**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | Food and Nutritional Sciences |
| **ACADEMIC UNIT** | Food Science and Human Nutrition |
| **LEVEL OF STUDIES** | Undergraduate |
| **COURSE CODE** | **3460** | **SEMESTER** | **9ο** |
| **COURSE TITLE** | **Technology of Alcoholic Drinks** |
| **INDEPENDENT TEACHING ACTIVITIES** *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits* | **WEEKLY TEACHING HOURS** | **CREDITS** |
| Lectures and Laboratory Exercises | 5 | 5 |
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| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* |  |  |
| **COURSE TYPE***general background, special background, specialised general knowledge, skills development* | General ground |
| **PREREQUISITE COURSES:** |  |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greece |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | YES (English) |
| **COURSE WEBSITE (URL)** |  |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** |
| *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.**Consult Appendix A* * *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
* *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
* *Guidelines for writing Learning Outcomes*
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| *The production of alcoholic beveragesis a dynamic industry that is in an expansion in our country. Ouzo as also other spirits, mainly those of grape marc (Tsipouro and Tsikoudia), are products with a significant contribution to the Greek economy, through their consumption by both the indigenous population and tourists. At the same time, those spirits have a steadily increasing presence in foreign countries. Regarding the consumers, their demand for the productionofhigh quality traditional alcoholic beverages (e.g. single-variety spirits) as also others spirits with an international presence (Gin, Rum, Vodka, Cognac, Armagnac, etc.) is an increasing trend. In addition, the prospect of producing spirits from fruits of different botanical origins, as also spirits with the addition of aromatic plants or even liqueurscanstimulate domestic agricultural production and increase the income of the producers. Finally, the brewery industry, mainly the microbreweries, seems to have capture the attention of the consumers with the increase of microbreweries throughout the country being evident.**The aim of this course is to offer to the undergraduate students’ basic and at the same timecutting-edge knowledge about the spirits production.* *Course goals**The main objective of the subject is to provide knowledge of the basic techniques of the distillation of the alcoholic beverages and the basic steps of brewing. Moreover, students will learn the chemical composition of the main alcoholic beverages and will learn to recognise their basic sensory attributes. In addition, the purposes of this course is to highlight the current legal framework as also the tax regulations and all aspects related to the development of new products.The above knowledge will be applied on a practical level during the laboratory courses. The structure of the course is described in Table 1.*

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| ***Topic*** |  ***Aim*** |  ***Objectives*** |
| ***Introduction to beverage technology, current trends and health effects*** | * *History of the alcoholic drinks, present evolution and consumption*
 | * *History-evolution*
* *Modernproductiontrends*
* *Legislativeframework*
* *Health effects*
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| ***Distillation***  | * *Distillation principals and basic methods of distillation*
 | * *Basicprinciples of distillation*
* *Distillationsystems and methods*
* *Quality of spirits*
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| ***Distillation beverages******and liqueurs*** | * *Study different distillation beverages and the specific methods of distillation for each one*
 | * *Grape marc beverages*
* *Grapedistillates, flavoredwinesandliqueurs*
* *Distillatesandalcoholicbeverageswithaniseand other fruit distillates world*
* *World most produced distillates (Whisky, Gin, Rum etc.)*
 |
| ***Beer*** | * *Study different methods of beer production*
 | * *Beer production*
* *Different beer styles*
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*Learning objectives in order to be achieved need to be specific and clear.**In detail, some of the questions that students should be able to answer in the context of this course are the following:**1. What are alcoholic beverages?**2. What are the basic principles of distillation?**3. What are the basic methods of distillation?**4. What we receive during distillation?**5. What are the main types of spirits in our country and how they are produced?**6. What are wine distillates, flavoured wines and liqueurs and how they are produced?**6. What are the most world spread spiritsand how they are produced?**7. What are the main flavours-botanicals added at the alcoholic drinks?**8. How is beer produced?* |
| **General Competences**  |
| *Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?* |
| *Search for, analysis and synthesis of data and information, with the use of the necessary technology* *Adapting to new situations* *Decision-making* *Working independently* *Team work**Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*  | *Project planning and management* *Respect for difference and multiculturalism* *Respect for the natural environment* *Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking**……**Others…**…….* |
| *Working independently**Teamwork**Project planning and management* *Working in an international environment**Work in an interdisciplinary environment* |

1. **SYLLABUS**

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| * + - 1. Theory

The theoretical part includes:• Lectures• Interactive teaching with questions and answers• Course evaluationSemester program is analyzed in Table 2.Table 2. Πίνακας 2. Teaching schedule on a weekly basis

| **Week** | **Subject** |
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| **1st** | Introductionofthealcoholicdrinks: History, evolution and new trends |
| **2nd** | Ι. Alcohol consumption, absorption and catabolism: metabolic and nutritional effects. General health effects (positive-negative)II. Legislative framework for alcoholic beverages  |
| **3rd** | Basic principles of beverages |
| **4th** | Distillation: I. Distillation systems and methodsII. Quality of distillates (what else, other than ethanol, is received during distillation?) |
| **5th** | Grapemarcspirits: Tsipouro, tsikoudia etc. |
| **6th** | Wine distillates |
| **7th** | Flavored wines and liqueurs |
| **8th** | I. Distillates and alcoholic beverages with anise and other aromatic additivesII. Fruitdistillates |
| **9th** | Beer production |
| **10th** | 1stpart: Spirits from cereals (whiskey, vodka, etc.), sugar cane (rum), agave (tequila) etc. |
| **11th** | 2nd part: Spirits from cereals (whiskey, vodka, etc.), sugar cane (rum), agave (tequila) etc. |
| **12th** | 3rd part: Spirits from cereals (whiskey, vodka, etc.), sugar cane (rum), agave (tequila) etc. |
| **13th** | Summary / Review of main points of this course |

* + - 1. Laboratory practices

The following fields will be studied during the laboratory practices:Determination of alcoholic strength of a distillate at different temperaturesFermentation of grapemarc* + - 1. Preparation of grape marc spirit
			2. Preparation of liqueurs and other alcoholic beverages with the addition of botanicals
			3. Introduction to beer production
			4. Sensory evaluation of alcoholic beverages
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1. **TEACHING and LEARNING METHODS - EVALUATION**

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| **DELIVERY***Face-to-face, Distance learning, etc.* | Face-to-face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Teaching through power point presentationsUse of the Internet and web technologies in the teaching and learning process through the Open eClass platform |
| **TEACHING METHODS***The manner and methods of teaching are described in detail.**Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.**The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS* |

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| ***Activity*** | ***Semester workload*** |
| Lectures | 25 |
| Laboratory practice | 25 |
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| Essay writing | 25 |
| Course total  | ***75*** |

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| **STUDENT PERFORMANCE EVALUATION***Description of the evaluation procedure**Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other**Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | **Lectures**Written examination that includes:Multiple choice questionnairesShort answersEssaysOral exam**Laboratory practices**Written examination that includes short answers |

1. **ATTACHED BIBLIOGRAPHY**

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| The bibliography is basically Greek books:*-Προτεινόμενη Βιβλιογραφία : Ποτογραφία (Αργύρης Τσακίρης, Εκδ.Ψυχάλου),* *Το τσίπουρο και η τσικουδιά: Το ελληνικό απόσταγμα στεμφύλων (Σουφλερός Ευάγγελος Η., Ροδοβίτης Βασίλης Α., Εκδ. Σουφλερός Ευάγγελος)**-Συναφή επιστημονικά περιοδικά:*Σημειώσεις: ΤΕΧΝΟΛΟΓΙΑ ΑΛΚΟΟΛΟΥΧΩΝ ΠΟΤΩΝ-Εργαστηριακές ασκήσεις (Γ. Κοτσερίδης, Ν. Κοντουδάκης, Ν. Προξενιά)Englishbibliography: Handbook of Alcoholic Beverages: Technical, Analytical andNutritional Aspects (Alan J. Buglass, Ed. Wiley) |