JOHANNES GUTENBERG UNIVERSITÄT MAINZ

JG|U

JOHANNES GUTENBERG-UNIVERSITÄT MAINZ - 55099 Mainz

Att: Marta Llacer/Maricarmen Belmar
Rector´s Building-Servicio de Estudiantes
Universitat de València
Av. de Blasco Ibáñez, 13
46010 València
SPAIN

ABTEILUNG
RECHTSANGELEGENHEITEN

Administration Vertragsangelegenheiten und Vertragsarchiv
Katharina Kissi

Johannes Gutenberg-Universität Mainz
Saarstraße 21
55122 Mainz

Dienstgebäude Forum 3

Tel. +49 6131 39-22487
Fax +49 6131 39-25131

recht@uni-mainz.de
https://recht.verwaltung.uni-mainz.de

Unser Zeichen
240827_VA_Valencia

Datum
28. August 2024

Cooperation Agreement Double Degree Programme in Physics

Dear Ms. Llacer,

Please find enclosed one of the originals of the cooperation agreement regarding the Double Degree Programme on Physics between the Universitat de Valéncia and the Johannes Gutenberg-Universität Mainz, duly signed.

Yours sincerely,

i.A. Katharina Kissi

Cooperation Agreement regarding the
Double Degree Programme in Physics

between

Johannes Gutenberg-Universität Mainz, 55099 Mainz, Germany
represented by its president, Univ.-Prof. Dr. Georg Krausch,
acting for Fachbereich 08 (Physik, Mathematik und Informatik),
represented by its dean, Univ.-Prof. Dr. Patrick Windpassinger

and

Universitat de València Estudi General,
Avinguda de Blasco Ibáñez, 13, 46010 Valencia, Spain,
represented by its rector, Prof. Dr. María Vicenta Mestre Escrivá

PREAMBLE

Both universities have objectives and interests in the teaching, scientific, technological, and cultural fields. For this purpose, a cooperation agreement is currently in effect.

In addition, both universities are part of the FORTHEM alliance.

In the degree studies of Physics there is currently a bilateral exchange agreement within the LLP Erasmus programme.

The Double Degree Programme in Physics aims both at producing highly qualified professionals in the field of physics and at fostering the international mobility of students.

ART. 1 OBJECTIVE OF THE COOPERATION, PARTNERS, NAME OF DEGREE PROGRAMME, DEGREE

1. Johannes Gutenberg-Universität Mainz, (Germany) (hereinafter JGU) and Universitat de València Estudi General (Spain) (hereinafter UV) intend to establish a lasting and mutually beneficial cooperation. The forenamed Universities (hereinafter Partners, Partner Institutions or Universities) agree to establish the Double Degree Programme in Physics (hereinafter Degree Programme).
2. This cooperation agreement defines the aims and the contents of the Degree Programme as well as the rights and obligations of the Partners.
3. Successful graduates of the Degree Programme obtain the following degrees:
    - JGU: "Bachelor of Science in Physics (B.Sc.)" with 180 ECTS credits (3 years) and "Master of Science in Physics (M.Sc.)" with 120 ECTS credits (2 years)
    - UV: "Degree in Physics / Grado en Física / Grau en Física" with 240 ECTS credits (4 years) and "Master's Degree in Advanced Physics / Máster Universitario en Física Avanzada / Màster Universitari en Física Avançada" with 60 ECTS credits (1 year)

ART. 2 LEGAL FRAMEWORK

1. This agreement is signed on the following basis:

    JGU:

    - § 2 Abs. 6, § 19 Abs. 5, § 67 Abs. 4 and § 80 Abs. 1 of Hochschulgesetz Rheinland-Pfalz (Higher Education Act Rhineland-Palatinate) of 23. September 2020

    UV:

    - represented herein by its rector, Prof. Dr. María Vicenta Mestre Escrivá, acting by virtue of Article 94 of the Statutes of the Universitat de València, which were approved by Decree 128/2004, of 30 July, of the Consell de la Generalitat (DOGV

2004/8213), amended by Decree 45/2013, of 28 March, of the Consell (DOGV 2013/6994) and entitled to enter into this agreement by virtue of her appointment by Decree 25/2022, of 11 March, of the Consell (DOGV 14.03.2022);

- Organic Law 2/2023, of 22 March, on the University System;
- Royal Decree 822/2021, of 28 September, which establishes the organization of university education and the procedure for quality assurance;
- the Statutes of the Universitat de València, approved by Valencian Government Decree 128/2004, of 30 July, and other applicable regulations;
- Regulations for the approval of double degree programmes for Bachelor and Master Degrees (approved by the Governing Council of the Universitat de València on 30 January 2024. ACGUV 6/2024).

The Degree Programme will be implemented in the observance of the respective national and State or Federal laws and regulations in force in Partners' Institutions countries, in particular the Higher Education Acts.

2. It is agreed that the study programmes on which the Degree Programme is based, have to be certified or accredited at each Partner by the relevant authorities.
3. The Partners confirm to be authorized to award a degree based on an international Degree Programme.

ART. 3 DEGREE PROGRAMME STRUCTURE, DURATION

1. Students start the Degree Programme either at JGU or UV (Home University) and study four semesters at the Home University. At the beginning of the second year (third semester), students may apply for the participation in the Degree Programme. Selected students will move to the Partner University (Host University) for the beginning of the third year (fifth semester).
   Study pathways 1a and 1b start at JGU and finish with the master's thesis either at JGU (study pathway 1a) or at UV (study pathway 1b). Study pathways 2a and 2b start at UV and finish with the master's thesis either at UV (study pathway 2a) or at JGU (study pathway 2b). Details of the study pathways are described in Annex I.
2. The standard Degree Programme study period is 10 semesters (5 years) full time with approximately 30 ECTS credits per semester and no less than 300 ECTS credits in total.
3. The Degree Programme begins either in the winter semester at JGU or in the fall semester at UV.

ART. 4 MANAGEMENT OF THE DEGREE PROGRAMME

1. Each University appoints a Local Academic Coordinator. The persons appointed as Local Academic Coordinators are named in Annex III.

2. The Local Academic Coordinators

   - are responsible for the implementation, monitoring, supervision, and control of the cooperation agreement at their Universities, and the academic and administrative well-functioning of the Degree Programme.
   - attend to the didactic and administrative coordination with the Partners and the creation of an academic calendar for each year,
   - nominate the students for selection,
   - follow the participants from his or her own University, advising them on their plan of studies and remaining in contact with them for the entire duration of the Programme, and
   - welcome the students of the Partner University at his or her University and advise them on their studies during their stay.

3. Decisions by the Local Academic Coordinators must be unanimous.
4. The Local Academic Coordinators are supported in the day-to-day activities by Administrative Coordinators at each University. The Administrative Coordinators

   - are the principal contact persons for prospective and enrolled Degree Programme students, e.g. in case of student complaints,
   - prepare for the decisions of the Local Academic Coordinators and
   - guarantee correct administrative management of the Degree Programme; this includes the process of selection and admission of students.

5. Each University will take care of the costs incurred by its curriculum (teaching, administration-related costs, travel costs, transcript issuance, degree issuance).

ART. 5 STUDENT SELECTION, STUDENT ADMINISTRATION, STUDENT STATUS

1. The maximum number of student exchanges for this Degree Programme is settled initially to 5 students per university and academic year. This maximum can increase up to 10 if the number of exchange students (ingoing/outgoing) between the two universities is balanced. In any case, the balance in the number of exchange students should be pursued.
2. Degree Programme candidates must fulfil the following admission requirements:
   - Students from UV, who intend apply to for the Degree Programme
   a) must be regularly enrolled in the second year of the Degree in Physics at UV,
   b) shall prove English language skills at level B1, and
   c) shall prove German language skills at level B1.
   - Students from JGU who intend apply to for the Degree Programme

a) must be regularly enrolled in the second year of the Bachelor of Science in Physics at JGU,
b) shall prove English language skills at level B1, and
c) shall prove Spanish or Catalan language skills at level B1.

3. Each Partner conducts the process of application and selection separately in compliance with the regulations of this agreement.
4. The Partners are committed to selecting students wishing to participate in this double degree programme according to objective and specific criteria based on qualification, equality, merit and ability.
5. The Local Academic Coordinators nominate students to be accepted to the Degree Programme from the pool of applicants who meet the requirements mentioned in Art. 5 clause 2. Final selection of students is to be made by following each universities' student selection process. The responsibility lies at each university.
6. The Partners shall transfer all relevant details of the selected students to the other Partner Institution for the purpose of enrolment, observing the data protection regulations as laid down in Art. 10. The Partners will accept the selected students for enrolment in the corresponding undergraduate and master degrees.
7. Students must be enrolled at their Home University for the entire duration of the Degree Programme. Starting on semester fifth, students will be as well enrolled at the Host University and, depending on the pathway they have chosen, they will remain in that institution until the end of the programme. Host institution's exchanging rules will apply along their stay. Students will maintain, as long as enrolled, students' status at both universities.

ART. 6 ACADEMIC REGULATIONS AND EXAMINATIONS, EXAMINATION ADMINISTRATION, ACADEMIC GUIDANCE

1. The study pathways, modules, and equivalences are described in Annex I.
2. The teaching languages of the Degree Programme are English, Spanish, Catalan, or German, depending on the course. The Partners shall provide possibilities for students to improve on their language skills.
3. During the study period, students participating in the Degree Programme will take part in the teaching activities of the Host University as they are regularly carried out. Examinations, including the master's thesis and the thesis defence, take place according to the regulations, policies and procedures of the Partner Institution conducting the examination. The participating students will be evaluated according to the same criteria and with the same methodology regularly used at the Host University.
4. Credits obtained in accordance with the modalities described in Annex I are recognized by the Partners without further validation.
5. Both Partners will use the ECTS evaluation system. Grades are converted according to the conversion table provided in Annex II.

6. Upon successfully passing the examinations to the courses up to and including the third year, as described in Annex I, implying the completion and defence of either the adapted final degree work (UV) or the bachelor's thesis (JGU), students will receive the Bachelor of Science in Physics by JGU.
   Upon successfully passing the examinations to the courses up to and including the fourth year, as described in Annex I, students will receive the Degree in Physics by UV.
   Upon successfully passing the examinations to the courses up to and including the fifth year, as described in Annex I, implying the completion and defence of the master's thesis, students will receive the Master of Science in Physics by JGU. At UV students from pathways 1b and 2a will receive the Master in Advanced Physics specialising in one of its specialties. Those students from pathways 1a and 2b will receive the Master in Advanced Physics without specialisation.
7. The degree certificates of JGU will be issued in German and English, the degree certificates of UV will be issued in Spanish and Catalan. The Partner Institutions will supply a Diploma Supplement each to all graduating students.
8. At the end of each mobility period, each student will receive a Transcript of Records including the names of the courses, final grades and the number of credits obtained. Each Partner is responsible for issuing the Transcript of Records for their mobility period. Students have to submit the Transcript of Records at the Partner University.
9. If a student does not comply with the terms of this agreement, including the minimum length of the stay at the Host University and its study programme, that student will forfeit any right to receive the corresponding degree from the Host University and will be excluded from the Degree Programme, although she or he may still be eligible to obtain the corresponding degree at her or his Home University.

ART. 7 QUALITY ASSURANCE

1. Each Partner follows its own procedures for institutional quality control to ensure the maintenance of high-quality standards.
   The Local Academic Coordinators regularly evaluate the effectiveness of the learning programme and the results achieved by students, as well as the resources supplied by both universities. To improve the quality of the Double Degree Programme, the Local Academic Coordinators could suggest modifications and propose them to the competent boards of both universities.

   Additionally, the Local Academic Coordinators agree upon annual (in person or virtual) meetings regarding the former and current state as well as the prospective development of the Double Degree Programme. Results of the national quality assurance procedures can be discussed. The Local Academic Coordinators collect structured student feedback and take the results into account for the further development of the Double Degree Programme.

ART. 8 STUDENT SUPPORT

1. To ensure students' quick orientation and integration in the Programme as well as to provide detailed information about structural and examination-related requirements, the Partners shall publish corresponding information on the faculty websites, outlining the structure of the Degree Programme in general terms and providing details about the Partner Institutions, an overview of procedures, the time table of the academic year and important deadlines at the Partner Institutions, and all regulations which shall apply to all students on the Degree Programme. Furthermore, the faculty websites shall provide information on the overall costs of the Degree Programme.
2. The Partner Institutions offer Degree Programme students advice and orientation; these services are to be specified on the Degree Programme faculty websites.
3. The Degree Programme students will benefit from all the services offered by the Partner Institutions to other regular students.
4. The Partner Institutions will assist students to find accommodation within their means.
5. It is an important concern of the Partner Institutions to ensure equal opportunities. They strive to prevent any form of discrimination and to provide adequate support to persons affected by discrimination.

ART. 9 STUDENT FINANCES, INSURANCE

1. Payment of public fees will tend to be based in reciprocity criteria. All the Degree Programme's students will pay the mandatory fees in their Home institution and will be exempt from paying them at the Host institution.
2. The following additional fees apply for students:

   UV:

   - Students coming from JGU will pay some administrative fees: the issuance of the university card (5.87 EUR), school insurance (only for students under 28 years old) (1.12 EUR), and academic record management (27.34 EUR).
   - Fees for issuing the Undergraduate and master degrees' issuance fees (186.24 EUR, degree; 212.07 EUR, master).

   JGU:

   - For the period of studying at Johannes Gutenberg-Universität Mainz, students usually pay the 'Semesterbeitrag' of 358 EUR per semester, which covers public transport opportunities. However, this is not mandatory.
   - For students starting the Degree Programme at JGU: Students who have already completed a master's degree (or equivalent) must pay additional fees in order to study again. The fees amount to 700 EUR per semester enrolled at JGU.

All these amounts mentioned above are included only as a guide, and they come from the fees approved for academic year 2023-2024. Annually, these public fees can be subject to changes, which will be officially published as well on the Partners Universities' websites.

3. Students will be liable for all expenses (e.g. travel, accommodation, cost of living, insurances costs, textbooks) while studying at the Partner Institutions.
4. Partner universities will make every effort to ensure that students who participate in this Degree Programme can benefit from mobility grants from European Union programmes or similar, in accordance with the conditions and requirements of their home institution.
5. In any event, students participating in the Degree Programme will be responsible for providing sufficient proof of insurance in order to get enrolled:

   For UV:

   - Students shall be covered under the conditions of health care and repatriation services and, where appropriate, civil liability insurance. The student is responsible for the costs of such insurance.

   For JGU:

   - Students must produce adequate proof of health insurance for each semester of enrolment.
   - Enrolled students have accident insurance for university-related activities, which is covered by the Unfallkasse Rhineland-Palatinate.

ART. 10 DATA TRANSFER, DATA PROTECTION

The Partners process personal data in accordance with the General Data Protection Regulation (EU 2016/679). If not agreed otherwise, both universities are viewed as independent data controllers as defined by the General Data Protection Regulation, Article 4. The parties to this agreement will disclose personal data of their students and staff only to an extent which is needed for implementing educational & research cooperation and mobility in the framework of cooperative and exchange agreements.

ART. 11 PROMOTION OF THE DEGREE PROGRAMME

1. Each Partner may use the logos, names and other marks of the other Partner only in connection with the Degree Programme. Each Partner shall refer to the other Partners' participation in press announcements, marketing and other reasonable promotional activities involving the Degree Programme through the appropriate use of logos, names and marks of the Partner. Both Local Academic Coordinators validate the contents of any communication document, including information published on the websites of Partners. The right to use the name and/or logo or any other identifying marks of the other University as described in sentence 1 is limited to the duration of the agreement.

2. The Local Academic Coordinators will make arrangements to advertise the Degree Programme through websites, brochures, flyers and by papers and advertisement. The Degree Programme will be presented at a webpage in each faculty's website.

ART. 12 DURATION AND VALIDITY OF THE AGREEMENT

1. This agreement becomes binding with the last Partner's signature. It comes into effect on 9th of September 2024 (start of academic year at UV) and remains in effect for 4 years. Every extension or amendment to this agreement requires written agreement and the signature from the legal representatives of the Partners.
2. This agreement may be terminated at the request of one of the Partners, provided such a request is made in writing at least 12 months before termination to become effective. Any students who are already enrolled in the Degree Programme must be guaranteed enough time to finish their studies. In each individual case a period which corresponds to 1,5 times the period necessary to still complete the Degree Programme will be considered sufficient.
3. An evaluation of this agreement will be initiated by the Local Academic Coordinators at least 12 months prior to its expiration. The agreement is based on long-term strategic cooperation interests from the Partners. The Partners will support and work towards the renewal and extension of this agreement to ascertain the continuation of the Degree Programme.

   This agreement is only in English and has been signed by the legal representatives of the Partners. Each Partner shall receive one scan of the fully signed agreement hard copy of the agreement.

ART. 13 CHANGES, SEVERABILITY CLAUSE

1. Each Partner may at any time ask in writing for the revision of the agreement. All amendments and additions to this agreement, including the Annexes which shall form an integral part of this cooperation agreement, must be made in writing and signed by the legal representatives of the Partners to be effective. The same applies to changes made to this clause. Spoken agreements are invalid and none have been made. Every amendment must be attached to the original copy of this agreement.
2. By way of derogation from Nr. 1, Annex I and Annex III may be adjusted with approval of the respective responsible boards or institutions of each Partner University. Annex II (grade conversion tables), is to be updated under the responsibility of the Local Academic Coordinators on a regular basis without amendment of this cooperation agreement.
3. It is agreed that the Degree Programme cannot continue if a Partner does not meet the requirements of reaccreditation. In this case, the agreement shall be revised.
4. If this agreement or any part thereof is found to be illegal or unenforceable, that part will be removed and the illegality or unenforceability shall not affect the untainted parts of this

agreement, which shall continue to be valid and enforceable. Notwithstanding the above, in the event of any such nullification, the Partners shall negotiate in good faith to agree on the terms of a mutually acceptable and satisfactory alternative provision to replace the nullified provision.

ART. 14 SETTLEMENT OF DISPUTES, APPLICABLE LAW

In case of difficulties involving the interpretation or execution of this agreement, the Local Academic Coordinators and academic departments shall attempt to resolve the dispute amicably. In the event of non-resolution, the first step is mediation by the President of JGU or his delegate/s and by the Rector of UV or her delegate/s. Recourse to a court of jurisdiction will be only a last resort, after exhausting all other possibilities. In this case, the conflict will be decided according to the laws of the defendant party.

Signature

for the cooperation agreement regarding of the Double Degree Programme in Physics

in its final version

for and on behalf of **JGU**

Date: Aug 27, 2024

Signature: ..

Name: Univ.-Prof. Dr. Georg Krausch

Role in the Organization: President

In consent with

Date: 19.8.24

Signature: .. ..

Name: Univ.-Prof. Dr. Patrick Windpassinger

Role in the Organization: Dean of Fachbereich 08 (Physik, Mathematik und Informatik)

Signature

for the cooperation agreement regarding the Double Degree Programme in Physics

in its final version

for and on behalf of **UV**

Date: 16 - julio - 2024

Signature:

Name: Prof. Dr. María Vicenta Mestre Escrivá

Role in the Organization: Rector

ANNEX I: STUDY PATHWAYS, MODULES, AND EQUIVALENCES

1. Study pathways

The four study pathways of the Degree Programme are:

study pathway	year 1	year 2	year 3	year 4	year 5
1a	JGU	JGU	UV	UV	JGU / UV
1b	JGU	JGU	UV	UV / JGU	UV
2a	UV	UV	JGU	JGU	UV
2b	UV	UV	JGU	JGU	JGU / UV

The module tables for these study pathways are given below.

Additional information on the modules (module programme, learning outcomes, language of instruction, assessment method, etc.) can be found in the corresponding websites of the different degrees.

Study pathway 1a

First semester: **JGU**	Module number	ECTS credits	
Experimental physics 1	M.08.128.22010	9	
Theoretical methods	M.08.128.23013	8	
Mathematics 1	M.08.105.2010	9	
Elective subject: Experimental chemistry	M.09.032.0001	6	
(or: Informatics: Programming, 08.079.1001, 6 ECTS credits)			
			Σ 32
Second semester: **JGU**			
Experimental physics 2	M.08.128.22020	9	
Theoretical physics 1: Classical mechanics	M.08.128.10111	8	
Mathematics 2	M.08.105.2020	9	
Elective subject: Chemistry laboratory	M.09.032.0002	6	
(or: Informatics: Software development, 08.079.1002, 6 ECTS credits)			
			Σ 32
Third semester: **JGU**			
Experimental physics 3	M.08.128.030	8	
Theoretical physics 2: Electrodynamics	M.08.128.122	8	
Mathematics 3b	M.08.125.2032	7	
Elementary laboratory course, part 1	M.08.128.10210	6	
Extended competences: "Speak your science"	M.08.128.619	3	
			Σ 32
Fourth semester: **JGU**			
Ex-B: Nuclear, particle, and astrophysics	M.08.128.22072	7	
Theoretical physics 3: Quantum mechanics	M.08.128.10130	9	
Mathematics 3a	M.08.105.2030	7	
Elementary laboratory course, part 2	M.08.128.10210	6	
			Σ 29

Fifth semester: **UV**			
Thermodynamics	34245	7.5	
Optics I	34257	6	
Statistical and numerical methods	34249	8	
Electromagnetism laboratory, part 1	34252	2.5	
Quantum physics laboratory, part 1	34254	2.5	
Optics laboratory, part 1	34253	2.5	
			Σ 29
Sixth semester: **UV**			
Statistical physics	34246	4.5	
Optics II	34258	6	
Quantum physics	34260	6	
Electromagnetism laboratory, part 2	34252	2.5	
Quantum physics laboratory, part 2	34254	2.5	
Optics laboratory, part 2	34253	2.5	
Degree final project (adapted)	34265 (adapted)	6	
			Σ 30
Seventh semester: **UV**			
Solid state physics	34263	7.5	
Classical electrodynamics	34267	4.5	
Quantum mechanics	34268	4.5	
Astrophysics	34261	4.5	
Elective subject, e. g.			
Renewable energies and solar radiation	36402	7.5	
			Σ 28.5
Eighth semester: **UV**			
Elective subjects, e. g.			
- Quantum field theory	34272	6	
- Electronics	34281	6	
- Phys. & nanotechn. of semiconductors	36543	6	
- Quantum optics	34276	6	
- Atomic and radiation physics	34273	4.5	
			Σ 28.5
Ninth semester: **JGU**			
Specialization	M.08.128.660	15	
Methodological knowledge	M.08.128.670	15	
			Σ 30
Tenth semester: **JGU** and **UV**			
JGU: Master's thesis	A.08.128.969	30	
UV: Elective subject	43xxx	6	
			Σ 36

Study pathway 1b

First semester to seventh semester: identical to study pathway 1a

Eigth semester: **JGU**		
Ex-A: Atomic and quantum physics	M.08.128.22071	7
Seminar, part 1	M.08.128.630	4
Seminar, part 2	M.08.128.630	4

Advanced laboratory course (Master)	M.08.128.620	10	
Elective subject, e. g.			
- Relativistic quantum field theory	08.128.165	9	
			Σ 34
Ninth semester: **UV**			
36 credits from subjects of one of the four specialities (Theoretical physics, Nuclear and particle physics, Astrophysics, Photonics)	43xxx		
			Σ 36
Tenth semester: **UV**			
Introduction to final project	43311	6	
Master's final project	43312	18	
			Σ 24

Study pathway 2a

First semester: **UV**			
Algebra and geometry I	34236	6	
Calculus I	34238	6	
General physics I	34233	6	
Chemistry	34240	6	
Informatics	34241	6	
			Σ 30
Second semester: **UV**			
Algebra and geometry II	34237	6	
Calculus II	34239	6	
General physics II	34234	6	
General physics III	34235	6	
Introduction to experimental physics	34266	6	
			Σ 30
Third semester: **UV**			
Mathematical methods I	34247	6	
Mechanics I	34242	6	
Thermodynamics	34245	7.5	
Statistical and numerical methods	34249	8	
Thermodynamics laboratory	34251	5	
			Σ 32.5
Fourth semester: **UV**			
Mathematical methods II	34248	6	
Mechanics II	34244	7.5	
Oscillations and waves	34243	4.5	
Atmospheric physics	34262	4.5	
Mechanics laboratory	34250	5	
			Σ 27.5
Fifth semester: **JGU**			
Ex-B: Nuclear, particle, and astrophysics	M.08.128.22072	7	
Theoretical physics 3: Quantum mechanics	M.08.128.10130	9	
Theoretical physics 4: Statistical physics	M.08.128.10140	9	
Advanced laboratory course (Bachelor), part 1	M.08.128.220	5	

Seminar on final thesis options	M.08.128.271	1	
			Σ 31
Sixth semester: **JGU**			
Ex-C: Condensed matter physics	M.08.128.22073	7	
Theoretical physics 2: Electrodynamics	M.08.128.122	8	
Advanced laboratory course (Bachelor), part 2	M.08.128.220	5	
Bachelor's thesis	A.08.128.10960	13	
			Σ 33
Seventh semester: **JGU**			
Ex-A: Atomic and quantum physics	M.08.128.22071	7	
Theoretical physics 5: Adv. quantum mechanics	M08.128.151	9	
Seminar, part 1	M.08.128.630	4	
Elective subjects, e. g.			
- Quantum spintronics	08.128.7014	6	
- Nonequilib. phenomena in quant. matter	08.128.752	6	
			Σ 32
Eighth semester: **JGU**			
Advanced laboratory course (Master)	M.08.128.620	10	
Seminar, part 2	M.08.128.630	4	
Elective subjects, e. g.			
- Astroparticle physics	M.08.128.737	6	
- Cosmology and general relativity	M.08.128.732	6	
- Quantum information (Q-Ex-3)	M.08.128.804	6	
			Σ 32
Ninth semester: **UV**			
36 credits from subjects of one of the four specialities (Theoretical physics, Nuclear and particle physics, Astrophysics, Photonics)	43xxx		
			Σ 36
Tenth semester: **UV**			
Introduction to final project	43311	6	
Master's final project	43312	18	
			Σ 24

Study pathway 2b

First semester to eigth semester:	identical to pathway 2a		
Ninth semester: **JGU**			
Specialization	M.08.128.660	15	
Methodological knowledge	M.08.128.670	15	
			Σ 30
Tenth semester: **JGU** and **UV**			
JGU: Master's thesis	A.08.128.969	30	
UV: Elective subject	43xxx	6	
			Σ 36

2. Notes

1. Deviations from these plans require the consent of the coordinators.

2. In study pathways with the fifth year at JGU (study pathways 1a and 2b) a lecturer of UV will act as the second referee of the master's thesis.

He or she will attend via teleconference to the seminar talks which complete the modules "specialization" and "methodological knowledge."

Students can choose to finish the module "methodological knowledge" by producing a portfolio of documents representing the work, instead of giving a seminar talk. In this case, the UV lecturer shall get the portfolio and can discuss it with the student.

The UV lecturer shall participate via teleconference in the final colloquium and discussion.

Additionally, the student will make a short stay (typically 4 weeks) at UV in the period March - July enrolling in one elective 6 ECTS subject offered in the Master of Advanced Physics. The student will take advantage of his / her stay at UV to contact and discuss with his / her second referee of the master's thesis. Shall the student need it, an extension of four weeks of the master's thesis finishing date will be granted.

3. Equivalences for study pathway 1a

3.1 UV Degree in Physics

JGU Modules, taken			UV Modules, equivalent		
Block: Mathematics & informatics					
M.08.105.2010	Mathematics 1	9	34236	Algebra and geometry I	6
M.08.105.2020	Mathematics 2	9	34238	Calculus I	6
M.08.105.2032	Mathematics 3b	7	34237	Algebra and geometry II	6
M.08.105.2030	Mathematics 3a	7	34239	Calculus II	6
M.08.128.23013	Theoretical methods	8	34247	Mathematical methods I	6
			34248	Mathematical methods II	6
			34241	Informatics	6
		Σ 40			Σ 42
Block: General physics					
M.08.128.22010	Exptl. phys. 1	9	34233	General physics I	6
M.08.128.22020	Exptl. phys. 2	9	34234	General physics II	6
			34235	General physics III	6
		Σ 18			Σ 18
Block: Elementary laboratory & extended competences					
M.08.128.10210	Elem. lab course 1	6	34266	Intro. exptl. phys.	6
M.08.128.10210	Elem. lab course 2	6	34251	Thermodynamics lab	5
M.08.128.619	"Speak your science"	3	34250	Mechanics lab	5
		Σ 15			Σ 16

Block: Mechanics & waves					
M.08.128.10111	Theoretical phys. 1	8	34242	Mechanics I	6
M.08.128.030	Exptl. phys. 3	8	34244	Mechanics II	7.5
			34243	Oscillations and waves	4.5
		Σ 16			Σ 18
Block: Complementary topics					
M.09.032.0001	Exptl. chemistry	6	34240	Chemistry	6
M.09.032.0002	Chemistry lab	6	34262	Atmospheric physics	4.5
		Σ 12			Σ 10.5
Block: Electromagnetism & quantum physics					
M.08.128.122	Theor. physics 2	8	34255	Electromagnetism I	6
			34256	Electromagnetism II	6
M.08.128.10130	Theor. physics 3	9	34259	Quantum physics I	6
		Σ 17			Σ 18
Block: Nuclear & particle physics					
M.08.128.22072	Nucl. part. & astrophys.	7	34264	Nucl. & particle physics	7.5

3.2 UV Master in Advanced Physics

JGU Modules, taken			UV Modules, equivalent		
M.08.128.660	Specialization	15	43xxx	Master elective subject	6
M.08.128.670	Meth. Knowledge	15	43xxx	Master elective subject	6
			43xxx	Master elective subject	6
			43xxx	Master elective subject	6
			43xxx	Master elective subject	6
			43xxx	Master elective subject	6
		Σ 30			Σ 36
A.08.128.969	Master's thesis	30	43xxx	Master elective subject	6
			43312	Master's final project	18
		Σ 30			Σ 24

3.3 JGU B.Sc. in Physics

UV Modules, taken			JGU Modules, equivalent		
Block: Advanced laboratory & seminar					
34252	Electromagnetism lab	5	M.08.128.271	Seminar	5
34254	Quantum physics lab	5	M.08.128.220	Adv. lab (Bachelor)	10
34253	Optics lab	5			
		Σ 15			Σ 15
Block: Advanced physics topics & thesis					
34245	Thermodynamics	7.5	M.08.128.140	Theoretical physics 4	9
34246	Statistical Physics	4.5	M.08.128.2207x	Adv. exptl. phys.	7
34257	Optics I	6	M.08.128.2207x	Adv. exptl. phys.	7
34258	Optics II	6	M.08.128.240	Meas. methods	6
34260	Quantum physics II	6	M.08.128.245	Measurement methods	3
34249	Stat. & num. Meth.	8	A.08.128.10960	Bachelor's thesis	13
34265'	Degree final project	6			

		Σ 44			Σ 45

3.4 JGU M.Sc. in Physics

UV Modules, taken			JGU Modules, equivalent		
Block: Advanced physics topics					
34263	Solid-state physics	7.5	M.08.128.620	Adv. lab (Master)	10
34267	Clas. electrodyn.	4.5	M.08.128.630	Seminars	8
34268	Quantum mechanics	4.5	M.08.128.2207x	Adv. exptl. phys.	7
34261	Astrophysics	4.5	M.08.128.xxx	elective theor. phys.	9
34xxx	elective subject	7.5	M.08.128.xxx	elective subject	6
34xxx	elective subject	6	M.08.128.xxx	elective subject	6
34xxx	elective subject	6	M.08.128.xxx	elective subject	6
34xxx	elective subject	6	M.08.128.xxx	elective subject	6
34xxx	elective subject	6	M.08.128.xxx	elective subject	6
34xxx	elective subject	4.5			
43xxx	elective subject	6			
		Σ 63			Σ 64

4. Equivalences for study pathway 1b

4.1 UV Degree in Physics

Equivalences for year 1 and year 2 are identical to study pathway 1a.

Equivalences for year 4, second term:

JGU Modules, taken			UV Modules, equivalent		
M.08.128.22071	At. & quant. phys.	7	09996	Elective credits	34.5
M.08.128.630	Seminar, part 1	4			
M.08.128.630	Seminar, part 2	4			
M.08.128.620	Adv. lab (Master)	10			
08.128.xxx	Elective subject	9			
		Σ 34			

4.2 UV Master in Advanced Physics

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4.3 JGU B.Sc. in Physics

Identical to study pathway 1a.

4.4 JGU M.Sc. in Physics

UV Modules, taken		JGU Modules, equivalent		
Block: Advanced physics topics I				
34263 Solid-state physics	7.5	08.128.xxx	elective subject	6
34267 Clas. electrodyn.	4.5	08.128.xxx	elective subject	6
34268 Quantum mechanics	4.5	08.128.xxx	elective subject	6
34261 Astrophysics	4.5	08.128.xxx	elective subject	6
34xxx elective subject	7.5	08.128.xxx	elective subject	6
	Σ 28.5			Σ 30
Block: Advanced physics topics II & thesis				
43xxx Master elective subject	6	M.08.128.660	Specialization	15

43xxx Master elective subject	6	M.08.128.670	Meth. Knowledge	15
43xxx Master elective subject	6	A.08.128.969	Master's thesis	30
43xxx Master elective subject	6			
43xxx Master elective subject	6			
43xxx Master elective subject	6			
43xxx Master elective subject	6			
43312 Master's final project	18			
	Σ 60			Σ 60

5. Equivalences for study pathway 2a

5.1 UV Degree in Physics

JGU Modules, taken			UV Modules, equivalent		
Block: Electromagnetism, quantum and statistical physics					
M.08.128.10130	Theoretical phys. 3	9	34255	Electromagnetism I	6
M.08.128.122	Theoretical phys. 2	8	34256	Electromagnetism II	6
M.08.128.151	Theoretical phys. 5	9	34259	Quantum physics I	6
M.08.128.10140	Theoretical phys. 4	9	34260	Quantum physics II	6
			34267	Class. electrodynamics	4.5
			34268	Quantum mechanics	4.5
			34246	Statistical physics	4.5
		Σ 35			Σ 37.5
Block: Advanced laboratory					
M.08.128.220	Adv. lab (Bachelor)	10	34252	Electromagnetism lab	5
M.08.128.620	Adv. lab (Master)	10	34254	Quantum phys. lab	5
			34253	Optics lab	5
		Σ 20			Σ 15
Block: Advanced physics topics					
M.08.128.22072	Nucl. part. & astroph.	7	34264	Nucl. & part. phys.	7.5
M.08.128.22073	Cond. matter phys.	7	34263	Solid state phys.	7.5
M.08.128.22071	At. & quant. phys.	7	34257	Optics I	6
			34258	Optics II	6
		Σ 21			Σ 27
Block: Elective subjects and thesis					
08.128.271	Seminar thesis opt.	1	34265	Degree final project	6
A.08.128.10960	Bachelor's thesis	13	34261	Astrophysics	4.5
M.08.128.630	Seminar	8	09998	Elective credits	30
08.128.xxxx	elective subject	6			
08.128.xxx	elective subject	6			
08.128.xxx	elective subject	6			
08.128.xxx	elective subject	6			
08.128.xxx	elective subject	6			
		Σ 52			Σ 40.5

5.2 UV Master in Advanced Physics

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5.3 JGU B.Sc. in Physics

UV Modules, taken			JGU Modules, equivalent		
Block: Mathematics & informatics					
34236	Algebra and geometry I	6	M.08.105.2010	Mathematics 1	9
34238	Calculus I	6	M.08.105.2020	Mathematics 2	9
34237	Algebra and geometry II	6	M.08.105.2032	Mathematics 3b	7
34239	Calculus II	6	M.08.105.2030	Mathematics 3a	7
34247	Mathematical methods I	6	M.08.128.23013	Theoretical methods	8
34248	Mathematical methods II	6	M.08.128.260	Computers in Science	6
34241	Informatics	6			
		Σ 42			Σ 46
Block: Introductory physics					
34233	General physics I	6	M.08.128.22010	Experimental physics 1	9
34234	General physics II	6	M.08.128.22020	Experimental physics 2	9
34235	General physics III	6			
		Σ 18			Σ 18
Block: Elementary physics & complementary topics					
34242	Mechanics I	6	M.08.128.10111	Theoretical physics 1	8
34244	Mechanics II	7.5	M.08.128.030	Experimental physics 3	8
34243	Oscillations and waves	4.5	M.08.128.xxx	elective subject	6
34249	Stat. & num. meth.	8	M.08.128.xxx	elective subject	6
34245	Thermodynamics	7.5	M.08.128.xxx	elective subject	6
34240	Chemistry	6	M.09.032.0001	Experimental chemistry	6
34262	Atmospheric physics	4.5	M.09.032.0002	Chemistry laboratory	6
		Σ 44			Σ 46
Block: Elementary laboratory & extended competences					
34266	Intro. experimental phys.	6	M.08.128.10210	Elem. lab course	12
34251	Thermodynamics lab	5	M.08.128.619	"Speak your science"	3
34250	Mechanics lab	5	M.08.128.271a	Seminar	4
		Σ 16			Σ 19

5.4 JGU M. Sc. in Physics

UV Modules, taken			JGU Modules, equivalent		
Block: Advanced physics topics & thesis					
43xxx	Master elective subject	6	M.08.128.660	Specialization	15
43xxx	Master elective subject	6	M.08.128.670	Meth. Knowledge	15
43xxx	Master elective subject	6	A.08.128.969	Master's thesis	30
43xxx	Master elective subject	6	43xxx	Master elective subject	6
43xxx	Master elective subject	6	43xxx	Master elective subject	6
43312	Master's final project	18			
		Σ 60			Σ 60

6. Equivalences for study pathway 2b

6.1 UV Degree in Physics

Identical to study pathway 2a.

6.2 UV Master in Advanced Physics

Identical to study pathway 1a.

6.3 JGU B. Sc. in Physics

Identical to study pathway 2a.

6.4 JGU M. Sc. in Physics

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ANNEX II: GRADE CONVERSION TABLES

1. Grades, grade conversion procedure, data

At UV marks are reported as a numerical mark from 0 to 10 to one decimal place, followed by the corresponding qualitative grade on the following scale:

9.0 – 10	distinction	(sobresaliente, SB)
7.0 – 8.9	merit	(notable, NT)
5.0 – 6.9	pass	(aprobado, AP)
0 – 4.9	fail	(suspenso, SS)

"Distinction with Honours" ("Matrícula de Honor") may be awarded to students who have obtained a grade of 9.0 or higher. It can be awarded to one out of every twenty students per group.

At JGU marks are reported on a scale 5.0 to 1.0, where 1.0 means "very good" and 5.0 means "not sufficient / fail". Grades can be raised and lowered by 0.3 between 1.0 and 4.0, so that:

1.0 ; 1.3	very good	(sehr gut)
1.7 ; 2.0 ; 2.3	good	(gut)
2.7 ; 3.0 ; 3.3	satisfactory	(befriedigend)
3.7 ; 4.0	sufficient	(ausreichend)
5.0	fail	(nicht ausreichend)

If the achievement of a student is outstanding (overall grade better than 1.3 (B.Sc.) or 1.2 (M.Sc.), and grade of the thesis 1.0, and finished within the standard period of study) then the overall grade "passed with distinction" ("mit Auszeichnung bestanden") is awarded.

The grade conversion tables are produced following the process described in the "ECTS Users' Guide," method "maximum grade of overlapping ranges." The tables shall be updated on a reasonable schedule, generally every three years. The tables below are based on the following data:

JGU: winter semester 2021/22, summer semester 2022, winter semester 2022/23, summer semester 2023; number of grades: B. Sc. in physics: 2129, M. Sc. in physics: 584

grade	JGU B.Sc. in Physics	JGU M.Sc. in Physics
1.0	23.34 %	39.55 %
1.3	14.47 %	23.97 %
1.7	11.60 %	11.99 %
2.0	8.97 %	6.51 %
2.3	8.88 %	5.82 %
2.7	8.03 %	2.91 %
3.0	5.26 %	2.74 %
3.3	6.29 %	0.68 %
3.7	5.92 %	2.74 %

4.0	7.24 %	3.09 %

UV: academic years 2021-22 and 2022-23; number of grades: Degree in Physics: 6644, Master in Advanced Physics: 469

grade	UV Degree in Physics	UV Master in Adv. Physics
9.5 - 10	9.60 %	16.84 %
9.0 - 9.4	13.56 %	27.93 %
8.5 - 8.9	9.86 %	10.87 %
8.0 - 8.4	11.56 %	14.50 %
7.5 - 7.9	10.30 %	6.18 %
7.0 - 7.4	11.57 %	10.02 %
6.5 - 6.9	8.68 %	3.20 %
6.0 - 6.4	8.52 %	4.90 %
5.5 - 5.9	7.34 %	2.13 %
5.0 - 5.4	9.01 %	3.43 %

2. Grade Conversion Tables

UV to JGU:

grade	UV Degree to JGU B.Sc.	UV Degree to JGU M.Sc.	UV Master to JGU M.Sc.
9.5 - 10	1.0	1.0	1.0
9.0 - 9.4	1.0	1.0	1.0
8.5 - 8.9	1.0	1.0	1.3
8.0 - 8.4	1.3	1.0	1.3
7.5 - 7.9	1.7	1.3	1.7
7.0 - 7.4	2.0	1.3	2.0
6.5 - 6.9	2.3	1.7	2.3
6.0 - 6.4	2.7	1.7	2.7
5.5 - 5.9	3.3	2.3	3.7
5.0 - 5.4	3.7	3.0	3.7
needed for:	1a, sem. 5-6 1b, sem. 5-6	1a, sem. 7-8 1b, sem. 7	1a, sem. 10 (stay at UV) 1b, sem. 9-10

	2a, sem. 1-4 2b, sem. 1-4	2a, sem. 9-10 2b, sem. 10 (stay at UV)

JGU to UV:

grade	JGU B.Sc. to UV Degree	JGU M.Sc. to UV Degree and to UV Master
1.0	10	10
1.3	8.8	9.3
1.7	8.3	8.3
2.0	7.8	7.8
2.3	7.3	7.3
2.7	6.8	6.8
3.0	6.3	6.3
3.3	6.3	6.3
3.7	5.8	6.3
4.0	5.3	5.3
needed for:	1a, sem. 1-4 1b, sem. 1-4 2a, sem. 5-6 2b, sem. 5-6	1b, sem. 8 2b, sem. 7-8 1a, sem. 9-10 2b, sem. 9-10

Students with a grade of 9.0 or higher in a subject after the grade conversion will be awarded a Matrícula de Honor if the original JGU grade is within the best 5 % of the group qualifications.

ANNEX III: LOCAL ACADEMIC COORDINATORS

On behalf of UV,

- Prof. José María Martí, Departamento de Astronomía y Astrofísica

On behalf of JGU,

- Prof. Jochen Walz, Institut für Physik