

## **AGREEMENT**

### **JOINT MASTER STUDY PROGRAMME “PHYSICS OF THE EARTH”**

This Agreement is entered into by and between the

Universität Wien, acting under the prerequisites of the Austrian Universities Act 2002 (*Bundesgesetz über die Organisation der Universitäten und ihre Studien (Universitätsgesetz 2002)*), Federal Gazette No. 120/2002), hereafter referred to as **University of Vienna (UW)**, represented by Ao. Univ.-Prof. Dr. Christa Schnabl, Vice-Rector for Educational Affairs.

and the

Univerzita Komenského v Bratislave, established by the Law num. 375/1919 of the Law Digest in accordance with the Slovak Higher Education Act 131/2002 hereafter referred to as **Comenius University Bratislava (CUB)**, represented by RNDr. Zuzana Kovačičová, PhD., Vice-Rector for Educational and Social Affairs

(herein after referred to individually as the "*Party*" and collectively as the "*Parties*" or "*partner universities*")

#### **WHEREAS**

the *Parties* intend to establish a Joint Master Study Programme “Physics of the Earth”. The focus of the Programme is the physics of the Earth and its close surroundings based on a solid physical/mathematical approach.

In accordance with the national laws as well as the relevant regulations of the *Parties* involved it is hereby agreed as follows:

#### **Article 0: Definitions**

**Agreement:** means the present *Agreement* and all its Annexes.

**Bachelor Programme:** refers to the basic degree of the three-degree-cycle implemented under the Bologna Process, which typically requires between 180 and 240 ECTS credits depending on the national legislation.

**Board of the Physics of the Earth programme:** is a collective body responsible for the implementation of the *Physics of the Earth Programme*.

**Curricula:** are legally binding documents containing the study goals, the competence framework, the modules and all subject and programme related academic rules and regulations. Together with the national legislation and university regulations (i.e. Statutes of the universities) the Curriculum is the legal framework of the programme after the implementation of the Programme. The legal name of the

Curricula on UW is “Curricula”, the legal name of the Curricula on CUB is “Opis študijného programu”.

**ECTS:** means the European Credit Transfer and Accumulation System, which is a student-centred system based on the student workload required to achieve the objectives of a programme, objectives preferably specified in terms of the learning outcomes and competences to be acquired.

**Physics of the Earth Programme:** refers to the study programme, which is offered to qualified *Students* at the *partner universities*. The official title of the study programme is “Physics of the Earth”.

**Master Programme:** means the second study programme in the three-degree-cycle of the Bologna Process, which typically requires between 90 and 120 ECTS credits depending on the national legislation.

**Master Thesis:** is a graded paper, by which *Students* have to prove their ability to reflect on real-life scenarios, problem solving and/or research topics.

**Reference Curriculum:** describes the common core of the *Physics of the Earth Programme* jointly developed by the *Parties* as stated in Annex A comprising 120 ECTS points. The *Reference Curriculum* is the basis for this cooperation agreement and the curriculum development. It has to be transferred into *Curricula* with respect of the national legislations and the *Parties’* rules and regulations.

**Students:** refers to all students enrolled in the *Programme* in order to obtain the Master’s degree.

**Study Guide:** is a schedule of all modules, lectures and exams including date, time, duration and location. It is jointly provided to the *Students* by the *Parties* for each semester in advance.

All words appearing in *Italics* have the meaning attributed to them in this *Agreement*. The descriptive headings in this *Agreement* are for convenience only and shall not be interpreted so as to limit or affect in any way the meaning of the language in the pertaining Article, Section, Paragraph or Sub-paragraph.

## **Article 1: Purpose and Duration**

### **1.1 Purpose**

The *Parties* are committed to cooperate in the joint award of the Master Joint Degree in Physics of the Earth. The *Reference Curriculum* (Annex A) regulates and defines the learning outcomes, structure and content of the *Physics of the Earth Programme*.

The *Physics of the Earth Programme* (120 ECTS) shall be binding for each *Party* only after its implementation. The decision regarding the implementation of a *Curriculum* according to the *Reference Curriculum* shall be taken by the respective authorized organ of each *Party* in accordance with the legal prerequisites of the *Party’s* rules and regulations and the national legislation.

### **1.2 Duration**

The present *Agreement* shall enter into effect after all *Parties* have signed the *Agreement*.

The *Agreement* shall continue in effect for eight (8) years.

The *Parties* shall review the status of the *Agreement* at least six (6) months before the envisaged termination date to determine any modification or amendments that might be necessary. Depending on the outcome of the evaluation, the *Parties* will decide whether to extend this *Agreement*.

### **1.3 Early Termination**

In the implementation phase each Party may terminate this Agreement effective upon the end of any month by issuing a prior written notice to the other Party, when the transfer of the *Reference Curriculum* into a *Curriculum* is not possible or the respective authorized organ of each Party in accordance with the legal prerequisites of the Party's rules and regulations decides to cancel the *Physics of the Earth Programme*.

Each Party may terminate this Agreement effective upon the end of any calendar year during the term, by issuing a 12-month's prior written notice to the other Party.

In case of early termination, the *Parties* agree that all *Students* already enrolled in the *Physics of the Earth Programme* shall have the right to finish their studies in the *Master Programme* on one of the partner universities selected by the *Students*.

## **Article 2: Implementation framework**

### **2.1 Study goals and competence framework**

The study goals of the *Physics of the Earth Programme* together with modules specifying the learning outcomes that contribute to the study goals and the competence framework are defined in the *Reference Curriculum* (Annex A). The language of the study program will be English, in order to attract students from various countries.

### **2.2 Duration and Workload**

In general, the *Parties* agree that the student workload regarding the *Physics of the Earth Programme* shall comprise 120 ECTS credits. This corresponds to a regular (minimum) duration of the equivalent study programme of four semesters.

The *Parties* will offer compulsory, compulsory elective and elective courses according to the principles of mutual complementation and recognition.

### **2.3 Admission regulations**

Access to the admission procedure will be possible after the implementation of *Curricula* at all partner universities. Students having earned a Bachelor degree in Physics are eligible. Bachelors of other geophysics programs or related fields (astronomy, meteorology) will have access with restrictions according to the national legislation.

The admission procedure shall be coordinated by the partners within the national rules and regulations. The admission procedure has to be extensively harmonized.

The admission procedure is regulated in more detail in Annex C.

### **2.4 Places of courses**

Courses take place in Vienna and Bratislava. *Students* will be required to study at both partner universities according to the *Curriculum*. The amount of traveling will be optimised in order to keep

travel and time expenses as low as possible. *Students* will keep regular contact with the teaching staff of both universities during the entire study period.

The *Board of the Physics of the Earth programme* will coordinate the courses offered and prepare a *Study Guide* for each semester in advance.

## **2.5 Master Thesis**

All *Students* are required to complete a *Master Thesis*. The *Parties* will instruct supervisors to organize the process in such a way that the total net workload for successful completing the *Master Thesis* will not exceed 30 ECTS corresponding to six (6) months.

The recognition of a *Master Thesis* which was approved by another university (outside of this joint study programme) is prohibited by the Austrian and Slovak laws.

The topic of the *Master Thesis* is to be specified within the scope of the *Physics of the Earth Programme*.

## **2.6 Academic degree and awarding institution**

Graduates of the *Physics of the Earth Programme* will be awarded the title according to the national legislations.

As a rule, each *Party* will provide a written notice on the award of the academic degree to each *Student*. The relevant documents will be issued in the national language of the universities.

A common certificate in English will be provided by all *Parties*. The *partner universities* will hold one award ceremony with altering locations.

The *Parties* guarantee that there will be no time delay concerning processing the award certificate.

The graduation is regulated in more detail in Annex C.

## **2.7 Quality management of courses for the *Physics of the Earth Programme***

Relevant *Curricula* at *partner universities* (including modules and their courses) have to be mapped to the *Reference Curriculum* presented here.

## **2.8 External Evaluation**

The Joint Master Study Programme will be periodically externally evaluated according to the national legislations.

### **Article 3: Board of the Physics of the Earth Programme**

The members of the *Board of the Physics of the Earth Programme* are

- a) the principal responsible for carrying out the study programme (main guarantor) and four co-guarantors of the study programme,
- b) at least two employers' representatives from the field of Physics of the Earth,
- c) at least two representatives of the students enrolled in the *Physics of the Earth programme* or graduates of the *Physics of the Earth programme*.

The principal responsible for carrying out of the *Physics of the Earth programme* is nominated by the Comenius University Bratislava. Each *Party* shall nominate respective number of co-guarantors and other members of the *Board of the Physics of the Earth programme*.

The *Board of the Physics of the Earth Programme* has the following responsibilities:

- supervise the management, adaptation and execution of this Agreement and the *Curriculum* on the local level according to the national rules and university's regulations
- propose changes of this Agreement, *Reference Curriculum* and the *Curriculum* to the university representatives
- select elements (courses, internships, etc.) which are relevant with respect to the competences to be acquired by students as defined in the learning outcomes of the *Physics of the Earth curriculum*
- organize of the admission process
- supervise quality development of the modules and adaptation of learning outcomes on course levels, teaching methods, and content according to the learning outcome specified in the *Curriculum*
- acts as responsible contact persons for *students*, scientists, administration and university representatives
- periodically reports to the *university representatives* about the performance and quality of the Programme
- participate in the Internal Evaluation and External Evaluation according to the national rules and university's regulations.

The *Board of the Physics of the Earth Programme* has advisory character. A decision by the *Board of the Physics of the Earth Programme* has binding effect only if it is approved by the authorized representative or organ of the respective *Party* in accordance with the national legislation as well as the relevant rules and regulations of the *Party*.

### **Article 4: Rights and Obligations of the Parties**

The *Parties* will:

- nominate members of the *Board of the Physics of the Earth Programme*
- update their respective section of the *Physics of the Earth Programme* webpages
- offer the modules as described in the *Curriculum* and *Reference Curriculum*
- provide adequate descriptions of modules (ECTS Information Package) and projects for the Study Guide
- safeguard the quality of the *Physics of the Earth Programme*, as offered in their institution
- fulfil the necessary formal requirements for accreditation of the *Physics of the Earth Programme* in their home country
- cooperate in activities to maintain the quality of the *Reference Curriculum*;

- take formal and legal responsibility for the *Students* enrolled in the *Physics of the Earth Programme* at their institution according to the applicable national laws and their respective internal regulations
- apply for teacher and student mobility (ERASMUS, CEEPUS or other funding)
- waive tuition fees for *Students* according to the national regulations for Master students in Austria (exemptions from the tuition fee: Degree program students from an EU/EEA country studying within the minimum duration of their degree program plus two additional semesters; Degree program students, who are granted the same rights as Austrian citizens concerning the access to a profession due to an international agreement, e.g. convention refugees; Students from certain non-EU/EEA countries.). The Austrian National Union of Students (ÖH) membership fee at the University of Vienna has to be paid in any case.
- waive tuition fees for *Students* according to the CUB regulations for Master students in Slovakia
- finance the participation of their members in the meetings of the *Board of the Physics of the Earth Programme* (at least once a year)
- finance teaching for the duration of the *Physics of the Earth Programme*

*Students* are regarded as regular students and will be granted full access to all facilities according to the regulations of each university.

## **Article 5: Intellectual Property Rights**

### **5.1. General**

The *Parties* agree to respect their individual Intellectual Property Rights (IPR). The *Parties* retain full title and rights to their own contributions made in the course of the implementation of the *Physics of the Earth Programme*. If one or more *Parties* contribute to a work or result, the contributing *Parties* gain co-ownership rights in proportion to their respective contribution. During the term of this *Agreement*, all *Parties* shall have the right to use the contributions of the other *Parties* to the *Physics of the Earth Programme* for the purpose of this cooperation free of charge.

Every *Party* is aware of the applicable national laws and regulations concerning copyright/intellectual property in its country and will take appropriate measures to assure compliance with these regulations.

### **5.2. Websites**

Both universities will provide the *Parties* with platforms for information of the public as well as information and exchange among students, teachers, and administrators for the *Physics of the Earth Programme*. The *Parties* will be fully responsible for the contents and contributions they provide via the website.

## **Article 6: Confidentiality**

The *Parties* shall treat as strictly confidential any data, information or documents etc. in whatever form and however communicated, marked as confidential, which the *Parties* become acquainted with during the execution of this *Agreement*.

Information is not considered as confidential if it

- was published or otherwise generally available to the public at the time of disclosure, or
- after disclosure has been published or made public otherwise than through any act or omission on the part of the receiving *Party* or
- was already in the possession of the receiving *Party* without any restrictions on disclosure or
- was rightfully acquired by the receiving *Party* from others without any undertaking of confidentiality or
- was developed independently of the work under this *Agreement* by the receiving *Party* or
- the confidentiality is excepted by the national legislation (e. g. Freedom of Information Act).

## **Article 7: Publicity**

The *Parties* may make reference for publicity reasons to the *Physics of the Earth Programme* under this *Agreement*, provided such reference clearly describes the nature and extent of the *Programme* and does not make misleading comments regarding standards, quality or services.

## **Article 8: Warranty & Liability**

The *Parties* warrant to use their best efforts to conduct all research and teaching activities in connection with the implementation of the *Physics of the Earth Programme* according to the present state of the art. Further warranties, whether implied or explicit are excluded.

Neither *Party* shall be responsible to the other *Parties* for indirect or consequential loss or damages such as, but not limited to, loss of profit, loss of revenue or loss of contracts. Each *Party* shall indemnify the others in respect of wilful or grossly negligent acts or omissions of itself and of its *Programme Coordinators* provided always that such indemnification shall not extend to claims for indirect or consequential loss or damages such as, but not limited to, loss of profit, revenue, contract or the like.

Further, the *Parties* shall only be responsible for and liable to the *Students* in accordance with the national laws and university regulations.

## **Article 9: Evaluation/Quality Assurance**

Each *Party* is subject to, and will follow, its own institutional quality assurance procedures to ensure that the *Programme* maintains its high academic quality. The quality assurance procedures are based on Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) implemented in the national legislation and *Party's* internal regulations.

The *Parties* shall continuously review the implementation of the *Agreement* (at the minimum every two years) to ascertain if adaptations, amendments or improvements are necessary for the successful execution of the *Agreement*.

#### **Article 10: No partnership no agency**

Nothing in the present *Agreement* shall be deemed to create a partnership or agency between the *Parties*. No *Party* shall be empowered or entitled to commit the other *Party* to any obligation or liability other than agreed to in this *Agreement* without having first secured the prior written permission of the *Party* concerned.

#### **Article 11: Assignment**

No *Party* shall, without the prior written consent of the other *Party*, assign or otherwise transfer any of its rights and obligations hereunder.

#### **Article 12: Amendments**

The present *Agreement* contains a full statement of all arrangements and understandings between the *Parties* and supersedes all other agreements entered into by the *Parties*.

No oral collateral agreements have been made. Any modification of or supplement to this *Agreement* shall be valid only when executed in writing and signed by an authorized signatory of each of the *Parties*. This shall also apply to departure from the requirement of writing.

#### **Article 13: Severability**

Should any provision of this *Agreement* prove to be invalid or incapable of fulfilment, or subsequently become invalid or incapable of fulfilment, whether in whole or in part, this shall not affect the validity of the remaining provisions of this *Agreement*. In such case, the *Parties* shall be entitled to demand that a valid and practicable provision be negotiated which mostly fulfils the purpose of the invalid or impracticable provision.

#### **Article 14: Settlement of Disputes**

The *Parties* will strive to settle all disputes or differences arising in connection with the present *Agreement* amicably. The members of the *Board of the Physics of the Earth Programme* will act as mediators to help the concerned *Parties* overcome their disagreements. If the *Parties*, with the help of the *Coordinators* cannot reach an agreement within six (6) months, the relevant organs or *legal bodies* or the *university representatives* of the *Parties* shall decide the dispute.

#### **Article 15: Language**

The present *Agreement* is drafted in English which shall be the governing language of all the documents, notices and minutes of meetings for its application and/or extension or in any other way relative thereto. The *Parties* may otherwise choose any other of their languages for use in the meetings provided that all minutes (or other derived document) be drafted in English.



**Article 16: Notices**

Any notice to be issued under the present *Agreement* shall be in writing to the addresses and recipients listed in Annex B. It shall be deemed to have been served when personally delivered or, if transmitted by fax, electronic or digital transmission, when transmitted, provided that such transmission is confirmed by receipt of a successful transmission report and confirmed by mail.

IN WITNESS whereof the *Parties* consent to the due execution of the present Agreement

Signed by Vice-Rector Ao. Univ.-Prof. Dr. Christa Schnabl for and on behalf of University of Vienna

Signed by Vice-Rector RNDr. Zuzana Kovačičová, PhD. for and on behalf of the Comenius University Bratislava

## **Annex A: Reference Curriculum**

### **Study Goal:**

Building on Bachelor programmes in physics or geophysics, the Joint Master Study Programme provides a broad and deep scientific education in physics of the Earth. This fundamental education allows not only to understand the principal functioning of our planet, but also some of the major challenges facing humanity through its dependence on the physical environment, e.g. natural resources and hazards, as well as the impact of man on nature and man`s own environment.

The focus of the study programme is on furthering the exposure to mathematics and physics as relevant in the physics of the Earth, and the quantitative methods used in the field. Students learn how to observe and mathematically describe phenomena occurring in the physical environment. The fundamental education advances analytical thinking, and graduates are able to work independently and develop problem-solving competence that can be applied to questions of basic research as well as industrial applications. There are optional classes in applications such as exploration-related techniques and seismic hazard analysis.

Through the thorough education in the field of physics of the Earth, students will be able to choose between careers in fundamental research and technologically-oriented companies, particularly in the fields of energy, natural hazard and risk, security, raw materials, groundwater, and environment. Pertaining research is performed in national research organizations, universities, and the private sector, with applications in national and international organizations (e.g., CTBTO, IAEA), in companies dealing with oil and gas or other natural resources, and in the insurance industry. The rigorous approach learned in this programme allows graduates to use their skills also in other physical and natural science occupations. Students acquire skills in information technologies and data processing, as well as physical measurement. Beyond job opportunities that are available exclusively to quantitatively-trained graduates, more general opportunities exist in public administration, engineering companies, consulting etc.

Graduates also profit from the exposure to the English language in which the Master programme is taught.

### **Overview:**

(1) The Joint Master Study Programme “Physics of the Earth” is offered in English language only.

(2) The Joint Master Study Programme “Physics of the Earth” is structured as follows: Five compulsory modules (46 ECTS in total) develop the students’ basic knowledge of mathematical and numerical tools and of the main principles of the physics of the Earth. Students deepen their knowledge and focus on specialization topics by selecting courses from the modules “Compulsory elective courses” and “Elective courses”. Here, students have to choose at least 23 and 15 ECTS, respectively, from the courses offered in these modules, or, in case of elective courses, from other courses offered by University of Vienna or Comenius University Bratislava.

(3) Courses are offered either at the Comenius University Bratislava or at University of Vienna. Successfully completed courses at the partner university will be accredited by both universities.

(4) In the Master module students learn to discuss and present scientific results closely linked to their thesis content.

(5) The study is completed by a Master thesis (28 ECTS) and an oral defense with public presentation (2 ECTS).

			ECTS
MA PE 01	Mathematical and Numerical Methods	compulsory	15
MA PE 02	Seismic Waves	compulsory	8
MA PE 03	Physics of the Earth 1	compulsory	8
MA PE 04	Physics of the Earth 2	compulsory	8
MA PE 05	Geophysical Measurements	compulsory	7
MA PE 06	Compulsory elective courses	compulsory	23
MA PE 07	Elective courses	compulsory	15
MA PE 08	Master Module	compulsory	6
	Master Thesis and Thesis Defense		30
			120

## (6) Module description:

<b>MA PE 01</b>	<b>Mathematical and Numerical Methods</b>				<b>15 ECTS</b>	
<b>Participation Restriction</b>	<i>None</i>					
<b>Module tasks</b>	<i>Students learn basic mathematical and numerical methods applied in modeling, time series analysis and in solving inversion problems.</i>					
<b>Module structure</b>					Hrs	ECTS
	CUB	Signal Analysis	pi	VU	3	4
		Numerical Methods	pi	VU	2	3
		Digital Filtering in Geophysics	pi	VU	3	4
UW	Inverse Problems	npi	VO	3	4	
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>Comenius University Bratislava (CUB) and University of Vienna (UW)</i>					

<b>MA PE 02</b>	<b>Seismic Waves</b>				<b>8 ECTS</b>	
<b>Participation Restriction</b>	<i>none</i>					
<b>Recommended Participation Restriction</b>	<i>Knowledge of continuum mechanics and basics in rheology (e.g. as offered in MA PE 07).</i>					
<b>Module tasks</b>	<i>Students get basic knowledge of elastic wave propagation and radiation from earthquake sources. They learn solving elastodynamic equations of motion in heterogeneous media.</i>					
<b>Module structure</b>					Hrs	ECTS
	CUB	Seismic Waves and Physics of Earthquakes (1)	pi	VU	3	4
		Seismic Waves and Physics of Earthquakes (2)	pi	VU	3	4
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>Comenius University Bratislava (CUB)</i>					

<b>MA PE 03</b>	<b>Physics of the Earth 1</b>				<b>8 ECTS</b>	
<b>Participation Restriction</b>	<i>none</i>					
<b>Module tasks</b>	<i>Students get knowledge of the physical properties and the structure of the Earth as well as of dynamic processes of the Earth interior:</i> <ul style="list-style-type: none"> <li>• <i>Magnetic field</i></li> <li>• <i>Gravity field</i></li> </ul>					
<b>Module structure</b>					Hrs	ECTS
	CUB	Magnetic Field of the Earth	pi	VU	3	4
	UW	Gravity Field	npi	VO	3	4
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>Comenius University Bratislava (CUB) and University of Vienna (UW)</i>					

<b>MA PE 04</b>	<b>Physics of the Earth 2</b>				<b>8 ECTS</b>	
<b>Participation Restriction</b>	<i>none</i>					
<b>Module tasks</b>	<i>Students get knowledge of the physical properties and the structure of the Earth as well as of dynamic processes of the Earth interior:</i> <ul style="list-style-type: none"> <li>• <i>Structure of the Earth and its physical properties</i></li> <li>• <i>Basics of seismology</i></li> <li>• <i>Tectonophysics</i></li> </ul>					
<b>Module structure</b>					Hrs	ECTS
	UW	Structure of the Earth	npi	VO	2	3
		Tectonophysics	npi	VO	2	3
		Anisotropy	npi	VO	1	2
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>University of Vienna (UW)</i>					

<b>MA PE 05</b>	<b>Geophysical Measurements</b>				<b>7 ECTS</b>	
<b>Participation Restriction</b>	<i>none</i>					
<b>Module tasks</b>	<i>Students get basic knowledge of instrumentation in earthquake seismology as well as in gravity and magnetic field observation.</i>					
<b>Module structure</b>					Hrs	ECTS
	UW	Geophysical Measurements Excursion	npi pi	VO EX	3 2	4 3
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>University of Vienna (UW)</i>					

<b>MA PE 06</b>	<b>Compulsory elective courses</b>				<b>23 ECTS</b>	
<b>Participation Restriction</b>	<i>None</i>					
<b>Module tasks</b>	<i>Students get or deepen their knowledge in special topics of physics of the Earth and/or acquire advanced skills in numerical modeling techniques.</i>					
<b>Module structure</b>	<i>Courses with an extent of at least 23 ECTS have to be selected. For example, the following topics can be chosen:</i>					
	<ul style="list-style-type: none"> <li>• <i>Continuum Mechanics and Rheology</i></li> <li>• <i>Advanced Numerical Methods</i></li> <li>• <i>Numerical Modeling of Seismic Wavefields</i></li> <li>• <i>Statistical Methods of Data Analysis</i></li> <li>• <i>Seismic Hazard</i></li> <li>• <i>Induced Seismicity</i></li> <li>• <i>Advanced Seismometry</i></li> <li>• <i>Physics of Ionosphere and Magnetosphere</i></li> <li>• <i>Paleomagnetism</i></li> <li>• <i>Regional Structure</i></li> <li>• <i>Seismic Exploration</i></li> <li>• <i>Potential Field Methods</i></li> </ul> <p><i>The courses offered each semester will be announced in due time by each University in the course catalogue. Courses not listed in the course catalogue have to be approved in advance by the Board of the Physics of the Earth programme and a recommendation has to be given to the university representatives.</i></p>					
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>Comenius University Bratislava and University of Vienna</i>					

<b>MA PE 07</b>	<b>Elective courses</b>	<b>15 ECTS</b>
<b>Participation Restriction</b>	<i>None</i>	
<b>Module tasks</b>	<i>Students get or deepen their knowledge in special topics of the physics of the Earth and/or numerical methods.</i>	
<b>Module structure</b>	<p><i>Courses with an extent of at least 15 ECTS have to be selected. For example, the following topics can be chosen:</i></p> <ul style="list-style-type: none"> <li>• Continuum Mechanics and Rheology</li> <li>• Special Topics in Signal Analysis</li> <li>• Statistical Methods of Data Analysis</li> <li>• Advanced Numerical Methods</li> <li>• Numerical Modeling of Seismic Wavefields</li> <li>• Seismic Hazard</li> <li>• Forensic Seismology</li> <li>• Induced Seismicity</li> <li>• Advanced Seismometry</li> <li>• Magnetohydrodynamics</li> <li>• Physics of Ionosphere and Magnetosphere</li> <li>• Electromagnetic Sounding</li> <li>• Nuclear Geophysics</li> <li>• Special Functions in Geophysics</li> <li>• Fractals and Chaos in Geophysics</li> <li>• Geodynamics</li> <li>• Physics of the Earth's Material</li> <li>• Paleomagnetism</li> <li>• Geothermics</li> <li>• Hydrodynamics</li> <li>• Regional Structure</li> <li>• Seismic Exploration</li> <li>• Potential Field Methods</li> <li>• Mineral Physics and Mineral Transformations</li> <li>• Geology for Physicists</li> <li>• other courses offered by Comenius University Bratislava or University of Vienna</li> </ul> <p><i>Lectures already completed in Module MA PE 06 are excluded from the selection. The courses offered each semester will be announced in due time by each University in the course catalogue. Courses not listed in the course catalogue have to be approved in advance by the Board of the Physics of the Earth programme and a recommendation has to be given to the university representatives.</i></p>	
<b>Performance Record</b>	<i>successful completion of the coursework</i>	
<b>Language</b>	<i>English</i>	
<b>Responsible University</b>	<i>Comenius University Bratislava and University of Vienna</i>	

<b>MA PE o8</b>	<b>Master Module</b>				<b>6 ECTS</b>	
<b>Participation Restriction</b>	<i>none</i>					
<b>Module tasks</b>	<i>Students learn to discuss and to present literature and scientific results related to the physics of the Earth.</i>					
<b>Module structure</b>					Hrs	ECTS
	CUB	Physics of the Earth Seminar 1 Master seminar*	pi pi	SE SE	1 1	2 2
	UW	Physics of the Earth Seminar 2 Master seminar*	pi pi	SE SE	1 1	2 2
	* The Master seminar has to be completed only once at the location of the supervisor of the Master thesis.					
<b>Performance Record</b>	<i>successful completion of the coursework</i>					
<b>Language</b>	<i>English</i>					
<b>Responsible University</b>	<i>Comenius University Bratislava (CUB) and University of Vienna (UW)</i>					

## Annex B: Addresses

University of Vienna  
 Universitätsring 1  
 1010 Wien  
 Austria

Comenius University Bratislava  
 Rektorát UK  
 Šafárikovo námestie 6  
 P.O.BOX 440  
 814 99 Bratislava 1  
 Slovakia



## **Annex C: Admission, study rules, graduation and administrative processes for the implementation of the Physics of the Earth Programme**

### **§ 1 The admission procedure:**

- a) Students shall receive information about the program and the admission procedure at both universities.
- b) Students shall first apply for admission at CUB. After having completed the admission procedure at CUB, students have to apply for admission at UW. UW will accept only those students who have a positive notification by the CUB.
- c) CUB is committed to accept students with a completed bachelor program in Physics at the UW or the CUB without further examination or restrictions.
- d) Applications by students without direct access (i.e. having completed a bachelor's study programme considerably different from Physics) will be individually evaluated jointly by CUB and UW. Based on the evaluation of the application, an admission exam at CUB may be required.
- e) The deadline for completing the admission procedure at CUB is August 31. Amendments need to be coordinated with the head of studies at the UW. To register for courses at the UW the students should apply for admission at the UW immediately after completing the process at CUB.
- f) The applicant becomes a student of the joint programme only after having been officially accepted and enrolled at both universities.

### **§ 2 Exclusion from Studies**

- a) Since different national laws apply to the joint master program, both systems have to be considered. If a student loses his right to continue his/her studies at one partner university, the other partner university has to exclude the respective student as well.
- b) Reasons for exclusion from study at CUB include:
  - a. not meeting the requirements of the monitoring stage of study (In order to continue their studies, students must acquire at least 40 credits by the end of the first academic year (AY) (31 August). In order to extend their studies to three years, students must acquire at least 80 credits by the end of the second AY (31 August). Complete semesters within periods of interrupted study are not included in the length of study.)
  - b. not successfully completing a subject at the relevant university within the required number of attempts (according to the study regulations at CUB)
  - c. not paying tuition fees
  - d. a decision made by the disciplinary committee
  - e. exceeding the number of limited semesters for the whole programme
- c) Reasons for exclusion from study at UW include:
  - a. not successfully completing a subject at the relevant university within the required number of attempts (according to the study regulations at UW.)
  - b. not paying tuition fees or Student's Union fees
  - c. not continuing studies every semester.
- d) When a student is excluded from one university, that university immediately informs the other university and sends it a copy/the original of the letter of exclusion from studies.

### § 3 Schedule

- a) Student enrolment is determined by the respective universities' schedules.
- b) Teaching in individual subjects is undertaken in accordance with the schedule of the university providing the teaching.
- c) Evaluation (exam or continuous evaluation during semester) in individual subjects are undertaken in accordance with the schedule of the university providing teaching with the exception that at the CUB evaluations included in a current AY must be completed by 31 August of that AY. The UW aims at organising its evaluations in order to meet this deadline. Otherwise, assuming sufficient number of credits, according to the Slovak law the evaluation must be repeated in the next AY.
- d) The diploma thesis assignment form is to be submitted by the student by 31 January in the first year of study at the latest at the CUB; the formal aspects of the assignment form are determined by the practices and regulations of both universities (at CUB the assignment form must be entered in the Academic Information System [AIS]). The CUB will send the information to the head of studies at UW. Therefore, the parties strive for a joint standard form which is to be submitted by the students. A supervisor or thesis topic can be changed under well-founded circumstances after 31 January.

### § 4 Exams

- a) The number of makeup exams offered in order to pass a subject is determined by the university providing the teaching.
- b) If a student retaking an exam at UW receives a modified grade in a different AY than the one in which he was awarded the initial grade, the modified grade will not be included among the credits awarded in the given AY when the student sat the retake.
- c) The evaluation of subjects is determined by the rules of each university using the following conversion table:

CUB	UW
A: 90%-100%	1: 87.5%-100%
B: 80%-90%	2: 75%-87.5%
C: 70%-80%	3: 62.5%-75%
D: 60%-70%	4: 50%-62.5%
E: 50%-60%	
FX: 49.9%-0%	5: 49.9%-0%

- d) Study offices at CUB and UW will exchange transcripts of records for recognition of credits earned at the partner university. The percentage determined in c) is needed for the transformation in the electronic system of both universities. The parties provide each other with the evaluations of the students immediately after the end of each semester, but at the latest before August 31<sup>st</sup> of the actual academic year or 5 work days before the thesis defense.

### § 5 The length of study, tuition fee for non-EU students, and tuition fees for extended periods of study

- a) The standard length of study is two years.
- b) The maximum length of study is four years. Periods of interruption to studies are not counted for the total length of study.

- c) The tuition fee at the UW depends on the compliance with the minimum duration of the degree programme (4) plus two additional semesters, the citizenship and the date of payment. The Austrian National Union of Students membership fee (ÖH-Beitrag) has to be paid in any case.
- d) The payment for non-EU students is determined by the rules of the respective university. The fee from each university shall equal half of the total fee to be determined by the relevant university. (Tuition fees are paid independently of the number of subjects a student is taking in a given academic year. This, however, does not exclude the possibility of applying for a fee waiver or a reduction in tuition fees.)
- e) The payment for an extended period of study is determined by the rules of the respective university. In a year where there is a payment to be made to both universities, the fee from each university shall equal half of the total fee to be determined by the relevant university (i.e. the university where the teaching is actually being provided). (Tuition fees are paid independently of the number of subjects a student is taking in a given AY. This, however, does not exclude the possibility of applying for a fee waiver or a reduction in tuition fees.)

## **§ 6 Requirements for the completion of study:**

In order to successfully complete their studies, students must obtain a minimum of 120 credits in accordance with the requirements of the prescribed study programme, including the successful completion of the thesis defense.

## **§ 7 Interrupting studies**

Students can interrupt their studies by applying to do so in writing, ordinarily for an entire study period (e.g. a semester or an AY) at the CUB. The CUB informs the UW immediately of an accepted leave of study.

## **§ 8 Master thesis submission**

- a) After finishing their respective Master thesis, students will submit an electronic version of their thesis to the CUB Academic Information System (AIS) as well as to UW and deliver one printed copy to CUB and 3 identical copies to UW. The electronic and printed versions of the thesis has to follow the formal criteria of both universities (UW: [https://mtbl.univie.ac.at/storage/media/mtbl02/2014\\_2015/2014\\_2015\\_260.pdf](https://mtbl.univie.ac.at/storage/media/mtbl02/2014_2015/2014_2015_260.pdf)).
- b) To meet Austrian Law and the regulations at the UW, each thesis is officially reviewed (in written form) by the state exam committee (§ 9 lit. b). Therefore the respective state exam committee has to be formally established soon after submission of the thesis.

## **§ 9 Master thesis defense**

- a) The state exam committee will decide on admission to thesis defense based on the individual reviews of the thesis by the supervisor and reviewer and successful completion of all courses defined by the curriculum. The state exam committee will also assess the grade of the master thesis based on the individual reviews.
- b) Students are required to defend their thesis in an oral final examination. The thesis defense is defined in the curriculum of the joint program. It is designed to meet the criteria of the state exam in the Slovak Republic. The thesis defense takes place in front of a committee which meets the criteria for the state exam committee.

- c) The state exam committee consists of minimum four persons including representatives of both universities. Each representative meets the academic requirements and standards jointly determined by both universities according to their own regulations.
- d) The thesis defense take place either at CUB or UW based on a joint decision.

## **§ 10 Graduation**

- a) After successful defense of thesis, students will receive the following documents that formally and content-wise comply with the respective national laws and refer to this agreement/Joint Master Study Programme:
  - a. a joint decorative certificate
  - b. the Slovak master`s degree diploma, the state examination certificate and the diploma supplement
  - c. the Austrian master`s degree diploma (Bescheid der Universität Wien über die Verleihung des akademischen Grades)
- b) Graduates of the Joint Master Study Programme will award academic title according to the national legislations. The awarded academic title at CUB is “Magister” (Mgr.), the awarded academic title at UW is “Master of Science“ (MSc).
- c) The Slovak master`s degree diploma will contain a clause that it is only valid in combination with the Austrian master`s degree diploma and vice versa. The Austrian and Slovak master`s degree diplomas will contain a note that both universities confer the same degree within the framework of this Joint Master Study Programme and issue the respective documents. However, graduates are entitled to bear only one academic degree.
- d) Unless a different agreement has been reached in this regard, graduations shall take place alternately at CUB and UW.
- e) If a student completes study fulfilling conditions of completion with distinctions at each of the two universities, the completion of the joint study program is classified as completion with distinction.