faculty of Oceanography and Geography -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr Iwona Bubak | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 0.0 | 30.0 | 0.0 | 0.0 | 30 |

E-learning hours included: 0.0

**Learning activity and number of study hours**

| Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
|---|---|---|---|---|
| Number of study hours | 30 | 1.0 | 19.0 | 50 |

**Subject objectives**

The aim of the course is to familiarise the student with methods for biochemical characterisation of algal biomass obtained from mass cultures.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [AKWAL3-U02] can make observations and perform simple physical / biological / chemical measurements that are typical in socio-economic activity based on natural sciences | Student is able to make observations and simple standard measurements to monitor the growth and characterisation of cyanobacterial and algal biomass for economic purposes (topics covered in exercises) | [SU2] presentation/project/paper/ report |
| [AKWAL3-K05] student is ready to appreciate the practical application of acquired knowledge | Student is ready to appreciate the practical application of the knowledge acquired in the field of cyanobacteria and algal aquaculture (topics covered in exercises) | [SK8] observation of student's independent or team work |
| [AKWAL3_W06] has an advanced understanding of techniques, research methods and tools used in aquaculture | Student knows the techniques, methods and research tools used in cyanobacterial and algal aquaculture. | [SW4] test/exam - oral or written |

**Subject contents**

1. Cultivation of microalgae in bioreactors.
2. Preparation of bioreactors for operation, preparation of starting cultures.
3. Characterisation of algal growth, measurement of biomass growth rate, evaluation of production efficiency of selected substances synthesised by algae and cyanobacteria (e.g. pigments, lipids, polysaccharides, etc).

**Prerequisites and co-requisites**

none

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>observation of the student's independent work</td><td>51.0%</td><td>15.0%</td></tr>
<tr><td>report</td><td>51.0%</td><td>25.0%</td></tr>
<tr><td>test</td><td>51.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Richmond, A., 2004, Handbook of microalgal culture. Biotechnology and applied phycology. Blackwell Publishing, Oxford, UK.<br>2. Johansen, M.N., 2012, Microalgae. Biotechnology, microbiology and energy. NOVA Science Publisher INC., New York.<br>3. Richmond, A., 2000, Handbook of microalgal mass culture. CRC Press, Baco Raton, Florida.<br>4. Khanal, S.K., Surampalli, R.Y., Zhang, T.C., Lamsal, B.P., Tyagi, R.D., Kao, C.M., 2010, Bioenergy and biofuel from biowaste and biomass. ASCE, Reston, Virginia.NOVA Science Publisher INC., New York.</td></tr>
<tr><td>Supplementary literature</td><td>1. Anderson R.A., 2005, Algal culturing techniques. Elsevier Academic Press, Oxford, UK.NOVA Science Publisher INC., New York.<br>2. Fogg, G.E., Thake, B., 1987, Algal Cultures and Phytoplankton Ecology. The University of Wisconsin Press, Madison, Wisconsin.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

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