



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Economic analysis and accounting for engineers

Course

Field of study

Bioinformatics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

30

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

dr inż. Piotr Tomasz Mitkowski

e-mail: piotr.mitkowski@put.poznan.pl

tel. 61 665 3334

Faculty of Chemical Technology

Berdychowo 4, 60-965 Poznan

Responsible for the course/lecturer:

dr hab. inż. Jacek Różański

e-mail: jacek.rozanski@put.poznan.pl

tel. 61 665 2147

Faculty of Chemical Technology

Berdychowo 4, 60-965 Poznan

Prerequisites

Student starting this subject should have basic knowledge in mathematics, computer science, chemistry, biology and biotechnology. Student should also have the ability to use spreadsheets and be ready to work in a team.

Course objective

The aim of the course is to gain basic knowledge in the area of the assessment of economic efficiency of investments in the biotechnology and related industries, including some financial and management accounting aspects.



Course-related learning outcomes

Knowledge

1. Knows the basic concepts of financial and management accounting. [K_W21]
2. Knows the methods of economic assessment of investment projects taking into account the ecological effect. [K_W21] [K_W23]
3. Knows the methods of estimating investment costs in fixed assets, production costs, sales revenues and profit in the process industries. [K_W21]

Skills

1. Is able to use basic terminology in the field of financial and management accounting. [K_U10]
2. Is able to determine the economic efficiency of investment using static and dynamic methods. [K_U15] [K_U10]
3. Is able to estimate investment costs using methods based on historical costs. [K_U15] [KU10]
4. Is able to estimate: working capital, variable and fixed production costs and profit for production processes in the chemical industry. [K_U10]

Social competences

1. Student is aware of the advantages and limitations of individual and group work in solving interdisciplinary problems in industry. Is aware of the responsibility for jointly implemented tasks as part of teamwork. [K_K02][K_K05]
2. Student knows the limits of her/his own knowledge and understands the need for continuous education and raising her/his professional competences. [K_K01] [K_K05]
3. Is able to think and act in a creative and entrepreneurial way. [K_K07]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified during the test. The test consists of about 30 closed questions. Minimum threshold: 50% points. The topics, on the basis of which questions are formed, will be sent to students by e-mail using the university e-mail system or made available in the university e-Learning system.

Skills and knowledge acquired during project classes are verified on the basis of the project and its presentation.

Programme content

The following topics will be discussed as part of the course:

1. The essence, functions and principles of accounting in economic activity
2. Records of basic economic operations and an accounting account



3. Presentation of the property and financial situation of an economic unit for tax and balance sheet purposes
4. An enterprise in the financial statements: presentation and evaluation
5. Economic assessment of projects
 - 5.2. Cash flow
 - 5.3. Basic methods of economic assessment (payback time, return on investment, break-even analysis)
 - 5.4. Time value of money
 - 5.5. Net present value
 - 5.6. Internal rate of return
 - 5.7. Equal payment streams
 - 5.8. Project selection under limited investment resources
 - 5.9. Sensitivity Analysis
 - 5.10. Economic analysis of the ecological effect of investment
6. Estimation of investment costs in fixed assets
7. Cost escalation (inflation)
8. Investment location
9. Validity of cost estimates
10. Estimating production costs
 - 10.1. Working capital
 - 10.2. Variable and fixed production costs
 - 10.3. Media cost
 - 10.4. Consumables costs
 - 10.5. Waste disposal costs
 - 10.6. Labor costs
11. Estimating sales revenues and profit

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples on the board.



2. Project: multimedia presentation, illustrated with tasks solved using a spreadsheet.

Bibliography

Basic

1. Mitkowski P.T., Różański J., Analiza ekonomiczna procesów przemysłowych, Wydawnictwo Politechniki Poznańska, 2012.
2. Rekowski M., Wprowadzenie do mikroekonomii, Wydawnictwo Akademi Ekonomicznej w Poznaniu, 2001.
3. Pfaff J.; Maruszewska E.W., Tkocz-Wolny K., Rachunkowość małych przedsiębiorstw, Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach, Katowice 2019.
4. Chadwick L., Rachunkowość zarządcza dla niewtajemniczonych, Agencja Wydawnicza Placet, 1997.

Additional

1. Gabrusewicz W., Kamela-Sowińska A., Poetschke H., Rachunkowość zarządcza, Wydawnictwo Akademi Ekonomicznej w Poznaniu, 2001.
2. Sinnott R.K. Towler G.: Chemical Engineering Design, 5th Edition, Elsevier, 2009.
3. Solińska M., Soliński I., Efektywność ekonomiczna proekologicznych inwestycji rozwojowych w energetyce odnawialnej, Uczelniane Wydawnictwa naukowo-Dydaktyczne AGH, Kraków 2003.
4. Coulson J.M., Richardson J.F.: Chemical Engineering, vol. VI, Butterworth Heinemann, Oxford 1999-2002.
5. Perry R. H., Green D. W., Perry's chemical engineering handbook, seventh edition, McGraw-Hill, 1997.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for tests, project preparation) ¹	30	1,0

¹ delete or add other activities as appropriate