

**AGH**AGH UNIVERSITY OF SCIENCE
AND TECHNOLOGY

Module name: Introduction to modern input-output analysis

Academic year: 2019/2020 Code: ZZIP-1-610-s ECTS credits: 4

Faculty of: Management

Field of study: Management and Production Engineering Specialty: —

Study level: First-cycle studies Form and type of study: Full-time studies

Lecture language: English Profile of education: Academic (A) Semester: 6

Course homepage: —

Responsible teacher: Lach Łukasz (llach@zarz.agh.edu.pl)

Module summary

The course offers an introduction to modern IO analysis. Special attention is paid to both theoretical foundations of the IO approach as well as practical aspects of this type of economic modelling

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	Knows advantages and weak sides of IO modelling.	ZIP1A_K01	Activity during classes
Skills: he can			
M_U001	Can build and analyse IO models.	ZIP1A_U06	Test
M_U002	Can use modified IO models for forecasting and scenario analysis.	ZIP1A_U06, ZIP1A_U04	Test
Knowledge: he knows and understands			
M_W001	Knows basic techniques of IO modelling.	ZIP1A_W07	Test
M_W002	Knows basic features of IO models.	ZIP1A_W10, ZIP1A_W07	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
60	30	0	0	0	0	0	0	0	30	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	Knows advantages and weak sides of IO modelling.	-	-	-	-	-	-	-	-	+	-	-
Skills: he can												
M_U001	Can build and analyse IO models.	-	-	-	-	-	-	-	-	+	-	-
M_U002	Can use modified IO models for forecasting and scenario analysis.	-	-	-	-	-	-	-	-	+	-	-
Knowledge: he knows and understands												
M_W001	Knows basic techniques of IO modelling.	+	-	-	-	-	-	-	-	-	-	-
M_W002	Knows basic features of IO models.	+	-	-	-	-	-	-	-	-	-	-

Student workload (ECTS credits balance)

Student activity form	Student workload
Udział w zajęciach dydaktycznych/praktyka	60 h
Preparation for classes	20 h
przygotowanie projektu, prezentacji, pracy pisemnej, sprawozdania	10 h
Realization of independently performed tasks	20 h
Summary student workload	110 h
Module ECTS credits	4 ECTS

Additional information

Module content

Lectures

Lectures:

1. Fundamentals of static Input-Output model.
2. Dynamic Input-Output model – construction, applications, limitations.
3. Dynamic IO model as an optimization problem – introduction to GAMS software.
4. Key sector analysis – theoretical fundamentals with empirical examples.
5. Application of network theory in key sector analysis.
6. Turnpike theorems versus the specificity of real economic systems.
7. Measuring value added in Global Value Chains – static approach with some examples.
8. Sherman–Morrison formula and its applications in empirical studies.
9. Finding the optimal direction of technological progress in the era of Global Value Chains.

Workshops

Auditorium classes

1. Solving static Input-Output model.
2. Constructing dynamic Input-Output models.
3. Introduction to GAMS language.
4. Key sector analysis of Polish economy.
5. Constructing turnpikes for real economic systems.
6. Measuring value added of selected economies in Global Value Chains – application of World Input-Output Tables.
7. Choosing the technological progress that maximizes the value added share in Global Value Chains

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.

Workshops: 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:

The final grade is calculated as a weighted sum of the grade obtained from the final test and the grade obtained from preparing summaries of two research papers.

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.

Workshops:

- 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

The final grade is calculated as:

if gradeA=2.0 then FINAL GRADE = 2.0,
otherwise FINAL GRADE = 0.67 • gradeA+ 0.33 • gradeB

where the two components are as follows:

-gradeA - a grade gained on the basis of the final test,
-gradeB - a grade gained after preparing two one-page-long (A4 with standard margins) summaries each focused on any of research papers available at:

<https://ideas.repec.org/f/pla607.html>

Each summary should focus on two different papers and contain a brief information on the paper's:- research goal-methods used-results/empirical findings -conclusions Summaries could (but do NOT have to) be focused only on IO-related topics.

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

Catching-up after the absence of a student during classes takes place during office hours.

Prerequisites and additional requirements

Prerequisites and additional requirements not specified

Recommended literature and teaching resources

Recommended literature and teaching resources not specified

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

Additional scientific publications not specified

Additional information

None