

## Subject card

|                                             |                                                                                                                                                                                                                                                                                          |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Fish diseases and welfare - laboratory exercises, PG_00075868                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
| Field of study                              | Aquaculture – Business And Technology                                                                                                                                                                                                                                                    |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
| Date of commencement of studies             | October 2025                                                                                                                                                                                                                                                                             |                                                          | Academic year of realisation of subject                                                                                                                                                           |                                     | 2026/2027                                                                                               |            |     |
| Education level                             | Bachelor’s studies                                                                                                                                                                                                                                                                       |                                                          | Subject group                                                                                                                                                                                     |                                     |                                                                                                         |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                                                                        |                                                          | Mode of delivery                                                                                                                                                                                  |                                     | at the university                                                                                       |            |     |
| Year of study                               | 2                                                                                                                                                                                                                                                                                        |                                                          | Language of instruction                                                                                                                                                                           |                                     | Polish                                                                                                  |            |     |
| Semester of study                           | 3                                                                                                                                                                                                                                                                                        |                                                          | ECTS credits                                                                                                                                                                                      |                                     | 1.0                                                                                                     |            |     |
| Learning profile                            | practical                                                                                                                                                                                                                                                                                |                                                          | Assessment form                                                                                                                                                                                   |                                     | credit                                                                                                  |            |     |
| Conducting unit                             | Laboratory of Parasitology and General Zoology -> Katedra Zoologii Bezkręgowców i Parazytologii -> Faculty of Biology -> Rector                                                                                                                                                          |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                       |                                                          | dr hab. Leszek Rolbiecki                                                                                                                                                                          |                                     |                                                                                                         |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                 |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                              | Lecture                                                  | Tutorial                                                                                                                                                                                          | Laboratory                          | Project                                                                                                 | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                    | 0.0                                                      | 0.0                                                                                                                                                                                               | 15.0                                | 0.0                                                                                                     | 0.0        | 15  |
|                                             | 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                                                                                                                                                                                                                                                                    | 15                                                       |                                                                                                                                                                                                   | 5.0                                 |                                                                                                         | 9.0        | 29  |
| Subject objectives                          | This course is designed to familiarize students with the causes and effects of fish diseases of various etiologies; to familiarize with diagnostic techniques, prevention and therapy in fish aquaculture; to familiarize with fish parasitic diseases and their prevention and control. |                                                          |                                                                                                                                                                                                   |                                     |                                                                                                         |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                           |                                                          | Subject outcome                                                                                                                                                                                   |                                     | Method of verification                                                                                  |            |     |
|                                             | [AKWAL3-K04] is ready to identify and recognize dilemmas connected with the profession and understands the need to improve professional competence                                                                                                                                       |                                                          | Student is ready to identify and recognize dilemmas related to performing the profession of a fish farming in the future and understands the need to improve professional competences.            |                                     | [SK1] oral statement/conversation/discussion<br>[SK8] observation of student's independent or team work |            |     |
|                                             | [AKWAL3-U06] can apply basic techniques and technological processes related to the use of elements of the environment for practical purposes                                                                                                                                             |                                                          | The student is able to apply basic laboratory and analytical techniques related to fish health testing for practical purposes.                                                                    |                                     | [SU6] demonstration of practical skills                                                                 |            |     |
|                                             | [AKWAL3_W03] knows and understands the conceptual categories and terminology related to the biological basis of aquatic organisms breeding, as well as concepts directly relevant to the practical applications of this knowledge                                                        |                                                          | Student knows and understands conceptual categories and terminology related to diseases fish, as well as concepts with direct reference to practical applications this knowledge in fish farming. |                                     | [SW4] test/exam - oral or written<br>[SW1] oral statement/conversation/discussion                       |            |     |
|                                             | [AKWAL3_W06] knows and discusses techniques, research methods and tools used in aquaculture                                                                                                                                                                                              |                                                          | Student knows and discusses techniques, research methods and tools used in fish disease diagnosis.                                                                                                |                                     | [SW1] oral statement/conversation/discussion                                                            |            |     |
|                                             | [AKWAL3-U04] can select and use available sources of information, and understand the literature on aquaculture in a broad sense                                                                                                                                                          |                                                          | Student can select and use available sources of information and understand the literature on fish health and welfare.                                                                             |                                     | [SU1] oral statement/conversation/discussion<br>[SU4] test/exam - oral or written                       |            |     |

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|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Subject contents                                               | Examination of infected fish - environmental diseases, viral, bacterial and fungal diseases, diseases caused by parasites (protozoa, flukes, tapeworms, nematodes, acanthocephalans, crustaceans, molluscs, annelids). Sections, preparation and macroscopic and microscopic observation. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |
| Prerequisites and co-requisites                                | -                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                  | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Percentage of the final grade |
|                                                                | Attendance                                                                                                                                                                                                                                                                                | 100.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.0%                          |
|                                                                | written test                                                                                                                                                                                                                                                                              | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50.0%                         |
|                                                                | practical skills demonstration                                                                                                                                                                                                                                                            | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50.0%                         |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                          | <ol style="list-style-type: none"><li>1. Antychowicz J., 2008. Choroby ryb śródlądowych. PWRiL, Warszawa.</li><li>2. Bruno D.W. Noguera P.A., Poppe T.T. 2013. A colour atlas of salmonid diseases. Springer Dordrecht Heidelberg New York London.</li><li>3. Jara Z., 1999. Chodyniecki A. Ichtiopatologia. Wydawnictwo Akademii Rolniczej we Wrocławiu, Wrocław.</li><li>4. Klimpel S., Kuhn T., Münster J., Dörge D.D., Klapper R., Kochmann J., 2019. Parasites of marine fish and cephalopods. A practical guide. Springer Nature Switzerland, Switzerland.</li><li>5. Noga E.J., Fish disease - diagnosis and treatment. A John Wiley &amp; Sons, Inc., Publication, USA.</li><li>6. Pritchard M.H., Kruze G.,O.W., 1982. The collection and preservation of animal parasites. Lincoln, London, University of Nebraska, Technical Bulletin No. 1.</li><li>7. Prost M., 1989. Choroby ryb. PWRiL, Warszawa.</li></ol> |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                  | <ol style="list-style-type: none"><li>1. Rolbiecki L., 2002. Szybka metoda wykonywania semipermanentnych glicerożelatynowych preparatów z pasożytów [A rapid method for preparing semipermanent glycerol-jelly parasite mounts]. Wiadomości Parazytologiczne 48: 87-88.</li><li>2. Rolbiecki L., 2007. Zastosowanie kwasu octowego i alkoholu benzyłowego w preparatyce parazytologicznej wady i zalety [The application of acetic acid and benzyl alcohol in parasitological preparations advantages and disadvantages]. Wiadomości Parazytologiczne 53: 347-349.</li></ol>                                                                                                                                                                                                                                                                                                                                               |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |
| Example issues/<br>example questions/<br>tasks being completed | -                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |

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