	MASTER					year
	SCIENCE – TECHNOLOGY - HEALTH					M1
	Teaching section Biology / Health					
	International Master in Microbiology - FortheMicrobes					
Student hour volume	102 h	90 h	228 h			420 h
Training provided in:	Lectures	Tutorials	Practical work	Integrated courses	Internship or project	Total
	x French	x English				

Contacts

Program directors		Administration
Johannes Gutenberg University Mainz (JGU): Eckhard Thines Professor +49 6131 3921863 thines@uni-mainz.de Ralf Heermann Professor +49 6131 39-28470 heermann@uni-mainz.de	**University of Burgundy (uB):** Dirk Redecker Professor +33 3 80 69 36 42 Dirk.Redecker@u-bourgogne.fr Stephanie Desroche-Weidmann Lecturer +33 3 80 39 62 62 Stephanie.Desroche@u-bourgogne.fr	**Student office** Sandrine Toussaint +33 3 80 39 37 34 Sandrine.Toussaint@u-bourgogne.fr
Institutional attachment:		UB UFR SVTE

Training objectives and career options:

- **Objectives:**

The objective of the Master ForTheMicrobes is to train researchers in the field of microbiology. Microbiology is considered a developing science at the heart of many industrial applications in the fields of health, agroenvironment and food production. It has a significant economic impact and is considered a strategic discipline in research and development policies. The technical use of microorganisms in health, food

production and agriculture, biocontrol but also the treatment of pollution by microorganisms are fields of application in full expansion.
Students in the International Master's Programme in Microbiology acquire advanced knowledge in the field of microbiology, particularly in the fields of molecular microbiology, microbial physiology and biotechnology as well as microbial ecology with a clear focus on applications in industry, biotechnology, medicine and pharmaceutics. The program is based on different practical and research courses, which are accompanied by seminars and lectures.

- **Job options:**

Continuation of studies in Master 2 (see sheet for Master 2)

- **Skills acquired at the end of the training (Master 1 and 2):**

Students will have acquired advanced theoretical knowledge in the different subfields of microbiology, in particular practical skills to work in a microbiology laboratory. A major objective is to train students in theoretical and practical scientific work so that they are qualified experts for different job opportunities in science and industry on the international job market.

The graduate must be able to comprehend in depth:
- methods for studying biomolecular interactions or fungal molecular physiology
- the mechanisms of adaptation of microorganisms to changing environmental conditions during their circulation in different environments
- the complexity of microbial interactions related to plant and animal health, as well as within microbial communities, as well as the methods used in biology to study them.

The graduate must be proficient in writing reports and oral presentation of results using slide or poster materials. In addition, the graduate must be able to use his/her theoretical and practical knowledge to conduct a research project in an academic or industrial context and to know basics of applied research and technology transfer.

Terms of access

The number of places offered is limited to 16.

The selection will be based on:
- the academic background: bachelor's degree in the field of biology with at least one teaching unit in microbiology and level B2 in English
- the academic results
- a cover letter explaining the career plans

International students who have not validated a year in French higher education must follow the procedures of the International Pole of the University of Burgundy (see calendar and deadline for submission of applications on the web page relating to this service: section "International" and " Coming to uB individually"), even if they are in the process of training in higher education in France at the time of application.

Organization and description of studies

- **General study plan:**

Master 1	Semester 1	Johannes Gutenberg University Mainz (30 ECTS)
	Semester 2	University of Burgundy (30 ECTS)

Master 2	Semester 3	Johannes Gutenberg University of Mainz or University of Burgundy (30 ECTS)
	Semester 4	Final Master Internship ("Master Thesis", 30 ECTS)

UE= module; CM=lecture, TD=tutorial, TP=practical, numbers represent teaching hours; CC= midterm exam, CT=end-of-semester exam; ECTS= European Credit Points; coeff= weighting coefficient

- **SEMESTER 1**

UE 1	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Basic Methods and Lab Skills	Basic Methods and Lab Skills	21	10,5	84	115,5		CC + CT written or oral	Written or oral CT	3	7	15
Module total		21	10,5	84		15					

OPTION 1

UE 2	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Biomolecular Interactions	Biomolecular Interactions	21	10,5	84	115,5		CC + CT written or oral	Written or oral CT	3	7	15
Module total		21	10,5	84		15					

OR

OPTION 2

UE 3	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Fungal Molecular Physiology	Fungal Molecular Physiology	21	10,5	84	115,5		CC + CT written or oral	Written or oral CT	3	7	15
Module total		21	10,5	84		15					

	CM	**TD**	**TP**	**Total**	**ECTS**					
TOTAL Semester 1	**42**	**21**	**168**	**231**	**30**			**6**	**14**	**30**

- **SEMESTER 2**

UE 4	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Microbial response to stress and environmental changes	Microbial response to stress and environmental changes	20	8	20	48		CC + CT written or oral	Written or oral CT	4	5	9
Module total		20	8	20	48	9					

EU 5	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Microbial interactions	**Microbial interactions**	20	8	20	48		CC + CT written or oral	Written or oral CT	4	5	9
Module total		20	8	20	48	9					

UE 6	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Microbial diversity and microbial circulation in ecosystems	Microbial diversity and microbial circulation in ecosystems	20	8	20	48		CC + CT written or oral	Written or oral CT	4	5	9
Module total		20	8	20	48	9					

UE 7	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Auxiliary module	**Auxiliary module**		15				Report and defense			3	3
Module total			15		15	3					

EU 8	discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Options	Additional internship optional (1)					0			0	0	0
Module total											

UE 9	discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
French and civilization	**French and civilization**		30			0			0	0	0
Module total											

	CM	**TD**	**TP**	**Total**	**ECTS**					
TOTAL Semester 2	**60**	**69**	**60**	**189**	**30**			**12**	**18**	**30**

(1) This optional internship, if envisaged by the student, must take place in a different structure from that provided for in the training (during the same academic year) or cover a different subject. It will then necessarily give rise to a different internship agreement, to an additional report, but which will not be noted or valued in the calculation of the master. The head of the sector and/or the director of the UFR reserves the right to refuse the optional internship requested.

- **Exam modalities:**

The classes in the Master ForTheMicrobes will take place in two partner universities. The examinations and knowledge tests carried out at the Johannes Gutenberg University Mainz (JGU) will follow the procedures described in the examination framework "Ordnung des Fachbereichs 10 der Johannes Gutenberg-Universität Mainz für die Prüfung im internationalen Masterstudiengang Microbiology."

For the exams carried out at the University of Burgundy, the rules applicable to Bachelor-Master-Doctorate studies are specified in the Common Reference for Studies posted on the University's website: http://www.u-bourgogne-formation.fr/IMG/pdf/referentiel_etudes_lmd.pdf

The general average of the Master is calculated over the 4 semesters.

The grades obtained at JGU and uB are converted reciprocally by a grade conversion table that will be established by the four program directors.

Exam sessions:
The validation sessions of semester 2 (uB) as well as the 2nd session will take place at the end of the 2nd semester. Exams for semester 1 (JGU) are taken at the end of the 1st semester, a 2nd session is possible at the end of the 2nd semester.

A replacement exam may be organized by the teaching team in the event of justified absence from a midterm exam.

Absence from exams:
Absence from exams at the University of Burgundy has the following consequences:

- Justified absence during midterm exam (CC): Failure.

The teaching team will endeavour to propose a remedial or compensatory solution in the event of justified absence from a CC.

- Unjustified absence during midterm exam (CC): Failure (inability to validate the year of training)
- Justified absence during a terminal exam (CT): Failure (passage to session 2)
- Unjustified absence during a terminal exam (CT): Failure (passage to session 2).
- Unjustified absence during session 2: repetition will not be granted

Validation and capitalization rules:
General principles:

COMPENSATION: The semester mark is calculated from the average of the marks of the teaching units of the semester taking into account the assigned coefficients. In France, the semester is validated if the module average is at least 10 out of 20. In Germany, the semester is validated if each module is itself validated with a minimum score of 10 out of 20.

CAPITALIZATION: Each teaching unit is assigned a value in European credits (ECTS). A UE is validated and capitalizable, i.e. definitively acquired when the student has obtained a weighted average greater than or equal to 10 out of 20 by compensation between each module subject. Each validated module allows the student to acquire the corresponding European credits. If the elements (subjects) constituting the non-validated modules have a value in European credits, they

are also capitalizable when the marks obtained in these elements are greater than or equal to 10 out of 20.

Repetition is not automatic and will be granted or refused by the validation panel after examination on a case-by-case basis.

NOTE: this English version is provided for information only, in case of dispute the French version (*Fiche filière*) is definitive.

	MASTER					year
	SCIENCE – TECHNOLOGY - HEALTH					M2 60 ECTS
	Teaching section Biology / Health					
	International master in microbiology - ForTheMicrobes					
Student hour volume		200 h			1+1 month, 6 months	110 h + 90 hours not face-to-face
Training provided in:	Lectures	Tutorials	Practical work	Integrated courses	Internship or project	total
	x French	x English				

Contacts

Program directors		Administration
Johannes Gutenberg University Mainz (JGU): Eckhard Thines Professor +49 6131 3921863 thines@uni-mainz.de Ralf Heermann Professor +49 6131 39-28470 heermann@uni-mainz.de	**University of Burgundy (uB):** Dirk Redecker Professor +33 3 80 69 36 42 Dirk.Redecker@u-bourgogne.fr Stephanie Desroche-Weidmann Lecturer +33 3 80 39 62 62 Stephanie.Desroche@u-bourgogne.fr	**Student office** Sandrine Toussaint +33 3 80 39 37 34 Sandrine.Toussaint@u-bourgogne.fr
	Institutional attachment:	UB UFR SVTE

Training objectives and opportunities:

- **Objectives:**

The objective of the Master ForTheMicrobes is to train researchers in the field of microbiology. Microbiology is considered a developing science at the heart of many industrial applications in the fields of health, agroenvironment and food production. It has a significant economic impact and is considered a strategic discipline in research and development policies. The technical use of microorganisms in health, food production and agriculture, biocontrol but also the treatment of pollution by microorganisms are fields of application in full expansion.
Students in the International Master's Programme in Microbiology acquire advanced knowledge in the field of microbiology, particularly in the fields of molecular microbiology, microbial physiology and

biotechnology as well as microbial ecology with a clear focus on applications in industry, biotechnology, medicine and pharmaceutics. The program is based on different practical and research courses, which are accompanied by seminars and lectures.

- **Job options:**

The Master Forthem allows to obtain a double degree between the University of Burgundy and the Johannes Gutenberg University of Mainz.

At the end of the Master ForTheMicrobes (M1 + M2), students are strongly encouraged to continue with a PhD thesis in order to complete their scientific training. These theses can take place in the fields of research in basic or applied microbiology.

Nevertheless, at the end of the Master's degree, students are well-qualified to secure a job in the research and development departments of companies, public research institutes and laboratories, etc.

- **Skills acquired at the end of the training:**

Students will have acquired advanced theoretical knowledge in the different subfields of microbiology, in particular practical skills to work in a microbiology laboratory. A major objective is to train students in theoretical and practical scientific work so that they are qualified experts for different job opportunities in science and industry on the international job market.

The graduate must be able to comprehend in depth:
- methods for studying biomolecular interactions or fungal molecular physiology
- the mechanisms of adaptation of microorganisms to changing environmental conditions during their circulation in different environments
- the complexity of microbial interactions related to plant and animal health, as well as within microbial communities, as well as the methods used in biology to study them.

The graduate must be proficient in writing reports and oral presentation of results using slide or poster materials. In addition, the graduate must be able to use his/her theoretical and practical knowledge to conduct a research project in an academic or industrial context and to know basics of applied research and technology transfer.

Terms of access to the training year

The number of places offered is limited to 16.

Admission to the second year of the ForTheMicrobes Master is conditioned by the success in the different modules of semesters 1 and 2 of the 1st year of this Master.

Organization and description of studies

- **General study plan:**

Master 1	Semester 1	Johannes Gutenberg University Mainz (30 ECTS)
	Semester 2	University of Burgundy (30 ECTS)
Master 2	Semester 3	Johannes Gutenberg University of Mainz or University of Burgundy (30 ECTS)
	Semester 4	Final Master Internship ("Master Thesis", 30 ECTS)

UE= module; CM=lecture, TD=tutorial, TP=practical, numbers represent teaching hours; CC= midterm exam, CT=end-of-semester exam; ECTS= European Credit Points; coeff= weighting coefficient

- **SEMESTER 3**

OPTIONS: 2 modules to choose out of 4

UE 1 (uB)	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Internship Advanced Microbiology I	-Research methodology -Integration in the active view; -4-week internship with research colloquium -Research seminar		40 20*		60	15	Oral: presentation, research colloquium	oral/written		15	15
module TOTAL			60		60						15

UE 2 (JGU)	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Bacterial Infection Biology	4-week internship with research colloquium		10 30*		40	15	Oral: presentation, research colloquium	oral/written		13	13
	Research seminars		20		20		Oral: presentation	oral		2	2
module TOTAL			60		60						15

*Non-face-to-face hours

UE 3 (uB)	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Internship Advanced Microbiology II	-Research methodology -Integration in the active view;		40 20*		60	15	Oral: presentation, research colloquium	oral/written		15	15

	-4-week internship with research colloquium -Research seminar										
EU TOTAL			60		60						15

*Non-face-to-face hours

UE 4 (JGU)	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Molecular Principles of Fungal Adaptation and Differentiation	4-week internship with research seminars		10 30*		40	15	Oral: presentation, research colloquium	oral/written		13	13
	Research seminars		20		20		Oral: presentation	oral		2	2
EU TOTAL			60		60						15

EU 5	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Options	Additional optional internship (1)					0			0	0	0
EU TOTAL											

	CM	**TD**	**TP**	**Total**	**ECTS**					
TOTAL Semester 3		**120**		**120**	**30**					**30**

- **SEMESTER 4**

UE 6	Discipline	CM	TD	TP	Total	ECTS	Eval type Session 1	Eval type Session 2	coeff CT	coeff CC	Total Coef
Internship	Internship; Accompaniment to the internship		50* 30		80		Report - Oral	oral/written		30	30
EU TOTAL			80		80	30					

*Non-face-to-face hours corresponding to the accompaniment in the internship search, the management of the internship and the internship reports (report and oral) as well as the follow-up of the student during the internship period.

	CM	**TD**	**TP**	**Total**	**ECTS**					
TOTAL Semester 4		**80**		**80**	**30**					**30**

A student must not exceed 6 months of internships in the same institute. Thus the S3 and S4 internships cannot take place in the same institutes.

(1) This optional internship, if envisaged by the student, must take place in a different structure from that provided for in the training (during the same academic year) or cover a different subject. It will then necessarily give rise to a different internship agreement, to an additional report, but which will not be noted or valued in the calculation of the master. The head of the sector and/or the director of the UFR reserves the right to refuse the optional internship requested.

- **Exam modalities:**

The classes in the Master ForTheMicrobes will take place in two partner universities. The examinations and knowledge tests carried out at the Johannes Gutenberg University Mainz (JGU) will follow the procedures described in the examination framework "Ordnung des Fachbereichs 10 der Johannes Gutenberg-Universität Mainz für die Prüfung im internationalen Masterstudiengang Microbiology."

For the exams carried out at the University of Burgundy, the rules applicable to Bachelor-Master-Doctorate studies are specified in the Common Reference for Studies posted on the University's website:
http://www.u-bourgogne-formation.fr/IMG/pdf/referentiel_etudes_lmd.pdf

The general average of the Master is calculated over the 4 semesters.

The grades obtained at JGU and uB are converted reciprocally by a grade conversion table that will be established by the four program directors.
The Master's ForTheMicrobes courses will take place in two partner universities. The examinations and knowledge tests carried out at the Johannes Gutenberg University Mainz will follow the procedures described in the examination framework "Ordnung des Fachbereichs 10 der Johannes Gutenberg-Universität Mainz für die Prüfung im internationalen Masterstudiengang Microbiology."

For the EU exams carried out at the University of Burgundy, the rules applicable to LMD studies are specified in the Common Reference for Studies posted on the University's website:
http://www.u-bourgogne-formation.fr/IMG/pdf/referentiel_etudes_lmd.pdf

The general average of the Master is calculated over the 4 semesters.

The grades obtained at JGU and uB are converted reciprocally by a grade conversion table that will be established by the four Master's supervisors.

Exam sessions:
The validation sessions of semester 2 (uB) as well as the 2nd session will take place at the end of the 2nd semester. Exams for semester 1 (JGU) are taken at the end of the 1st semester, a 2nd session is possible at the end of the 2nd semester.

A replacement exam may be organized by the teaching team in the event of justified absence from a midterm exam.

Absence from exams:
Absence from exams at the University of Burgundy has the following consequences:

- Justified absence during midterm exam (CC): Failure.

The teaching team will endeavour to propose a remedial or compensatory solution in the event of justified absence from a CC.

- Unjustified absence during midterm exam (CC): Failure (inability to validate the year of training)
- Justified absence during a terminal exam (CT): Failure (passage to session 2)
- Unjustified absence during a terminal exam (CT): Failure (passage to session 2).
- Unjustified absence during session 2: repetition will not be granted

Validation and capitalization rules:

General principles:

COMPENSATION: The semester mark is calculated from the average of the marks of the teaching units of the semester taking into account the assigned coefficients. In France, the semester is validated if the module average is at least 10 out of 20. In Germany, the semester is validated if each module is itself validated with a minimum score of 10 out of 20.

CAPITALIZATION: Each teaching unit is assigned a value in European credits (ECTS). A UE is validated and capitalizable, i.e. definitively acquired when the student has obtained a weighted average greater than or equal to 10 out of 20 by compensation between each module subject. Each validated module allows the student to acquire the corresponding European credits. If the elements (subjects) constituting the non-validated modules have a value in European credits, they are also capitalizable when the marks obtained in these elements are greater than or equal to 10 out of 20.

Repetition is not automatic and will be granted or refused by the validation panel after examination on a case-by-case basis.

NOTE: this English version is provided for information only, in case of dispute the French version (*Fiche filière*) is definitive.