



საქართველოს ტექნიკური უნივერსიტეტი  
GEORGIAN TECHNICAL UNIVERSITY

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

Modified by  
Academic Council of GTU  
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## Master's Educational Program

### Program Title

მევენახეობა და ენოლოგია

Viticulture and Enology

### Faculty

აგრარული მეცნიერებების და ბიოსისტემების ინჟინერინგი

Agricultural Sciences and Bio Systems Engineering

### Program Supervisor

Professor David Maghradze

### Qualification to be awarded

Master of Viticulture and Enology

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

### The language of teaching

English

### Admission Prerequisites to the program

The studying rights on a Master's program is entitled person who has at least (01) Bachelor of Agrarian Science, (05) Bachelor of Science / Natural Sciences or equivalent academic degree, and has English knowledge in the level B2, that must be approved by an appropriate Certificate from an Institution with special Accreditation, or tests providing by the University. The person will be enrolled according on the results of the master's exams (general master's exam and the exam / exams / in specialization, English language tests provided by the GTU). The exam questions / tests will be posted on the GTU Department of Education website at [http://gtu.ge/Study-Dep/News/?ELEMENT\\_ID=12830](http://gtu.ge/Study-Dep/News/?ELEMENT_ID=12830) at least one month before the exams begin. Admission to the program without passing the master's exams is possible according to the procedure established by the Ministry of Education, Science, Culture and Sport of Georgia.

### Program Description

The program is developed according ECTS system, 1 credit equals 25 hours which includes both contact and independent working hours. The distribution of credits is presented in the curriculum of

the program. The program lasts 2 years (4 semesters) and includes 120 credits: Study component - 75 credits; Research Component - 45 credits including Master's thesis / Prospectus - 5 credits, Theoretical / Experimental Research / Colloquium - 10 credits, Thesis Completion and Defense - 30 credits.

One semester covers 20 weeks, out of which the teaching process takes 15 weeks.

The academic calendar will be issued and published on the web-page by the Rector of GTU before the beginning of the semester.

**In the first semester of the first year** the master studies 6 major specialty courses: 2 disciplines with 5 credits of each and 4 disciplines with 4 credits of each. In addition, with 4 credits, master chooses a discipline among Elective Courses. **Total: 30 credits;**

**In the second semester of the first year**, the master studies 4 major specialty courses – among those 2 disciplines with 6 credits of each, 1 discipline with 5 credits and 1 discipline with 4 credits. In addition, with 4 credits, master chooses a discipline among Elective Courses. In this semester the students also has a master's research project / prospectus which includes 5 credits. **Total: 30 credits.**

**In the first semester of the second year**, the master studies 4 major specialty courses with 5 credits of each. It also has a theoretical / experimental research / colloquium covering 10 credits. **Total: 30 credits.**

**In the second semester of the second year**, the master completes and defends the master thesis. **Total 30 credits.**

Detailed information on the Master's Regulations is available on the GTU Web site: [https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

The Master Research Project / Prospectus Evaluation Criteria and Scales are set out in the Evaluation Rule for the Research Component of the Master's Degree Program, which is available on the GTU Web site: [https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

Instructions for completing a master's degree are available at the GTU web site: [https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

Criteria and scoring criteria for qualification are given in the evaluation section of the research component of the Master's Degree Program on the GTU web site:

[https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

Detailed information on the evaluation of the research component of the MA program is available at the GTU web site: [https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

## Program Objective

The aim of the master's program is to teach students historical trends of spreading and development for grapevine and wine in the World viticulture and wine making, the modern and innovative methods of vineyard establishment and cultivation based on varietal biodiversity, the full agro technological cycles of vineyard management.

Based on the international regulations and guidelines in Viticulture and Enology in the World grape processing features, modern innovative and traditional technologies of wine making and other alcoholic beverages of grape origin, trends in the fields of vitivinification, microbiological and physical-chemical processes, laboratory testing of wine quality based on modern analytical methods, selection of appropriated methods for testing and their planning.

physical-chemical composition of wine and beverages, their sensory evaluation based on international rules and practically established systems, wine diseases, the reasons of their origin and the ways of their prevention; current trends in the world wine tourism market, planning and elaboration of touristic products - including “wine-routs” among others – and their promotion taking inaccount the World trends.

And in accordance to the International standards and the innovative methods prepare a Master of Viticulture and Enology - in the labor competitive market, a skilled, qualified and competitive expert

managing the whole wine production chain – starting from grape growing to final product.

### **The Learning Outcomes/Competence (general and field-specific)**

- Describes the basic principles of organizational and seasonal management of viticulture; Vine and grape development phases and main physiological processes of the plant, impact of agro-climatic conditions on vine and wine quality, effective and sustainable systems for managing of soils and water in a vineyard, modern trends in the field, describes the main pests and diseases in viticulture, and discusses about integrated pest management for their prevention, independently plan vineyard maintenance operations, discuss potential problems in plant growth and development, and plan solutions based on the modern requests;
- Evaluates soil resources and determines the optimal harvest date for the desired final product, plans the appropriate technology and establishes the process of alcoholic fermentation, analyzes seasonal operations, manages grape cultivation and oenological processes according to current regulations;
- Discusses world viticulture and winemaking, traditional, classical and innovative production features in accordance with existing legislation, appellation regions and their characteristics, vine varieties and agro-technological features;
- Describes grape and wine analysis methods, chemical and physical processes during grape processing, discusses the solutions needed during the process and ways to realize them;
- Identifies wine diseases, discusses their causes, and suggests ways to eliminate them. Plans for tasting alcoholic beverages in accordance with international requirements and standards;
- Discusses world beverages market trends, modern market research tools, company structure and trading opportunities between countries; independently plans market research, business, brand and product development strategies to attract satisfied customers;
- Connects wine, as an ancient culture, to the product of one of the world's leading forms of wine tourism development. Analyzes the requirements of wine tourism worldwide, develops a wine tourism development strategy, plans the necessary activities and activities to raise awareness;
- Plans and makes independent research based on modern methods and trends, develops critical conclusions, perspectives and innovative suggestions on viticulture-winemakers' problems, develops arguments when communicating with the academic or professional community;
- Shares and adheres to ethical and professional responsibility norms, presents substantially and innovative visions in viticulture and winemaking.

### **Methods (Teaching-learning) of Achieving Learning Outcomes**

Lecture Seminar (working in the group) Practical classes Laboratory class's Practice   
Course Work/Project Consultation Independent Work

Based on the specifics of a learning course, the appropriate activities listed below are employed, reflected in the relevant learning courses (syllabi):

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/pdf/sc.pdf>

## Student knowledge assessment system

Grading system is based on a 100-point scale.

Positive grades:

- (A) - Excellent - the rating of 91-100 points;
- (B) – Very good - the rating of 81-90 points
- (C) - Good - the rating of 71-80 points
- (D) - Satisfactory - the rating of 61-70 points
- (E) - Enough - the rating of 51-60 points

Negative grades:

- (FX) - Did not pass - 41-50 points of rating, which means that the student needs more work to pass and is given the right to take the exam once more with independent work;
- (F) – Failed - 40 points and less, which means that the work carried out by the student is not enough and he/she has to learn the subject from the beginning.

In the case of receiving FX, an additional exam is held no earlier than 5 days after the announcement of the results.

Detailed information is available on GTU's website: Instructional Management Process at Georgian Technical University <https://gtu.ge/Study-Dep/Forms/Forms.php>

Qualification assessment criteria and scales are given in the research component of evaluation section of master's program on the GTU website:

[https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

Detailed information on the evaluation of the research component of the MA program is available at the GTU web site: [https://gtu.ge/Learning/debuleba\\_magistraturis\\_sesaxeб.php](https://gtu.ge/Learning/debuleba_magistraturis_sesaxeб.php)

## Sphere of employment

- Privet Local and international private sector;
- Ministry of Environment Protection and Agriculture, its agencies and regional services
- Laboratories, scientific-research and experimental farms and bases;
- Tasting commissions
- Sectoral public and non-governmental sectors;

## Potential for Further Education

Doctoral Educational Programs

## Human and material resources necessary for the implementation of the program

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

**The Number of Syllabi Attached: 20**

## Courses in the Program

№	Course Title	Admission prerequisites	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	Viticulture and vineyard	N/A	5			

	management systems					
2	Grapevine physiology	N/A	4			
<b>Elective courses of specialty</b>						
3 <sup>1</sup>	Regulation of viticulture and wine production	N/A	4			
3 <sup>2</sup>	Agro insurance	N/A				
3 <sup>3</sup>	Wine grapes and world grape growing regions	N/A				
4	Grapevine pests, diseases and integrated pest management	N/A	4			
5	Integrated soil and water management for vineyards	N/A	4			
6	Intensive course in wine microbiology	N/A	5			
7	Enochemistry	N/A	4			
8	Wine production and winery systems	Intensive course in wine microbiology, Enochemistry		6		
9	Vineyard establishment and maintenance	Viticulture and vineyard management systems		5		
10	Field Practice in viticulture	Viticulture and vineyard management systems. Grapevine physiology. Integrated soil and water management for vineyards		6		
<b>Elective courses of specialty</b>						
11 <sup>1</sup>	Wine and beverage marketing	N/A	4			
11 <sup>2</sup>	World wines and winemaking techniques	N/A				
11 <sup>3</sup>	Sparkling wine production	N/A				
12	Methods of must and wine analyses	Enochemistry		4		
13	Wine tourism	Wine production and winery systems			5	
14	Production of distilled spirituous beverages of grape origin	Wine production and winery systems. Enochemistry			5	
15	Sensory evaluation of wine	Wine production and winery systems. Enochemistry			5	
16	Enterprise Practice in Winery	Wine production and winery systems.			5	

		Methods of must and wine analyses				
		<b>In semester</b>	<b>30</b>	<b>25</b>	<b>20</b>	
		<b>Total:</b>	<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	<b>N/A</b>		<b>5</b>		
	Theoretical / experimental research / colloquium	<b>Prospectus</b>			10	
	Accomplishment and Defense of Master's Thesis	<b>Colloquium</b>				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program curriculum

№	Course code	Course Title	ESTS credits / hours	Hours									
				Lecture	Seminar (work in the group)	Practical classes:	Laboratory	Practice	Course paper / project	Mid-semester exam	Final exam	Independent work	
1	AGC21110E1-LS	Viticulture and vineyard management systems	5/125	30	15						1	1	78
2		Grapevine physiology	4/100	15	15						1	1	68
3 <sup>1</sup>	LAW11410E1-LS	Regulation of viticulture and wine production	4/100	15	15						1	1	68
3 <sup>2</sup>		Agro insurance	4/100	15	15						1	1	68
3 <sup>3</sup>	AGC21210E1-LS	Wine grapes and world grape growing regions	4/100	15	15						1	1	68
4	BRS17410G1-LS	Grapevine pests and diseases and integrated pest management	4/100	15	15						1	1	68
5		Integrated soil and water management for vineyards	4/100	15		15					1	1	68
6	BRS17510E1-LB	Intensive course in wine microbiology	5/125	15			30				1	1	78
7	BRS22210G1-LS	Enochemistry	4/100	15	15						1	1	68
8	MAP18510E1-LSP	Wine production and winery	6/150	30	15	15					1	1	88

		systems										
9	AGC21010E1-LS	Vineyard establishment and maintenance	5/125	30	15					1	1	78
10	MAP18410E1-R	Field Practice in Viticulture	6/150					60		1	1	88
11 <sup>1</sup>	BUA54710E1-LS	Wine and beverage marketing	4/100	15	15					1	1	68
11 <sup>2</sup>	MAP18210E1-LS	World wines and winemaking techniques	4/100	15	15					1	1	68
11 <sup>3</sup>	MAP18810E1-LS	Sparkling wine production	4/100	15	15					1	1	68
12	MAP18610E1-B	Methods of must and wine analyses	4/100					30		1	1	68
13	BUA54610E1-LS	Wine tourism	5/125	30	15					1	1	78
14	MAP18710E1-LS	Production of distilled spirituous beverages of grape origin	5/125	15	30					1	1	78
15	MAP18410E1-LSP	Sensory evaluation of wine	5/125	15	15	15				1	1	78
16	MAP18310E1-R	Enterprise Practice in Winery	5/125					45		1	1	78

Program Supervisor

David Maghradze

Head of Quality Assurance Service of the  
Faculty of Agricultural Sciences and Bio-systems  
Engineering

Nino Lomidze

Dean of the Faculty

Giorgi Kvartskhava

**Agreed with**

Quality Assurance Service of GTU

Irma Inashvili

**Approved by**

Academic Council of GTU  
On 20 February, 2015  
By Decree #1438

**Modified by**

Agriculture Sciences and Bio-Systems Engineering  
At the Meeting of Faculty Council  
By Report №79 29.04.2020  
Chairman of the Faculty Council

Giorgi Kvartskhava

Results of the program<sup>1</sup>

Subject	Describes the basic principles of organizational and seasonal management of viticulture; Vine and grape development phases and main physiological processes of the plant, impact of agro-climatic conditions on vine and wine quality, effective and sustainable systems for managing of soils and water in a vineyard, modern trends in the field, describes the main pests and diseases in viticulture, and discusses about integrated pest management for their prevention, independently plan vineyard maintenance operations, discuss potential problems in plant growth and development, and plan solutions based on the modern requests	Evaluates soil resources and determines the optimal harvest date for the desired final product, plans the appropriate technology and establishes the process of alcoholic fermentation, analyzes seasonal operations, manages grape cultivation and oenological processes according to current regulations.	Discusses world viticulture and winemaking, traditional, classical and innovative production features in accordance with existing legislation, appellation regions and their characteristics, vine varieties and agro-technological features	Describes grape and wine analysis methods, chemical and physical processes during grape processing, discusses the solutions needed during the process and ways to realize them.	Identifies grape and wine diseases, discusses their causes, and suggests ways to eliminate them. Plans for tasting alcoholic beverages in accordance with international requirements and standards.	Discusses world spirits market trends, modern market research tools, company structure and trading opportunities between countries, independently plans market research, business, brand and product development strategies to attract satisfied customers.	Connects wine, as an ancient culture, to the product of one of the world's leading forms of wine tourism development. Analyzes the requirements of wine tourism worldwide, develops a wine tourism development strategy, plans the necessary activities and activities to raise awareness.	Plans and makes independent research based on modern methods and trends, develops critical conclusions, perspectives and innovative suggestions on viticulture-winemakers' problems, develops arguments when communicating with the academic or professional community	Shares and adheres to ethical and professional responsibility norms, presents substantially and innovative visions in viticulture and winemaking;
Viticulture and vineyard management systems	1	1	1	-	1	-	-	1	1



Grapevine physiology	1	1	1	1	1	-	1	1	1
Grapevine pests and diseases and integrated pest management	1	1	1						
Integrated soil and water management for vineyards	1	1	1						
Intensive course in wine microbiology	-	-		1	1	-	-	1	1
Enochemistry	-	-	-	1	1	-	-	1	1
Wine production and winery systems	-	2	2	2	2	-	2	2	2
Vineyard establishment and maintenance	2	2	2	-	2	-	-	2	2
Field Practice in viticulture	3	3	3	3	3	3	3	3	3
Methods of must and wine analyses	-	-	-	2	2	-	-	2	2
Wine tourism						3	3	3	3

Production of distilled spirituous beverages of grape origin	2	2	2	2	2	-	-	2	2
Sensory evaluation of wine	3	3	3	3	3	3	3	3	3
Enterprise Practice in Winery	3	3	3	3	3	-	-	3	3
Master Research Project / Prospectus	1	1	1	1	1	1	1	1	1
Theoretical / experimental research / colloquium	2	2	2	2	2	2	2	2	2
Accomplishment and Defense of Master's Thesis	3	3	3	3	3	3	3	3	3

Program aims and results map<sup>2</sup>

<p>The aim of the master's program is to teach students historical trends of spreading and development for grapevine and wine in the World viticulture and wine making, the modern and innovative methods of vineyard establishment and cultivation based on varietal biodiversity, the full agro technological cycles of vineyard management. Based on the international regulations and guidelines in</p>	<p>The aim of the program</p>
<p>✓</p>	<p>Describes the basic principles of organizational and seasonal management of viticulture; Vine and grape development phases and main physiological processes of the plant, impact of agro-climatic conditions on vine and wine quality, effective and sustainable systems for managing of soils and water in a vineyard, modern trends in the field, describes the main pests and diseases in viticulture, and discusses about integrated pest management for their prevention, independently plan vineyard maintenance operations, discuss potential problems in plant growth and development, and plan solutions based on the modern requests</p>
<p>✓</p>	<p>Evaluates soil resources and determines the optimal harvest date for the desired final product, plans the appropriate technology and establishes the process of alcoholic fermentation, analyzes seasonal operations, manages grape cultivation and oenological processes according to current regulations.</p>
<p>✓</p>	<p>Discusses world viticulture and winemaking, traditional, classical and innovative production features in accordance with existing legislation, appellation regions and their characteristics, wine varieties and agro-technological features;</p>
<p>✓</p>	<p>Describes grape and wine analysis methods, chemical and physical processes during grape processing, discusses the solutions needed during the process and ways to realize them</p>
<p>✓</p>	<p>Identifies grape and wine diseases, discusses their causes, and suggests ways to eliminate them. Plans for tasting alcoholic beverages in accordance with international requirements and standards;</p>
<p>✓</p>	<p>Discusses world spirits market trends, modern market research tools, company structure and trading opportunities between countries, independently plans market research, business, brand and product development strategies to attract satisfied customers;</p>
<p>✓</p>	<p>Connects wine, as an ancient culture, to the product of one of the world's leading forms of wine tourism development. Analyzes the requirements of wine tourism worldwide, develops a wine tourism development strategy, plans the necessary activities and activities to raise awareness;</p>
<p>✓</p>	<p>Plans and makes independent research based on modern methods and trends, develops critical conclusions, perspectives and innovative suggestions on viticulture-winemakers' problems, develops arguments when communicating with the academic or professional community;</p>
<p>✓</p>	<p>Shares and adheres to ethical and professional responsibility norms, presents substantially and innovative visions in viticulture and winemaking;</p>

<p>Viticulture and Enology in the World grape processing features, modern innovative and traditional technologies of wine making and other alcoholic beverages of grape origin, trends in the fields of vitivinification, microbiological and physical-chemical processes, laboratory testing of wine quality based on modern analytical methods, selection of appropriated methods for testing and their planning.</p>									
<p>physical-chemical composition of wine and beverages, their sensory evaluation based on international rules and practically established systems, wine diseases, the reasons of their origin and the ways of their prevention; current trends in the world tourism market, planning and elaboration of touristic products - including "wine-routs" among others – and their promotion taking in</p>	✓	✓	✓	✓	✓	✓	✓	✓	✓

account the World trends. And in accordance to the International standards and the innovative methods prepare a Master of Viticulture and Enology - in the labor competitive market, a skilled, qualified and competitive expert									
Managing the whole wine production chain – starting from grape growing to final product.	✓	✓	✓	✓	✓	✓	✓	✓	✓