AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Module name: Research planning and methodology variant_I

Academic year: 2019/2020 Code: ZSDA-3-1006-s ECTS credits: 1

Faculty of: Szkoła Doktorska AGH

Field of study: Szkoła Doktorska AGH Specialty: —

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

Lecture language: Polski i Angielski Profile of education: Academic (A) Semester: 1

Course homepage: —

Responsible teacher: dr hab. inż. Młyniec Andrzej (mlyniec@agh.edu.pl)

Module summary

The purpose of this subject is to equip participants with a set of skills and toolkits necessary for effective planning and conducting scientific projects. We will begin with defining the open research questions, selection of the methods, analyzing the results, up to the scientific discourse and critical evaluation of own works. Moreover, the workshops should improve their analytical and organizational skills as well as equip them with computational tools, facilitating scientific research.

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 understand the role of scientific discourse	SDA3A_K01, SDA3A_K03, SDA3A_K02	Activity during classes
Skills: he can			
M_U001	The participant is able to define properly new research question, considering current trends in science, technological demands and ethical aspects.	SDA3A_U07, SDA3A_U06, SDA3A_U04	Activity during classes
M_U002	A student is able to analyze the results of own works and analyze the results of own work and draw constructive conclusions.	SDA3A_U06, SDA3A_U04	Activity during classes
M_U003	Student knows the most popular self-teaching services and understands necessity of the self-studies	SDA3A_U07	Activity during classes
Knowledge: he knows and understands			

M_W001	A student knows and understands scientific methods.	SDA3A_W03, SDA3A_W06	
M_W002	Students know and understand the scientometry and principles of evaluation of the scientific works.	SDA3A_W03, SDA3A_W06	Activity during classes

Number of hours for each form of classes

	Form of classes										
Suma	Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Fieldwork classes	Workshops	Prace kontrolne i przejściowe	Lektorat
20	0	0	0	0	0	0	0	0	20	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 understand the role of scientific discourse	-	-	-	-	-	-	-	-	+	-	-
Skills: he can												
M_U001	The participant is able to define properly new research question, considering current trends in science, technological demands and ethical aspects.	-	-	-	-	-	-	-	-	+	-	-
M_U002	A student is able to analyze the results of own works and analyze the results of own work and draw constructive conclusions.	-	-	-	-	-	-	-	-	+	-	-
M_U003	Student knows the most popular self-teaching services and understands necessity of the self-studies	-	-	-	-	-	-	-	-	-	-	-
Knowledge: he knows and understands												
M_W001	A student knows and understands scientific methods.	-	-	-	-	-	-	-	-	+	-	-

M_W002	Students know and understand the scientometry and principles of evaluation of the scientific works.	-	-	-	-	-	-	-	-	+	-	-

Student workload (ECTS credits balance)

Student activity form	Student workload
Udział w zajęciach dydaktycznych/praktyka	20 h
Preparation for classes	10 h
Summary student workload	30 h
Module ECTS credits	1 ECTS

Additional information

Module content

Workshops

Scientific databases and search engines – how does it work?
Search engines: Wos, Scopus, Sciencedirect, Scholar Google etc
Social media: Reserachgate, Mendeley etc.
Indexing: how to use search engines?

Open source scientific tools
Latex,
Inkscape
Mendeley, Endnote
Python etc.

Scientometry, publish or perish?, The role of the Scientist in contemporary world. Research works
The most important indicators: h-index, Impact Factor etc,
Scientific journals, books,
Founding
The role of the Scientific Mentor
The types of scientific works

Research Topic
How to define good scientific topic?
Hypothesis vs. Theory vs, Law.
Basic research vs. Applied vs. Implementation – proof of concept etc.

How to choose the good scientific topic?
The role of the literature review
Selection of the “Hot topics” in the field
How to convince the scientific community to your ideas?

Networking, conferences, courses, Society membership etc.
How to build your own scientific network?
The role of Society memberships, courses and conferences.

Promotion
Academic career path – positions and requirements

Data analysis and presentation of the results
Data analysis incl. statistical analysis – useful tools and methods

Teaching methods and techniques:
Workshops: Seminaria prowadzone przy użyciu pomocy multimedialnych oraz w formie aktywnej dyskusji z prowadzącym.

Warunki i sposób zaliczenia poszczególnych form zajęć, w tym zasady zaliczeń poprawkowych, a także warunki dopuszczenia do egzaminu:
There is no Exam. The grades will be calculated as a mean value of all grades obtained during these classes including activity.

Zasady udziału w poszczególnych zajęciach, ze wskazaniem, czy obecność studenta na zajęciach jest obowiązkowa:
Workshops:
– Attendance is mandatory: Yes
– Participation rules in classes: Studenci uczestniczą w zajęciach poznając kolejne treści nauczania zgodnie z syllabusem przedmiotu. Studenci winni na bieżąco zadawać pytania i wyjaśniać wątpliwości. Rejestracja audiowizualna wykładu wymaga zgody prowadzącego.

Method of calculating the final grade
The mean value from all grades obtained during the classes.

Sposób i tryb wyrównywania zaległości powstałych wskutek nieobecności studenta na zajęciach:
Additional classes will be organized

Prerequisites and additional requirements
Logical thinking
Critical evaluation of own works

Recommended literature and teaching resources
CHARTING A COURSE FOR A SUCCESSFUL RESEARCH CAREER – A Guide for Early Career Researchers, 2nd Edition, Professor Alan M Johnson AM M.A. (Hons), M.Ed.Mgmt., B.App.Sc., Ph.D., D.Sc. Elsevier

Scientific publications of module course instructors related to the topic of the module
- Interfascicular matrix-mediated transverse deformation and sliding of discontinuous tendon subcomponents control the viscoelasticity and failure of tendons / R. Obuchowicz, M. EKIERT, P. KOHUT, K. HOLAK, L. AMBROZIŃSKI, K.A. Tomaszewski, T. UHL, A. MŁYNIEC // Journal of the Mechanical Behavior of Biomedical Materials ; ISSN 1751-6161. — 2019 vol. 97, s. 238–246. — https://www-1sciencedirect-1com-1000027030270.wbg2.bg.agh.edu.pl/science/article/pii/S1751616119300943/pdfft?md5=dcdc2448863c698a7e3dd5298b70993f&pid=1-s2.0-S1751616119300943-main.pdf

- Structurally based constitutive model of epoxy adhesives incorporating the influence of post-curing and thermolysis / A. MŁYNIEC, J. KORTA, T. UHL // Composites. Part B, Engineering ; ISSN 1359-8368. — 2016 vol. 86, s. 160–167. http://www.sciencedirect.com/science/article/pii/S1359836815006265/pdfft?md5=ad478a0a70a31a4bb

8ef6f5b13e0bec7&pid=1-s2.0-S1359836815006265-main.pdf

Additional information

n/a