BACHELOR'S DEGREE in Viticulture and Enology

Handbook of teaching program 2022-2023

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Introduction

The Bordeaux Sciences Agro Bachelor of Science in English Viticulture and Enology program (https://www.agro-bordeaux.fr/fiche-pedagogique/bachelors-degree-in-viticulture-and-enology/). It gives international students the opportunity to study at the heart of one of the most prestigious wine regions in the world.
The duration of the programme is 10 months full-time, which includes a 2-week and a 3-month internship in a winery/vineyard.
The defining features of this degree are the prominent role of practicing professionals in instruction of the program as well as practical work and professional internships. The teaching approach of this program will therefore be centred on technical knowledge and professional practices.

This program is a "**Licence Professionnelle 3**" – the French bachelor's degree program (3rd year university degree), which is internationally recognized. These programs are ideally suited for students who seek a professional degree at the bachelor's level and are looking for immediate exposure to the wine industry. It also offers opportunities for those already in the industry, but who want to jump-start their career.

In order to be admitted to the program, students need to have completed at least two years of tertiary education. (e.g. U.S. associate degree of two years) in agriculture, biology, chemistry, biochemistry, microbiology, fermentation and/or food sciences, mathematical, and physical sciences. Places will be potentially available for students who have finished at least a Bachelor degree in other subjects but are looking for a change of career.

The tuition fees for the 10 months of study are 9,000 € to be paid in three instalments.

Bordeaux Sciences Agro is a member of the **French Institute of Agronomic, Veterinary and Forest Sciences** (Agreenium) that unites the main French institutions in research and higher agronomic and veterinary education. The Bachelor program is mainly carried out by Bordeaux Sciences Agro, in partnership with other agricultural institution within Agreenium: i.e. **Montpellier SupAgro**, **AgroSup Dijon** and **ENSAT-INP-Toulouse**. The educational value of this collaboration of institutes for the students is in the discovery of several wine-production regions and different methods of viticulture and winemaking. Additionally, much of the practical teaching of this program will be conducted at Château Luchey-Halde of Bordeaux Sciences Agro and in partnership with the different Chateaux of the Gironde agricultural colleges (EPLEFPA).
The objective of this program is to produce graduates that:

- will become skilled professionals in the global wine industry
- can provide technical advice and support to other wine industry professionals
- have acquired specific knowledge and experience in sensory analysis

Obtaining the Bachelor's Degree in Viticulture and Enology can open doors to many different careers in this field such as:

- Winemaker
- Vineyard manager
- Technical consultancy, experimentation, control and auditing
- Managing projects for professional or public institutions and organizations

University Calendar

2022 Calendar

2023 Calendar

Semester 5

Semester 6

September			October			November			December		
1	Thu		1	Sat		1	Tue	Toussaint holidays	1	Thu	
2	Fri		2	Sun		2	Wed		2	Fri	
3	Sat		3	Mon		3	Thu		3	Sat	
4	Sun		4	Tue		4	Fri		4	Sun	
5	Mon	Organise accommodation, banque, etc	5	Wed		5	Sat		5	Mon	
6	Tue	Administrative Start	6	Thu		6	Sun		6	Tue	
7	Wed	Welcome Session- presentation of the program	7	Fri		7	Mon		7	Wed	
8	Thu		8	Sat		8	Tue		8	Thu	
9	Fri		9	Sun		9	Wed		9	Fri	
10	Sat		10	Mon		10	Thu	holiday	10	Sat	
11	Sun		11	Tue		11	Fri		11	Sun	
12	Mon		12	Wed		12	Sat		12	Mon	
13	Tue		13	Thu		13	Sun		13	Tue	
14	Wed		14	Fri		14	Mon		14	Wed	
15	Thu		15	Sat		15	Tue		15	Thu	
16	Fri		16	Sun		16	Wed		16	Fri	
17	Sat		17	Mon		17	Thu		17	Sat	
18	Sun		18	Tue		18	Fri		18	Sun	
19	Mon	immersion internship	19	Wed		19	Sat		19	Mon	Christmas holidays
20	Tue		20	Thu		20	Sun		20	Tue	
21	Wed		21	Fri		21	Mon		21	Wed	
22	Thu		22	Sat		22	Tue		22	Thu	
23	Fri		23	Sun		23	Wed		23	Fri	
24	Sat		24	Mon		24	Thu		24	Sat	
25	Sun		25	Tue		25	Fri		25	Sun	
26	Mon	immersion internship	26	Wed		26	Sat		26	Mon	Christmas holidays
27	Tue		27	Thu		27	Sun		27	Tue	
28	Wed		28	Fri		28	Mon		28	Wed	
29	Thu		29	Sat		29	Tue		29	Thu	
30	Fri		30	Sun		30	Wed		30	Fri	
			31	Mon	Toussaint holidays				31	Sat	

January			February			March			April			May			June			July		
1	Sun		1	Wed		1	Wed	Exam S6	1	Sat		1	Mon		1	Thu	Internship	1	Sat	
2	Mon		2	Thu		2	Thu	Exam S6	2	Sun		2	Tue		2	Fri		2	Sun	
3	Tue		3	Fri		3	Fri	Exam S6	3	Mon	Beginning of the internship	3	Wed	Internship	3	Sat		3	Mon	
4	Wed		4	Sat		4	Sat	Exam S6	4	Tue		4	Thu		4	Sun		4	Tue	
5	Thu		5	Sun		5	Sun		5	Wed	Internship	5	Fri		5	Mon		5	Wed	
6	Fri		6	Mon		6	Mon	Courses in Montpellier	6	Thu		6	Sat		6	Tue		6	Thu	Oral presentations
7	Sat		7	Tue		7	Tue		7	Fri		7	Sun		7	Wed	Internship	7	Fri	Oral presentations
8	Sun		8	Wed		8	Wed		8	Sat		8	Mon	Internship	8	Thu		8	Sat	
9	Mon		9	Thu		9	Thu		9	Sun		9	Tue		9	Fri		9	Sun	
10	Tue		10	Fri		10	Fri		10	Mon	Internship	10	Wed		10	Sat		10	Mon	
11	Wed		11	Sat		11	Sat		11	Tue		11	Thu		11	Sun		11	Tue	
12	Thu		12	Sun		12	Sun		12	Wed	Internship	12	Fri		12	Mon	Internship	12	Wed	
13	Fri		13	Mon		13	Mon	Courses in Montpellier	13	Thu		13	Sat		13	Tue		13	Thu	
14	Sat		14	Tue		14	Tue		14	Fri		14	Sun		14	Wed		14	Fri	
15	Sun		15	Wed	Winter holiday	15	Wed		15	Sat		15	Mon	Internship	15	Thu		15	Sat	
16	Mon		16	Thu		16	Thu		16	Sun		16	Tue		16	Fri				
17	Tue	Exam S5	17	Fri		17	Fri		17	Mon	Internship	17	Wed	Internship	17	Sat				
18	Wed	Exam S5	18	Sat		18	Sat		18	Tue		18	Thu		18	Sun				
19	Thu	Exam S5	19	Sun		19	Sun		19	Wed	Internship	19	Fri		19	Mon	Internship			
20	Fri	Exam S5	20	Mon		20	Mon	Courses in Dijon	20	Thu		20	Sat		20	Tue				
21	Sat		21	Tue		21	Tue		21	Fri		21	Sun		21	Wed				
22	Sun		22	Wed		22	Wed		22	Sat		22	Mon	Internship	22	Thu				
23	Mon		23	Thu		23	Thu		23	Sun		23	Tue		23	Fri				
24	Tue	Courses in Toulouse	24	Fri		24	Fri		24	Mon	Internship	24	Wed	Internship	24	Sat				
25	Wed		25	Sat		25	Sat		25	Tue		25	Thu		25	Sun				
26	Thu		26	Sun		26	Sun		26	Wed	Internship	26	Fri		26	Mon				
27	Fri		27	Mon		27	Mon	Courses in Dijon	27	Thu		27	Sat		27	Tue				
28	Sat		28	Tue		28	Tue		28	Fri		28	Sun		28	Wed	Final report			
29	Sun					29	Wed		29	Sat		29	Mon	Internship	29	Thu				
30	Mon					30	Thu		30	Sun		30	Tue		30	Fri				
31	Tue					31	Fri					31	Wed							

Frequently Asked Questions

Where do we go the first day?	Bordeaux Sciences Agro, building St Emilion
When does the course start?	The administrative start is on 6 Sep 2022 from 10:00 AM onwards Program start and student/teacher introductions are on 8 Sep 2022 at 9:00 AM
What documentation will we need to start the course ?	After acceptance into the course you will receive information about all documentation needed
When will there be holidays during the time of the course ?	• All Saints holidays: 30/10/22 – 04/11/22 • Christmas holidays: 19/12/22 – 30/12/22 • Winter holidays: 13/02/23– 17/02/23 • For further information see university calendar
Where do we stay during the course?	You will have to organize your accommodation yourself. There is student accommodation available at BSA at very compatible prices. For information go to the BSA website: https://study.agro-bordeaux.fr/campus-life/accomodation/
What is the cost of accommodation?	For accommodation cost at BSA go to https://study.agro-bordeaux.fr/campus-life/accomodation/. For accommodation in the city expect to pay considerably more, about 750 € for a 2-room apartment (see: https://www.leboncoin.fr/annonces/offres/aquitaine/gironde/)
How far is the university from the Bordeaux?	Bordeaux-Sciences Agro is about 8km from Bordeaux center
Where can we do our shopping?	Bordeaux Metropole consists of many small centers. Around BSA there are Talence, Pessac, Gradignan, Villenave d'Ornon just to mention a few. All are closer to BSA than Bordeaux City Centre. Each center has its own shopping areas. Big surface supermarkets are generally on the outskirts of the city and you'll need access to transport
Where can we have lunch?	A number of studios at BSA have their own kitchen facilities There is no canteen on campus for lunch but within 5 min walking there are several outlets for food at very reasonable prices
What transport is available to get to BSA?	• Due to lots of traffic congestions in Bordeaux it is not recommended to come to BSA by car unless you come from outside the city • There is a tram station at 10 min walking. The tram will take you in 20 min to the city center • There is a bus station at 5 min from BSA. The bus will take about 40 min to get you to the city center • There are many good and safe cycling paths through the city. It will take you about 30 min to get to the city center by bicycle

FAQ (cont.)

Do we need to speak French?	• For the course you do not need to speak French, however you will enjoy being in France more if you do speak some French • At university most people will speak English but outside the university most people speak only French • To find yourself an internship and to enjoy working with the workers at the winery and in the field, it is good to speak a bit of French
Should we be taking French courses before we come to France?	Because of the above we would recommend you do take a course before you come to France
Will we be able to learn French during our study?	• Yes, there will be French courses • When? Twice a week for two hours in the afternoon • Where? At the nearby university campus • Additional cost? No, there will be no additional cost
Will all classes be taught at BSA?	No, classes will be taught at BSA but also in vineyards and wineries around Bordeaux. Additionally there will be classes given at other educational institutions
Which educational institutions will be involved with this course?	• Teaching will be done for 6 months at Bordeaux Sciences Agro, Gradignan (06 Sep 2022 – 03 Mar 2023) • For 5 days at EPLEFPA Bordeaux/Gironde • For one week at INP-ENSAT, Toulouse (24 -27 January 2023) • For two weeks at SUPAGRO, Montpellier (06 -17 March 2023) • For two weeks at AGROSUP, Dijon (20 March - 31 March 2023)
During the courses off-campus do we need to organize and pay for our own transport?	Yes, you will need to organize and pay for your own transport but we can advise
During the courses off-campus do we need to organize and pay for our own accommodation?	Yes, you will need to organize and pay for your own accommodation but we can advise. Look at Booking.com, airbnb.com etc.

FAQ (cont.)

During the courses off-campus do we need to organize and pay for our own meals?	Yes, you will have to organize and pay for your own meals but you'll be advised of the possibilities
Will all courses be taught in English or will they be translated from French?	Yes, all courses will be taught in English but in some cases during the winery visits some translation might be needed and will then be available
Will we be given books?	Some books will be available as reference but most material can be found on the internet. The course has its own Moodle internet site where all course information will be available
How will we be tested?	During the course, you will be set several tasks to complete which will be scored. At the end of each semester there will be a series of exams, either written or oral exams
Will the exams be open book?	No, in general you will not be allowed books or other assistance during your exams
What computer software knowledge will be needed?	You will need a running knowledge of Microsoft Word, Excel and PowerPoint
How are the internships organized?	• You will go on a two week organized internship for winemaking from 19 Sep-30 Sep 2022 • You will take an 8-12 week internship of your own choosing, either in France or elsewhere from 3 April 2023 onwards • You will have to hand in your internship report on 28 June so you cannot take an internship of more than 3 months
How will we find internship positions?	You will have to organize this internship yourself (some assistance available) and it will have to be approved by BSA.
What is required from the internships for the course?	You will write an internship proposal before the start of the internship and an internship report at the end
Will we be paid for internships?	In France, by law, if they stay for more than 8 weeks, interns must be paid about 550 € per month. Other countries have different rules for internship payments
How will we be assessed for the final internship?	You will have an oral examination about your internship. Your marks will be composed of both your written report and your oral examination

This information is provided solely as an indicative Non-contractual document.

You will receive more complete and precise information during the course of the study.

Lecturers Bordeaux Sciences Agro Bachelor program

Georgia LYTRA,

Bachelor program coordinator,

Lecturer Enology/Sensory analysis

Marc GREVEN,

Bachelor program coordinator,

Lecturer Viticulture

Jean-Christophe BARBE,

Bachelor program director,

Lecturer Enology/Sensory

Kees, VAN LEEUWEN,

Head of Department,

Lecturer Viticulture/Terroir

Elisa MARGUERIT,

Lecturer Soils and soil fertility

Gregory GAMBETTA

Lecturer Viticulture/Vine physiology and morphology

Isabelle MASNEUF,

Lecturer Enology / Micro-Biology

Guilherme MARQUES-MARTINS

Lecturer Enology

Jean-Philippe ROBY,

Lecturer Viticulture / Plant material

Alfredo COELHO,

Lecturer Business management

Jean-Christophe DOMEC,

Lecturer Forestry / Climatology

Jean-Philippe FONTENELLE,

Head International Relations

Lecturer Organisation

Brice GIFFARD,

Lecturer Environmental sciences

Benoît GROSSIORD,

Lecturer Food sciences

Emma FULCHIN,

Lecturer Plant pathology

Stéphanie PERES,

Lecturer Enology

Guest lecturers Bachelor program

Fréderic ARDOUIN,

Guest lecturer Bio-Dynamics

Xavier CHONÉ,

Guest lecturer Irrigation

Thierry DUFOURCQ,

Guest lecturer Canopy management

Bruno EYNARD,

Guest lecturer Practical vineyard management

David PERNET,

Guest lecturer Bordeaux soils

Yann BUCHWALTER,

Guest lecturer Viticulture

Anne COMBES,

Guest lecturer Enology

Thierry MEIRE,

Guest lecturer Mechanisation

ECTS Credits

The student-centred credit system reports on their workload (the estimated time to complete the learning activities = follow-up of the sessions + work between sessions + revisions and exams), in attendance or remotely. It is a precious element for estimating the number of hours dedicated to learning activities.

1 ECTS credit = 25h to 30h of student work

1 year = 60 credits (from 1500 to 1800 hours of work)

Example: a course of 4 credits is equivalent to 100h including 1/3 of course, 1/3 of personal or collective work and 1/3 of revisions and exams.

Working outside the classroom therefore represents an important part of these hours which:

- Requires to plan activities to be carried out by students

- Requires autonomy on the part of students who will play an active role in this type of teaching.

Program Teaching Units Summary

Semester	Module	Name	Responsible	# Hours	ECTS
S5	**0**	Initiation to Bordeaux Viticulture & Enology	Marc Greven, Georgia Lytra	17	0
	1	Bases of Sensory Analysis	Georgia Lytra	21	2
	2	Grape and wine composition	Georgia Lytra	30	3
	3	Microorganisms and fermentations management	Isabelle Masneuf Pomarede	30	3
	4	Wine making : technological approach from the grape to the bottle	Georgia Lytra	56	5
	5.1	Enological materials, practices and regulations	Georgia Lytra	28	3
	6	Grapevine Physical and Ecological Environment	Marc Greven	42	4
	7.1	Viticulture : scientific basis and operational management	Marc Greven	57	6
	8	Technical and economical diagnostics for sound operational management	Marc Greven	42	4
	L	French Language	Florent Celle	24	0
			Total ECTS	347	30
S6	5.2	Enological materials practices and regulations	Georgia Lytra	18	2
	7.2	Viticulture : scientific basis and operational management	Marc Greven	24	2
	9	Socio-Economic and Legal Environment	Marc Greven	21	2
	10	SupAgro Montpellier	Patrice Lallemand	40	2
	11	Still and sparkling wines of northern France	Yves Le Fur (AgroSup Dijon)	40	2
	12	3-month Professional Internship	Marc Greven, Georgia Lytra, Jean-Christophe Barbe	0	20
	L	French Language	Florent Celle	6	0
			Total ECTS	133	30

Semester 5

SEMESTRE : S5	Module 0: Initiation to Bordeaux Viticulture & Enology						Global duration : x	Version : 2	Update date : 07/2019
	Module coordinator : Georgia Lytra, Marc Greven, Jean-Christophe Barbe						N° ECTS : 0	Open to sandwich courses (alternance) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	3	9		5				*17*	
Overall objective	To provide an introduction to the Bachelor program and Bordeaux Sciences Agro. Introduce students to the resources that are available to them and provide more information regarding administrative matters. Build strong relationships between students and begin to explore cultural exchange Objectives of initial immersion internship • Getting to know an important part of the Bordeaux wine industry • First practical experience at that most important time of the year: harvest time • Full participation in all the work requested • Understanding the actual hard work in a vineyard and winery								
PREREQUISITE	-none								
PEDAGOGICAL CONTENT	Multicultural Team Building Understanding of how we work at BSA								
EVALUATION METHODS	None								
TECHNOLOGY TOOLS NEEDED	none								

SEMESTRE : S5	Module 1: Bases of Sensory Analysis						Global duration : 21	Version : 2	Update date : 07/2019
	Module coordinator : Georgia Lytra						N° ECTS : 2	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	15	6						*21*	
Overall objective	Introduction to sensory analysis. Objective: prepare the students for wine sensory evaluation.								
PREREQUISITE	-								
PEDAGOGICAL CONTENT	**Base of perception** CM 5h + TD 3h **Bases of sensory analysis evaluation** Methodology for sensory evaluation CM 4h + TD 3h Stats applied to sensory analyses CM 6 h ENSAT								
EVALUATION METHODS	Class Participation and Take Home Examination								
TECHNOLOGY TOOLS NEEDED									

SEMESTRE : S5	Module 2: Grape and wine composition						Global duration : 30	Version : 2	Update date : 07/2019
	Module coordinator : Georgia Lytra						N° ECTS :3	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	*Total*	
	16	5	6	3				*30*	
Overall objective	To know chemical composition of grape and wine and their sensorial impact To be able to perform classical oenological analysis and to understand analysis reports To be able to decide the date of harvest								
PREREQUISITE	Basic in chemistry / TU1 basis of perception								
PEDAGOGICAL CONTENT	**Grape maturation** sugars / acids / phenolic compounds / nitrogen - vitamins - mineral salts / aromas CM 3h basic must analysis TP 3h sensory analysis of the must TD 1h + CM 2h **Wine and its perception** Wine composition: phenolic compounds and secondary and tertiary aromas – fundamental CM 6h basic wine analysis (residual sugars - method of Fehling / pH / free and total SO2 ...) TP 3h sensory analysis of wine TD 1h + CM 2h Wine is good for life! Truth or lie? CM 3h ENSAT visit to a laboratory 3h Comments analysis reports TD 3h								
EVALUATION METHODS	Class Participation and Take Home Examination								
TECHNOLOGY TOOLS NEEDED									

SEMESTRE : S5	Module 3: Microorganisms and fermentations management						Global duration : 29,5	Version : 2	Update date : 07/2019
	Module coordinator : Isabelle Masneuf Pomarede						N° ECTS : 3	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	*Total*	
	20	7,5		2				*29,5*	
Overall objective	To master basic knowledge on yeast and bacteria To be able to conduct alcoholic and malolactic fermentations To know how to prevent microbial spoilage								
PREREQUISITE									
PEDAGOGICAL CONTENT	yeasts - AF 5h30 CM and fermentation aromas1h30 TD fermentations management 1h30 CM and fermentation aromas1h30 TD lactic acid bacteria - MLF 5h CM + 1h30 TD stuck fermentation and wine defects 3h CM + 3 TD starters 2h CM microbial alterations of wines 3h CM ENSAT visit at ISVV 2h								
EVALUATION METHODS	class participation and exam (theoretical and practical)								
TECHNOLOGY TOOLS NEEDED									

SEMESTRE : S5	Module 4: Wine making: technological approach from the grape to the bottle						Global duration : 56	Version : 2	Update date : 07/2019
	Module coordinator : Georgia Lytra						N° ECTS : 5	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	33	11		12				*56*	

Overall objective	To be able to perform the transformation of grapes into wine according to the target product To be able to understand phenomena occurring during wine aging, associated risks and to act consequently
PREREQUISITE	Grape composition (TU2) and practical winemaking experience
PEDAGOGICAL CONTENT	**vinification** **Bases of vinification** CM 2 x 3h **Technical itinerary and wine styles** TD 2 **Winery Design and Equipment** CM 2h **Wine Vinification** CM 12h +TD 6h: red Bordeaux style 2CM + 1h TD white Bordeaux style 2CM + 1h TD sweet wines (vins liquoreux) 2CM + 1h TD rosés 2CM + 1h TD fortified wines -wines aged under flor 2CM + 1h TD special vinification 2CM + 1h TD South Western wine typicity and diversity 6CM ENSAT **Visit** to cooperative winery /GCC 6h **wine maturation (in tank or in contact with wood - chips / barrel)** **Oak and Wine** oak heating, origin and compounds CM 3h sensory impact of oak on wine TD 2h visit to Vicard cooperage and distillery in Cognac 6h **Implementation and management of wine maturation** oxygen, microbiology risk, prevention of defects CM 3h
EVALUATION METHODS	technical report (technical visit), class participation and exam (theoretical and practical)
TECHNOLOGY TOOLS NEEDED	

<table>
<tr><td>SEMESTRE : S5</td><td colspan="6">Module 5.1: Enological materials, practices and regulations</td><td>Global duration : 28</td><td>Version : 2</td><td>Update date : 07/2019</td></tr>
<tr><td></td><td colspan="6">Module coordinator : Georgia Lytra</td><td>N° ECTS : 3</td><td>Open to sandwich courses (alternated) : ☐</td><td>Open to Formco : ☐</td></tr>
<tr><td rowspan="2">Hours distribution</td><td>CM</td><td>TD</td><td>TP</td><td>Visits</td><td>CM TICE</td><td>TD TICE</td><td>Personal work</td><td colspan="2"><u>Total</u></td></tr>
<tr><td>9</td><td>19</td><td></td><td></td><td></td><td></td><td></td><td colspan="2"><u>28</u></td></tr>
<tr><td>Overall objective</td><td colspan="9">To be able to use oenological tools and to understand their consequences according to their technical goal
To be aware of regulatory contexts
To be aware of quality health and safety management</td></tr>
<tr><td>PREREQUISITE</td><td colspan="9">Wine composition (TU2) and vinification process (TU4)</td></tr>
<tr><td>PEDAGOGICAL CONTENT</td><td colspan="9"><u>oenological materials - concept of the scale (pump, press, tank, pipe, ...)</u>
salon sitevi 2019 + group project <u>TD 5*3h = 15h</u>

<u>filtration</u>: Membrane technologies in wine industry South Western wine typicity and diversity <u>3h CM</u> ENSAT

<u>health and safety:</u> <u>3h CM</u>

cooperage EPLEFPA <u>3h TD</u>

<u>use of oenological products</u> and sensory consequences (tannins, fining including bentonite and PVPP, alternative oak product, gums- arabic, cellulose, mannoprotein): <u>1h30 CM</u> + <u>1h TD</u>

<u>regulation</u> <u>1h30 CM</u></td></tr>
<tr><td colspan="2">EVALUATION METHODS</td><td colspan="8">Small group project (from technical fair), class participation and exam (theory)</td></tr>
<tr><td colspan="2">TECHNOLOGY TOOLS NEEDED</td><td colspan="8"></td></tr>
</table>

<table>
<tr><td>SEMESTRE : S5</td><td colspan="6">Module 6: Grapevine Physical and Ecological Environment</td><td>Global duration : 45</td><td>Version : 2</td><td>Update date : 07/2019</td></tr>
<tr><td></td><td colspan="6">Module coordinator : Marc Greven</td><td>N° ECTS : 5</td><td>Open to sandwich courses (alternated) : ☐</td><td>Open to Formco : ☐</td></tr>
<tr><td rowspan="2">Hours distribution</td><td>CM</td><td>TD</td><td>TP</td><td>Visits</td><td>CM TICE</td><td>TD TICE</td><td>Personal work</td><td colspan="2"><u>Total</u></td></tr>
<tr><td>36</td><td>6</td><td></td><td>6</td><td></td><td></td><td></td><td colspan="2"><u>48</u></td></tr>
<tr><td>Overall objective</td><td colspan="9">Understanding the role of soil and climate on berry composition Understanding the role of the natural environment (soil, climate) and human influence on wine quality</td></tr>
<tr><td>PREREQUISITE</td><td colspan="9">-</td></tr>
<tr><td>PEDAGOGICAL CONTENT</td><td colspan="9">Physical: Concept of terroir
Terroir: (CM 7h)
Soil: importance of soil in wine production. Geology, soil types and scale issues. Impact of soil on vine physiology and wine production
(CM 6h, visit [soil pits] 3h)
Climate: importance of climate in grape production. Major climatic parameters and indexes. Scale issues. Impact of climate on vine physiology and wine production (CM 11h) (Potential visit St Emilion trial)

- EPLEFPA How to use field equipment in practice (TD 6h)

Sustainability:
Sustainability issues in wine production. Importance of biodiversity in the vineyard (CM 12h visit 3h)</td></tr>
<tr><td colspan="2">EVALUATION METHODS</td><td colspan="8">Oral presentation based on article analysis specific on soil/climate/terroir/sustainability
Report on soil practical
Marks practical EPLEFPA
Written exam</td></tr>
<tr><td colspan="2">TECHNOLOGY TOOLS NEEDED</td><td colspan="8"></td></tr>
</table>

SEMESTRE : S5	Module 7.1: Viticulture : scientific basis						Global duration : 78	Version : 2	Update date : 07/2019
	Module coordinator : Marc Greven						N° ECTS : 7	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	**CM**	**TD**	**TP**	**Visits**	**CM TICE**	**TD TICE**	**Personal work**	***Total***	
	39	15	0	3				*57*	
Overall objective	Acquire scientific and technical knowledge to manage a vineyard								
PREREQUISITE	-								
PEDAGOGICAL CONTENT	**Proposal and activation of coherent technical and economical pathways** - Basics of vine physiology and morphology (CM 6h) - Plant material: choice of rootstock and grapevine variety as a function of production objectives and physical environment (CM 6h) Planting / trellising: choice of system of production (density, vine architecture). Consequences on grape quality potential, yield and production cost (CM 9h, visit 3h) - Pruning / canopy management choice of pruning system and canopy management depending on pedo-climate and production objectives (CM 3h, TD 9h) - Fertilization / soil maintenance: determining fertilization strategy and vineyard floor management, depending on vine vigor, grape quality expectations and yield (CM 6h) - Calendar of vineyard operations (CM 3h) - - Vine water status management and irrigation: assessment of vine water status. Management of vine water status through the choice of plant material, training system and irrigation (CM 6h) - EPLEFPA How to use harvesters in practice (TD 6h)								
- EVALUATION METHODS	Create a short literature review on a technical aspect related to operational vineyard management Present a study on what equipment to use Report on practical Marks practical EPLEFPA Written exam								
TECHNOLOGY TOOLS NEEDED	Access to scientific and technical documentation								

SEMESTRE : S5	Module 8: Technical and economical diagnostics for sound Operational Management Module coordinator : Marc Greven						Global duration : N° ECTS : 2	Version : 2 Open to sandwich courses (alternated) : ☐	Update date : 07/2019 Open to Formco : ☐
Hours distribution	**CM**	**TD**	**TP**	**Visits**	**CM TICE**	**TD TICE**	**Personal work**	***Total***	
	24	18						*42*	
Overall objective	Be able to assess the technical and economic efficiency of, and operationally manage a grape producing company								
PREREQUISITE	-								
PEDAGOGICAL CONTENT	**Develop technical and economic analysis (operations):** Be able to assess the technical efficiency of vineyard practices (soil nutrition and fertilization). (CM 3h, TD 3h) **Visit to SITEVI or VINITECH** 1 Guided visit to VINITECH or SITEVI (3 h TD) 2 Conferences and Seminars 2 days **Technical and economical assessments:** • The use of scientific and technical literature in order to keep update on technical evolutions **VINITECH** (CM 3h, TD 6h) • Yield and disease assessments and climatic influences on grape yield (CM 3h) • Finding and Planning internship (TD 3h) **Operational management** • Project management: How to schedule and implement a project (CM 3h, TD 3h) • Human resource management in order to optimize the process efficiency (CM 3h) • Challenges and job opportunities in modern viticulture (ENSAT CM 3h) • Reporting and communication, both intern and extern (CM 3h) • Traceability; Data recording and management. Choice of adapted software (CM 3h)								
EVALUATION METHODS	Analysis of soil nutrition management VINITECH project, report and presentation Analysis of winery data (Luchey-Halde?) Written Exam								
TECHNOLOGY TOOLS NEEDED	Access to winery information Class room								

Semester 6

SEMESTRE : S6	Module 5.2: Enological materials, practices and regulations						Global duration : 18	Version : 2	Update date : 07/2019
	Module coordinator : Georgia Lytra						N° ECTS : 2	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	**CM**	**TD**	**TP**	**Visits**	**CM TICE**	**TD TICE**	**Personal work**	***Total***	
	14	2		3				*18*	
Overall objective	To be able to use oenological tools and to understand their consequences according to their technical goal To be aware of regulatory contexts To be aware of quality health and safety management To be able to choose wine packaging according to products shelf life								
PREREQUISITE	Wine composition (TU2) and vinification process (TU4)								
PEDAGOGICAL CONTENT	**oenological practices:** Stabilisation 3CM Filtration 3CM **packaging (equipment and materials):** 3h CM + visit to bottling company 3h **use of oenological products** and sensory consequences 1h30 CM **regulation** 1h30 CM **wine blending** 2h CM + 1h TD								
EVALUATION METHODS	Class participation and exam (theoric)								
TECHNOLOGY TOOLS NEEDED									

SEMESTRE : S6	Module 7.2: Viticulture : scientific basis and operational management						Global duration : 21	Version : 2	Update date : 07/2019
	Module coordinator : Marc Greven						N° ECTS : 7 2	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	15	9						*24*	
Overall objective	Acquire scientific and technical knowledge to manage pests and diseases in a vineyard								
PREREQUISITE	-Module 7.1								
PEDAGOGICAL CONTENT	**Achieving vineyard and vine health through environmental and economical sustainable management** Management of pests and diseases: knowledge of major pests and diseases in vines. Vine protection strategy (CM 6h, TD 3h) Landscape management and preservation of biodiversity in a wine estate (CM 3h) Biocontrol: Vineyard ecology and health (CM 6h) **Working with spray equipment** EPLEFPA (TD 6h)								
EVALUATION METHODS	Assessment of understanding of practical aspects Marks practical EPLEFPA Written exam								
TECHNOLOGY TOOLS NEEDED	Access to scientific and technical documentation								

SEMESTRE : S5	Module 9: Socio-Economic and Legal Environment						Global duration :	Version : 2	Update date : 07/2019
	Module coordinator : Marc Greven						N° ECTS : 2	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	18	3						*21*	
Overall objective	Taking into account the importance of social, economic and legal environment in wine production								
PREREQUISITE	-								
PEDAGOGICAL CONTENT	**Economical:** Different types of production structures – GCC/ coop winery. Relations between grape growers and wineries (CM 3h) Cost and profitability performance. (CM 3h) Characteristics and analysis of global production. (CM 3h) **Legal:** Awareness of legal issues and regulations in wine production, cahier de charge (CM 3h) Food Safety and Traceability. (CM 3h) Governance: Structures and governance of international wine firms. (CM 3h) Health and Safety in the vineyard (TD 3h)								
EVALUATION METHODS	Home exam Written exam								
TECHNOLOGY TOOLS NEEDED	Access to winery information								

<table>
<tr><td>SEMESTRE : S6</td><td colspan="6">Module 10: Mediterranean wines (SupAgro Montpellier)
Typicity and innovation in Languedoc-Roussillon vineyard</td><td>Global duration :</td><td>Version : 2</td><td>Update date : 07/2019</td></tr>
<tr><td></td><td colspan="6">Module coordinator : Patrice Lallemand
Scientific Director of the module : Prof A Deloire</td><td>N° ECTS : 2</td><td>Open to sandwich courses (alternated) : ☐</td><td>Open to Formco : ☐</td></tr>
<tr><td rowspan="2">Hours distribution</td><td>CM</td><td>TD</td><td>TP</td><td>Visits</td><td>CM TICE</td><td>TD TICE</td><td>Personal work</td><td colspan="3"><u>Total</u></td></tr>
<tr><td>18</td><td></td><td>7.5</td><td>19</td><td></td><td></td><td>10</td><td colspan="3"></td></tr>
<tr><td>Overall objective</td><td colspan="9">Acquire technical and scientific knowledge to understand the main specificities of viticultural and oenological practices used throughout the vineyards of Mediterranean region of France.
Focus on Languedoc and Roussillon</td></tr>
<tr><td>PREREQUISITE</td><td colspan="9">Viticulture: scientific basis and operational management
Winemaking: technological approach from the grape to the bottle
Sensory analysis: basics in wine tasting</td></tr>
<tr><td>PEDAGOGICAL CONTENT</td><td colspan="9">An overview of the course, presentation of Mediterranean vineyard with the examples of Languedoc and Roussillon
Presentation of the main scientific and agronomic aspects characterising the “terroir” of Languedoc/Roussillon:
- climate constraints, especially dry conditions and climate change
- local varieties
- diversity of the soils and mapping
- diversity of the wine-making know-how : red, white, rosé, sparkling, fortified wines ; visit of wineries
- marketing strategies AOP/IGP, brand “Sud de France”, role of the main stakeholders (syndicate, cooperative, investors)

Visit of the main research institutes in vine sciences for selection of new varieties facing the climate change constraints and the sustainable strategy (new varieties resistant to main diseases): IFV, INRA Pech Rouge, Domaine du Chapitre et mas numérique.
Wine tasting methods and practice, sensory identity of Languedoc wines</td></tr>
<tr><td colspan="2">EVALUATION METHODS</td><td colspan="8">Report: each group presents one study case in order to identify particularities of the wine production in the Languedoc-Roussillon region.
Written exam (evaluation quiz)</td></tr>
<tr><td colspan="2">TECHNOLOGY TOOLS NEEDED</td><td colspan="8"></td></tr>
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SEMESTRE : S6	Module 11: Still and sparkling wines of northern France (AgroSup Dijon)						Global duration : 64	Version : 2	Update date : 07/2019
	Module coordinator : Yves LE FUR						N° ECTS : 2	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
	8	14		34			8		

Overall objective	Acquire technical and scientific knowledge to understand the main specificities of viticultural and oenological practices used throughout the vineyards of northern France. Focus on Burgundy and Champagne
PREREQUISITE	Viticulture : scientific basis and operational management Grape and wine composition Winemaking : technological approach from the grape to the bottle Oenological materials
PEDAGOGICAL CONTENT	An overview of the course, presentation of Northern France vineyards with the examples of Burgundy and Champagne, interactive use of Mind Map/Genially Visit to the Burgundy Wine School in Beaune. Presentation of Burgundy wines: the vineyards and appellation system, concept of terroir, the "Climats" of the Burgundy vineyard, illustrative wine tasting Oenological practices for the production of white Burgundy wines Oenological practices for the production of red Burgundy wines (visit to a wine estate on this subject) Winemaking of sparkling wines (Crémant de Bourgogne and Champagne) Notion of sensory spaces, control plans, typicity/exemplarity measurements and professional communities Personal work: Forming 7-8 groups and preparation for evaluated presentations of other Northern France wine-growing areas: Alsace, Loire Valley (segmentations), Jura, Bugey/Savoie, Beaujolais/Lyonnais and Northern Rhône Valley. Guidelines/checklist of aspects to consider for presentation of wine-growing regions: General working framework, Agro systems and vineyard management, Winemaking practices, Distribution networks (preview), How the sector is organised and marketing strategies/player strategies (preview) Travel in northern Burgundy (Chablis, vineyards of the Yonne, Châtillonnais) and Champagne (meeting with the Interprofession, visits to a family estate, a Champagne House and a cooperative)

EVALUATION METHODS	Oral presentation: each group presents the vineyard it has chosen to study Written exam (evaluation quiz)
TECHNOLOGY TOOLS NEEDED	Mind Map/Genially, Interactive tile, Wooclap, Course feedback

SEMESTRE : S6	Module 12: 3-month Professional Internship						Global duration : 3-month	Version :	Update date : 07/2019
	Module coordinator : Georgia Lytra, Marc Greven, Jean-Christophe Barbe						N° ECTS : 20	Open to sandwich courses (alternated) : ☐	Open to Formco : ☐
Hours distribution	CM	TD	TP	Visits	CM TICE	TD TICE	Personal work	***Total***	
Overall objective	• Be part a decision making process for your project and understand the reasons for the project • Take personal responsibility for solving an actual viticultural or winemaking problem • Learn to understand how to analyse results from your study and apply the results to the problem • Be able to communicate the results to your internship host and the wider industry								
PREREQUISITE	-								
PEDAGOGICAL CONTENT									
EVALUATION METHODS	Internship proposal Internship report Oral exam								
TECHNOLOGY TOOLS NEEDED									