**Nazwa przedmiotu:**

Circular economy (WN1A\_11/05)

**Koordynator przedmiotu:**

prof. dr hab. inż. Małgorzata Kacprzak

**Status przedmiotu:**

Fakultatywny dowolnego wyboru

**Poziom kształcenia:**

Studia I stopnia

**Program:**

Inżynieria Środowiska

**Grupa przedmiotów:**

Wspólne dla wydziału

**Kod przedmiotu:**

WN1A\_11/05

**Semestr nominalny:**

4 / rok ak. 2023/2024

**Liczba punktów ECTS:**

1

**Liczba godzin pracy studenta związanych z osiągnięciem efektów uczenia się:**

Lecture: number of taught hours according to study plan – 10 h; student individual work: reading key literature – 10 h; preparation to test – 5 h; In total 25 h = 1 ECTS

**Liczba punktów ECTS na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich:**

Lectures – 10 h; In total 10 h = 0,4 ECTS

**Język prowadzenia zajęć:**

angielski

**Liczba punktów ECTS, którą student uzyskuje w ramach zajęć o charakterze praktycznym:**

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**Formy zajęć i ich wymiar w semestrze:**

|  |  |
| --- | --- |
| Wykład:  | 15h |
| Ćwiczenia:  | 0h |
| Laboratorium:  | 0h |
| Projekt:  | 0h |
| Lekcje komputerowe:  | 0h |

**Wymagania wstępne:**

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**Limit liczby studentów:**

Lecture: min. 15

**Cel przedmiotu:**

This course will provide undergraduate students with knowledge in concepts of circular economy CE in the context of the current state of waste and material management systems as well as technological, economic and legal limitations. The implementation of the course content will ensure the understanding of terms such as life cycle, energy flows, "no-waste / less waste" and industrial ecology. Case studies will allow students to learn about the possibility of applying the CE concept in the processing technology of commonly used materials, such as metals, rubber, plastics or the so-called everyday objects clothes, electronic devices, shoes. CE financing and operating models will also be explored in a broader perspective, exploring how global supply chains can scale to more quickly deploy and adapt to circular economies.

**Treści kształcenia:**

1. Fundamentals of the circular economy: theories and principles of the concept and the history of the idea. 2. Circular design and innovation: opportunities and challenges related to the design of circular technological processes in various sectors. 3. Circular business models: the role of business in a circular economy and how to accelerate the transition from a linear model. 4. Building a circular economy strategy: the rationale for CE and ways to measure success. 5. Politics and society: macro (governments) and micro (local communities) approaches to the social effects of consumption. 6. Social practices and value transformation: optimal organization of materials management in various sectors, energy balance and environmental impact. 7. CE in everyday life (waste is food, the second life of a smartphone, zero waste clothes). 8. Re- thinking in a sustainable circular economy.

**Metody oceny:**

Attendance at lectures is recommended. It is recommended that the student attend all lectures (10 hours). Each lecture will end with a short quiz on the content of the lecture. If the student participates in all the quizzes (confirmation of the activity in lectures), it will be a bonus to raise the test grade by half a grade. The condition for passing the lectures is obtaining a positive grade from the written test in the fifteenth week of classes, containing the lectures content. The obtained assessment from the written lecture test is made available at the next consultation. In the case of a unsatisfactory grade from the lecture test, the student has the possibility to correct it during the next term in the examination session. In the case of failure to pass a given material, students are allowed to take an final date in the resit session. The student may repeat the lecture due to unsatisfactory results only in the next academic year. When completing the course, the student may only use his or her acquired knowledge. It is unacceptable to use your own notes, books and scripts. The student has the right to inspect his work always during the tutor's consultation hours or at another time agreed by email.

**Egzamin:**

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**Literatura:**

1. Jonker J., Ivo Kothman, Niels Faber, Naomi
Montenegro Navarro (2018) Organising for the
Circular Economy, free e-book
organising\_for\_the\_circular\_economy\_ebook.pdf (europa.eu) 2. Ekins, P., Domenech, T.,
Drummond, P., Bleischwitz, R., Hughes, N. and
Lotti, L. (2019), “The Circular Economy: What,
Why, How and Where”, Background paper for an OECD/EC Workshop on 5 July 2019 within the workshop series “Managing environmental and energy transitions for regions and cities”, Paris. https://www.oecd.org/cfe/regionaldevelopment/Ekins-2019-Circular-Economy-What-Why-HowWhere.pdf
3. Green Alliance, January 2015, A circular economy for smart devices Opportunities in the US, UK and India,
4. William McDonough, Michael Braungart (2002). Cradle to Cradle: Remaking the Way We Make, Things, North Point
Press
5. Stahel, W. The Circular Economy: A Users
Guide, (2019) 6. Webster, K. The Circular
Economy: A Wealth of Flows, 2nd Edition (2016)

**Witryna www przedmiotu:**

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**Uwagi:**

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## Charakterystyki przedmiotowe

### Profil ogólnoakademicki - wiedza

**Charakterystyka W05\_01:**

Has a basic knowledge of new solutions, technologies and methods in the circular economy.

Weryfikacja:

Test from lectures content

**Powiązane charakterystyki kierunkowe:** I1A\_W05\_01

**Powiązane charakterystyki obszarowe:** I.P6S\_WG.o

**Charakterystyka W08\_01:**

Has basic knowledge necessary to understand social, economic and legal conditions in circular economy.

Weryfikacja:

Test from lectures content

**Powiązane charakterystyki kierunkowe:** I1A\_W08\_01

**Powiązane charakterystyki obszarowe:** I.P6S\_WK

### Profil ogólnoakademicki - umiejętności

**Charakterystyka U01\_01:**

Can obtain information from properly selected sources in English, in the field of circular economy.

Weryfikacja:

Test from lectures content

**Powiązane charakterystyki kierunkowe:** I1A\_U01\_01

**Powiązane charakterystyki obszarowe:** P6U\_U

### Profil ogólnoakademicki - kompetencje społeczne

**Charakterystyka K02\_01:**

Is aware of the importance and understands the legal, economic and social consequences of circular economy.

Weryfikacja:

Active participation in lectures (quizzes)

**Powiązane charakterystyki kierunkowe:** I1A\_K02\_01

**Powiązane charakterystyki obszarowe:** I.P6S\_KR