

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 2

1. Course title: Financial analysis in power engineering		2. Course code		
3. Validity of course description: 2012/2013				
4. Level of studies: 1st cycle of higher education				
5. Mode of studies: intramural studies				
6. Field of study: POWER ENGINEERING			(FACULTY SYMBOL) RIE	
7. Profile of studies: General academic				
8. Programme: Sustainable energy engineering				
9. Semester: 6				
10. Faculty teaching the course: Institute of Thermal Technology				
11. Course instructor: dr Jacek Kalina				
12. Course classification: Major courses				
13. Course status: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: Mathematics, thermodynamics, heat transfer, energy management				
16. Course objectives: Transfer of knowledge in the range of theory and methods of feasibility studies, financial analysis and methods of determination of profitability of investment projects in energy and environmental protection sectors.				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	Student is able to present stages of investment project development, define the range of feasibility study and contents of documentation required.	Written test, oral answer	Lectures	K_W16, K_W21, K_W22
2.	Student is able to present and explain the methods of financial and economic analysis of investment projects.	Written test, oral answer	Lectures	K_W16, K_W21, K_W22
3.	Student can calculate values of the main profitability indices	Written test	Lectures, Laboratory	K_U14
4.	Student can elaborate a prefeasibility study of a sample investment project	Elaborated project	Laboratory	K_U12, K_U14
5.	Student is using professional (technical) knowledge acquired at other courses for estimation of material, energy and environmental effects of investment projects	Written test, elaborated project, oral answer	Lectures, Laboratory	K_U14
6.	Student is aware of the importance and impact of non-technical aspects of engineering activities, and consequently the responsibility for decisions	Observation by the lecturer	Laboratory	K_K02
7.				
8.				
18. Teaching modes and hours				
Lecture / BA /MA Seminar / Class / Project / Laboratory				
Lecture: 30 h Laboratory: 15 h				
19. Syllabus description:				
Lectures: Investment projects - goals and risk analysis. Possibilities of capital allocation. Cash flow and its components. Analysis of costs, incomes and profits. Fixed and variable costs. Amortisation. Cost of using the environment. Mass and energy balances in relation to cash flows. Discount and capitalisation. Indices of financial and economic effectiveness. Profitability criteria and decision variables. Influence of technical parameters on effectiveness of investment projects. Sensitivity analysis. Accounting liquidity. Investment cost estimation. Project financing methods. Phases of investment project development. Prefeasibility and feasibility studies. Energy audits. Microeconomic, macroeconomic and legal conditions of profitability of projects in energy and environmental protection sectors. Examples of investment projects.				
Laboratory: Hand-on training on financial analysis using a spread sheet software. Development of financial projections, calculation of cash flow and profitability indices. Development of sample projects.				
20. Examination: No				

21. Primary sources:

Behrens W., Hawranek P. M.: Guide for preparation of industrial feasibility studies UNIDO. Warszawa 1993;
 Bejan A., Tsatsaronis G., Moran M.: Thermal design and optimisation. A Wiley- Interscience Publication, John Wiley and Sons, INC. New York 1996.;

22. Secondary sources:

Kalina J.: Distributable didactic materials and lecture notes;
 Laudyn D.: Rachunek ekonomiczny w elektroenergetyce. Oficyna Wydawnicza Pol. Warszawskiej. Warszawa 1997.
 Nowak E., Pielichaty E., Poszwa M.: Rachunek opłacalności inwestowania. Polskie Wydawnictwo Ekonomiczne, Warszawa 1999. Rogowski W.: Rachunek efektywności przedsięwzięć inwestycyjnych. Oficyna Ekonomiczna Kraków 2006; Skorek J. Ocena efektywności energetycznej i ekonomicznej układów kogeneracyjnych małej mocy. Wydawnictwo Politechniki Śląskiej, Gliwice 2002; Szargut J.: Analiza termodynamiczna i ekonomiczna w energetyce przemysłowej. Wydawnictwa Naukowo-Techniczne, Warszawa 1983; Szyszko L., Szczepański J. (red.): Finanse przedsiębiorstwa. PWE, Warszawa 2003. Tarczyński W.: Inżynieria Finansowa. Wydawnictwo PLACET, Seria: Biblioteka biznesmena. Rok wydania 1999.

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30/15
2	Classes	/
3	Laboratory	15/30
4	Project	/
5	BA/ MA Seminar	/
6	Other	/
	Total number of hours	45/45

24. Total hours: 90**25. Number of ECTS credits: 3****26. Number of ECTS credits allocated for contact hours: 2****27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 2****26. Comments:**

Approved:

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 (date, Instructor's signature)

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 (date , the Director of the Faculty Unit signature)