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| <b>Subject code:</b><br>FG-101-1           | <b>Subject name:</b> Meteorology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                   |                        |
| <b>Study cycle:</b> I                      | <b>Year:</b> I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Semester:</b> I                                                | <b>ECTS credits:</b> 6 |
| <b>Status:</b> Mandatory                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Contact hours:</b> 60<br>Lectures: 30<br>Practical courses: 30 |                        |
| <b>Assigned professors and assistants:</b> | Lecturers and assistants selected for the field to which the course belongs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                        |
| <b>Prerequisites:</b>                      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                        |
| <b>Subject objectives:</b>                 | <ul style="list-style-type: none"><li>-Familiarize students with the theoretical foundations of quantitative and qualitative indicators of the spatial-temporal dynamics of the main meteorological elements and meteorological phenomena.</li><li>- Introduce students to the basic modifiers of meteorological elements and phenomena.</li><li>- Familiarize students with meteorological weather conditions and synoptic forecasting models.</li><li>- Introduce students to meteorological instrumental monitoring, types and functioning of meteorological instruments, observational terms, and climatological statistical methods for data processing.</li><li>- Familiarize students with the laws and regularities governing the daily and annual patterns of the main meteorological elements, with the aim of applying this knowledge in the educational process in primary and secondary schools.</li></ul> |                                                                   |                        |
| <b>Teaching units:</b>                     | <ol style="list-style-type: none"><li>1. The Atmosphere – General Concepts and Formation. Composition and Density of the Atmosphere. Vertical Structure of the Atmosphere.</li><li>2. Meteorology – Definitions, Objectives, Tasks, Subject of Study, and Classification. Meteorological Elements and Meteorological Phenomena. Meteorological Weather – Concept, Definitions, and Types. Meteorological Observations and Measurements – Concept, Importance, and Types of Meteorological Measurements. Types of Meteorological Instruments. Organization of the Meteorological Service. Observational Terms. Statistical Methods for Processing Meteorological Data.</li><li>3. Energy of Atmospheric Processes. Solar Radiation. Forms of Solar Radiation. Daily and Annual Change of Global Solar Radiation. Geographic Distribution of Solar Radiation. Earth Radiation and the Counter-radiation of</li></ol>      |                                                                   |                        |



- the Atmosphere. Radiation Balance. Instruments for Measuring and Processing Data on Solar Radiation and Light. Importance of Solar Radiation.
4. Heat in the Ground, Water, and Atmosphere. Ground Heating and Cooling. Daily and Annual Temperature Change.
  5. Heating and Cooling of Water. Daily and Annual Temperature Change. Instruments for Measuring and Processing Data on Ground and Water Temperature. Importance of Ground and Water Temperature.
  6. Heating and Cooling of Air. Daily and Annual Air Temperature Flows. Geographic Distribution of Air Temperature. Vertical Temperature Changes in the Air. Instruments for Measuring and Processing Data on Air Temperature. Importance of Air Temperature.
  7. First Test.
  8. Water in the Atmosphere. Evaporation. Geographic Distribution of Evaporation. Instruments for Measuring and Processing Data on Evaporation. Importance of Evaporation.
  9. Air Humidity and the Parameters for Characterizing Air Humidity. Daily and Annual Humidity Change. Geographic Distribution of Relative Humidity. Instruments for Measuring and Processing Data on Air Humidity. Importance of Air Humidity.
  10. Horizontal Visibility and Fog. Types of Fog. Geographic Distribution of Fog. Instruments for Measuring and Processing Data on Horizontal Visibility. Importance of Fog.
  11. Cloudiness. Formation and Types of Clouds. Geographic Distribution of Cloudiness. Instruments for Measuring and Processing Data on Cloudiness. Importance of Cloudiness.
  12. Precipitation. Formation and Types of Precipitation. Daily and Annual Flows of Precipitation Height. Geographic Distribution of Precipitation. Instruments for Measuring and Processing Data on Precipitation Height. Importance of Precipitation.
  13. Dynamics of Atmospheric Processes. Atmospheric (Air) Pressure. Daily and Annual Air Pressure Flows. Geographic Distribution of Air Pressure. Instruments for Measuring and Processing Data on Air Pressure. Importance of Air Pressure.
  14. Synoptics. Synoptic Maps of Absolute and Relative



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|                           | <p>Topography. Modern Synoptic Methods and Weather Forecasting Models.</p> <p>15. Wind. Mechanical Properties of Wind. Types of Air Circulation and Types of Winds. Geographic Distribution of Winds. Instruments for Measuring and Processing Data on Wind. Importance of Wind.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Learning outcomes:</b> | <p>Knowledge:</p> <ul style="list-style-type: none"><li>- Students' knowledge of meteorological weather conditions and synoptic forecasting models.</li><li>- Students' knowledge of quantitative and qualitative indicators of the spatial-temporal dynamics of the main meteorological elements and phenomena.</li><li>- Students' knowledge of the mechanisms of development and daily and annual trends of the main meteorological elements.</li><li>- Students' knowledge of the impact of major geographical factors on the dynamics and intensity of the main meteorological elements.</li></ul> <p>Skills:</p> <ul style="list-style-type: none"><li>- Understanding of meteorological weather at the local and regional level in relation to basic synoptic indicators.</li><li>- Practical knowledge of the laws and regularities governing the daily and annual trends of the main meteorological elements, with the aim of applying this knowledge in the educational process in primary and secondary schools.</li><li>- Knowledge of geoinformation software for geovirtual modeling of the spatial-temporal dynamics of meteorological elements.</li></ul> <p>Competencies:</p> <ul style="list-style-type: none"><li>- Knowledge of types of weather conditions and understanding their applicative potential for various economic and societal needs.</li><li>- Knowledge of meteorological instrumentation, measurement methodology, and data processing methodology within instrumental meteorological monitoring.</li><li>- Work in various agencies and institutes that operate in different areas of studying natural and social processes.</li></ul> |
| <b>Teaching methods:</b>  | <ul style="list-style-type: none"><li>- Theoretical instruction with the use of appropriate multimedia tools.</li><li>- Practical work of students with meteorological data in the field of meteorological statistics application.</li><li>- Joint analysis (practical courses).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Knowledge testing</b>  | Knowledge assessment – criteria:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



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| <b>methods with grading structure<sup>1</sup>:</b> | <ul style="list-style-type: none"><li>- Attendance: maximum 5 points, minimum 3 points required.</li><li>- Class participation: maximum 5 points, minimum 3 points required.</li><li>- Written test during the course: maximum 40 points, minimum 22 points required.</li><li>- Written paper (seminar paper): maximum 10 points, minimum 6 points required</li><li>- Final exam: maximum 40 points, minimum 21 points required.</li><li>- Total of 100 points; minimum 55 points required.</li></ul> <p>Evaluation:</p> <table><tr><td>Grade</td><td>-</td><td>ECTS grade</td><td>-</td><td>Points</td></tr><tr><td>10</td><td></td><td>(A) excellent</td><td></td><td>95 - 100</td></tr><tr><td>9</td><td></td><td>(B) very good</td><td></td><td>85 - 94</td></tr><tr><td>8</td><td></td><td>(C) good</td><td></td><td>75 - 84</td></tr><tr><td>7</td><td></td><td>(D) satisfactory</td><td></td><td>65 - 74</td></tr><tr><td>6</td><td></td><td>(E) sufficient</td><td></td><td>55 - 64</td></tr><tr><td>5</td><td></td><td>(F,FX) insufficient</td><td></td><td>&lt; 55</td></tr></table> | Grade               | - | ECTS grade | - | Points | 10 |  | (A) excellent |  | 95 - 100 | 9 |  | (B) very good |  | 85 - 94 | 8 |  | (C) good |  | 75 - 84 | 7 |  | (D) satisfactory |  | 65 - 74 | 6 |  | (E) sufficient |  | 55 - 64 | 5 |  | (F,FX) insufficient |  | < 55 |
| Grade                                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ECTS grade          | - | Points     |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 10                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (A) excellent       |   | 95 - 100   |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 9                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (B) very good       |   | 85 - 94    |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 8                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (C) good            |   | 75 - 84    |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 7                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (D) satisfactory    |   | 65 - 74    |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 6                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (E) sufficient      |   | 55 - 64    |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| 5                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (F,FX) insufficient |   | < 55       |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |
| <b>Literature<sup>2</sup>:</b>                     | <p>Mandatory:</p> <ul style="list-style-type: none"><li>- Šegota, T. Filipčić, A. (1996): Klimatologija za geografe, Školska knjiga, Zagreb.</li><li>- Milosavljević, M. (1988): Praktikum iz klimatologije sa meteorologijom, Beograd.</li></ul> <p>Additional:</p> <ul style="list-style-type: none"><li>- Milosavljević, M. (1988): Meteorologija, Naučna knjiga, Beograd.</li><li>- Milosavljević, M. (1988): Klimatologija, Naučna knjiga, Beograd.</li><li>- Penzar, I., Penzar, B. (1985): Agroklimatologija, Školska knjiga, Zagreb.</li><li>- Dukić, D. (1981): Klimatologija, Naučna knjiga, Beograd.</li><li>- Ducić, V., Anđelković, G. (2004): Klimatologija – Praktikum za geografe, Geografski fakultet Univerziteta u Beogradu, Beograd.</li></ul>                                                                                                                                                                                                                                                                                                                             |                     |   |            |   |        |    |  |               |  |          |   |  |               |  |         |   |  |          |  |         |   |  |                  |  |         |   |  |                |  |         |   |  |                     |  |      |

<sup>1</sup> The structure of points and point criteria for each subject is determined by the Council of the organizational unit before the beginning of the academic year in which the subject is taught in accordance with Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton

<sup>2</sup> The Senate of the higher education institution as an institution or a council of the organizational unit of the higher education institution as a public institution determines mandatory and recommended textbooks and manuals, as well as other recommended literature on the basis of which exams are prepared by a special act which is required to be published on its website before the beginning of the academic year in accordance with Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton.