**DEPARTMENT OF FOOD TECHNOLOGYAND PROCESSING OF ANIMAL PRODUCTS**
**Study programme: OENOLOGY**
**Degree: Master of Agricultural sciences – OENOLOGY**

| Code | I SEMESTER – first year | | | |
|---|---|---|---|---|
| | **C O U R S E** | **Credits** | **Lectures** | **Total** |
| 2ZF200112 | Methods in scientific research work | 8 | 3+2+2 | 216 |
| 2ZF220112 | General oenology | 8 | 3+2+2 | 216 |
| 2ZF200312 | Biostatistics | 6 | 2+2+1 | 156 |
| | ***Faculty elective course*** | 4 | 2+1+1 | 120 |
| | ***Faculty elective course*** | 4 | 2+1+1 | 120 |
| | **Total:** | 30 | 12+8+7 | 828 |

| Code | II SEMESTER – first year | | | |
|---|---|---|---|---|
| | **C O U R S E** | **Credits** | **Lectures** | **Total** |
| 2ZF215312 | Wine grape varieties | 8 | 3+2+2 | 216 |
| 2ZF220212 | Technologies for wine | 8 | 3+2+2 | 216 |
| 2ZF220312 | Methods for quality control of wine | 6 | 2+2+1 | 156 |
| | ***Faculty elective course*** | 4 | 2+1+1 | 120 |
| | ***Faculty elective course*** | 4 | 2+1+1 | 120 |
| | **Total:** | 30 | 12+8+7 | 828 |

| Code | III SEMESTER – second year | | | |
|---|---|---|---|---|
| | **C O U R S E** | **Credits** | **Lectures** | **Total** |
| 2ZF220412 | Sensory evaluation of wine | 8 | 3+2+2 | 216 |
| 2ZF220512 | Yeasts and alcohol fermentation | 8 | 3+2+2 | 216 |
| 2ZF220612 | Instrumental analysis of wine and grape | 8 | 3+2+2 | 216 |
| | ***University elective course*** | 6 | 2+2+1 | 156 |
| | **Total:** | 30 | 11+8+7 | 804 |

| Code | IV SEMESTER – second year | | | |
|---|---|---|---|---|
| | **C O U R S E** | **Credits** | **Lectures** | **Total** |
| | **Master thesis** | 30 | 0+0+26 | 818 |
| | **Total:** | 30 | 0+0+26 | 818 |

| Code | ***Faculty elective course 1 semester*** | | | |
|---|---|---|---|---|
| 2ZF220712 | Grape preparations and products | 4 | 2+1+1 | 120 |
| 2ZF205612 | Equipment in the winery | 4 | 2+1+1 | 120 |
| 2ZF215412 | Designing the vineyards | 4 | 2+1+1 | 120 |
| 2ZF205512 | Marketing and promotion of grapes and wine | 4 | 2+1+1 | 120 |
| | ***Faculty elective course 2 semester*** | | | |
| 2ZF215612 | Legislation in viticulture and winemaking | 4 | 2+1+1 | 120 |
| 2ZF220812 | Design of winery | 4 | 2+1+1 | 120 |
| 2ZF215712 | Processing and storage of grapes | 4 | 2+1+1 | 120 |

| | | | | |
|---|---|---|---|---|
| 2ZF212712 | Growing organic grapes | 4 | 2+1+1 | 120 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | | |
|---|---|---|---|---|---|---|
| 1. | **Course title** | **METHODS IN SCIENTIFIC RESEARCH WORK** | | | | |
| 2. | **Course code** | **2ZF200112** | | | | |
| 3. | **Study programme** | Oenology | | | | |
| 4. | **Organizer of the study programme (faculty, institute, group)** | "Goce Delcev"University - Stip,<br>Faculty of Agriculture, Stip,<br>Department for plant and environmental protectionmacy | | | | |
| 5. | **Level (first, second, third cycle)** | Second cycle | | | | |
| 6. | **Academic year / semester** | First year / I semester | 7. | Number of ECTS credits | 8 | |
| 8. | **Professor** | **Prof. Ilija Karov , PhD** | | | | |
| 9. | **Preconditions for course enrollment** | No | | | | |
| 10. | **Goals of the course programme:** Introduction to the basic rules and principles in science, the scientific research methods and characteristics that should possess the scientific worker. | | | | | |
| 11. | **Content of the course programme:**<br>**Content of lectures:** 1. Importance of scientific research 2. Selection of topic for scientific work, 3. Methodology of research 4. Literature and working hypothesis 5. Planning of experiment 6. Conducting the experiment 7. Methodology and experimental technique of field experiment 8. An overview of important procedures in the experimental technique 9. Methodology and technique of conducting experiments in containers 10. Processing and displaying the results 11. Technique of writing master's, specialist and scientific papers and citing the literature 12. Preparation of a scientific paper for printing.<br>**Content of exercises**: 1. Introduction 2. Setting the hypothesis 3. Studying the literature 4. Performing of experiment 5. Field trials 6. Laboratory experiments 7. Experiment in containers 8. Processing of the experimental results 9. Displaying obtained results 10. Literature citation, 11. Writing a scientific paper 12. Presenting a scientific paper. | | | | | |
| 12. | **Methods of study:** lectures, theoretical and practical exercises, consultations, independent paper work, home learning, preparatory classes for exams and mid-term tests, consultations. | | | | | |
| 13. | **Total amount of available time** | 216 hours | | | | |
| 14. | **Distribution of the available time** | 3+2+2 | | | | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 3 | | |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 | | |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 | | |
| | | 16.2. | Individual projects | 1 | | |
| | | 16.3. | Individual study | | | |
| 17. | **Forms of assessment** | | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 | | | |
| | 17.2. | Project activities (oral and written presentation) | 50 | | | |
| | 17.3. | Other forms of studying activities | 20 | | | |

| | | | |
|---|---|---|---|
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 (five) (F) |
| | | from 51 to 60 points | 6 (six) (E) |
| | | from 61 to 70 points | 7 (seven) (D) |
| | | from 71 to 80 points | 8 (eight) (C) |
| | | from 81 to 90 points | 9 (nine) (B) |
| | | from 91 to 100 points | 10 (ten) (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | |
| 20. | **Language in which classes are conducted** | Macedonian | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | |

22. **Literature**

22.1. **Compulsory literature**

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Проф. д-р. Илија Каров, Асс. Билјана Ковачевиќ | Методи на научно истражувачката работа (скрипта) | УГД-Штип | 2010 |
| 2. | Ketryn L. Allen | Study skills. A student survival guide. (translation of the Macedonian language) | Goce Delcev University, Stip | 2010 |

22.2. **Additional literature**

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Dr. Slavko Borojevic | Metodologija eksperimentalnog naucnog rada | Radnicki Univerzitet “Radivoj Cirpanov“ | 1974 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | |
|---|---|---|---|---|
| 1. | Course title | **GENERAL OENOLOGY** | | |
| 2. | Course code | 2ZF220112 | | |
| 3. | Study programme | Oenology | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products | | |
| 5. | Level (first, second, third cycle) | Second cycle | | |
| 6. | Academic year / semester | First year/ first semester | 7. | Number of ECTS credits: 8 |
| 8. | Professor | Assistant Professor Violeta Ivanova-Petropulos, PhD | | |
| 9. | Preconditions for course enrollment | / | | |

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|---|---|---|---|---|
| 10. | **Goals of the course programme**: Acquiring knowledge of oenology, including harvest conditions and grape quality, chemical composition of grapes and wine, technological processes for production of wine, legislation and geographical origin of wines. | | | |
| 11. | **Content of the course programme:**<br>**A) Content of lectures**: 1. Introduction to oenology; 2. Harvest; 3. Basic chemical composition of grape and wine; 4. Specific substances in grape and wine; 5. Fermentation; 6. Postfermentation treatments; 7. Wine aging; 8. Specific wine styles; 9. Bottling; 10. Geographical origin of wines; 11. Wine legislation; 12. Wine and health.<br>**B) Content of exercises**: Mechanical and chemical composition of grapes; 2. Grape harvest; 3. Processing of grapes; 4. Maceration; 5. Fermentation; 6. Wine treatments; 7. Drawing off; 8. Clarification; 9. Bottling; 10. Wine aging; 11. Tasting of withe wines; 12. Tasting red wines. | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | 216 | | |
| 14. | **Distribution of the available time** | 3+2+2 | | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | 1 |
| 17. | **Forms of assessment** | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 70 |
| | 17. 2 | Project activities (oral and written presentation) | | 10 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |

| | | |
|---|---|---|
| 20. | **Language in which classes are conducted** | Macedonian |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | **Literature** | | | | | |
| | | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | 22.1. | 1. | Jackson R | Wine Science, Pricniples & Applications, 3th Ed. | Elsevier | 2008 |
| | | 2. | Margalit J. | Concepts in wine technology | USA | 2004 |
| | | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | 22.2. | 1. | Violeta Ivanova-Petropulos | Authorized lectures of General Oenology, for the students at Faculty of Agriculture | UGD - Štip | 2012 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | **Course title** | **BIOSTATISTICS** | | | |
| 2. | **Course code** | **2ZF200312** | | | |
| 3. | **Study programme:** | **Oenology** | | | |
| 4. | **Organizer of the study programme (faculty, institute, group)** | Department for plant and environmental protection Faculty of Agriculture University “Goce Delcev”- Stip. | | | |
| 5. | **Level (first, second, third cycle)** | Second cycle | | | |
| 6. | **Academic year / semester** | Second year/ first semester | 7. | **Number of ECTS credits** | 6 |
| 8. | **Instructor** | **Prof. Tatjana Atanasova Pacemska, PhD** | | | |
| 9. | **Preconditions for course enrollment** | | | | |
| 10. | **Goals of the course programme**: Getting more detailed knowledge about the use of statistical methods in agricultural practice | | | | |
| 11. | **Content of the course programme**:<br>**Content of lectures:**<br>1. Introduction to statistics (mathematics and statistics science) 2. Basic statistical techniques 3. Types of statistical methods 4. Data processing 5. Statistics, variability and distribution 6. Discrete equal distribution. 7. Elements of statistical conclusion. 8. T test and F test 9. Analysis of variance (ANOVA) 10. Factorial experiment, two | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | factorial experiment 11. Linear regression and correlation 12. Experimental Design - practical application of methods in agricultural research.<br>**Content of exercises:**<br>1. Mathematics and statistics science 2. The use of basic statistical techniques 3. Types of statistical methods 4. Practical ways of data processing 5. Statistics, variability and distribution 6. Discrete equal distribution. 7. Elements of statistical conclusion. 8. T test and F test 9. Analysis of variance (ANOVA) 10. Factorial experiment, two factorial experiment 11. Linear regression and correlation 12. Experimental Design - practical application of methods in agricultural research. | | | | |
| 12. | **Methods of study**:<br>Lectures, theoretical and practice exercises, consultations; individual work; home learning; preparatory classes for exams and mid-term tests: consultation; | | | | |
| 13. | **Total amount of available time** | | 156 hours | | |
| 14. | **Distribution of the available time** | | 2+2+1 | | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 | |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 | |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 | |
| | | 16.2. | Individual projects | - | |
| | | 16.3. | Individual study | - | |
| 17. | **Forms of assessment** | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 30 | |
| | 17.2. | Project activities (oral and written presentation) | | 50 | |
| | 17.3. | Other forms of studying activities | | 20 | |
| | | | | | |
| 18. | **Criteria for assessment (points / grade)** | | to 50 points | 5 (five) (F) | |
| | | | from 51 to 60 points | 6 (six) (E) | |
| | | | from 61 to 70 points | 7 (seven) (D) | |
| | | | from 71 to 80 points | 8 (eight) (C) | |
| | | | from 81 to 90 points | 9 (nine) (B) | |
| | | | from 91 to 100 points | 10 (ten) (A) | |
| 19. | **Condition for getting a signature and taking the final exam** | | 60% of term activities | | |
| 20. | **Language in which classes are conducted** | | Macedonian | | |
| 21. | **Method of monitoring the quality of instruction** | | Self-evaluation | | |

22. **Literature**

22.1. **Compulsory literature**

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Graham Currell, Antony Dowman | Essential mathematics and statistics for science | | 2009 |
| 2. | Nelmut van Emden | Statistics for terrified biologists | | 2008 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 3. | Calvin Dytham | Choosing and Using Statistics | | 2003 |

| **Appendix No.3** | **Subject programme from second cycle studies** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **Wine grape varieties** | | | |
| 2. | Course code | 2ZF215312 | | | |
| 3. | Study programme**:** | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture / Department of viticulture and fruit growing | | | |
| 5. | Degree (first cycle) | Second cycle | | | |
| 6. | Academic year / semester | firs year/second semester | 7. | Number of ECTS credits | 8 |
| 8. | Professor | Prof. Violeta Dimovska, Ph.D | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Acquiring knowledge agro-biological and technological characteristics of grape varieties for wine production. | | | | |
| 11. | Content of the course programme: 1. Introduction. Origin and meaning of varieties for wine production. 2.Reonization and classification of varieties for wine production. 3.Varieties for the production of red wines. 4. Varieties for the production of red wines. 5.Varieties production of red wines. 6.Varieties producing withe wines 7. Varieties producing withe wines 8.Varieties producing withe wines. 9.Varieties producing mucsat wine. 10.Indigenous varieties. Regional varieties. 11. International varieties. 12.Clones<br>B) Exercises: 1.Elements (botanical description of varieties). 2.Elements of agro-biological properties of varieties. 3. Elements of the technological characteristics of the varieties. 4. Mechanical composition of the cluster and berries. 5.Determining the structure of the cluster and berry. 6.Ripening of grapes 7.Degree of ripeness of the grape varieties 8.Kategorization. | | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | | |
| 13. | Total amount of available time | 216 | | | |
| 14. | Distribution of the available time | 3 +2 +2 | | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 3 | |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 | |
| 16. | Other forms of activities | 16.1. | Team projects | | |
| | | 16.2. | Individual projects | 1 | |

| | | | | |
|---|---|---|---|---|
| | | 16.3. | Individual study | / |

| | | | |
|---|---|---|---|
| 17. | Forms of assessment | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 |
| | 17.2. | Project activities (oral and written presentation) | 50 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points / grade) | to 50 points | 5( five) (F) |
| | | from 51 to 60 points | 6( six) (E) |
| | | from 61 to 70 points | 7(seven) (D) |
| | | from 71 to 80 points | 8( eight) (C) |
| | | from 81 to 90 points | 9(nine) (B) |
| | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | Macedonian | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

22. Literature

22.1. Compulsory literature

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Zvonimir Bozinovic | Ampelography | Agrinet DOO Skopje | 2010 |
| 2. | Cindric P., Korac Nada, Kovac V. | Grape varieties | Prometej-Novi Sad | 2000 |
| 3. | Kerridge, George, Antcliff, Allan | Wine grape varieties | CSIRO | 1999 |

22.2. Additional literature

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | INRA | Catalogue of selected wine grape varieties and clones in France | ENTAV-INRA | 2007 |
| 2. | Avramov, L. Zunic D. | Ampelography | Faculty of agriculture, Belgrade | 2001 |

| **Appendix No.3** | **Subject programme from second cycle studies** | |
|---|---|---|
| 1. | Course title | Technologies for wine |
| 2. | Course code | 2ZF220212 |

| | | | | | |
|---|---|---|---|---|---|
| 3. | Study programme**:** | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture | | | |
| 5. | Degree (first cycle) | Second cycle | | | |
| 6. | Academic year / semester | second year/second semester | 7. | Number of ECTS credits | 8 |
| 8. | Professor | Professor George Micev, PhD | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Knowledge for the production of red wines, ranging from crushing the grapes, fermentation, pressing, machining wines clarification, filtration, stabilization, bottling and regulations that regulate the production of wine. | | | | |
| 11. | A) Content of the course programme: 1.Introduction, as wine industry in our country and the world. 2. Monitoring the quality and determination of harvest time. 3. Crush the grapes, treatment of grape pulp, yeasts, selected using 4. Application of enzyme preparations 5. Maceration 6. Fermentation and types fermentation. 7 clarification. Use, fining and filtration 8. Pressing 9. Filtration 10. Stabilization 11. Production of sparkling, dessert wines and liqueurs 12. Maturing of wine terms, putting the bottle<br>B) Exercises: Transport the grapes to the winery; 2.Mashini for crushing the grapes, transport to the grape mash fermentation containers and treatments.2. Preparation, selected yeasts and use them. 3. Use of enzymes for the extraction of color. 4. Alcoholic fermentation. 5. Maceration. 6. Extrusion presses. 7. Clarification. 8. Filtering and filters. 9. Stabilization of wine. 10. Wine aging, ripening conditions and vessels.11. Packaging, labeling and bottling of wine. 12. Organoleptic evaluating wine. | | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | | |
| 13. | Total amount of available time | 216 | | | |
| 14. | Distribution of the available time | 3 +2 +2 | | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 3 | |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 | |
| 16. | Other forms of activities | 16.1. | Team projects | / | |
| | | 16.2. | Individual projects | 1 | |
| | | 16.3. | Individual study | 1 | |
| 17. | Forms of assessment | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 | | |
| | 17.2. | Project activities (oral and written presentation) | 50 | | |
| | 17.3. | Other forms of studying activities | 20 | | |
| 18. | Criteria for assessment (points / grade) | to 50 points | 5( five) (F) | | |
| | | from 51 to 60 points | 6( six) (E) | | |

| | | | |
|---|---|---|---|
| | | from 61 to 70 points | 7(seven) (D) |
| | | from 71 to 80 points | 8( eight) (C) |
| | | from 81 to 90 points | 9(nine) (B) |
| | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | Macedonian | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Literature | | | | | |
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Karin Kovacevic | Technologies for wine | Zagreb | 2006 |
| | 22.2. | Additional literature | | | | |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **METHODS FOR QUALITY CONTROL OF WINE** | | | |
| 2. | Course code | 2ZF220312 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | First year/ second semester | 7. | Number of ECTS credits | 6 |
| 8. | Professor | Assistant Professor Violeta Ivanova-Petropulos, PhD | | | |
| 9. | Preconditions for course enrollment | / | | | |
| 10. | **Goals of the course programme**: Acquiring knowledge about the methods used for quality control of wine, as well as knowledge of the parameters that determine quality. | | | | |
| 11. | **Content of the course programme:**<br>**A) Content of lectures**: 1. Introduction to quality control of wine; 2. Analytical methods for quality control of wine; 3. Safety in the laboratory; 4. Alcohol and extract, methods for determination; 5. Total acid and pH, methods for their determination; 6. Volatile acids and methods for determination; 7. Sulfur dioxide and determination; 8. Carbohydrates and methods for determination; 9. $CO_2$, bitartarate and protein stability, methods for determination; 10. Other important parameters for wine quality control and methods for determination; 11. Total polyphenols and color methods for determination; 12. Reagents and standardization. | | | | |

| | | | | |
|---|---|---|---|---|
| | **B) Content of exercises**: 1. Introduction to the parameters responsible for the wine quality; 2. Introduction to methods for quality control of wine; 3. Safety in laboratory; 4. Determination of alcohol and extract; 5. Determination of total acid and pH; 6. Determination of volatile acids; 7. Determination of free and total $SO_2$; 8. Determination of reducing sugars; 9. Determination of $CO_2$ and protein stability; 10. Bentonite and gelatin; 11. Determination of color; 12. Standardization of solutions. | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | | 156 | |
| 14. | **Distribution of the available time** | | 2+2+1 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | - |

| | | | |
|---|---|---|---|
| 17. | **Forms of assessment** | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 70 |
| | 17. 2 | Project activities (oral and written presentation) | 10 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | | |
|---|---|---|---|---|
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | **Language in which classes are conducted** | Macedonian | | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | | |

| | |
|---|---|
| 22. | **Literature** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 22.1. | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Jacobson J.L. | Introduction to Wine Laboratory Practices and Procedures | Springer | 2008 |
| | | 2. | Zoecklein B., Fugelsand K.C., Gump B.H., Nury F.S. | Wine analysis and production | Chapman & Hall, New York | 1995 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Violeta Ivanova-Petropulos | Authorized lectures of Methods for quality control of wine, for the students at Faculty of Agriculture | UGD - Štip | 2012 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **SENSORY EVALUATION OF WINE** | | | |
| 2. | Course code | 2ZF220412 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second year/ third semester | 7. | Number of ECTS credits | 8 |
| 8. | Professor | Assistant Professor Violeta Ivanova-Petropulos, PhD | | | |
| 9. | Preconditions for course enrollment | / | | | |
| 10. | **Goals of the course programme**: Acquiring knowledge in the field of sensory evaluation of wines, determination of the wine quality by assessing the appearance, smell and taste, recognition of unpleasant odors and faults of wine, wine and food. | | | | |
| 11. | **Content of the course programme:**<br>**A) Content of lectures**: 1. Introduction to sensory evaluation of wine; 2. Wine quality parameters; 3. Testing rooms; 4. Testing groups; 5. Evaluation of appearance; 6. Evaluation of odor; 7. Evaluation of taste; 8. Methods and tests for sensory | | | | |

| | | | | |
|---|---|---|---|---|
| | analysis; 9. Processing of analysis data; 10. Faults of wine, 11. Styles and types of wines, 12. Wine and food.<br>**B) Content of exercises**: 1. Introduction; 2. Chemical composition of wine and influence of sensory properties; 3. Visit of tasting room; 4. Introduction with basic rules of wine tasting; 5. Evaluation of appearance; 6. Assessment and recognition of odor; 7. Assessment and recognition of taste; 8. Comparing pairs; 9. Duo-trio test; 10. Test to triangle; 11. Identification of faults in wine; 12. Combining wine with food. | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | | 216 | |
| 14. | **Distribution of the available time** | | 3+2+2 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 3 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | - |

| | | | |
|---|---|---|---|
| 17. | **Forms of assessment** | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 70 |
| | 17. 2 | Project activities (oral and written presentation) | 10 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | | |
|---|---|---|---|---|
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | **Language in which classes are conducted** | Macedonian | | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | | |

| 22. | **Literature** | | | | | |
|---|---|---|---|---|---|---|
| | | **Compulsory literature** | | | | |
| | 22.1. | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Flamini R | Hyphenated Techniques in Grape and Wine Chemistry | John Wiley & Sons | 2008 |
| | | 2. | Flamini R, Traldi T. | Mass Spectrometry in Grape and Wine Chemistry | John Wiley & Sons | 2010 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Violeta Ivanova-Petropulos | Authorized lectures of Sensory evaluation of wine, for the students at Faculty of Agriculture | UGD - Štip | 2012 |

| Appendix No.3 | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **Yeasts and alcohol fermentation** | | | |
| 2. | Course code | 2ZF220512 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second year/ third semester | 7. | Number of ECTS credits | 8 |
| 8. | Professor | Prof. Ilija Karov, PhD | | | |
| 9. | Preconditions for course enrollment | / | | | |
| 10. | **Goals of the course programme**: Introduction to microorganisms (yeasts,bacteria), their morphology, physiology, biochemistry and systematics and their importance in the production of wine. | | | | |
| 11. | **Content of the course programme:**<br>**C) Content of lectures**: 1. Basic microbiological processes fermentacion production yeastes and construction yeastes cell.2.Characteristics and significance of wine yeasts of Saccharomyces cerevisiae – (ellipsoideus, oviformis, cerevisiae);3. Characteristics and significance of wine yeasts of Zygosaccharomyces (bailii, rouxii) and rase Schizosaccharomyces (pombe, acidodevorax, malidevorans);4.Characteristics and significance of wine yeasts of rase Hanseniaspora, Kloeckera и Saccharomycodes; 5.Characteristics and significance of wine yeasts of Brettanomyces, Torulaspora и Rhodotorula; 6. .Characteristics and significance of wine yeasts of under Pichia, Candida and | | | | |

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|---|---|---|---|---|
| | Hansenula.7.Milk acid bacteria.Classification and characteristic primary types.8.Vinegar acids bacteria – characteristics the genus Acetobacter and Gluconobacter.Metabolism and growth factors. 9.Impact of physical factors the action of yeasts – temperature and moisture content.10.Influence of chemical factors – oxygen,concentration of sugars,impact of vitamins and unsaturated fatty acids;11.Impact of biological factors – between yeasts,yeasts and vinegar acids bacteria and between yeasts and milk acid bacteria;12.Environment of the yeasts.<br>**D) Content of exercises**: Preparation the nutritional of yeasts;2.Preparation the nutritional of wine bacteria;3.Methods for isolation of pure cultures yeasts;4.Selection of yeasts for red wines – stages and criterion.5. .Selection of yeasts for the wines – stages and criterion.6.Methods for identification for pure yeast cultures;7.Pure culture yeast for the production of red wines;8. Pure culture yeast for the production of withe wines;9.Breeding of yeasts;10.Entry of yeasts in grape pulp;11.Methods for microbiological examination the wine;12.Methods for microbiological examination the cork; | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | | 216 | |
| 14. | **Distribution of the available time** | | 3+2+2 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 3 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | - |
| 17. | **Forms of assessment** | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 70 |
| | 17. 2 | Project activities (oral and written presentation) | | 10 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |

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| 20. | **Language in which classes are conducted** | Macedonian |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation |

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|---|---|---|---|---|---|---|
| 22. | **Literature** | | | | | |
| | 22.1. | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Ilija Karov | Yeasts and alcohol fermentation | UGD-Stip | 2012 |
| | | 2. | Fidanka Ilieva | | | |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Bambalov G., | Microbiology of wine production | Hr.Danov Plovdiv | 1981 |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Fungelsang K., Ch. Edwards | Wine microbiology | Champan and Hall, New York | 1997 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **INSTRUMENTAL ANALYSIS OF WINE AND GRAPE** | | | |
| 2. | Course code | 2ZF220612 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second year/ third semester | 7. | Number of ECTS credits | 6 |
| 8. | Professor | Assistant Professor Violeta Ivanova-Petropulos, PhD | | | |
| 9. | Preconditions for course enrollment | / | | | |
| 10. | **Goals of the course programme**: Acquiring knowledge in the field of instrumental methods of analysis of wine and grapes and their application for analysis of various components. | | | | |
| 11. | **Content of the course programme:** | | | | |

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| | **A) Content of lectures**: Introduction to instrumental methods for analysis of grapes and wine; 2. Liquid and gas chromatography; 3. MALDI-TOF and electrophoresis; 4. Atomic absorption spectrometry and spectrophotometry; 5. Analysis of polyphenols with liquid chromatography and liquid chromatography-mass spectrometry; 6. Analysis of tannins and elagotannins using different techniques; 7. Gas chromatography and aromas in wine and grapes; 8. Analysis of the components responsible for the defects of wine; 9. Analysis of contaminants in grapes and wine: ochratoxsin A and biogenic amines; 10. Analysis of pesticide residues in grape and wine; 11. Analysis of proteins and peptides in grape and wine 12. Analysis of the elements in grapes and wine.<br><br>**B)** ***Content of exercises***: Basic instrumental methods; 2. Introduction to the fundamentals of liquid chromatography; 3. Introduction to the fundamentals of gas chromatography; 4. Introduction to the fundamentals of atomic absorption spectrometry and spectrophotometry; 5. Spectrophotometric determination of anthocyanins, color and hue of wine; 6. Spectrophotometric determination of total polyphenols 7. Analysis of anthocyanins by HPLC; 8th Analysis of aroma with GC-MS; 9. Analysis of ochratoxin A; 10. Analysis of pesticide residues; 11. Protein stability 12. Analysis of heavy metals. | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | | 156 | |
| 14. | **Distribution of the available time** | | 2+2+1 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | - |
| 17. | **Forms of assessment** | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 70 |
| | 17. 2 | Project activities (oral and written presentation) | | 10 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |

| | | | |
|---|---|---|---|
| | | from 91 to 100 points | 10 (ten) (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | |
| 20. | **Language in which classes are conducted** | Macedonian | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | **Literature** | | | | | |
| | | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | 22.1. | 1. | Flamini R | Hyphenated Techniques in Grape and Wine Chemistry | John Wiley & Sons | 2008 |
| | | 2. | Flamini R, Traldi T. | Mass Spectrometry in Grape and Wine Chemistry | John Wiley & Sons | 2010 |
| | | Additional literature | | | | |
| | 22.2. | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Violeta Ivanova-Petropulos | Authorized lectures of Instrumental analysis of wine and grape, in ppt format, for the students at Faculty of Agriculture | UGD - Štip | 2012 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **GRAPE PREPARATIONS AND PRODUCTS** | | | |
| 2. | Course code | 2ZF220712 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of viticulture and fruitgrowing | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | First year/first semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Associate Professor Violeta Dimovska, PhD<br>Assistant Professor Violeta Ivanova-Petropulos, PhD | | | |

| | | | | |
|---|---|---|---|---|
| 9. | Preconditions for course enrollment | / | | |
| 10. | **Goals of the course programme**: Acquiring knowledge about the use of grape as raw material in the manufacturing industry, types of processing and production technologies. | | | |
| 11. | **Content of the course programme:**<br>**Content of lectures**: 1. Introduction. Production of grapes in the world and in our country. Economic and technological value; 2. Types of processed 3. Juices and concentrated juices 4. Compotes, candies, jams and marmalades; 5. Wine (red, white, table, quality, premium) 6. Special wines: Sparkling wine, Jerez/Xérès/Sherry wines, Liqueur wines or Fortified wines, Dessert wines, Aromatized wines or Vermouth; 7. Distillates: types of brandies; 8. Seeds oil and phenolic substances (tannins and anthocyanins); 9. Vinegar; 10. Wine sediment, tartaric acid; 11. Seeds phenolic extract; 12. Preparations used in cosmetics and confectionary industry.<br>**Content of exercises**: 1. Determining the quality of raw materials; 2. Mechanical and chemical analysis of grapes; 3. Visit of a factory for production of beverages, soft drinks and other grape products. Introducing of technological processes; 4. Visit of a factory for production of alcohol and distillates; 5. Visit of a winery and introducing of wine technologies; 6. Visit of pharmaceutical company that manufactures grapes used in cosmetics; 7. Visit of factory for confectionery products; 8. Making a survey about the use of processed grapes within a category of users. | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | |
| 13. | **Total amount of available time** | | 120 | |
| 14. | **Distribution of the available time** | | 2+1+1 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | **Other forms of activities** | 16.1. | Team projects | - |
| | | 16.2. | Individual projects | 0.5 |
| | | 16.3. | Individual study | 0.5 |
| 17. | **Forms of assessment** | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 70 |
| | 17. 2 | Project activities (oral and written presentation) | | 10 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | | | to 50 points | 5 ( five) (F) |

| | | | | |
|---|---|---|---|---|
| | **Criteria for assessment (points / grade)** | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | **Language in which classes are conducted** | Macedonian | | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | **Literature** | | | | | |
| | 22.1. | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Nikićević N., Tešević V | Spirits | Beograd | 2008 |
| | | 2. | Jovic S, Milisavljevic M | Grape and wine | Beograd | 2004 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Göktürk Baydar N, Akkurt M | Oil content and oil quality properties of some grape seeds | *Turkish Jounal of Agriculture and Forestry* 25 | 2001 |
| | | 2. | Cajkovic M | Cosmetology | Naklada Spal, Zagreb | 2000 |

| **Appendix No.3** | **Subject programme from second cycle studies** | |
|---|---|---|
| 1. | Course title | **Equipment in the winery** |
| 2. | Course code | 2ZF205612 |
| 3. | Study programme**:** | Oenology |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture / Department of viticulture and fruit growing |
| 5. | Degree (first cycle) | Second cycle |

| | | | | | |
|---|---|---|---|---|---|
| 6. | Academic year / semester | firs year/second semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Prof. Risto G.Kukutanov, Ph.D | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Gaining knowledge and skills about handling and maintenance the equipment used in tehnological processes in different production technologies.Students will be able to apply acquired knowledge in practice Ordinal in put new modern technical – technological solutions. | | | | |
| 11. | Content of the course programme: 1.Introduction to the basic features of the machines and equipment used in manufacturing process:<br>1.Equipment in receipt throat.Control probe measurement content of sugar.2.Types the grinding the grape.Transportes of grapes.Sulfur dozers.3.Pumps fluid.Pumps for cluj;4.Types of strains of withe grapes;5.Types presses withe and black grapes.Transporters for marc.6.Systems vinification the black grapes.7.Systems controlled fermentation.8.Cooling systems.9.Filters for wine.Filters for sediment.10.Systems stabilization of wine.11.Lines charging of wine. Lines charging spirits.12.Lines for packaging.Machinery palletisers and machinery and equipment for internal and external transport.Exploitation characteristics of machines. | | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | | |
| 13. | Total amount of available time | 120 | | | |
| 14. | Distribution of the available time | 2 +1 +1 | | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | | / |
| 16. | Other forms of activities | 16.1. | Team projects | | |
| | | 16.2. | Individual projects | | 1 |
| | | 16.3. | Individual study | | / |
| 17. | Forms of assessment | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | | 50 |
| | 17.3. | Other forms of studying activities | | | 20 |
| 18. | Criteria for assessment (points / grade) | to 50 points | | | 5( five) (F) |
| | | from 51 to 60 points | | | 6( six) (E) |
| | | from 61 to 70 points | | | 7(seven) (D) |
| | | from 71 to 80 points | | | 8( eight) (C) |
| | | from 81 to 90 points | | | 9(nine) (B) |

| | | | |
|---|---|---|---|
| | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | Macedonian | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Literature | | | | | |
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Prof. Ph.D Risto G.Kukutanov | Mechanization in agricultural production Aveilable in electronic form | UGD | |
| | | 2. | Prof. Ph.D Risto G.Kukutanov | Pacticum in mechanization in agricultural production Aveilable in electronic form | UGD | |
| | | 3. | Prof. Ph.D Risto G.Kukutanov | Internal script Process technique | UGD | |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | | | | |
| | | 2. | | | | |

| **Appendix No.3** | **Subject programme from second cycle studies** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **Designing the vineyards** | | | |
| 2. | Course code | 2ZF215412 | | | |
| 3. | Study programme**:** | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture / Department of viticulture and fruit growing | | | |
| 5. | Degree (first cycle) | Second cycle | | | |
| 6. | Academic year / semester | First year/second semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Prof. Violeta Dimovska, Ph.D | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Student to enable the collection and preparation of materials (pedological maps, climate data, data analysis of soil) necessary for | | | | |

| | | | | |
|---|---|---|---|---|
| | construction of the project. Students equip themselves to be able to prepare an elaborate project for raising grape plants. | | | |
| 11. | Content of the course programme: Climate and soil conditions. Structure-investment Vineyard. Location of new plantings. Choosing the sorting. Dimanic the boot. 2.Tehnological processes for raising plantation. Preparation the surface before planting. Measures to improve soil fertility. Ways of rigolovanje soil. 3.Technical-tecnological solutions. Determining the distance of planting, direction and length of the lines. 4.Systems and support structures. 5.Selection of plant material. Preparation of seedlings. Time and ways of planting. 6.Sitting of the supporting structures. 7.Growing the young plantation in the first three years. 8.Technological processes in plantation in full yield. 9. Cutting, maintenance of soil, green cutting, nutrition, protection from disease and low temperatures, the grape harvest. 10.The total cost for regular production. Expected yields. 11. Means for raising plantation in the first three years.12. Total costs of raising grape plants including advisory services.<br>B) Exercises: Making project based on the given element. Practical field performance based on finished project. | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | |
| 13. | Total amount of available time | | 120 | |
| 14. | Distribution of the available time | | 2 +1 +1 | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | / |
| 16. | Other forms of activities | 16.1. | Team projects | |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | / |
| 17. | Forms of assessment | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | 50 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | Criteria for assessment (points / grade) | | to 50 points | 5( five) (F) |
| | | | from 51 to 60 points | 6( six) (E) |
| | | | from 61 to 70 points | 7(seven) (D) |
| | | | from 71 to 80 points | 8( eight) (C) |
| | | | from 81 to 90 points | 9(nine) (B) |
| | | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |

| | | |
|---|---|---|
| 20. | Language in which classes are conducted | Macedonian |
| 21. | Method of monitoring the quality of instruction | Self-evaluation |

22. Literature

Compulsory literature

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Vulic T., Sivcev B., Aleksic V., Rumi M., Urosevic M. | Elevation of the new plantations | University of Belgrade,Faculty of agriculture | 2004 |
| 2. | Kuljancic, M | Viticulture | Prometej, Novi Sad | 2007 |
| 3. | Milanov M. Martinovska Stojcevska A. | Expenses and calculations in agriculture | Faculty of agriculture | 2002 |

22.2 Additional literature

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Avramov L. | Viticulture | Belgrade | 1991 |
| 2. | Milosavljevic M | Biotechnical of vine | Research institute in agriculture | 1998 |

| **Appendix No.3** | **Subject programme from second cycle studies** | | | |
|---|---|---|---|---|
| 1. | Course title | Marketing and promotion of grapes and wine | | |
| 2. | Course code | 2ZF205512 | | |
| 3. | Study programme | Oenology | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip, Faculty of Agricultural - Department for viticulture and fruit growing | | |
| 5. | Level (first, second, third cycle) | Second cycle | | |
| 6. | Academic year / semester | Second year/ second semester | 7. | Number of ECTS credits: 4 |
| 8. | Professor | Ass. prof. Elenica Sofijanova, PhD | | |
| 9. | Preconditions for course enrollment | No | | |
| 10. | Goals of the course programme: Introducing the students with marketing access and marketing concept of wine and grapes production for all marketing activities and assortments. | | | |
| 11. | Content of the course programme:<br>A) *Content of lectures:* 1. Introduction, concept, definition and meaning of marketing; 2. Marketing - activities and marketing – concepts; 3. Product selection programme and agricultural assortment of grapes and wine; 4. Headlines way of selling grapes and wine; 5. Highlights priced grapes and wine; 6. Analysis of demand and supply of grapes and wine; 7. Mechanism and market organization of grapes and wine; 8. Market institutions in | | | |

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| | the supply of grapes and wine; 9. Market indicators and conditions of supply of grapes and wine; 10. World market for grapes and wine; 11. The Republic of Macedonia in the foreign - trade with grapes and wine; 12. Market research on grapes and wine;<br>B) *Content of exercises:* 1. Basic principles, concepts and notions of marketing; 2. Use of marketing activities and concepts to promote a new product market (wine); 3. Tracking global turned selection of the best and sought after product; 4. Methods for determination the way of selling grapes and wine; 5. Development of methods for determining prices of grapes and wine; 6. Examples analysis of demand and supply of grapes and wine; 7. Functioning of mechanism and organization of the market of grapes and wine 8. Examining the market institutions in the supply of grapes and wine; 9. Development of indicators and market conditions the supply of grapes and wine; 10. Graphic displays of world producers grapes and wine; 11. Graphic display of the largest trade partners of Macedonia grapes and wine; 12. Case study research in a global market for grapes and Wine. | | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations. | | | | |
| 13. | Total amount of available time | | 120 hours | | |
| 14. | Distribution of the available time | | 2 +1 +1 | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | | 1 |
| 16. | Other forms of activities | 16.1. | Team projects | | 1 |
| | | 16.2. | Individual projects | | |
| | | 16.3. | Individual study | | |
| 17. | Forms of assessment | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | | 50 |
| | 17.3. | Other forms of studying activities | | | 20 |
| 18. | Criteria for assessment (points / grade) | | to 50 points | | 5( five) (F) |
| | | | from 51 to 60 points | | 6( six) (E) |
| | | | from 61 to 70 points | | 7(seven) (D) |
| | | | from 71 to 80 points | | 8( eight) (C) |
| | | | from 81 to 90 points | | 9(nine) (B) |
| | | | from 91 to 100 points | | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | Language in which classes are conducted | | Macedonian | | |
| 21. | Method of monitoring the quality of instruction | | Self-evaluation, Periodic tests students; Survey | | |
| 22. | Literature | | | | |
| | 22.1. | Compulsory literature | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 1. | Bosko Jakovski | Marketing | Economic Faculty - Skopje | 1997 |
| | | 2. | Tomin A., Gjorovic M. | Trzište i promet poljoprivrednih i agroindustriskij proizvoda | NIR „Zadruga“ Beograd. | 2000 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Filip Kotler and Geri Amstrong | Principles marketing | Academic press | 2010 |

| Appendix No.3 | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | LEGISLATION IN VITICULTURE AND WINEMAKING | | | |
| 2. | Course code | 2ZF215612 | | | |
| 3. | Study programme | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delčev” – Štup, Faculty of Agriculture, Department of viticulture and fruitgrowing | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second year/second semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Associate Professor Violeta Dimovska, PhD<br>Assistant Professor Violeta Ivanova-Petropulos,PhD | | | |
| 9. | Preconditions for course enrollment | / | | | |
| 10. | **Goals of the course programme**: Acquiring knowledge about the use of grape as raw material in the manufacturing industry, types of processing and production technologies. | | | | |
| 11. | **Content of the course programme:**<br>1. Meaning of cadastre for vineyards; 2. List of varieties. Recommended, permitted and prohibited; 3. Legal norms-conditions for production and trade with seedlings; 4. Method of production and control of raw materials and grape seedlings; 5. Standards for grape quality seedlings; 6. Standards for quality of table grapes for fresh consumption; 7. Introduction to the wine law. National strategy for wine development; 8. Wine production; 9. Market and trade with wine; 10. Classification of wines. Wines with geographic origin; 11. Description, designation and protection of wine; 12. Quality control. Rules for quality of wine. | | | | |
| 12. | **Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning. | | | | |
| 13. | **Total amount of available time** | 120 | | | |
| 14. | **Distribution of the available time** | 2+1+1 | | | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 | |

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| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 0.5 |
| | | 16.2. | Individual projects | |
| | | 16.3. | Individual study | 0.5 |

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|---|---|---|---|
| 17. | **Forms of assessment** | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 70 |
| | 17. 2 | Project activities (oral and written presentation) | 10 |
| | 17.3. | Other forms of studying activities | 20 |

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| 18. | **Criteria for assessment (points / grade)** | to 50 points | 5 ( five) | (F) |
| | | from 51 to 60 points | 6 ( six) | (E) |
| | | from 61 to 70 points | 7 (seven) | (D) |
| | | from 71 to 80 points | 8 (eight) | (C) |
| | | from 81 to 90 points | 9 (nine) | (B) |
| | | from 91 to 100 points | 10 (ten) | (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | **Language in which classes are conducted** | Macedonian | | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | | |

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|---|---|---|---|---|---|---|
| 22. | **Literature** | | | | | |
| | 22.1. | **Compulsory literature** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Official Gazette of RM No. 39/06, 89/08, 171/10 | Law on Seeds and Seedlings | MZSV | 2006, 2008, 2010 |
| | | 2. | Official Gazette of RM No. 103/09 (EU Directive 2002/53/EC) | Regulations for registration of variety in the National Variety List and | MZSV | 2009 |

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|---|---|---|---|---|---|---|
| | | | | keeping of National Variety List | | |
| | | 3. | Official Gazette of RM No. 53 | Wine low | MZSV | 2011 |
| | | 4. | Official Gazette of RM No. 116/11 (EU Directive 68/193/EEC) | Regulation for trade with material for vegetative propagation of vine | MZSV | 2011 |
| | | 5. | Official Gazette of RM No. 53/11 | Wine low | MZSV | 2010 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Official Gazette of RM No. 91/11 M | Regulation of the minimum standards for fruit and vegetables intended for processing and specific marketing standards for quality of fresh fruits and vegetables | MZSV | 2011 |

| **Appendix No.3** | **Subject programme from second cycle studies** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | Design of winery | | | |
| 2. | Course code | 2ZF220812 | | | |
| 3. | Study programme**:** | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture | | | |
| 5. | Degree (first cycle) | Second cycle | | | |
| 6. | Academic year / semester | firs year/second semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Professor George Micev, PhD | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Acquiring knowledge of wine production, the influence of the type of winery based economy in the operation of the winery, through energy saving cooling performance of the alcoholic fermentation, losses in maturing the wine and the like. | | | | |
| 11. | A) Content of the course programme: 1. Introduction to design the winery, influence the economy cellar conditions needed to build winery. 2. Types of wine cellars (cellars for primary processing, commercial wineries, surface cellars, dug cellars) and their characteristics. 3. Design packaging and labels, impact on sales 4. Design tanks for fermentation, storage and aging of wine; impact of packaging on transport costs 5. The | | | | |

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| | design of glasses for tasting (shape, size, thickness of glass) 6. Assortment of production 7. Production of wines with protected geographical got sweaty; 8.Production of special, dessert, flavored, sparkling wines, organic wine 9.Production of wine organic 10. Editing area winery; 11. Deployment of the equipment and organization of production in the winery. 12.Low regulations<br>B) Exercises: 1.Building a winery, choice of location, type and size 2. Equipment in the wine cellar. 3. Selection of raw material for the realization of production. 4. Monitoring the quality of raw material during the ripening of the grapes and the determination of terms of harvest. 5. Selection of appropriate technology for processing, processing and finishing. 6. Oenological means and procedures for the processing of grape must and wine 7. Maturing of wine, choice of dishes and maturing technologies 8. Putting the wine in the bottle, choice of appropriate packaging and packing 9. Designing packaging (bottle) packaging and labels. 10. Designing a room for aging the wine in bottles. 11. Designing facilities for quality control. 12. Low regulations. | | | |
| 12. | Methods of study:<br>Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | |
| 13. | Total amount of available time | | 120 | |
| 14. | Distribution of the available time | | 2 +1 +1 | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | Other forms of activities | 16.1. | Team projects | / |
| | | 16.2. | Individual projects | 0.5 |
| | | 16.3. | Individual study | 0.5 |
| 17. | Forms of assessment | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | 50 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | Criteria for assessment (points / grade) | | to 50 points | 5( five) (F) |
| | | | from 51 to 60 points | 6( six) (E) |
| | | | from 61 to 70 points | 7(seven) (D) |
| | | | from 71 to 80 points | 8( eight) (C) |
| | | | from 81 to 90 points | 9(nine) (B) |
| | | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | | Macedonian | |
| 21. | Method of monitoring the quality of instruction | | Self-evaluation | |
| 22. | Literature | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Karin Kovacevic | Technologies for wine | Zagreb | 2006 |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Milenko Blesic | Technologies for wine | Saraevo | 2006 |
| | | 2. | Mihail Petkov | Oenology | Skopje | 2010 |
| | | | Borimir Vojnoski | authorized lectures Wine production PDF | UGD-Stip | 2011 |

| **Appendix No.3** | **Subject programme from second cycle studies** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | Processing and storage of grapes | | | |
| 2. | Course code | 2ZF215712 | | | |
| 3. | Study programme**:** | Oenology | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip. Faculty of agriculture | | | |
| 5. | Degree (first cycle) | Second cycle | | | |
| 6. | Academic year / semester | second year/second semester | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Prof. Violeta Dimovska, Ph.D | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme: Acquiring knowledge about the technologies of production of grapes. Acquisition of the opportunities and taking care of the individual varieties of grapes | | | | |
| 11. | A) Content of the course programme: .Introduction. 2. Conditions in production of grapes in the world and in our country. 3. Technologies in the production of grapes. 4. Chois of the size, variety and healthy planting material. 5. Usung of agro-technical measures. 6.Usung the ampelo-technical measures. 7. Determining the time and ways to harvest. 8. Packaging of grapes for processing and storage market. 9. Condition and ways to save on wine grapes. 10. Condition and ways to save on table grapes. 11. Ways to use the excess and the remainder from grapes.12.Organoleptic evaluation of grapes.<br>B) Exercises: 1.Methods for determining the structure of the bunch and berry. 2. Methods for determining the mechanical properties of bunch and berry (transported). 3. Methods for determining the degree of maturity of the grapes. 4. Methods the organoleptic evaluation of grapes. 5. Techniques in green operations. 6. Techniques the preparation and packaging of table grapes (for storage, directly to the market). | | | | |
| 12. | Methods of study: | | | | |

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|---|---|---|---|---|
| | Lectures, Laboratory exercises, e-learning, individual and team projects, consultations | | | |
| 13. | Total amount of available time | | 120 | |
| 14. | Distribution of the available time | | 2 +1 +1 | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | / |
| 16. | Other forms of activities | 16.1. | Team projects | |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | / |

| | | | |
|---|---|---|---|
| 17. | Forms of assessment | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 |
| | 17.2. | Project activities (oral and written presentation) | 50 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points / grade) | to 50 points | 5( five) (F) |
| | | from 51 to 60 points | 6( six) (E) |
| | | from 61 to 70 points | 7(seven) (D) |
| | | from 71 to 80 points | 8( eight) (C) |
| | | from 81 to 90 points | 9(nine) (B) |
| | | from 91 to 100 points | 10(ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | / 60% of term activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | Macedonian | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

22. Literature

Compulsory literature

| | Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|---|
| 22.1. | 1. | Zvonimir Bozinovic | Ampelography (general part) | Agrinet DOO Skopje | 2010 |
| | 2. | Aleksandar Nakalamic, Nebojsa Markovic | General Viticulture (general part) | Faculty of agriculture Belgrade | 2009 |
| | 3. | Fabio Mencarelli, Andrea Bellincontro | Grape-postharvest operation | Department of Food Science and Technology, | 2005 |

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|---|---|---|---|---|---|---|
| | | | | | University of Viterbo, Italy | |
| | 22.2. | Additional literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Fazinic, N., Fazinic M. | Table grape varieties (general part) | Zadar | 1990 |
| | | 2. | Comision regulation (EC) $N_0$ 912/2001, $N_o$ 1221/2008 | Oficial Jurnal of the European Communities. Laying down the marketing standard for table grape | ЕУ | 1999, 2001, 2008 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | **Course title** | **Growing organic grapes** | | | |
| 2. | **Course code** | 2ZF212712 | | | |
| 3. | **Study programme** | Oenology | | | |
| 4. | **Organizer of the study programme (faculty, institute, group)** | Faculty of Agriculture, University “Goce Delcev”-Stip, Department for viticulture and fruit growing | | | |
| 5. | **Level (first, second, third cycle)** | Second cycle | | | |
| 6. | **Academic year / semester** | First year/ second semester | 7. | Number of ECTS credits | 4 |
| 8. | **Professor** | Prof. Ljupco Mihajlov, PhD | | | |
| 9. | **Preconditions for course enrollment** | No | | | |
| 10. | **Goals of the course programme**: Students will be able to understand the techniques in production of grapes according to the standards of organic principles. Students will develop competences about specifics of conversion, certification and organic grapes growing according to the ruling Law and By-laws in the Republic of Macedonia. | | | | |
| 11. | **Content of the course programme**:<br>***Lectures***: (1) Introduction of the principles of growing organic grapes; (2) Legal status of organic grapes production; (3) Influence of organic growing principles on environment; (4) Standards and law in organic grapes production; (5) Conversion procedures in organic grapes growing; (6) Multi functionality of organic grapes growing; (7) Growing techniques and plant protection in organic grapes production; (8) Vine nutrition according to organic growing principles; (9) Bio pesticides and bio fertilizers in organic grapes growing; (10) Integral methods for protection in organic grapes production; (11) Certification in organic grapes growing; (12) Methods for development of organic grapes growing.<br>***Practices***: (1) Specifics of growing techniques in organic farming; (2) Pre-conditions for establishing organic grapes production; (3) Specifics in terrain preparation for organic grapes production; (4) Guidelines of organic grapes production; (5) Planting material and cultivars; (6) Conversion from conventional into organic grapes growing; (7) Training systems; (8) Specifics in growing table grapes cultivars; (9) Specifics in growing wine | | | | |

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| | grapes cultivars; (11) Specifics of plant protection in organic grapes growing; (12) Visit to organic grapes production farm. | | | |
| 12. | **Methods of study**:<br>Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams. | | | |
| 13. | **Total amount of available time** | | 120 hours | |
| 14. | **Distribution of the available time** | | 2+1+1 | |
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 1 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 0.5 |
| | | 16.2. | Individual projects | / |
| | | 16.3. | Individual study | 0.5 |

| | | | |
|---|---|---|---|
| 17. | **Forms of assessment** | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 |
| | 17.2. | Project activities (oral and written presentation) | 50 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | |
|---|---|---|---|
| 18. | **Criteria for assessment (points / grade)** | up to 50 points | 5 (five) (F) |
| | | from 51 to 60 points | 6 (six) (E) |
| | | from 61 to 70 points | 7 (seven) (D) |
| | | from 71 to 80 points | 8 (eight) (C) |
| | | from 81 to 90 points | 9 (nine) (B) |
| | | from 91 to 100 points | 10(ten) (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% success level on all pre-exam activities | |
| 20. | **Language in which classes are conducted** | Macedonian | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | |

22. **Literature**

***Compulsory literature***

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 22.1. 1. | Expert group of Ministry of agriculture, forestry and water management, Republic of Macedonia | Guidelines for organic production | Ministry of agriculture, forestry and water management | 2008 |
| 2. | IFOAM | Basic standards organic production and processing | Overall Assembly of IFOAM, Basel Swiss | 2006 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 3. | Nic Lampin et all. | Manual to guide the organic farms OP | Government of the Republic of Macedonia, Project for translate of 500 books | 2009 |
| | | | | | | |
| | 22.2. | ***Additional literature*** | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | Vasko Zlatkovski | Guides for organic grapes production | Ministry of agriculture, forestry and water management | 2005 |
| | | 2. | Borivoj Šarapatka, Jiri Urban et.al. | Organic agriculture | Ministry of Agriculture of the Czech Republic | 2009 |
| | | 3. | | | | |

LIST OF UNIVERSITY COURSES (**Second cycle s**tudies, Faculty of Agriculture**)**

| **Appendix No 3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | Promotion | | | |
| 2. | Course Code | UGD200312 | | | |
| 3. | Study programme | | | | |
| 4. | Organizer of the study programme (unit, institute, department, section) | Faculty of Economics | | | |
| 5. | Level of Cycle of studies (I, II, III cycle) | II cycle of studies | | | |
| 6. | Academic year / term | | 7. | ECTS credits | 6 |
| 8. | Professor | Prof. Riste Temjanovski, PhD | | | |
| 9. | Preconditions of the course enrollment | | | | |
| 10. | Goals of the course programme:<br>Students are familiar with the meaning, usage, use of promotion | | | | |
| 11. | Content of the course:<br>In contemporary economic science study of promotion becomes necessary and imperative in contemporary work. The purpose of the programme is available in a clear and acceptable way to meet the needs and application of this element of the marketing mix through the study of the process of marketing communication, the forms of promotional activities, i.e individual specifics of economic promotion, personal selling, sales promotion and publicity and public relations. | | | | |
| 12. | Methods of study | | | | |
| 13. | Total amount of available time | 156 | | | |
| 14. | Distribution of the available time | 2+2+1 | | | |
| 15. | Forms of teaching activities | 15.1. | Teaching-theoretical lectures | 2 | |
| | | 15.2. | Practical (laboratorial, | 2 | |

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|---|---|---|---|---|
| | | | auditorium), seminars, team working | |
| 16. | Other forms of activities | 16.1. | Learning of teaching material | 1 |
| | | 16.2. | Preparation for practical | |
| | | 16.3. | Consultations | |

| | | | |
|---|---|---|---|
| 17. | Forms of assessment | | |
| | 17.1. | Tests& mid-term tests | |
| | 17.2. | Seminar work/ project ( presentation: written and oral) | 10 scores |
| | 17.3. | Active role &activity and participation | 20 scores |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points / grade) | under 50 scores | 5 (five) (F) |
| | | from 51 to 60scores | 6 (six) (E) |
| | | from 61 to70 scores | 7 (seven) (D) |
| | | from 71 to 80 scores | 8 (eight) (C) |
| | | from 81 to 90 scores | 9 (nine) (B) |
| | | from 91 to 100scores | 10 (ten) (A) |
| 19. | Precondition for getting a signature and taking the final exam | Success of 60% of the colloquiums and the final exam | |
| 20. | Language in which classes are conducted | Macedonian, English | |
| 21. | Method of monitoring the quality of instruction | Self evaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Literature | | | | | |
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal number | Author | Title | Publisher | year |
| | | 1. | Jakovski B, Jovanovska - Ristovska S. | Marketing | EF | 2004 |
| | | 2. | Jakovski B, Ciuniva-Suleska A. | Marketing management | EF | 2004 |
| | | 3. | | | | |
| | 22.2. | Additional literature | | | | |
| | | Ordinal number | Author | Title | Publisher | Year |
| | | 1. | Kotler &Armstrong | Principles of marketing, eight edition | Prentice-Hall international | 1999 |
| | | 2. | Philip Kotler, Gary Armstrong, Jon | Principles of Marketing | Pearson Education | 2003 |

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|---|---|---|---|---|---|---|
| | | | Saunders, Veronica Wong | | | |
| | | 3. | | | | |

| **Appendix No 3** | **Syllabus for the first, second and third cycle of study** | | | | | |
|---|---|---|---|---|---|---|
| 1. | Course title | **Organizational behavior** | | | | |
| 2. | Course code | UGD200412 | | | | |
| 3. | Study programme | Management and Entrepreneurship | | | | |
| 4. | Organizer of the study programme (unit, institute, department, section) | Faculty of Economics | | | | |
| 5. | Level of studies (I, II, III cycle) | I cycle of studies | | | | |
| 6. | Academic year / term | | 7. | ECTS credits | 6 | |
| 8. | Professor | Prof. Trajko Miceski, Ph.D. | | | | |
| 9. | Preconditions for course enrollment | | | | | |
| 10. | Goals of the course programme:<br>The aim of this course is to help students in understanding the behavior of the people in the today's complex organizations. The syllabus of this course mainly focuses its attention to the following questions: the man as an individual, motivation, groups and behavior of groups, leadership theories, authority, power, politics, culture and organizational changes | | | | | |
| 11. | Content of the course:<br>Introduction; Organizational behavior in a global context, Behavior of the individual; Organizational behaviour and the organization; Groups in the organization; Motivation; Power, The individual and the organization; Leadership; The nature of the organizational behavior. | | | | | |
| 12. | Methods of study | | | | | |
| 13. | Total amount of available time | 156 | | | | |
| 14. | Distribution of the available time | 2+2+1 | | | | |
| 15. | Forms of teaching activities | 15.1. | Teaching-theoretical lectures | 2 | | |
| | | 15.2. | Practical (laboratorial, auditorium), seminars, team working | 2 | | |
| 16. | Other forms of activities | 16.1. | Learning of teaching material | 1 | | |
| | | 16.2. | Preparation for practical | | | |
| | | 16.3. | Consultations | | | |
| 17. | Forms of assessment | | | | | |
| | 17.1. | Tests&mid-term tests | 60 scores | | | |
| | 17.2. | Seminar work/ project ( presentation: written and oral) | 20 scores | | | |
| | 17.3. | Active role &activity and participation | 20 scores | | | |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points/ grade) | under 50 scores | 5 (five) (F) |
| | | from 51 to 60scores | 6 (six) (E) |
| | | from 61 to70 scores | 7 (seven) (D) |
| | | from 71 to 80 scores | 8 (eight) (C) |
| | | from 81 to 90 scores | 9 (nine) (B) |
| | | from 91 to 100scores | 10 (ten) (A) |
| 19. | Precondition for getting a signature and taking the final exam | Success of 60% of the colloquiums and the final exam | |
| 20. | Language in which classes are conducted | Macedonian, English | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Literature | | | | | |
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal number | Author | Title | Publisher | year |
| | | 1. | prof. Ljubomir Drakulevski | Leadership-base for effective strategic management | Faculty of Economics, Skopje | 1999 |
| | | 2. | | | | |
| | | 3. | | | | |
| | 22.2. | Additional literature | | | | |
| | | Ordinal number | Author | Title | Publisher | Year |
| | | 1. | Kinicki, Angelo, Robert Kreitner | Organizational Behavior, key conncepts, skills & best practices | McGraw-Hill, Irwin, Hightstown | 2006 |
| | | 2. | Roobbins, Stephen P. | Bitni elementi organizacsikog ponasanja | MATE, Zagreb | 1995 |
| | | 3. | | | | |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | |
|---|---|---|
| **1.** | **Course** title | **Applied Electrical Engineering** |
| **2.** | **Code** | UGD200512 |
| **3.** | **Study Programme** | |
| **4.** | **Organizer** of the study programme (**unit** or institute**, Faculty,** department**)** | University Goce Delcev<br>Faculty of Electrical Engineering |

| | | | | | | |
|---|---|---|---|---|---|---|
| **5.** | **Level of study (**first**, second and third** cycle**)** | Second cycle | | | | |
| **6.** | **Academic year / semester** | Second / third semester | **7.** | **Number of credits** | 6 | |
| **8.** | **Professor (s)** | Assistant Professor Vasilija Sarac, PhD | | | | |
| **9.** | **Preconditions for course enrollment** | Obtained 180 or 240 ECTS credits | | | | |
| **10.** | **Goals of the courseprogramme:**<br>Enhancement of knowledge in applied electrical engineering in manufacturing and technological process and its apply in modern electrical appliances and devices. | | | | | |
| **11.** | **Content** of the course programme**:**<br>Electric potential. Voltage. Modern measurement instruments for electrical variables measurement. Methods for measurement of electrical parameters. Power converters, basic principles of operation of devices for conversion of electrical energy parameters. Construction of electrical installations and electrical lighting. Electrical devices and appliances. Basic principles of transformer operation, dc and ac machines. Regulation in industrial processes. Usage of microprocessor based devices in control and regulation of technological processes. Usage of power converters in modern controlled industrial processes. Usage of special electrical machines in industrial processes. | | | | | |
| 12. | **Methods of study:**<br>– Lectures, practical exercises, seminar work | | | | | |
| **13.** | **Total amount of** available time | 156 | | | | |
| **14.** | **Distribution of the** available time | **2+2+1** | | | | |
| **15.** | **Forms of** teaching activities | **15.1.** | lectures / theoretical **- contact teaching, e-teaching** | 2 hours | | |
| | | **15.2.** | theoretical and practical exercises,<br>e-exams, preparation of independent seminar work | 2 hours | | |
| **16.** | **Other forms of activities** | **16.1.** | **Project tasks** | **1 hours** | | |
| | | **16.2.** | **Individual** tasks | **hours** | | |
| | | **16.3.** | **Home** learning | **hours** | | |
| **17.** | **Forms of assessment** | | | | | |
| | **17.1.** | **Tests / oral exams** | | **30 points** | | |
| | **17.2.** | **Seminars (**paper / project - **presentation:** written and/or oral**)** | | **50 points** | | |
| | **17.3.** | **Activity** and participation | | **20 points** | | |
| **18.** | Criteria **for assessment** (**points** / grade**)** | **up** 50 points | **5** | **(five)** | **(F)** | |
| | | **51 to** 60 points | **6** | **(six)** | **(E)** | |
| | | **61 to** 70 points | **7** | **(seven)** | **(D)** | |
| | | **71 to** 80 points | **8** | **(eight)** | **(C)** | |
| | | **81 to** 90 points | **9** | **(nine)** | **(B)** | |
| | | **91 to** 100 points | **10** | **(ten)** | **(A)** | |

| | | |
|---|---|---|
| **19.** | **Precondition for getting a signature and taking the final exam** | **Obtained minimum 42 points from midterms, seminar work and attending to lectures and practical exercises** |
| **20.** | **Language** in which classes are conducted | **Macedonian** |
| **21.** | **Method** of monitoring the quality of teaching | **Self- evaluation and evaluation** |

| **22.** | **Literature** | | | | | |
|---|---|---|---|---|---|---|
| | **22.1.** | **Compulsory** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | George Haberl | Switching, Protection and Distribution in Low- Voltage Networks | Publicis MCD Verlag | 1994 |
| | | **2.** | M. Zadar | Arhitektura upravljackih microracunala i njijovo povezivanje s okolinom | Skolska kniga | 2002 |
| | | **3.** | W. Shepherd, Li. Zhang | Power Converter Circuits | Marcel Dekker Inc | 2004 |
| | **22.2.** | **Additional** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | R. Firoozian | Servo Motors and Industrial Control Theory | Springer | 2009 |
| | | **2.** | | | | |
| | | **3.** | | | | |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **Agroecology** | | | |
| 2. | Course code | UGD200612 | | | |
| 3. | Study programme | University selective courses | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip, | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second / III | 7. | Number of ECTS credits | 8 |
| 8. | Professor | Prof. Liljana Koleva-Gudeva, PhD | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme:<br>Acquisition of theoretical and practical knowledge of life processes and throughout the life cycle of plants depending on environmental conditions. Research in the field of eco physiology connects the living conditions and the ability of plants depending on environmental conditions, through positive and negative impacts. | | | | |
| 11. | Content of the course programme:<br>Content of the lectures**:** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 1. Introduction to agroecology. 2 Notion of aerosphere, agrobiotope, agrobiocenose. 3 Key Features of crop production. 4 General rules in various activities of environmental factors - biotic and abiotic. 5 Measures for rational use of solar energy. 6 Autonomic space. 7 Water as agro-environment factor. 8 Physiology of stress. 9 Global climatological changes. 10 Global warming. 11 Emissions. 12 Effect of "Glass Valley".<br>Content of exercises (**practical** and laboratory**):**<br>1. Providing optimal index plate surface. 2 Utilization of production area. 3 Laws of returns. 4 Methods for assessment of humidity / acidification of climate in agriculture. 5 Determination of temperature thresholds for the beginning and end of vegetation. 6 The impact of climate change on agro ecosystems. 7 Resistance of plants to different stress factors. 8 Analysis of agro-ecological factors at the farm level. 9 Standards for sustainable agricultural production. 10 Sustainable agro ecosystems - organic farming. 11 Field exercise. 12 Presentation of papers. | | | | |
| 12. | Methods of study:<br>Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam. | | | | |
| 13. | Total amount of available time | | 156 hours | | |
| 14. | Distribution of the available time | | 2 + 2 + 1 | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | | 2 |
| 16. | Other forms of activities | 16.1. | Team projects | | |
| | | 16.2. | Individual projects | | 1 |
| | | 16.3. | Individual study | | |
| 17. | Forms of assessment | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | | 50 |
| | 17.3. | Other forms of studying activities | | | 20 |
| 18. | Criteria for assessment (points / grade) | | to 50 points | | 5 (five) (F) |
| | | | from 51 to 60 points | | 6 (six) (E) |
| | | | from 61 to 70 points | | 7 (seven) (D) |
| | | | from 71 to 80 points | | 8 (eight) (C) |
| | | | from 81 to 90 points | | 9 (nine) (B) |
| | | | from 91 to 100 points | | 10 (ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | | 60% of term activities, project activities and attending to lectures and discussions | | |
| 20. | Language in which classes are conducted | | Macedonian | | |
| 21. | Method of monitoring the quality of instruction | | Self-evaluation | | |
| 22. | Literature | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 22.1. | Compulsory literature | | | | |
| | Ordinal No. | Author | Title | Publisher | Year |
| | 1. | Liljana Koleva Gudeva | Plant Physiology | UGD - Stip | 2010 |
| | 2. | Liljana Koleva Gudeva | Agro ecology ppt presentation unpublished lessons | UGD, Stip | 2010 |
| 22.2. | Additional literature | | | | |

| | | Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|---|---|
| | | 1. | Volter Larcer | Plant Eco Physiology | Government Project – translation of 500 scientific books | 2009 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | **Course title** | **Organic production** | | | |
| 2. | **Course code** | **UGD200712** | | | |
| 3. | **Study programme** | | | | |
| 4. | **Organizer of the study programme (faculty, institute, group)** | University choose subject, Faculty of Agriculture, University "Goce Delcev"- Stip, Department of Plant production | | | |
| 5. | **Level (first, second, third cycle)** | Second cycle | | | |
| 6. | **Academic year / semester** | Second year/ third semester | 7. | Number of ECTS credits | 6 |
| 8. | **Professor** | Prof. Ljupcho Mihajlov, PhD, Prof. Verica Ilieva, PhD | | | |
| 9. | **Preconditions for course enrollment** | No | | | |
| 10. | **Goals of the course programme**: Students gain knowledge and skills for application of techniques for organic production. They gain skills for specifics conversion, certification and organic production of field crops based on law and current regulations in the Republic of Macedonia. | | | | |
| 11. | **Content of the course programme**:<br>***Lectures***: 1. Introduction in organic production; 2. Low statute for organic method of plant production; 3. Impact of organic production on the outer environment, 4. Standards and regulations for the production of organic food; 5. Process of conversion to organic production; 6. Multi functionality of organic production; 7. Agro technique and protection in organic production; 8. Crops nutrition under methods for organic production; 9. Bio pesticides and fertilizer allowed in organic crops production; 10. Integral methods for protection of crops in organic production; 11. Ccertification in organic production; 12. Methods for development of organic production.<br>***Practices***: 1. Specifics in basic agro-technical measures in organic production; 2. Ways for preparation of projects related to organic production; 3. Guide for organic production of soybeans; 4. Guide for organic production of potato; 5. Guide for organic production of cabbage; 6. Guide for organic production of alfalfa; 7. Utilization the symbiotic azotofixation in organic production; 8. Conversion of conventional to organic production; 9. Prerequisites that must meet the seeds for organic production of various crops; 10. Specifics in protection for organic production; 11. Specifics for fertilization in organic production; 12. Visit an organic farm. | | | | |
| 12. | **Methods of study**:<br>Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams. | | | | |
| 13. | **Total amount of available time** | 156 hours | | | |
| 14. | **Distribution of the available time** | 2+2+1 | | | |

| | | | | |
|---|---|---|---|---|
| 15. | **Forms of teaching activities** | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 |
| 16. | **Other forms of activities** | 16.1. | Team projects | 1 |
| | | 16.2. | Individual projects | / |
| | | 16.3. | Individual study | / |

| | | | |
|---|---|---|---|
| 17. | **Forms of assessment** | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | 30 |
| | 17.2. | Project activities (oral and written presentation) | 50 |
| | 17.3. | Other forms of studying activities | 20 |

| | | | |
|---|---|---|---|
| 18. | **Criteria for assessment (points / grade)** | up to 50 points | 5 (five) (F) |
| | | from 51 to 60 points | 6 (six) (E) |
| | | from 61 to 70 points | 7 (seven) (D) |
| | | from 71 to 80 points | 8 (eight) (C) |
| | | from 81 to 90 points | 9 (nine) (B) |
| | | from 91 to 100 points | 10 (ten) (A) |
| 19. | **Condition for getting a signature and taking the final exam** | 60% success level on all pre-exam activities | |
| 20. | **Language in which classes are conducted** | Macedonian | |
| 21. | **Method of monitoring the quality of instruction** | Self-evaluation | |

22. **Literature**

***Compulsory literature***

| | Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|---|
| 22.1. | 1. | Expert Group on Ministry of Agriculture Forestry and Water Economy Republic of Macedonia | Quinines for organic production | Ministry of Agriculture Forestry and Water Economy R. of Macedonia | 2008 |
| | 2. | Veladžič M, Čaklavica F. Fejzič N. | Food organic production | IK >>Liljan<< Sarajevo | 2003 |
| | 3. | Nic Lampin et all. | Manual to guide organic farms OP | Government of R. of Macedonia. Project translate on 500 books. | 2009 |
| | 4 | | | | |

***Additional literature***

| | Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|---|
| 22.2. | 1. | Ljupcho Mihajlov | Guide for organic production of soybeans | University Goce Delchev - Stip | 2011 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 2. | Borivoj Šarapatka, Jiri Urban et.al. | Organic agriculture | Ministry of Agriculture of the Czech Republic | 2009 |
| | | 3. | Franc and Martina Bavec | Organic production and utilization of crops | Government of Republic of Macedonia. Project translate on 500 books | 2009 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | Copyright and Related Rights | | | |
| 2. | Course code | UGD201012 | | | |
| 3. | Study programme | University selective coures | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip, | | | |
| 5. | Level (first, second, third cycle) | Second cycle | | | |
| 6. | Academic year / semester | Second / III | 7. | Number of ECTS credits | 6 |
| 8. | Professor | Prof. Vojo Belovski, PhD | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course porgramme:<br>The purpose of this study programme is to familiarize students with the basic tools copyright and smaller segment of intellectual property rights - industrial property. To see primarily the role that this discipline has in modern conditions of trade operations. After overcoming These thematic units, students will be able to locate problems this matter, both give the same proposed solutions. Given the attractiveness of this discipline in terms of property rights, the focus will be on the protection of copyright, and sanctions for violations of these rights. | | | | |
| 11. | Content of the course:<br>PART. CONCEPT, DEVELOPMENT AND SOURCES OF COPYRIGHT<br>I. Definition of intellectual property<br>II. Definition of Copyright<br>III. Meanings of copyright<br>III.1. Copyright in objective terms<br>III.1.1. Relationship with other legal branches<br>III.2. Copyright in subjective terms<br>III.2.1. Relationship with other subjective rights<br>IV. Development of Copyright<br>V. Sources copyright<br>V.1. Constitution<br>V.2. law<br>V.3. International sources of copyright<br>V.3.1. International standards for copyright protection<br>V.3.2. Berne Convention for the Protection of Literary and Artistic Works<br>V.3.3. Universal Copyright Convention<br>V.3.4. Copyright Agreement | | | | |

| | |
|---|---|
| | V.3.5. Convention for the protection of performers, producers of phonograms and broadcasting organizations<br>V.3.6. Convention for the protection of producers of phonograms of illicit Duplication of Their Phonograms<br>V.3.7. Contract interpretation and Phonograms<br>V.3.8. TRIPS<br>V.3.9. EU Regulation<br>PART TWO. COPYRIGHT<br>VI. Author and carrier<br>VI.1. Definition of author<br>VI.2. co<br>VI.3. Bonded parts<br>VI.4. The copyright holder<br>VII. Subjectively copyright<br>VII.1. Personally legal powers<br>VII.2. Property and legal powers<br>VII.2.1. Using the work in physical form<br>VII.2.2. Using the work in the form beztelesna<br>VII.3. Other powers<br>VII.3.1. Access to a copy of the work<br>VII.3.2. Right of resale<br>VII.3.3. Right of priority processing of architectural work<br>VII.3.4. Right to fair compensation for audio or visual recording and pho ¬ tokopiranje the copyrighted work<br>VII.4. Limitation of subjective right Author<br>VII.4.1. statutory licenses<br>VII.4.2. permitted use<br>VII.5. Battery subjective Copyright<br>VIII. copyright Case<br>VIII.1. Definition of copyrighted work<br>VIII.2. Legal Terms of copyright protection act<br>VIII.3. Title of the copyrighted work<br>VIII.4. Types of works<br>VIII.4.1. voice works<br>VIII.4.2. Theatre works<br>VIII.4.3. musical works<br>VIII.4.4. films<br>VIII.4.5. Works of fine and applied art<br>VIII.4.6. computer Programme<br>VIII.4.7. Copyrighted work from employment<br>IX. Turnover of copyright<br>IX.1. Translativen and constitutional transfer IX.2. Turnover of copyright on contract<br>IX.2.1. Definition of copyright agreement<br>IX.2.2. Principles, form and interpretation of copyright contracts<br>IX.2.3. Named copyright agreements<br>IX.2.3.1. publishing agreement<br>IX.2.3.2. Contract Ordinal of copyrighted work<br>IX.2.3.3. Contract to perform the copyrighted work<br>IX.2.3.4. Agreement for film work<br>IX.2.3.5. Contract processing of copyrighted work |

| | | | | | |
|---|---|---|---|---|---|
| | IX.2.3.6. License Agreement<br>IX.3. Inheritance of Copyright<br>PART THREE. Of copyright<br>X. Individual exercise of rights<br>XI. Of rights<br>XI.1. Organizations for collective administration of rights<br>XI.1.1. Status, and establishing prestanik organizations<br>XI.1.2. Agreements concluded that organizations are<br>XI.1.3. Control of Organizations<br>XI.2. international cooperation<br>PART FOUR. RELATED RIGHTS<br>XII. Definition of Related Rights<br>XIII. Rights of performers<br>XIV. Rights of producers of phonograms<br>XV. Rights of producers of video grams<br>XVI. Rights of producers of shows<br>XVII. Rights of producers of databases<br>XVIII. Broadcaster works via satellite<br>PART FIVE. PROTECTION OF COPYRIGHT AND RELATED RIGHTS<br>XIX. Violation of Rights<br>XIX.1. immediate injury<br>XIX.2. indirect injury<br>XX. Civil Remedies<br>XX.1. Plaintiff and defendant<br>XX.2. claims<br>XX.2.1. Determination of injury<br>XX.2.2. Termination of injury<br>XX.2.3. Destroying objects<br>XX.2.4. Announcement of verdict<br>XX.2.5. Compensation<br>XX.2.5.1. civil penalty<br>XXI. Administrative Remedies<br>XXI.1. BOrdinal measures<br>XXII. Criminal justice | | | | |
| 12. | Methods of study:<br>Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam. | | | | |
| 13. | Total amount of available time | | 216 hours | | |
| 14. | Distribution of the available time | | 2 + 2 + 1 | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | | 2 |
| | | 15.2. | Exercises (auditorial), teamwork | | 2 |
| 16. | Other forms of activities | 16.1. | Team projects | | |
| | | 16.2. | Individual projects | | 1 |
| | | 16.3. | Individual study | | |
| 17. | Forms of assessment | | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | | 50 |
| | 17.3. | Other forms of studying activities | | | 20 |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points / grade) | to 50 points | 5 (five) (F) |
| | | from 51 to 60 points | 6 (six) (E) |
| | | from 61 to 70 points | 7 (seven) (D) |
| | | from 71 to 80 points | 8 (eight) (C) |
| | | from 81 to 90 points | 9 (nine) (B) |
| | | from 91 to 100 points | 10 (ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | 60% of term activities, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | Macedonian, English | |
| 21. | Method of monitoring the quality of instruction | Self-evaluation | |

22. Literature

22.1. Compulsory literature

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Professor. Dr.. Jadranka Dabovic-Anastasovska and Doc. Dr. Valentin Pepeljugovski | Copyright | Faculty of law "Justinian I "-Skopje | 2006 |

22.2. Additional literature (Laws)

| Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Law on Copyright Law and related laws | | | 1996,and changes (1998,2002) |
| 2. | Law on Industrial property | | | 2002 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | | | |
|---|---|---|---|---|
| 1. | Course title | International Criminal Law | | |
| 2. | Course code | UGD201212 | | |
| 3. | Study programme | University selective coures | | |
| 4. | Organizer of the study programme (faculty, institute, group) | University “Goce Delcev”- Stip, | | |
| 5. | Level (first, second, third cycle) | Second cycle | | |
| 6. | Academic year / semester | Second / III | 7. | Number of ECTS credits: 6 |
| 8. | Professor | Prof. Todor Vitlarov, PhD | | |
| 9. | Preconditions for course enrollment | No | | |

| | | | | |
|---|---|---|---|---|
| 10. | Goals of the course programme | | | |
| 11. | Content of the course:<br>First-week -term, subject to IPC, repressive vlasst the state,<br>Second week-limits jurisdiction state and types of international cooperation,<br>Third-week international legal assistance exchange of information notices prakugranichno observation, controlled delivery, using undercover agents,<br>Fourth-week joint investigation teams interception test by telephone and videoconference conference, confiscation<br>The five-week download and transfer of prosecution Ecstadiction<br>Six weeks-execution of criminal judgments and transfer of inmate<br>Seventh-week Asylum<br>Eight-week international police cooperation and basic features of international offenses<br>Nine-week Genocit, Torture asparticular crime and aggression<br>Tenth-week international terrorism ascrime and war crimes<br>Eleventh-week International criminal courts. Nuremberg Tribunal and Tokiski. Hague war crimes tribunal in the former<br>Twelve-week Permanent International Criminal Court (the Rome Statute) | | | |
| 12. | Methods of study:<br>Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam. | | | |
| 13. | Total amount of available time | | 156 hours | |
| 14. | Distribution of the available time | | 2 + 2 + 1 | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theoretical training | 2 |
| | | 15.2. | Exercises (laboratory, auditory), workshops, outreach and teamwork | 2 |
| 16. | Other forms of activities | 16.1. | Team projects | |
| | | 16.2. | Individual projects | 1 |
| | | 16.3. | Individual study | |
| 17. | Forms of assessment | | | |
| | 17.1. | Exams (midterm exams, exam, electronic testing) | | 30 |
| | 17.2. | Project activities (oral and written presentation) | | 50 |
| | 17.3. | Other forms of studying activities | | 20 |
| 18. | Criteria for assessment (points / grade) | | to 50 points | 5 (five) (F) |
| | | | from 51 to 60 points | 6 (six) (E) |
| | | | from 61 to 70 points | 7 (seven) (D) |
| | | | from 71 to 80 points | 8 (eight) (C) |
| | | | from 81 to 90 points | 9 (nine) (B) |
| | | | from 91 to 100 points | 10 (ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | | 60% of term activities, project activities and attending to lectures and discussions | |
| 20. | Language in which classes are conducted | | Macedonian, English | |
| 21. | Method of monitoring the quality of instruction | | Self-evaluation | |
| 22. | Literature | | | |
| | 22.1. | Compulsory literature | | |

| | | Ordinal No. | Author | Title | Publisher | Year |
|---|---|---|---|---|---|---|
| | | 1. | V. Kambovski | International criminal law | Prosvetno delo Skopje | 1998 |
| | | 2. | A. Kaseze | International criminal Law | Prosvetno delo Skopje | 2009 |
| | | 3. | | Law for international cooperation criminal matter, Official Journal br.124/2010 | | |
| | | | | | | |
| | 22.2. | Additional literature (Laws) | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | | | | |

| **Appendix No. 3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Course title | **Finite Element Method** | | | |
| 2. | Course code | | | | |
| 3. | Study programme | | | | |
| 4. | Organizer of the study programme (faculty, institute, group) | | | | |
| 5. | Level (first, second, or third study cycle) | Second cycle | | | |
| 6. | Academic year / semester | | 7. | Number of ECTS credits | |
| 8. | Professor | Assoc. Professor Gicev Vlado, PhD/ Professor Jordan Zivanovik, PhD | | | |
| 9. | Preconditions for course enrollment | No | | | |
| 10. | Goals of the course programme:<br>Able for scientific research | | | | |
| 11. | Content of the course programme:<br>- Variation formulation. Aproximate methods.<br>- Direct method. Residual method. Accuracy and convergence.<br>- Finite elements and interpolation functions. Lagrange and Hermitian polinoms. Serendipity elements.<br>- Natural coordinates.<br>- Interpolation functions for some elements in natural coordinate system.<br>- Curvilinear finite elements<br>- Isoparametric elements. Numerical quadrature.<br>- 2-D and 3-D problems.<br>- Axial symmetric problems. | | | | |
| 12. | Methods of study: Lectures, Discussions, Labs, Numerical exercises, e-learning, individual and team projects, office hours. | | | | |
| 13. | Total amount of available time | 156 hours | | | |
| 14. | Distribution of the available time | 24 hours-lectures; 36 hours-discussions; 96 hours other forms of activities | | | |

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|---|---|---|---|---|
| 15. | Forms of the lecturing activities | 15.1. | Lectures | 24 hours |
| | | 15.2. | Discussions (auditorial, numerical exercises) | 36 hours |
| 16. | Other forms of activities | 16.1. | Team and individual projects | 48 hours |
| | | 16.2. | Office hours and e-learning | 12 hours |
| | | 16.3. | Individual study | 36 hours |

| | | | |
|---|---|---|---|
| 17. | Forms of assessment | | |
| | 17.1. | Mid-term and Final exams | 30 points |
| | 17.2. | Project activities (oral and written presentation) | 50 points |
| | 17.3. | Active contribution in lectures and labs | 20 points |

| | | | |
|---|---|---|---|
| 18. | Criteria for assessment (points / grade) | Up to 50 points | 5 (five) (F) |
| | | from 51 to 60 points | 6 (six) (E) |
| | | from 61 to 70 points | 7 (seven) (D) |
| | | from 71 to 80 points | 8 (eight) (C) |
| | | from 81 to 90 points | 9 (nine) (B) |
| | | from 91 to 100 points | 10 (ten) (A) |
| 19. | Condition for getting a signature and taking the final exam | none | |
| 20. | Language in which classes are conducted | Macedonian | |
| 21. | Method of monitoring the quality of instruction | Selfevaluation | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Literature | | | | | |
| | 22.1. | Compulsory literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | R.D. Cook, D.S. Malkus, M.E. Plesha, R.J.Witt | Concepts and applications of Finite Element Analysis | John Wiley & Sons Inc | 2001 |
| | 22.2 | Additional Literature | | | | |
| | | Ordinal No. | Author | Title | Publisher | Year |
| | | 1. | K-J. Bathe | Finite Element Procedures | Prentice Hall | 1995 |

| **Appendix No.3** | **Syllabus for the first, second and third cycle of study** | |
|---|---|---|
| **1.** | **Title of the Course** | Applied Data Analysis |
| **2.** | **Code** | |
| **3.** | **Study Programme** | All study programmes on second cycle studies at the University “Goce Delcev” |
| **4.** | **Organizer** of the study programme (**unit** or institute**, Faculty,** department**)** | University “Goce Delcev” - Stip |

| | | | | | |
|---|---|---|---|---|---|
| **5.** | **Level of studies (**first**, second and third** cycle**)** | Second cycle | | | |
| **6.** | **Academic year / semester** | 2012/2013 / III | **7.** | **Number of credits** | 6 |
| **8.** | **Professor (s)** | Prof. Tatjana Atanasova Pacemska, PhD | | | |
| **9.** | **Preconditions** for course enrollment | / | | | |
| **10.** | **Goals of the course programme:**<br>Students on the second cycle studies will be enabled to plan and implement the applied research, and for using of the results of specific operational problems and making decisions. They will be able to use the software package SPSS (or other, depending on the needs) applied for data analysis based on the methods of mathematical statistics. Students will gain research skills and knowledge about interpretation of the results of studies that will prepare them for a successful preparation of the master thesis. | | | | |
| **11.** | **Content** of the course programme**:**<br>• Usually versus applied research (definition, goals, ways of implementation, the process of research ...)<br>• Statistics - collection, classification and presentation of data<br>• Random variables, types of random variables<br>• Statistics sampling distributions<br>• Data analysis<br>• Descriptive Statistics<br>• Hypotheses testing – parametric and nonparametric tests<br>• Linear and nonlinear regression<br>• Analysis of variance (ANOVA)<br>• Experimental design<br>• Case studies (examples in the programme SPSS, Excel, Mathematica according to the needs of the profession) | | | | |
| 12. | **Methods of study:**<br>– Lectures,<br>– e-learning,<br>– individual and team projects<br>– Consultations. | | | | |
| **13.** | **Total** available time | 156 | | | |
| **14.** | **Distribution of** available time | 2+2+1 | | | |
| **15.** | **Forms of** teaching activities | **15.1.** | lectures / theoretical **- contact teaching, e-teaching** | | **2** |

| | | | | |
|---|---|---|---|---|
| | | **15.2.** | theoretical and practical exercises, e-exams, preparation of independent seminar work | **2** |
| **16.** | **Other forms of sctivities** | **16.1.** | **Project tasks** | **1** |
| | | **16.2.** | **Individual** tasks | |
| | | **16.3.** | **Home** learning | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **17.** | **Forms of assessment** | | | | | |
| | **17.1.** | **Project task** | | | | **30 points** |
| | **17.2.** | **Seminars (**paper / project - **presentation:** written and/or oral**)** | | | | **50 points** |
| | **17.3.** | **Activity** and participation | | | | **20 points** |
| **18.** | **Criteria for assessment** (**points** / grade**)** | | **up** 50 points | **5** | **(five)** | **(F)** |
| | | | **51 to** 60 points | **6** | **(six)** | **(E)** |
| | | | **61 to** 70 points | **7** | **(seven)** | **(D)** |
| | | | **71 to** 80 points | **8** | **(eight)** | **(C)** |
| | | | **81 to** 90 points | **9** | **(nine)** | **(B)** |
| | | | **91 to** 100 points | **10** | **(ten)** | **(A)** |
| **19.** | **Condition for getting a signature and taking the final exam** | | 60% of pre - exam activities | | | |
| **20.** | **Language** in which classes are conducted | | Macedonian | | | |
| **21.** | **Method** of monitoring the quality of teaching | | Self-evaluation, external evaluation | | | |

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|---|---|---|---|---|---|---|
| **22.** | **Literature** | | | | | |
| | **22.1.** | **Compulsory** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | 1. | Forthofer, R.N., Lee, E.S. | Introduction to Biostatistics: A Guide to Design, Analysis and Discovery | Academic Press, London | 1995 |
| | | **2.** | Soldik-Aleksik J. | Primenjena analiza podataka | Ekonomski Fakultet-Beograd | 2011 |
| | | **3.** | Njubold, P., Karlson L.V., Torn B. | Statistika za biznis I ekonomija | Magor – 1000 prevodi od vlada na RM | 2010 |
| | **22.2.** | **Additional** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | 1. | Montgomery, D.C. | Design and Analysis of Experiments | John Wiley and Sons | 2001 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Inc., New York | |
| | | **2.** | | | | |
| | | **3.** | | | | |

| **Appendix No.3** | **Programme of the Course** - **second** cycle studies | | | | |
|---|---|---|---|---|---|
| **1.** | **Title of the Course** | **Industrial Engineering** | | | |
| **2.** | **Code** | **UGD203112** | | | |
| **3.** | **Study Programme** | Mining, Logistics, Environmental Engineering, Architecture and Design | | | |
| **4.** | **Organizer** of the study programme (**unit** or institute**, Faculty,** department**)** | University Goce Delcev<br>Faculty of Natural and technical sciences<br>Department of mining, Departments of Logistics, Environmental Engineering, Architecture and Design | | | |
| **5.** | **Cycle (**first**, second and third** cycle**)** | Second cycle | | | |
| **6.** | **Academic year / semester** | I/II | **7.** | **Number of credits** | 6 |
| **8.** | **Professor (s)** | Prof. Boris Krstev, PhD | | | |
| **9.** | **Preconditions for course enrollment** | | | | |
| **10.** | **Goals of the course programme:**<br>Students learn the anticipated contents or methods used in study programme to investigate and control of the processes, as well as to apply them to solve problems in appropriate conditions. | | | | |
| **11.** | **Content** of the course programme**:**<br>Introduction; Aims and Tasks; Industrial Engineering (unorganic, organic, petrochemical, food, mineral technology, mining, services) etc. | | | | |
| 12. | **Methods of study:** Lectures, laboratory exercises, numerical exercises, e-learning, seminar work, teamwork, project consultation | | | | |
| **13.** | **Total amount of** available time | **120 hours** | | | |
| **14.** | **Distribution of the** available time | **36 lectures + 24** exercises **+ 40 others activities / per week** | | | |
| **15.** | **Forms of** teaching / learning activities | **15.1.** | lectures / theoretical **- contact teaching, e-teaching** | 36 **hours** | |
| | | **15.2.** | theoretical and practical exercises,<br>e-exams, preparation of independent seminar work | 24 **hours** | |
| **16.** | **Other forms of activities** | **16.1.** | **Project tasks** | 24 **hours** | |
| | | **16.2.** | **Individual** tasks | 24 **hours** | |
| | | **16.3.** | **Home** learning | 12 **hours** | |
| **17.** | **Forms of assessment** | | | | |
| | **17.1.** | **Tests / oral exams** | | **70 points** | |
| | **17.2.** | **Seminars (**paper / project - **presentation:** written and/or oral**)** | | **10 points** | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **17.3.** | **Activity** and participation | | | | **20 points** |
| **18.** | Criteria **for assessment** (**points** / grade**)** | | **up** 50 points | **5** | **(five)** | **(F)** |
| | | | **51 to** 60 points | **6** | **(six)** | **(E)** |
| | | | **61 to** 70 points | **7** | **(seven)** | **(D)** |
| | | | **71 to** 80 points | **8** | **(eight)** | **(C)** |
| | | | **81 to** 90 points | **9** | **(nine)** | **(B)** |
| | | | **91 to** 100 points | **10** | **(ten)** | **(A)** |
| **19.** | **Condition for getting a signature and taking the final exam** | | | | | |
| **20.** | **Language** of teaching / study | | **Macedonian** | | | |
| **21.** | **Method** of monitoring the quality of teaching | | **Self-evaluation** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **22.** | **Literature** | | | | | |
| | **22.1.** | **Required** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | BORIS KRSTEV | Industrial Engineering | UGD-Stip | 2012 |
| | | **2.** | | | | |
| | | **3.** | | | | |
| | **22.2.** | **Additional** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | **E-books** | | | |
| | | **2.** | **Internet** | | | |
| | | **3.** | | | | |

| **Appendix No. 3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| **1.** | **Title of the Course** | **Natural resources** | | | |
| **2.** | **Code** | UGD203312 | | | |
| **3.** | **Study Programme** | Geology (University course) | | | |
| **4.** | **Organizer** of the study programme (**unit** or institute**, Faculty,** department**)** | University Goce Delcev<br>Faculty of Natural and Technical Sciences<br>Institute of Geology, Department of Mineral deposits and economic geology | | | |
| **5.** | **Cycle (**first**, second and third** cycle**)** | Second cycle | | | |
| **6.** | **Academic year / semester** | 2 (second) / III (third) | **7.** | **Number of credits** | 6 |
| **8.** | **Professor (s)** | Prof. Todor Serafimovski, PhD (and Prof. Blažo Boev, PhD) | | | |
| **9.** | **Preconditions for course enrollment** | none (elective course) | | | |
| **10.** | **Goals of the course programme:**<br>Study of natural phenomena related to the resources, mainly, of solid and fluid potentials and eventual use as mineral resources, architectural and building stones, thermal and thermo mineral waters etc. | | | | |
| **11.** | **Content** of the course programme**:**<br>1. General features of natural resources<br>2. Regional distribution of natural resources | | | | |

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|---|---|---|---|---|
| | 3. Classification of natural resources<br>4. Types and categories of natural resources<br>5. Natural resources at the territory of the Republic of Macedonia<br>6. Mineral resources as natural resources<br>7. Metallic and non-metallic resources as natural resources<br>8. Architectural and building stone as natural resources<br>9. Solid natural energy resources<br>10. Thermo mineral natural resources<br>11. Geothermal natural resources<br>12. Alternative natural resources | | | |
| 12. | **Methods of study:**<br>– Lectures followed by computer presentations, discussions, simulations, study of practical cases, seminars | | | |
| **13.** | **Total amount of** available time | | 120 hours | |
| **14.** | **Distribution of the** available time | | **40 hours-lectures; 40 hours – practicals, 40 hours of other forms of activities** | |
| **15.** | **Forms of** teaching activities | **15.1.** | lectures / theoretical **- contact teaching, e-teaching** | 40 hours |
| | | **15.2.** | theoretical and practical exercises, e-exams, preparation of independent seminar work | 40 hours |
| **16.** | **Other forms of activities** | **16.1.** | **Project tasks** | **20 hours** |
| | | **16.2.** | **Individual** tasks | **10 hours** |
| | | **16.3.** | **Home** learning | **10 hours** |

| | | | |
|---|---|---|---|
| **17.** | **Forms of assessment** | | |
| | **17.1.** | **Tests / oral exams** | **30 points** |
| | **17.2.** | **Seminars (**paper / project - **presentation:** written and/or oral**)** | **50 points** |
| | **17.3.** | **Activity** and participation | **20 points** |

| | | | | | |
|---|---|---|---|---|---|
| **18.** | Criteria **for assessment** (**points** / grade**)** | **up** 50 points | **5** | **(five)** | **(F)** |
| | | **51 to** 60 points | **6** | **(six)** | **(E)** |
| | | **61 to** 70 points | **7** | **(seven)** | **(D)** |
| | | **71 to** 80 points | **8** | **(eight)** | **(C)** |
| | | **81 to** 90 points | **9** | **(nine)** | **(B)** |
| | | **91 to** 100 points | **10** | **(ten)** | **(A)** |
| **19.** | **Condition for getting a signature and taking the final exam** | **60% success from all pre-final exam activities or 42 points from both mid-term tests, seminar, attendance to lectures and practicals.** | | | |
| **20.** | **Language** in which classes are conducted | **Macedonian** | | | |
| **21.** | **Method** of monitoring the quality of teaching | **Self-evaluation** | | | |

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|---|---|
| **22.** | **Literature** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **Compulsory** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | **22.1.** | 1. | Тодор Серафимовски | Минерални ресурси - 2 | Факултет за природни технички науки, Универзитет "Гоце Делчев"-Штип, 328 стр. | 2011 |
| | | 2. | Боев, Б и Лепиткова, С | Архитектонско градежен камен | Факултет за природни технички науки, Универзитет "Гоце Делчев"-Штип, 181 стр. | 2008 |
| | | **3.** | Gupta, K. H. and Roy, S., | Geothennal Energy: An Alternative Resource for the 21st Century. | Elsevier, Netherlands, 279 p. | 2007 |
| | | | | | | |
| | | | | | | |
| | **22.2.** | **Additional** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | | | | |
| | | **2.** | | | | |
| | | | | | | |

| **Appendix No. 3** | **Syllabus for the first, second and third cycle of study** | | | | |
|---|---|---|---|---|---|
| 1. | Title of the course | **Business systems in tourism and hospitality** | | | |
| 2. | Code of the course | **UGD203412** | | | |
| 3. | Study Programme | Business logistics | | | |
| 4. | Organizer of the study programme (unit, Institution, department) | Faculty of tourism and business logistics | | | |
| 5. | Level of studies (first, second, third) | 2 | | | |
| 6. | Academic Year/ semester | 1 | 7. | Number of ECTS credits | 4 |
| 8. | Professor | Assistant Professor Nako Taskov, PhD | | | |
| 9. | Preconditions for course enrolment | Accomplished undergraduate studies | | | |
| 10. | Goals of the course programme:<br>Obtaining theoretical knowledge for business systems in tourism and hospitality and its practical application. | | | | |
| 11. | Content of the course programme:<br>1. Theoretical approach in researching business systems in tourism and hospitality<br>2. Business processes in tourism and hospitality<br>3. Analysis and management with business systems in tourism and hospitality<br>4. Supply chain in tourism and hospitality<br>5. International business systems in tourism and hospitality | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 6. Development of business systems<br>7. On-line business systems<br>8. Marketing of business systems<br>9. Hospitality in business systems<br>10. Hospitality services as a component of business systems<br>11. Models of business systems in tourism and hospitality<br>12. Business systems in Macedonia | | | | |
| 12. | Methods of study: PPP lectures, laboratory, essays, exercises, consultations | | | | |
| 13. | Total amount of available time | | 120 | | |
| 14. | Distribution of the available time | | 2+1+1 | | |
| 15. | Forms of teaching activities | 15.1. | Lectures - theory | 2 | |
| | | 15.2. | Exercises (laboratory, audio), seminars, team work | 2 | |
| 16. | Other form of activities | 16.1. | Projects | 1 | |
| | | 16.2. | Self-standing projects | 1 | |
| | | 16.3. | Home work | 1 | |
| 17. | Forms of assessment | | | | |
| | 17.1. | Projects | | 30 | |
| | 17.2. | Essay (presentation: written and oral) | | 50 | |
| | 17.3. | Activity and participation | | 20 | |
| 18. | Criteria for assessment(points/grade) | till 50 points | 5 (F) | | |
| | | from 51 till 60 points | 6 (E) | | |
| | | from 61 till 70 points | 7 (D) | | |
| | | from 71 till 80 points | 8 (C) | | |
| | | from 81 till 90 points | 9 (B) | | |
| | | from 91 till 100 points | 10 (A) | | |
| 19. | Precondition for getting a signature and taking the final exam | Minimum 42 points | | | |
| 20. | Language in which classes are conducted | Macedonian | | | |
| 21. | Method of monitoring the quality of teaching | Self-evaluation | | | |
| 22. | Literature | | | | |

22.1. Compulsory literature

| No | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1. | Buhalis, D., Costa, C., eds. | "Tourism business frontiers: consumers, products and industry", | Elsevier, | 2006 |
| 2. | Coles, T., Hall, M., eds. | "International business and tourism: global issues, contemporary interactions", | Routledge, | 2008 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 3. | Eastham, J., Sharples, L., Ball, S., eds. | "Food supply chain management: issues for the hospitality and retail sectors", | Butterworth-Heinemann, | 2001 |
| | 22.2. | Additional literature | | | | |
| | | No | Author | Title | Publisher | Year |
| | | 1. | | | | |
| | | 2. | | | | |
| | | 3. | | | | |

| **Appendix No. 3** | **Syllabus for the first, second and third cycle of study** | | | |
|---|---|---|---|---|
| **1.** | **Title of the Course** | **Tourism Planning** | | |
| **2.** | **Code** | **UGD203612** | | |
| **3.** | **Study Programme** | | | |
| **4.** | **Organizer** of the study programme (**unit** or institute**, Faculty,** department**)** | University Goce Delcev<br>Faculty of Tourism and Business Logistics<br>Department of Tourism | | |
| **5.** | **Cycle (**first**, second and third** cycle**)** | Second cycle | | |
| **6.** | **Academic year / semester** | | **7.** | **Number of credits** 6 |
| **8.** | **Professor (s)** | Biljana Petrevska, PhD, Assistant Professor | | |
| **9.** | **Preconditions for course enrollment** | Accomplished undergraduate studies | | |
| **10.** | **Goals of the course programme:**<br>Obtaining knowledge for the concept, forms, approaches and obstacles in tourism planning. | | | |
| **11.** | **Content** of the course programme**:**<br>- Tourism policy<br>- Concept of tourism planning<br>- Strategic tourism planning<br>- Tourism development – concept, structure and process<br>- Tourism development plan – introduction, characteristics, phases and mistakes<br>- Essentials of tourism research and marketing<br>- Measuring tourism economic impacts<br>- Tools and techniques in tourism planning<br>- Forecasting tourism demand – process, phases, obstacles and meaning<br>- Qualitative and quantitative methods for forecasting tourism demand<br>- Current tourism planning practices<br>- Tourism planning in the third millennium | | | |
| 12. | **Methods of study:**<br>- PPP lectures,<br>- laboratory,<br>- essays,<br>- exercises,<br>- consultations | | | |
| **13.** | **Total amount of** available time | 120 | | |
| **14.** | **Distribution of the** available time | **2+1+1 / per week** | | |

| | | | | |
|---|---|---|---|---|
| **15.** | **Forms of** teaching activities | **15.1.** | lectures / theoretical **- contact teaching, e-teaching** | 2 |
| | | **15.2.** | theoretical and practical exercises, e-exams, preparation of independent seminar work | 1 |
| **16.** | **Other forms of activities** | **16.1.** | **Project tasks** | 1 |
| | | **16.2.** | **Individual** tasks | 1 |
| | | **16.3.** | **Home** learning | 1 |

| | | | |
|---|---|---|---|
| **17.** | **Forms of assessment** | | |
| | **17.1.** | **Tests / oral exams** | **70 points** |
| | **17.2.** | **Seminars (**paper / project - **presentation:** written and/or oral**)** | **10 points** |
| | **17.3.** | **Activity** and participation | **20 points** |

| | | | | | |
|---|---|---|---|---|---|
| **18.** | Criteria **for assessment** (**points** / grade**)** | **up** 50 points | **5** | **(five)** | **(F)** |
| | | **51 to** 60 points | **6** | **(six)** | **(E)** |
| | | **61 to** 70 points | **7** | **(seven)** | **(D)** |
| | | **71 to** 80 points | **8** | **(eight)** | **(C)** |
| | | **81 to** 90 points | **9** | **(nine)** | **(B)** |
| | | **91 to** 100 points | **10** | **(ten)** | **(A)** |
| **19.** | **Condition for getting a signature and taking the final exam** | Minimum 42 points | | | |
| **20.** | **Language** in which classes are conducted | Macedonian | | | |
| **21.** | **Method** of monitoring the quality of teaching | Self-evaluation | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **22.** | **Literature** | | | | | |
| | **22.1.** | **Compulsory** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | Edgell, D., DelMastro Alen, M., Swanson, J. | Tourism Policy and Planning: Yesterday, Today and Tomorrow | Butterworth-Heinemann | 2008 |
| | | **2.** | Goeldner, C. and Ritchie, B. | Tourism – Principles, Practices and Philosophies | John Wiley & Sonns Inc | 2006 |
| | | **3.** | Gunn, C. A. | Tourism Planning - Basics, Concepts, Cases | Taylor&Frances | 1993 |
| | **22.2.** | **Additional** literature | | | | |
| | | **No.** | **Author** | **Title** | **Publisher** | **Year** |
| | | **1.** | Petrevska, B. | Planiranje vo turizmot | EDNOTERA-Skopje | 2011 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **2.** | Mason, P. | Tourism Impacts, Planning and Management | Butterworth-Heinemann | 2003 |