

**AGH**AGH UNIVERSITY OF SCIENCE
AND TECHNOLOGY

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|----------------------|--|-------------------------|---|---------------|---|
| Module name: | Economy of mineral processing | | | | |
| Academic year: | 2019/2020 | Code: | GIKS-2-309-WK-s | ECTS credits: | 3 |
| Faculty of: | Mining and Geoengineering | | | | |
| Field of study: | Environmental Engineering | Specialty: | Industrial ventilation and air-conditioning | | |
| Study level: | Second-cycle studies | Form and type of study: | Full-time studies | | |
| Lecture language: | English | Profile of education: | Academic (A) | Semester: | 3 |
| Course homepage: | — | | | | |
| Responsible teacher: | prof. nadzw. dr hab. inż. Saramak Daniel (dsaramak@agh.edu.pl) | | | | |

Module summary

Student knows the basic economic factors in mineral processing plant.

Description of learning outcomes for module

| MLO code | Student after module completion has the knowledge/ knows how to/is able to | Connections with FLO | Method of learning outcomes verification (form of completion) |
|-------------------------------------|--|----------------------|---|
| Social competence: is able to | | | |
| M_K001 | Student is aware of economic effects of raw material processing | IKS2A_U03, IKS2A_U02 | Activity during classes |
| Skills: he can | | | |
| M_U001 | Student can perform economic analysis of mineral processing operations | IKS2A_U04, IKS2A_U03 | Test |
| Knowledge: he knows and understands | | | |
| M_W001 | Student knows basic terms concerning economy of mineral processing. The student knows the global trends in resource management of raw materials (copper, lead zinc, coal, oil, REE etc) | IKS2A_W02, IKS2A_W01 | Presentation |
| M_W002 | Student knows basic terms connected with metal balancing | IKS2A_W01, IKS2A_W05 | Test |

| | | | |
|--------|--|----------------------|-------------------------------|
| M_W003 | Student *explains basic economic terms connected with enterprises functioning *gives forms of conducting management activity *explains what is the specific character of exploitation *knows about deposits in Poland and the whole world *knows about rules of materials, fuels and energy markets | IKS2A_W02, IKS2A_W05 | Activity during classes, Test |
|--------|--|----------------------|-------------------------------|

Number of hours for each form of classes

| Suma | Form of classes | | | | | | | | | | |
|------|-----------------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|-------------------------------|----------|
| | Lectures | Auditorium classes | Laboratory classes | Project classes | Conversation seminar | Seminar classes | Practical classes | Fieldwork classes | Workshops | Prace kontrolne i przejściowe | Lektorat |
| 45 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

FLO matrix in relation to forms of classes

| MLO code | Student after module completion has the knowledge/ knows how to/is able to | Form of classes | | | | | | | | | | |
|-------------------------------------|--|-----------------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|-------------------------------|----------|
| | | Lectures | Auditorium classes | Laboratory classes | Project classes | Conversation seminar | Seminar classes | Practical classes | Fieldwork classes | Workshops | Prace kontrolne i przejściowe | Lektorat |
| Social competence: is able to | | | | | | | | | | | | |
| M_K001 | Student is aware of economic effects of raw material processing | + | + | - | - | - | - | - | - | - | - | - |
| Skills: he can | | | | | | | | | | | | |
| M_U001 | Student can perform economic analysis of mineral processing operations | + | + | - | - | - | - | - | - | - | - | - |
| Knowledge: he knows and understands | | | | | | | | | | | | |
| M_W001 | Student knows basic terms concerning economy of mineral processing. The student knows the global trends in resource management of raw materials (copper, lead zinc, coal, oil, REE etc) | + | - | - | - | - | - | - | - | - | - | - |
| M_W002 | Student knows basic terms connected with metal balancing | + | + | - | - | - | - | - | - | - | - | - |

| | | | | | | | | | | | | |
|--------|--|---|---|---|---|---|---|---|---|---|---|---|
| M_W003 | Student *explains basic economic terms connected with enterprises functioning *gives forms of conducting management activity *explains what is the specific character of exploitation *knows about deposits in Poland and the whole world *knows about rules of materials, fuels and energy markets | + | + | - | - | - | - | - | - | - | - | - |
|--------|--|---|---|---|---|---|---|---|---|---|---|---|

Student workload (ECTS credits balance)

| Student activity form | Student workload |
|--|------------------|
| Udział w zajęciach dydaktycznych/praktyka | 45 h |
| Preparation for classes | 8 h |
| Realization of independently performed tasks | 34 h |
| Examination or Final test | 2 h |
| Contact hours | 1 h |
| Summary student workload | 90 h |
| Module ECTS credits | 3 ECTS |

Additional information

Module content

Lectures

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Lectures

World balance of mineral resources. Industrial plant on the market. National mining industry for coal, ores and other mineral raw materials. Cost analysis in mineral processing plant. Trade formulas. Equation of mass balance.

Auditorium classes

Ways of determination of basic economic factors in mineral processing plant. Systematics of mineral processing activity costs. Determination of economic efficiency for beneficiation process.

Global trends in resource management of raw materials

The analysis of cooper, lead, zinc, coal, REE world resources.

Teaching methods and techniques:

Lectures: Treści prezentowane na wykładzie są przekazywane w formie prezentacji multimedialnej w połączeniu z klasycznym wykładem tablicowym wzbogaconymi o pokazy odnoszące się do prezentowanych zagadnień.

Lectures: Treści prezentowane na wykładzie są przekazywane w formie prezentacji multimedialnej w połączeniu z klasycznym wykładem tablicowym wzbogaconymi o pokazy odnoszące się do prezentowanych zagadnień.

Auditorium classes: Podczas zajęć audytoryjnych studenci na tablicy rozwiązują zadane wcześniej problemy. Prowadzący na bieżąco dokonuje stosowanych wyjaśnień i moderuje dyskusję z grupą nad danym problemem.

Warunki i sposób zaliczenia poszczególnych form zajęć, w tym zasady zaliczeń poprawkowych, a także warunki dopuszczenia do egzaminu:

Final mark is given on the basis of the mark obtained during auditory classes

Zasady udziału w poszczególnych zajęciach, ze wskazaniem, czy obecność studenta na zajęciach jest obowiązkowa:

Lectures:

- Attendance is mandatory: No

- Participation rules in classes: Studenci uczestniczą w zajęciach poznając kolejne treści nauczania zgodnie z sylabusem przedmiotu. Studenci winni na bieżąco zadawać pytania i wyjaśniać wątpliwości. Rejestracja audiowizualna wykładu wymaga zgody prowadzącego.

Lectures:

- Attendance is mandatory: No

- Participation rules in classes: Studenci uczestniczą w zajęciach poznając kolejne treści nauczania zgodnie z sylabusem przedmiotu. Studenci winni na bieżąco zadawać pytania i wyjaśniać wątpliwości. Rejestracja audiowizualna wykładu wymaga zgody prowadzącego.

Auditorium classes:

- Attendance is mandatory: Yes

- Participation rules in classes: Studenci przystępując do ćwiczeń są zobowiązani do przygotowania się w zakresie wskazanym każdorazowo przez prowadzącego (np. w formie zestawów zadań). Ocena pracy studenta może bazować na wypowiedziach ustnych lub pisemnych w formie kolokwium, co zgodnie z regulaminem studiów AGH przekłada się na ocenę końcową z tej formy zajęć.

Method of calculating the final grade

Test concerning issues from tutorial and auditory exercises

Sposób i tryb wyrównywania zaległości powstałych wskutek nieobecności studenta na zajęciach:

An absence can be worked out on the classes with another group

Prerequisites and additional requirements

Knowledge about basic economic issues

Recommended literature and teaching resources

Minerals Yearbook – Area Reports: International Review: 2014

An Introduction to mMineral Economics, H.F. Campbell, 1999, Brisbane, Australia

Scientific publications of module course instructors related to the topic of the module

Analiza kosztów wzbogacania rud cynku i ołowiu — Cost analysis of zinc – lead ore processing / Barbara TORA, Daniel SARAMAK // Gospodarka Surowcami Mineralnymi = Mineral Resources Management / Polska Akademia Nauk. Komitet Gospodarki Surowcami Mineralnymi ; ISSN 0860-0953. — 2007 t. 23 z. spec. 2 s. 285–296. —

Coal, gas, oil and energy market in Czech Republic and Poland : short analysis / Barbara TORA, Marian Kurzac, Peter Fečko: conference / ed. Peter Fečko, Vladimír Čablík ; Vysoká Škola Báňská – Technická Univerzita Ostrava. Hornicko – Geologická Fakulta. Institut Environmentálního Inženýrství. — Ostrava :

VSB - TU Ostrava, 2005. — S. 69-82.

Efektywność ekonomiczna wzbogacania rud cynku i ołowiu — The economic efficiency of zinc and lead ores processing / Daniel SARAMAK, Barbara TORA // Zeszyty Naukowe / Politechnika Śląska ; nr 1689. Górnictwo. — 2005 z. 266 s. 205-213. — Bibliogr. s. 212-213, Streszcz., Abstr.

Additional information

In the case of absence, the student may work with another group or in another form agreed with the teacher.