UNIL | Université de Lausanne
Ecole de biologie

Master of Science in Molecular Life Sciences
2016-2017

The Master program has a normal duration of 3 semesters and comprises 90 ECTS :

- 16 ECTS : Module 1 (Compulsory courses (7 ECTS) + Optional courses (9 ECTS))

- 14 ECTS : Module 2 (First Step Project)

- 15 ECTS : Module 3 (Compulsory courses (6 ECTS) + Optional courses (9 ECTS))

- 45 ECTS : Personal research project (Master Thesis)

Autumn Semester (semester 1)

	Courses / *Enseignements*	Hours per semester C	E/S	PW	Teaching Staff	ECTS Credits	Limited nb of students
MODULE 1	**General and common activities - Compulsory /** ***Activités générales et communes - Obligatoires***						
	Retreat and BIG Seminars *Retraite et séminaires BIG*	-	-	-	**Fankhauser C., …**		
	Sequence a Genome I *Séquençage d'un génome I*	14	30	-	**van der Meer J.,** Robinson-Rechavi M., Engel P., tutors	3	
	Write a Review *Rédaction d'une revue*	15	-	42	**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)***						
	Biotechnology *Biotechnologie*	14	-	-	**Poirier Y.,** Mermod N.	1.5	
	Development of the Nervous System *Développement du système nerveux*	14	-	-	**Braissant O.**	1.5	
	Human Molecular Genetics *Génétique moléculaire humaine*	14	-	-	**Rivolta C.**	1.5	
	Molecular Mechanisms of Evolution *Mécanismes moléculaires de l'évolution*	14	-	-	**Benton R.**, Geldner N.	1.5	
	Plant Functional Genetics *Génétique fonctionnelle des plantes*	14	-	-	**Poirier Y.**	1.5	
	Plant Interactions with Microbes and Insects *Interactions des plantes avec les microbes et les insectes*	14	-	-	**Keel C.**, Farmer E.	1.5	
	Protein Homeostasy and Adaptation of Organisms to Stress *Adaptation des organismes au stress et homéostasie des protéines*	14	-	-	**Goloubinoff P.**	1.5	
	Scientific Research in all its Forms (for Biology) (Sciences2 - in French only) *La recherche dans tous ses états (pour biologie) (Sciences2)*	14	-	-	**Preissmann D.**	1.5	
	Introduction to R (optional support) *Introduction à R (mise à niveau optionnelle)*	-	-	-	**Schütz F.**	-	
	Advanced Data Analysis in Biology I-II (compulsory for Bioinformatics specialisation) *Analyse de données en biologie I-II : niveau avancé*	12	-	12	**Schütz F.**	4.5	
	Case Studies in Bioinformatics (compulsory for Bioinformatics specialisation) *Etudes de cas en bioinformatique*	12	24	-	**Bergmann S.,** others	2.5	
	Programming for Bioinformatics (compulsory for Bioinformatics specialisation) *Programmation pour bioinformatique*	7	14	-	**Salamin N.**	2	
	Advanced Microbial Genetics *Génétique avancée des microbes*	14	-	-	**Collier J., Pelet S.**	1.5	
	Bacterial Genomes and Genome Evolution *Génomes bactériens et évolution du génome*	14	-	-	**van der Meer J.**	1.5	
	Fungal Virulence and Pathogenicity *Pathogénicité et virulence fongique*	14	-	-	**Sanglard D.**	1.5	
	Immunology with Relevance to Infectuous Diseases *Immunologie et maladies infectieuses*	14	-	-	**Nardelli D.**, Roger T.	1.5	
	Virus-Host Interactions *Interactions virus-hôtes*	14	-	-	**Kunz S.**, Meylan P.	1.5	
	Total					**16**	
MODULE 2	**Practical Project /** ***Travail pratique***						
	First Step Project *Travail d'initiation à la recherche*	-	-	250	**Fankhauser C.**	**14**	

Abbreviations
C = Course
E/S = Exercise/Seminar
PW = Practical Work

Condition to obtain the specialisation / Condition pour obtenir une spécialisation

Specialisation Bioinformatics :
Obtain 9 ECTS credits in the field of Bioinformatics (marked in blue) in Module 1 and 9 ECTS credits in any field of study in Module 3
Carry out the First Step Project (Module 2) and the Master Thesis (Module 4) in the field of Bioinformatics.
Produce a significant computer program, in the context of any Module.

Specialisation Microbiology :
Obtain 12 ECTS credits in the field of Microbiology (marked in yellow) and 6 ECTS credits in any field of study in Modules 1 and 3.
Free choice for the First Step Project (Module 2)
Carry out the Master Thesis (Module 4) in the field of Microbiology.

Specialisation Integrative Biology :
Obtain at least 18 ECTS credits in any field of study in Modules 1 and 3.
Free choice for the First Step Project (Module 2) and the Master Thesis (Module 4).

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Spring Semester (semester 2)

MODULE 3

Courses / Enseignements	Hours per semester C	E/S	PW	Teaching Staff	ECTS Credits	Limited nb of students
General and common activities - Compulsory / ***Activités générales et communes - Obligatoire***						
Sequence a Genome II *Séquençage d'un génome II*	14	28	-	**van der Meer J.,** Robinson-Rechavi M., Engel P., tutors	3	
Write a Fellowship *Rédaction d'une demande de bourse*	7	-	-	**Fankhauser C.,** Sohrmann M., tutors	3	
Subtotal	**21**	**28**	**-**		**6**	
Optional (choice -> 9 credits) * / ***Optionnel (choix -> 9 crédits)****						
Genomics, Proteomics and Quantitative Genetics *Génomique, protéomique et génétique quantitative*	24	-	-	**Franken P.**, Tafti M., Quadroni M., Harshman K., Hor C.	3	
Herbivory : Why is the Earth Green *Herbivorie : pourquoi la terre est verte*	24	-	-	**Farmer E.**	3	8
Plant and Animal Domestication : from History to Molecular Mechanisms II *Domestication des animaux et des plantes : de l'histoire aux mécanismes moléculaires II*	-	12	-	**Fankhauser C., Hardtke C.**	3	
Plant and Animal Domestication : from History to Molecular Mechanisms I (support course) *Domestication des animaux et des plantes : de l'histoire aux mécanismes moléculaires I (mise à niveau)*	12	-	-	**Hardtke C.,** Fankhauser C.	-	
Recombinant Proteins: Applications in Research and Medicine *Protéines recombinantes : application en recherche et en médecine*	12	-	-	**Corthésy B.**	1.5	
Scientific Mediation and Communication - Scientific Hands-on Workshop Module (in French only, MSc BEC) *Communication et médiation scientifique - module atelier scientifique (MSc BEC)*	8	-	20	**Michalik L., Kaufmann A.,** Ducoulombier D., Trouilloud S.	3	6
Seminars Biology and Integrative Genetics (BIG) *Séminaires Biologie et Génétique Intégratives (BIG)*	-	-	-	**Martin S.**	-	
Supplement : Sequence a Genome *Enseignement complémentaire : Séquençage d'un génome*	-	14	10	**van der Meer J., Sentchilo V.**	1.5	
Bioinformatic Algorithms *Algorithmes de bioinformatique*	15	15	-	**Dessimoz C.,** Gfeller D.	3	
Industrial Bioinformatics *Bioinformatique industrielle*	14	-	-	**Xenarios I.**	1.5	12
Phylogeny and Comparative Methods **(MSc BEC)** *Phylogénie et méthodes comparatives (MSc BEC)*	7	14	-	**Salamin N.**	1.5	
Anti-Infective Agents *Agents anti-infectieux*	14	-	-	**Sanglard D.**, Hauser P., Croxatto A., Ciuffi A.	1.5	
Bacterial Virulence and Pathogenesis *Virulence bactérienne et pathogenèse*	14	-	-	**Greub G.**, Hauser P., Jacquier N.	1.5	
Chromosome Organization and Dynamics *Organisation et dynamique des chromosomes*	-	14	-	**Gruber S., vacat**	1.5	
Environmental Microbiology *Microbiologie environnementale*	14	-	-	**van der Meer J.,** Sentchilo V.	1.5	
Epidemiology of Human Pathogens *Epidémiologie de pathogènes humains*	14	-	-	**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*	10	4	-	**Sanglard D.,** Ciuffi A.	1.5	
Microbial Cytoskeleton - A Scientific Writing Class *Cytosquelette microbien - écriture scientifique*	4	10	-	**Martin S.,** Collier J.	1.5	
Viral Pathogenesis and Emerging Viruses *Pathogenèse virale et virus émergents*	14	-	-	**Kunz S.,** Gouttenoire J., Ciuffi A.	1.5	
Total					**15**	

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

MODULE 4

Course / *Enseignement*		ECTS Credits	
Master Thesis **Travail de Master**	**Thesis Director**	**45**	

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Free choice for the First Step Project (Module 2).
Carry out the Master Thesis (Module 4) in the field of Microbiology.

Specialisation Integrative Biology :
Obtain at least 18 ECTS credits in any the field of study in Modules 1 and 3.
Free choice for the First Step Project (Module 2) and the Master Thesis (Module 4).

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