UNIL | Université de Lausanne
Ecole de biologie

Master of Science in Molecular Life Sciences
2014-2015

The Master program has the minimum duration of 3 semesters and comprises 90 ECTS :

- 16 ECTS : Module 1 (Compulsory courses + Optional courses)
- 14 ECTS : Module 2 (First step project)
- 15 ECTS : Module 3 (Compulsory courses + Optional courses)
- 45 ECTS : Personal research project (Master thesis)

Autumn Semester (semester 1)

	Course / Enseignement	Hours per semester C	E/S	PW	Lo	Teaching Staff	ECTS Credits	Limited nb of students
MODULE 1	**General and common activities - Compulsory / Activités communes et obligatoires**							
	Retreat and BIG Seminars *Retraite et séminaires BIG*	-	-	-	L	**Fankhauser C., ...**		
	Sequence a Genome (Part I) *Séquençage d'un génome I*	14	30	-	L	**van der Meer J.,** Robinson-Rechavi M.,	3	
	Write a Review *Rédaction d'une revue*	15	-	42	L	**Fankhauser C.,** Sohrmann M., tutors	4	
	Critical Readings of Scientific Literature *Lectures critiques de la littérature scientifique*	-	-	56				
	Subtotal	**29**	**30**	**98**			**7**	
	Optional (choice -> 9 credits) / Optionnel (choix -> 9 crédits)							
	Plant Interactions with Microbes and Insects *Interactions des plantes avec les microbes et les insectes*	14	-	-	L	**Keel C.**, P. Reymond	1.5	
	Molecular Mechanisms of Evolution *Mécanismes moléculaires de l'évolution*	14	-	-	L	**Benton R.**, Geldner N.	1.5	
	Development of the Nervous System *Développement du système nerveux*	14	-	-	L	**Braissant O.**	1.5	
	Plant Functional Genetics *Génétique fonctionnelle des plantes*	14	-	-	L	**Poirier Y.**	1.5	
	Human Molecular Genetics *Génétique moléculaire humaine*	14	-	-	L	**Rivolta C.**	1.5	
	Biotechnology *Biotechnologie*	14	-	-	L	**Poirier Y.,** Mermod N.	1.5	
	Protein Homeostasy and Adaptation of Organisms to Stress *Adaptation des organismes au stress et homéostasie des protéines*	14	-	-	L	**Goloubinoff P.**	1.5	
	Scientific Research in all its Forms (in French only) *La recherche dans tous ses états pour biologistes*	14	-	-	L	**Clavien C.**	1.5	
	Introduction to R (optional support) *Introduction à R (mise à niveau optionnelle)*	-	-	-	-	**Schütz F.**	-	
	Elements of Bioinformatics *(compulsory for Bioinformatics distinction)* *Eléments de bioinformatique*	36	-	20	G	**Bairoch A.,** Blatter MC.	4.5	
	Advanced Data Analysis in Biology I-II *(compulsory for Bioinformatics distinction)* *Analyse de données en biologie I-II : niveau avancé*	12	-	32	L	**Schütz F.**	4.5	
	Bacteria Genomes and Genome Evolution *Génomes bactériens et évolution du génome*	14	-	-	L	**van der Meer J.**	1.5	
	Immunology with Relevance to Infectuous Diseases *Immunologie et maladies infectieuses*	14	-	-	L	**Nardelli D.**, Roger T.	1.5	
	Virus-Host Interactions *Interactions virus-hôtes*	14	-	-	L	**Kunz S.**, Meylan P.	1.5	
	Fungal Virulence and Pathogenicity *Pathogénicité et virulence fongique*	14	-	-	L	**Sanglard D.**	1.5	
	Total						**16**	
MODULE 2	**Pratical project**							
	First Step Project	-	-	250		**Fankhauser C.**	**14**	
	OR First Step Project in Programing and Programming for bioinformatics	28	56	166		**Robinson-Rechavi M.,** Lisacek F. Chopard B, Palagi P.		

Abbreviations
C = Course
E/S = Exercise/Seminar
PW = Practical Work
Lo = Location (L = registration in Lausanne, G = registration in Geneva)

Distinction **Integrative biology :**
first semester: Follow the 3 common compulsory courses and optional courses
second semester: follow optional courses
free choice for the first-step project
Master thesis: Free choice for the Master project

Distinction **Bioinformatics** :
first semester : follow the 3 common compulsory courses and the 2 specialized "optional "courses (in blue)
do the first step project in the Bioinformatics program
second semester : follow optional courses among all proposed (indicative blue color for courses with bioinformatics contain) .
Master thesis : must belong to the tagged Master thesis "Bioinformatics"

Distinction **Microbiology** :
first semester : follow the 3 common compulsory courses and "optional "courses
free choice for the first step project
second semester : follow optional courses among all proposed.
At the end of the two semesters **at least 12 ECTS must be obtained on optional specialized courses (in yellow)**
Master thesis : must belong to the tagged Master thesis "Microbiology"

Spring Semester (semester 2)

MODULE 3

Course	Hours per semester C	E/S	PW	Lo	Teaching Staff	ECTS Credits	Limited nb of students
General and common activities - Compulsory							
Sequence a Genome (Part II) *Séquençage d'un génome II*	14	42	-		**van der Meer J.,** Robinson-Rechavi M., …	3	
Write a Fellowship *Rédaction d'une demande de bourse*	7	-	21		**Fankhauser C.,** Sohrmann M., tutors	3	
Subtotal	**21**	**42**	**21**			**6**	
Optional (choice -> 9 credits) *							
From Receptors to Genes: Selected Chapters of Molecular Endocrinology *Des récepteurs membranaires aux gènes*	24	-	-	L	**Mermod N.**	3	
Genomics, Proteomics and Quantitative Genetics *Génomique, protéomique et génétique quantitative*	24	-	-	L	**Franken P.**, Tafti M., Quadroni M., Harshman K.	3	
Recombinant Proteins: Applications in Research and Medicine *Protéines recombinantes : application en recherche et en médecine*	12	-	-	L	**Corthésy B.**	1.5	
Scientific Mediation and Communication (in French only, MSc BEC) *Communication et médiation scientifique (MSc BEC)*	28	-	-	L	**Michalik L., Kaufmann A.**	3	6
Perception of Environmental Signals in Plants *Perception de l'environnement chez les plantes*	24	-	-	L	**Fankhauser C., Hardtke C.**	3	
Herbivory: Why is the Earth Green *Herbivorie : pourquoi la terre est verte*	24	-	-	L	**Farmer E.**	3	8
Institute Seminars *Séminaires d'institut*	-	-	-	L	**Fankhauser C.**		
Supplement : Sequence a Genome II and Write a Fellowship *Enseignement complémentaire: Séquençage d'un génome II et Rédaction d'une demande de bourse*	-	10	10	L	**Fankhausesr C. van der Meer J.,**	1.5	
Introduction to Systems Biology *Introduction à la biologie de systèmes*	20	20	-	G	**Lisacek F.**	3	
Selected Chapters in Bioinformatics *Chapitres choisis de Bioinformatique*	20	20	-	G	**Lisacek F.,** Palagi P.	3	
Bioinformatics for Proteomics and Glycomics *Bioinformatique pour la protéomique et la glycomique*	20	8	12	G	**Palagi P.,** Müller M.	3	
Phylogeny and Comparative Methods **(MSc BEC)** *Phylogénie et méthodes comparatives (MSc BEC)*	7	14	-	L	**Salamin N.**	1.5	
Molecular Genetics of Populations *Génétique moléculaire des populations*	20	20	-	G	**Sanchez-Mazas A.**	5	
Phylogeny and Molecular Evolution *Phylogénie et évolution moléculaire*	20	20	-	G	**Montoya J.**	5	
Datamining for Protein Function Prediction *Exploitation de données pour prédire la fonction des protéines*	4	-	76	G	**Bairoch A.,** Lane L.	5	
Anti-Infective Agents *Agents anti-infectieux*	14	-	-	L	**Sanglard D.**, Hauser P., Croxatto A., Ciuffi A.	1.5	
Bacterial Virulence and Pathogenesis *Virulence bactérienne et pathogenèse*	14	-	-	L	**Greub G.**, Hauser P.	1.5	
Cytoskeleton from Microbes to Man *Cytosquelette: des microbes à l'homme*	14	-	-	L	**Martin S.**	1.5	
Epidemiology *Epidémiologie*	14	-	-	L	**Blanc D.**, Hauser P., Meylan P., Zanetti G., Sanglard D.	1.5	
Microbes as Tools in Experimental Biology *Les microbes comme outils de biologie expérimentale*	14	-	-	L	**Sanglard D.**, Ciuffi A.	1.5	
Microbial Ecology *Ecologie microbienne*	-	-	35	L	**van der Meer J.,** Sentchilo V.	1.5	
Viral Pathogenesis and Emerging Viruses *Pathogenèse virale et virus émergents*	14	-	-	L	**Kunz S.,** Gouttenoire J., Telenti A., Ciuffi A.	1.5	
Total						**15**	

Spring Semester (semester 2) and Autumn Semester (semester 3)

MODULE 4

Course	ECTS Credits
Compulsory personal research project	
Master Thesis — **Thesis Director**	**45**

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Master thesis: Free choice for the Master project

Distinction **Bioinformatics** :
first semester : follow the 3 common compulsory courses and the 2 specialized "optional "courses (in blue)
do the first step project in the Bioinformatics program
second semester : follow optional courses among all proposed (indicative blue color for courses with bioinformatics contain) .
Master thesis : must belong to the tagged Master thesis "Bioinformatics"

Distinction **Microbiology** :
first semester : follow the 3 common compulsory courses and "optional "courses
free choice for the first step project
second semester : follow optional courses among all proposed.
At the end of the two semesters **at least 12 ECTS must be obtained on optional specialized courses (in yellow)**
Master thesis : must belong to the tagged Master thesis "Microbiology"

* Students can choose some courses of the Master of Science (MSc) in Behaviour, Evolution and Conservation (max 3 ECTS credits)