საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

Approved by
Academic Council of GTU
On 20 February, 2015 by
Decree № 1438
Modified
Academic Council of GTU
On 19 May, 2016 by
Decree № 2005

Master's Education Program

Title of the program

Viticulture and Enology

Faculty

Agriculture Sciences and Biosystems Engineering

Program Supervisor

Professor Mariam Khomasuridze

Awarded qualification

Master of Agricultural
Will be awarded in the case of passing not less than 120 credits of an educational program

Credits

120 credits

Language

English

Program objective

To prepare the enologist in accordance with labor market demands, which will be competitive, practically-oriented and ready to meet the highest expectations of the wine industry. To acquire the students with the required theoretical knowledge and practical skill.To introduce to students the world of grape growing, wine making, wine appreciation and wine business. To teach the current techniques, to give information about modern methods, innovations used while managing a vineyard and winery.To explain the importance of specific viticulturetechniques in creating wines with good flavor and aroma.To provide the experience for students that develops relevant skills in current practices for harvesting grapes and processing grapes into wine at a commercial vineyard and/or winery. To become students familiar with common analytical skills used in a wine laboratory.

Program Description

The program was developed according ECTS system, 1 credit is equal to 27 hours, which is meant as a

contact, as well as independent work hours. The distribution of credits is represented in the curriculum. The duration of the program is 2 years (4 semesters) and covers 120 credits (ECTS). Core courses - 75 credits, which are scheduled as follows: mandatory courses in specialization 58 credits; elective course 5 credit; practice-12 credits and research component – 45 credits. Practices will be held in vineyard, nursery garden and in wine factory.

The first-year learning process (two semesters 21-21 weeks) is scheduled as follows: two weeks, particularly in VII and XIV week provided midterm examinations i.e., duration of learning and midterm examinations is 17 weeks. During XVIII- and XXI week provided examinations (Main and supplementary examinations).

In the first semester of given year master learns 3 subjects with 5 credits, 1 subjects with 6 credits, 1 subject with 4 credits and 1 subject 5 credits (elective). In second semester master learns 3 subjects with 5 credits, 1 subject with 6 credits and 1 subject with 4 credits and Graduate Research Project/prospectus, which estimated as 5 credits.

The second-year learning process (one semester 21 weeks) is scheduled as follows: two weeks, particularly in VII and XIV week provided midterm examinations i.e., duration of learning and midterm examinations is 17 weeks. During XVIII- and XXI week provided examinations (Main and supplementary examinations). In the third semester Master learns 2 subjects with 6 credits, 2 subjects with 4 credits and Research/experimental component, which estimated as 10 credits.

In the fourth semester Master completes the master's thesis. Master's thesis completion and presentation include 30 credits.

Program Prerequisites

The studying rights on a Master's program is entitled person who has at least a bachelor's or equivalent academic degree and has English knowledge in the level B2, that must be approved by appropriate Certificate from Institution with special Accreditation, or tests providing by the University. The person will be enrolled according the results of the Graduate Record Examination (based on the Graduate Record Examinations, and tests in specialty submitted in the English language). Sample tests will be posted up on the website of the Department of Education of GTU at least one month before the start of the examinations. Admission to the Master's program without passing the examination may be established by the Ministry of Education and Science.

Learning Outcome/Competencies

Knowledge and understanding:

The deep and systematic knowledge of viticulture and enology; Knowledge of cultural history and geography of grape growing, the grape sorts cultivated in the world viticulture regions. Knowledge and understanding of plant anatomy, viticulture cycles: site analysis; varietal selection; trellising methods; nutrient needs of vines; diseases and insect pests of grapevines; crop regulation; breeding; grafting; vineyard floor management and harvest determinations. Understanding of physiology and symptoms of common pest problems Knowledge of wine producing regions, famous wine features, traditional methods and wine making techniques of different countries. Knowledge and understanding of winery operations, materials, devices, winery safety and sanitation. Knowledge of modern methods of analyses must and wine. Understanding the main determination factors of wine quality. Knowledge and understanding of technological processes and methods of sparkling wine, brandy, cognac and other distilled beverages production. Knowledge and understanding of the concept of wine business, marketing and sale.

Applying knowledge:

Ability of Independently planning and implementing the necessary measures formaintaining vineyard, by consideration of grape variety, soil composition and environmental conditions. Ability to diagnose nutrient deficiencies, cold damage, and common pest problems. Ability to recognize common nutrient deficiencies and pest infestations. Ability of organization of harvest, determination the optimal date of vintage. Ability of monitoring and managing of grape growing processes and wine making operations, according to regulations in force.

Ability of usage of modern methods, materials and devices for production high quality wine, proper to world market demands. Ability of establishment of innovation technologies and novelties for creation of a new brand. Ability of independently Carrying out of quality control in the vineyard and winery. The assessment of risks through unforeseen circumstances. The Sensory evaluation wine and distilled beverages. Understanding the individual solution of the problems in the viticulture and enology. Ability to perform laboratory trials on wines over a broad range of addition rates, analyze the trials through sensory or laboratory analysis, and scale up the chosen addition rate to calculate rates of addition to the bulk wine (mathematics). Ability to use latest the methods approaches and to perform the scientific research independently.

Making judgments:

Ability to select and interpret Viticulture and enology field specific data, also to analyze abstract data using standards and certain selected methods; Ability of understanding the scope of work in manufacturing and research processes; Ability of making predictive analyses and proper inferences about current situation during implementing of technological operations and problem solving. Ability of critical thinking and making sound judgment. Ability of the problems detection and risk assessment. Ability of identification of needs of new recourses. Ability to evaluate historical reasons for successful wine production in different regions of the world. Ability to evaluate soil and climate data of a potential vineyard site to determine: how to prepare it for planting; what varieties will grow best there; and what trellising features will work best for the site and varieties chosen. Ability to execute a grape and wine purchase agreement.

Communication skills:

The ability of provision of the presentations to the target audience and carry out the interpersonal communication. To present oral reports for each research paper using good communication techniques, within an allotted amount of time and covering the assigned material. Ability to use wine production vocabulary to describe basic process steps involved with making both red and white wines. Ability to prepare a research paper focusing on a chosen aspect of the history of wine grapes and/or wine using library manuals and websites. Ability to demonstrate core knowledge of viticulture and winemaking techniques as they relate to vineyard safety, trellis management, vineyard equipment, nutrition management, water relations, vineyard floor management, pest control techniques of harvesting, grape processing into juice, fermentation management, winery safety, winery processes and winery equipment. Ability of application software by writing a research paper, managing spreadsheets, giving a professional presentation and managing information (computer literacy). Ability to interpret, analyze and evaluate journal, text publications in enology and trade.

Learning skills:

The assessment of the personal learning process in a coherent and versatile way; The development of the professional career, after the completion of the educational program. The identification of the further learning needs. The identification of the needs in personal learning process in the field of enology; Finding the Learning means, understanding the learning characteristics of the process based on the strategic planning and management of future learning. Ability to create a basic research paper specific to enology field.

Values:
The evaluation of own and others attitude to professional values and contribution in new values formation. The Maintenance and protection of professional ethics in accordance with the basic laws of action; Based on professional values, the statement of field development necessity in the political, economic and social aspects. The reception of the enologist with the professional, ethical responsibility and values. Apply academic and professional ethics and values during their internship and while critically evaluating their experience. This includes either: recognizing how certain viticulture practices done at their internship could be improved in the areas of pest control, efficiency or moral obligations of false advertising; and/or noticing dangers and/or necessary safety precautions at their internship

Forms and Methods of achieving the learning outcomes

☒Lecture ☒Seminar (working in the group) ☒Practical classes☒Laboratory class's☒Field Work/Practice ☒Course Work/Project ☒Consultation Hours ☒Independent Work ☒Master Thesis.

The most widely spread teaching and learning methods as well as their definitions are given below. A Teachershould choose the proper method according to the concrete aim and problem.

1. **Discussion/debates.** This is the most widely spread method of interactive teaching. A discussion process greatly increases the quality of students' involvement and their activity. A discussion may turn into an argument and this process is not merely confined to the questions posed by the teacher. It develops students' skills of reasoning and substantiating their own ideas.
2. **Collaborative work**; using this method implies dividing students into separate groups and giving each group its own task. The group members work at their issues individually and at the same time share their opinions with the rest of the group. According to the problem raised, it is possible to shift the functions among the group members in this process. This strategy ensures the students' maximum involvement in the learning process.
3. **Problem-based learning (PBL)** is a method which uses a concrete problem as the initial stage both for acquiring new knowledge and integration process.
4. **Heuristic method** is based on the step-by-step solving of a given problem. It is realized by means of independent fixing of the facts in the teaching process and determining the ties among them.
5. **Demonstration method** implies presenting information with the help of visual aids. It is quite effective in reaching the required result. It is frequently advisable to present the material simultaneously through audio and visual means. The material can be presented both by a teacher and a student. This method helps us to make different steps of perceiving the teaching material more obvious, specify what steps the students are supposed to take independently; at the same time this strategy visually shows the essence of an issue/problem. Demonstration can be very simple.
6. **Inductive method** determines such a form of conveying any kind of knowledge when in the process of learning the train of thought is oriented from facts towards generalization, i.e. while presenting the material the process goes from concrete to general.
7. **Deductive method** determines such a form of conveying any kind of knowledge which presents a logical process of discovering new knowledge on the basis of general knowledge, i.e. the process goes from general to concrete
8. **Analytical method** helps us to divide the whole teaching material into constituent parts. In this way the detailed interpretation of separate issues within the given complex problem is simplified.
9. **Synthetic method** implies forming one issue from several separate ones. This method helps students to develop the ability of seeing the problem as a whole.
10. **Verbal or oral method** comprises a lecture, narration, conversation, etc. During the process the teacher

conveys, explains the material verbally, and students perceive and learn it by comprehending and memorizing.

11. **Laboratory method** implies the following forms of activity: conducting experiments, showing video materials, etc.
12. **Practical methods** unite all the teaching forms that stimulate developing practical skills in students. In this case a student independently performs different kinds of activity on the basis of the knowledge acquired e.g. field study, teaching practice, field work, etc.
13. **Explanatory method** is based on discussing a given issue. In the process of explaining the material the teacher brings concrete examples the detailed analysis of which is made in the framework of the given topic.
14. **Designing and presenting a project.** While designing a project a student applies the knowledge and skills he has acquired for solving a problem. Teaching by means of designing projects increases students' motivation and responsibility. Working on a project involves the stages of planning, research, practical activity and presenting the results according to the chosen issue. The project is considered to be completed if its results are presented clearly, convincingly, and correctly. It can be carried out individually, in pairs or in groups; also, within the framework of one or several subjects (integration of subjects); on completion the project is presented to a large audience.
15. **Activity-oriented teaching** implies teachers' and students' active involvement in the teaching process, when practical interpretation of the theoretical material takes place.
16. **Written method** implies the following forms of activity: copying, taking notes, composing theses, writing essays, etc.

Forms and Methods of achieving the learning outcomes are uploaded to the university web-site and can be find via the following link:http://www.gtu.ge/quality/new/en.pdf

Student's Knowledge Assessment

Assessment is based on a 100 point grading scale.

Positive assessment is:

- **(A)** - excellent - 91% and more of the maximum grade;
- **(B)** - very good - 81-90% of the maximum grade;
- **(C)** - good - 71-80% of the maximum grade;
- **(D)** - satisfactory - 61-70% of the maximum grade;
- **(E)** - enough - 51-60% of the maximum grade;

Negative assessment is:

- **(FX)** - Not passed - 41-50% of the maximum grades. It means that a student needs more individual work, and is given one more possibility to pass the exam;
- **(F)** - Failed - 40% and less of the maximum grade. It means that work performed by a student was not enough and the subject should be learnt from the beginning;

Descriptions of the methods, criteria, and scales of student knowledge assessment are described in syllabuses. Also, it is uploaded to the university web-site and can be find via the following link: http://gtu.ge/quality/new/Evaluating%20students.pdf

Sphere of Employment

After graduation of this program, with the acquired knowledge and awarded qualification, person will be able to work in private sector, governmental and nongovernmental organizations such as wine companies, grape growing companies, sparkling wine and distilled beverages enterprises, laboratories, tasting commissions,

associations working in the field of viticulture and enology, Ministry of Agriculture and its affiliated agencies.

Possibilities for further continues education

Doctoral Educational Programs

Reared human and material resources

The program provides the appropriate human and material resources.
For more information see the attached documents.

The number of attached syllabi: 16

Educational Program Scheme

№	Learning and Scientific Components		I Year		II Year		Credits
			Semester I	Semester II	Semester III	Semester IV	
	Educational Component:						
1	Educational Courses		30	25	20		75
	Research Component:						
2	Graduate Research Project/prospectus			5			5
3	Research/experimental component				10		10
4	Master Thesis					30	30
ECTS Credits		Per semester	30	30	30	30	120
		Per course	60		60		120

Program in total

№	Course code	Course	Prerequisites	ECTS credits			
				I year		II year	
				Semester			
				I	II	III	IV
1	VAVMS10EA1	Viticulture and vineyard management systems	N/A	5			
2	WPAWS10EA1	Wine production and winery systems	N/A	6			
3	ENOCH10EA1	Enochemistry	N/A	5			
4	GIWIB10EA1	Global wine business	N/A	5			
5	WINMI10EA1	Wine microbiology	N/A	4			
		Elective	N/A	5			
6[1]	WWAWT10EA1	World wines and winemaking techniques					
6[2]	WGWGR10EA1	Wine grapes and world grape growing regions					
7	VEAME10EA1	Vineyard establishment and maintenance	Viticulture and vineyard management systems		5		
8	FPRIV10EA1	Field Practice in viticulture	Viticulture and vineyard management systems		6		
9	MOMWI10EA1	Methods of must and wine analyses	Enochemistry		5		
10	ROVWP10EA1	Regulation of viticulture and wine production	N/A		4		
11	WIMAS10EA1	Wine marketing and sales	N/A		5		
12	SWPRM10EA1	Sparkling wine producing methods	Wine production and winery systems			4	
13	SEEVW10EA1	Sensory evaluation of wine	Wine production and winery systems; Enochemistry; Wine microbiology.			6	
14	EPRIW10EA1	Enterprise Practice in Winery	Wine production and winery systems. Enochemistry			6	

15	PSBGO10EA1	Production of distilled spirituous beverages of grape origin	Wine production and winery systems. Enochemistry.			4	
Educational Components:				**30**	**25**	**20**	**0**
Research Components:				**0**	**5**	**10**	**30**
Credits per year				**60**		**60**	
Total				**120**			

Map of study results

#	Course code	Course	Knowledge and understanding	Applying Knowledge	Making judgments	Communication skills	Learning skills	Values
1	VAVMS10EA1	Viticulture and vineyard management systems	X	X	X	X	X	
2	WPAWS10EA1	Wine production and winery systems	X	X	X			X
3	ENOCH10EA1	Enochemistry	X	X		X		
4	GIWIB10EA1	Global wine business	X	X		X	X	
5	WINMI10EA1	Wine microbiology	X	X		X		
		Elective						
6[1]	WWAWT10EA1	World wines and winemaking techniques	X	X	X			X
6[2]	WGWGR10EA1	Wine grapes and world grape growing regions	X	X	X			X
7	VEAME10EA1	Vineyard establishment and maintenance	X	X	X	X	X	
8	FPRIV10EA1	Field Practice in Viticulture		X		X	X	
9	MOMWI10EA1	Methods of must and wine analyses	X	X		X		

10	ROVWP10EA1	Regulation of viticulture and wine production	X	X		X	X	
11	WIMAS10EA1	Wine marketing and sales	X	X		X	X	
12	SWPRM10EA1	Sparkling wine producing methods	X	X	X			X
13	SEEVW10EA1	Sensory evaluation of wine	X	X	X	X		
14	EPRIW10EA1	Enterprise Practice in Winery		X	X	X	X	X
15	PSBGO10EA1	Production of distilled spirituous beverages of grape origin	X	X	X			X

Program curriculum

	Code	Course	ECTS Credits/hours	Lecture	Seminar (working in the group)	Practical classes	Laboratory classes	Practice	Course Work/Project	Midterm/Final examinations	Independent Work
1	VAVMS10EA1	Viticulture and vineyard management systems	5/135	2/30	1/15					2/1	-/87
2	WPAWS10EA1	Wine production and winery systems	6/162	2/30	1/15	1/15				2/1	-/99
3	ENOCH10EA1	Enochemistry	5/135	2/30	1/15					2/1	-/87
4	GIWIB10EA1	Global wine business	5/135	2/30	1/15					2/1	-/87
5	WINMI10EA1	Wine microbiology	4/108	1/15			1/15			2/1	-/75
		Elective									
6[1]	WWAWT10EA1	World wines and winemaking techniques	5/135	2/30	1/15					2/1	-/87
6[2]	WGWGR10EA1	Wine grapes and world grape growing regions	5/135	2/30	1/15					2/1	-/87
7	VEAME10EA1	Vineyard establishment and maintenance	5/135	2/30	1/15					2/1	-/87

8	FPRIV10EA1	Field Practice in viticulture	6/162					4/60		2/1	-/99
9	MOMWI10EA1	Methods of must and wine analyses	5/135				3/45			2/1	-/87
10	ROVWP10EA1	Regulation of viticulture and wine production	4/108	1/15	1/15					2/1	-/75
11	WIMAS10EA1	Wine marketing and sales	5/135	2/30	1/15					2/1	-/87
12	SWPRM10EA1	Sparkling wine producing methods	4/108	1/15	1/15					2/1	-/75
13	SEEVW10EA1	Sensory evaluation of wine	6/162	1/15	1/15	2/30				2/1	-/99
14	EPRIW10EA1	Enterprise Practice in winery	6/162					4/60		2/1	-/99
15	PSBGO10EA1	Production of distilled spirituous beverages of grape origin	4/108	1/15	1/15					2/1	-/75

Educational Program Supervisor Mariam Khomasuridze

The Head of Quality Assurance Service of the Faculty Mariam Khomasuridze

The Head of the Faculty GiorgiKvartskhava

Approved by
Academic Council of GTU
On 20 February, 2015
by Decree № 1438

Modified at
The Council of the Faculty of Agriculture
sciences And Bio Systems Engineering
Protocol №6, 28 July 2016

The Head of the Faculty Council GiorgiKvartskhava

Agreed with
Quality Assurance Service of GTU GiorgiDzidziguri