



COURSE UNIT (MODULE) DESCRIPTION

| Course unit (module) title | Code |
|---|------|
| The Chemistry of Human Nature and Chemistry at Home | |

| Lecturer(s) | Department(s) where the course unit (module) is delivered |
|--|--|
| Coordinator: prof. Aivaras Kareiva Other(s): Skirmantė Tutlienė | Faculty of Chemistry and Geosciences, Institute of Chemistry |

| Study cycle | Type of the course unit (module) |
|---------------|----------------------------------|
| First, Second | Elective |

| Mode of delivery | Period when the course unit (module) is delivered | Language(s) of instruction |
|------------------|---|----------------------------|
| Face to face | 1st semester | English |

| Requirements for students | |
|--|--|
| Prerequisites: English B1 or B2 level. | Additional requirements (if any): - |

| Course (module) volume in credits | Total student's workload | Contact hours | Self-study hours |
|-----------------------------------|--------------------------|---------------|------------------|
| 5 | 130 | 54 | 76 |

| Purpose of the course unit (module): programme competences to be developed |
|---|
| Ability to explain the principles of the Chemistry of Human Nature and ability to characterize the properties and possible applications of Chemistry at Home. |

| Learning outcomes of the course unit (module) | Teaching and learning methods | Assessment methods |
|---|---|---------------------------|
| Students will be able to identify, formulate and evaluate chemical and biochemical processes influencing the human nature. | Literary studies, active lecture, problematic teaching, comparative analysis. | Final exam (written form) |
| Students will be able to communicate effectively with individuals and with other groups on issues of human nature. | Lectures, self-study, discussions. | |
| Students will be able to comprehend and critically evaluate the general chemical processes in human life. | Lectures, self-study, discussions. | |
| Students will be able to comprehend and critically evaluate the specific chemical processes in human life. | Literature overview, self-study. | |
| Students will understand and be able to use the basic concepts of the general natural phenomena surrounding us which are related to chemical processes. | Lectures, self-study, discussions. | |

| Content: breakdown of the topics | Contact hours | | | | | | Self-study work: time and assignments | | |
|--|---------------|-----------|-----------|-----------|-----------------|---------------------------|---------------------------------------|------------------|---|
| | Lectures | Tutorials | Seminars | Exercises | Laboratory work | Internship/work placement | Contact hours | Self-study hours | Assignments |
| <p>1. Chemistry of human nature. Chemistry of taste. The taste receptors. Chemistry and pleasure relationship. Life chemistry. Chemical evolution. From replication to reproduction. Love and connection. Punishment, romantic love and chemistry. Born. Human character and chemistry. Chemistry and creative intelligence. Chemistry and violence. Chemistry and dominance. Free will and chemistry. Chemistry for the universe journey.</p> | 3 | 2 | 1 | | | | 6 | 6 | Preparation for discussion, written answers to open questions. Notifications, participation in the discussion, preparation and presentation of tasks. |
| | 3 | | 1 | | | | 4 | 4 | |
| | 4 | | 1 | | | | 5 | 4 | |
| | 2 | | 1 | | | | 3 | 6 | |
| | | | | | | | | | |
| <p>2. Chemistry at home. Basic concepts. Houses. Home pharmacy. Medications, their types. Nitrogen compounds in our live. Vitamins, antioxidants, food supplements. Bathroom and toilet. Washing powder and other cleaners. Writing desk and chemistry. The bedroom. Kitchen and dining room. Chemistry in the garage. Garden and chemistry. Interesting food chemistry (beverages, ice cream, beer and many other products). Chemistry and medical science. Chocolate pharmaceutical properties. Medical properties of cannabis (marijuana). Molecular killers. Poisons.</p> | 4 | 2 | 1 | | | | 7 | 6 | Preparation for discussion, answers to open questions in writing. Test. |
| | 2 | | 1 | | | | 3 | 6 | |
| | 3 | | 1 | | | | 4 | 8 | |
| | 3 | | 1 | | | | 4 | 4 | |
| | | | | | | | | | |
| <p>3. Chemistry in our live. The chemical element is the basis of matter. Compounds. Physical properties of materials. Chemical reactions. The body generates energy. Carbon dioxide emissions. Molecules. The importance of salts for the body. Fossil fuel. Plastics. Alcohol and health. Organic acids and food. Sugar and fat. Batteries, fuel cells, hydrogen energy. Water, water sources, water pollution and purification. Contaminated air - contaminated lungs. Global warming and greenhouse effect. Radioactivity, nuclear and solar energy.</p> | 2 | 2 | 2 | | | | 6 | 10 | Preparation for discussion, answers to open questions in writing. Test. |
| | 2 | | 2 | | | | 4 | 10 | |
| | 2 | | 2 | | | | 4 | 6 | |
| | 2 | | 2 | | | | 4 | 6 | |
| | | | | | | | | | |
| ... | | | | | | | | | |
| Total | 32 | 6 | 16 | | | | 54 | 76 | |

| Assessment strategy | Weight, % | Deadline | Assessment criteria |
|--|-----------|---------------------|---|
| Colloquium (written answers to open questions) - Writing a test. | 33.3 | 5th semester week. | Answers to open questions on the topics covered. Colloquium questions include the topics covered in the first part of the course, lectures and discussions. It is necessary to answer 10 questions, each of which is evaluated by 1 point (evaluation criteria below) and the general assessment summarizes individual questions. 10 points consist of 33.3% of total grade of Exam. Evaluation Criteria: 1 point (excellent) evaluates the answer, giving a detailed and clear answer to a question based not only on lecture material but also on its own, substantiated reasoning. The 0.5 point (well) evaluates the answer in detail, but not very accurately. A score of 0.25 (weak) is considered the answer to be vague or incomplete, with several major errors. 0 points (unsatisfactory) no answer or it's completely wrong. |
| Colloquium (written answers to open questions) - Writing a test. | 33.4 | 10th semester week. | Answers to open questions on the topics covered. Colloquium questions include the topics covered in the first part of the course, lectures and discussions. It is necessary to answer 10 questions, each of which is evaluated by 1 point (evaluation criteria below) and the general assessment summarizes individual questions. 10 points consist of 33.4% of total grade of Exam. Evaluation Criteria: 1 point (excellent) evaluates the answer, giving a detailed and clear answer to a question based not only on lecture material but also on its own, substantiated reasoning. The 0.5 point (well) evaluates the answer in detail, but not very accurately. A score of 0.25 (weak) is considered the answer to be vague or incomplete, with several major errors. 0 points (unsatisfactory) no answer or it's completely wrong. |
| Colloquium (written answers to open questions) - Writing a test. | 33.3 | During session. | Answers to open questions on the topics covered. Colloquium questions include the topics covered in the first part of the course, lectures and discussions. It is necessary to answer 10 questions, each of which is evaluated by 1 point (evaluation criteria below) and the general assessment summarizes individual questions. 10 points consist of 33.3% of total grade of Exam. Evaluation Criteria: 1 point (excellent) evaluates the answer, giving a detailed and clear answer to a question based not only on lecture material but also on its own, substantiated reasoning. The 0.5 point (well) evaluates the answer in detail, but not very accurately. A score of 0.25 (weak) is considered the answer to be vague or incomplete, with several major errors. 0 points (unsatisfactory) no answer or it's completely wrong. |

| Author | Year of publication | Title | Issue of a periodical or volume of a publication | Publishing place and house or web link |
|---------------------------|---------------------|------------------------|--|--|
| Compulsory reading | | | | |
| T. Husband | 2017 | The Chemistry of Human | | Royal Society of Chemistry |

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|-------------------------|------|---------------------------|--|----------------------------|
| | | Nature | | |
| J. Emsley | 2015 | Chemistry at Home | | Royal Society of Chemistry |
| C. Baird | 2006 | Chemistry in Your Life | | W. H. Freeman and Company |
| Optional reading | | | | |
| M. Hartings | 2017 | Chemistry in Your Kitchen | | Royal Society of Chemistry |
| P.K. Wilson, W.J. Hurst | 2012 | Chocolate as Medicine | | Royal Society of Chemistry |
| C. Clarke | 2012 | The Science of Ice Cream | | Royal Society of Chemistry |
| T. Hargreaves | 2017 | Poisons and Poisonings | | Royal Society of Chemistry |
| J. Emsley | 2016 | Molecules of Murder | | Royal Society of Chemistry |
| I. Hornsey | 2013 | Brewing | | Royal Society of Chemistry |
| A. Mack, J. Joy | 2001 | Marijuana as Medicine? | | NATIONAL ACADEMY PRESS |