

## History of Light

### Educational subject description sheet

#### Basic information

<b>Study programme</b> Liberal Arts and Sciences (English programme)		<b>Didactic cycle</b> 2024/25
<b>Speciality</b> -		<b>Subject code</b> 18LENS.11K.02950.24
<b>Organizational unit</b> Faculty of History		<b>Lecture languages</b> English
<b>Study level</b> First-cycle programme		<b>Course type</b> Obligatory
<b>Study form</b> Full-time		<b>Block</b> Major subjects
<b>Education profile</b> General academic		
<b>Subject coordinator</b>	Tomasz Pędziński	
<b>Lecturer</b>	Tomasz Pędziński	
<b>Period</b> Semester 1	<b>Activities and hours</b> • Lecture: 30, Graded credit; including sub-activities: ◦ Synchronous lecture: 30	<b>Number of ECTS points</b> 3

#### Goals

Code	Goal
C1	transfer of knowledge in the field of basic photophysics, photochemistry and spectroscopy (incl. lab safety procedures)
C2	familiarization with principle terms and equipment used in chemistry, physics, biology and medical sciences
C3	basic terms related to light and photonic applications (photon, electromagnetic wave, laser etc.)

## Entry requirements

There are no prerequisites.

## Subject learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
<b>Knowledge - Student:</b>			
W1	understands and uses basic terms in physics, chemistry and spectroscopy	LEN_K1_W03, LEN_K1_W04, LEN_K1_W10	Project, Multimedia presentation
W2	understands and explains the atom/molecule model in the excited state	LEN_K1_W04, LEN_K1_W06, LEN_K1_W08	Project, Multimedia presentation
W3	characterizes selected types of light-related physico-chemical processes and their practical applications	LEN_K1_W06, LEN_K1_W08, LEN_K1_W10	Project, Multimedia presentation

## Study content

No.	Course content	Subject learning outcomes	Activities
1.	Basic terms related to LIGHT as an electromagnetic wave, wave-particle theory, spectral ranges: radio-waves, infrared, visible light, UV, gamma radiation etc.	W1	Lecture, Synchronous lecture
2.	Atom/molecule model, physical properties of excited states.	W1, W2	Lecture, Synchronous lecture
3.	History of light-related scientific discoveries, examples of key experiments that helped understanding the nature of LIGHT.	W1, W3	Lecture, Synchronous lecture
4.	Light-induced reactions and processes and their practical applications in pharmacy, medicine and cosmetic industry.	W1, W2, W3	Lecture, Synchronous lecture
5.	Light sources (from fire and Sun to the laser), equipment for spectroscopy - basic principles and practical uses.	W1, W2, W3	Lecture, Synchronous lecture

## Additional information

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues, Conversation lecture, Problem-based lecture, Problem-based learning, Solving tasks (e.g. computational, artistic, practical)

Activities	Credit conditions
Lecture	Grading of the student project and/or multimedia presentation: 5 (very good) - >95% 4,5 (good plus) - 94%-85% 4 (good) - 84%-75% 3,5 (satisfactory plus) - 74%-65% 3 (satisfactory) - 64%-51% 2 (fail) - below 50%

## Literature

### Obligatory

1. Suppan P., Chemistry and Light: RSC, 1994 (and later editions).
2. Holt J., When Einstein Walked with Gödel. Excursions to the Edge of Thought, 2019.

## Calculation of ECTS points

Activities	Activity hours*
Lecture	30
Reading the indicated literature	10
Preparation of a multimedia presentation	20
Preparation of a project	10
Preparation for classes	15
<b>Student workload</b>	<b>Hours</b> 85
<b>Number of ECTS points</b>	<b>ECTS</b> 3

\* academic hour = 45 minutes

## Efekty uczenia się dla kierunku

Kod	Treść
LEN_K1_W03	The graduate knows and understands rules of logic and rhetoric that define the principles of correct reasoning and presentation of scientific results
LEN_K1_W04	The graduate knows and understands the key terminology of the main disciplines in the humanities, social sciences, sciences and natural sciences
LEN_K1_W06	The graduate knows and understands principles and methods of research within the humanities and sciences
LEN_K1_W08	The graduate knows and understands the processes of development of the sciences and selected issues of contemporary research
LEN_K1_W10	The graduate knows and understands the processes of development of experimental sciences and selected issues of contemporary research