



Universidad Nacional de Tucumán



**DOUBLE DEGREE COLLABORATION AGREEMENT BETWEEN
THE FACULTY OF APPLIED SCIENCES AND TECHNOLOGY
OF THE NATIONAL UNIVERSITY OF TUCUMÁN,
AND
THE DEPARTMENT OF CIVIL, GEO AND ENVIRONMENTAL
ENGINEERING OF THE TECHNICAL UNIVERSITY OF MUNICH**

Expte. N° 60524-19

The Faculty of Applied Sciences and Technology from the National University of Tucumán (UNT) with registered office at Avenida Independencia 1800, T4002BLR San Miguel de Tucumán, Argentina, and on its behalf and represented by the Rector, Ing. José García, and on the other part, the TUM Department of Civil, Geo and Environmental Engineering of the Technical University of Munich (TUM), with registered office at Arcisstrasse 21, 80333, Munich, Germany, and on its behalf and represented by its Senior Vice President, Prof. Dr. Juliane Winkelmann, conclude this Specific Agreement on Academic Cooperation, subject to compliance with the articles established in this agreement:

Article 1: Scope of the Agreement

This Double Degree Collaboration Agreement aims to implement a Double Degree Program at the Master's level.

The Double Degree Program is open to UNT students enrolled in the Master's program in Geotechnical Engineering of the Faculty of Applied Sciences and Technology and to students of TUM enrolled in the Master of Civil Engineering (Master Bauingenieurwesen).

The Master's Degree in Geotechnical Engineering of UNT is regulated in accordance with the Regulations of Postgraduate Studies of the National University of Tucumán, Resolution 2558/2012.

The Master's Degree of Civil Engineering of TUM is regulated by the Examinations and Academic Regulations for the Master's Program in Civil Engineering (Fachprüfungs- und Studienordnung für den Masterstudiengang Bauingenieurwesen).

After successful participation in the Double Degree Program, students from UNT will be awarded the Master of Science (M. Sc.) degree by TUM, whereas students from TUM will be awarded the Master of Science (M. Sc.) degree by UNT, both in addition to the degree awarded by the home university.

In order to obtain the degree, students of the UNT and TUM must be enrolled at these universities.

Article 2: Student Application and Admission

In order to participate in the Double Degree Program, students must be first accepted into the master's program at their home institution, where a first evaluation of students who are

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interested in the Double Degree Program will be made. Based on this first evaluation, if necessary, the home institution will conduct an interview with candidates who meet the requirements for the program. Finally, the home institution will provide a list of selected students on the basis of their academic results, interest and language skills.

To formalize the application for admission to the Double Degree Program students must meet the requirements of each university. Final admission requires approval by the responsible coordinators from both TUM and UNT.

Article 3: Registration and Tuition Fees

Students participating in the Double Degree Program will enroll and pay tuition fees at their home university. They will be enrolled as regular students at the host university where tuition fees will be waived for the duration of their participation in the program. At TUM an obligatory contribution to the student union will be charged in either case.

This exemption does not apply to classes at the Language Center. Upon request, each partner university will provide information about language courses that are free of charge for enrolled students.

Article 4: Coordination

At UNT, the Double Degree Program will be managed by the Faculty of Applied Sciences and Technology.

At TUM, the double Degree Program will be managed by the TUM Department of Civil, Geo and Environmental Engineering.

Each university must assign a coordinator who will be responsible for the management and administrative monitoring of the Double Degree Program. In the case of TUM, the Professor of Soil Mechanics and Foundation Engineering, Rock Mechanics and Tunneling and in the case of UNT, the Academic Director of the Master's Degree in Geotechnical Engineering will be the coordinator.

Article 5: Language

At the UNT the language of instruction will be Spanish and/or English.

Students must demonstrate a level of Spanish language equivalent to B2.

As the language of instruction will in general be German or English, TUM will require a certification of sufficient proficiency in the German language according to the *Enrollment, Student Fees Payment, Leave of Absence and Withdrawal Regulations* of the Technical University of Munich ("Immatrikulationssatzung") or a certification of sufficient proficiency in the English language according the *Academic and Examination Regulations* for the Master of Civil Engineering. Students who do not provide a proof of proficiency in German for the application, are admitted in condition to complete at least one module providing integrative knowledge of the German language within their studies at TUM.

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A level of language equivalent to B1 will be admitted provided that the student takes an intensive course of at least six (6) weeks in the country of destination before the start of the academic year.

Aforementioned language levels are a prerequisite for admission to the Double Degree Program.

An English language level equivalent to B1 or higher is recommended in either case.

Article 6: Curriculum and Courses Recognition

In the German system, the ECTS (European Credits Transfer System) is the academic unit to measure the amount of work of the student to meet the objectives of the study program and is obtained by passing each of the courses that integrate the curriculum. This unit of measurement integrates the time of theoretical and practical classes, as well as the hours of study and work that the student must perform to achieve the objectives of the courses, such as exam preparation.

In the Argentine system, the 60-minute chair time is used as a unit to measure the amount of time the student spends in teaching-learning activities. These are obtained by the approval of each of the subjects involved in the curriculum. This unit of measurement mainly considers the dictation of theoretical-practical classes, but it can also include the time devoted to laboratory tests and to research in the framework of the master's thesis work.

Basically, the Master in Geotechnical Engineering and the Master of Civil Engineering have duration of four (4) semesters. In each case, the degree is organized as follows: three (3) semesters are allocated to the course of Basic (compulsory) and Specialization (elective) and one (1) semester is intended for the development of the Master's Thesis.

Further information on the curricula can be found in Annex I.

To guarantee the course recognition, each student must concur a signed learning agreement with the responsible coordinator of the home institution. The conversion of the ECTS at TUM to the chair hours at UNT, and vice versa, will be done by the coordinators based on individual analysis of the workload and learning outcome.

Both universities shall announce a catalog of the recognizable courses at the beginning of the semester.

Article 7: Exchange Duration

Students beginning the Double Degree Program at UNT must attend one (1) semester at TUM. Likewise, students beginning the Double Degree Program at TUM must complete one (1) semester at UNT. The academic year will be semi-annual and will basically follow the European calendar; that is, the first academic period will be extended from October to March and the second from April to September.

The courses of the Master's degree will be delivered every four (4) semesters. The start of the first cohort is planned for the second semester of 2022.

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Article 8: Master's Thesis

Students participating in the Double Degree Program must develop (and complete) a master's thesis at either of the two universities. The subject of thesis will be related to research topics that are developed in partner universities or that arise from the practice of engineering, but must have a clear scientific component.

The master's thesis will be supervised and graded by the institution at which it is developed and has to be submitted according to the format established at that institution.

The master's thesis defense will take place in the institution where it is developed. The master's thesis defense will comply with the current regulations at the institution where it takes place.

The master's thesis will not replace any of the required amounts of ECTS and hours, stated in Annex I.

Article 9: Grading System and Equivalences

The equivalence between the grading systems of UNT and TUM is based on the formula proposed in § 16 section 6 of the General Academic and Examination Regulations for Bachelor's and Master's Programs (APSO) at the Technical University of Munich.

The grades obtained by the students of UNT in courses studied at TUM will be transformed to UNT grading system according to the table of equivalences indicated in Annex II.

The grades obtained by the students of TUM in courses studied at UNT will be transformed to the system of qualifications of TUM according to the table of equivalences indicated in Annex III.

After completing the stay, the students must submit to their institution of origin an official student transcript issued by the partner institution in order to receive credit for the courses taken.

Article 10: Student Obligations and Rights

During the exchange period, the students will be subject to the rules and regulations of the partner institution and to all the legal obligations within the host country. Likewise, they will enjoy the same rights as students enrolled at the partner institution.

Participating students must:

- a. pay student fees at their home university before departure;
- b. comply with visa and all other immigration procedures.

Article 11: Expenses and Funding

Students must incur the expenses for accommodation, food, transportation, health insurance, personal expenses, as well as costs related to their mobility.


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Article 12: Orientation and Services

Each university shall provide pre-departure orientation for exchange students to inform them of the terms and conditions of the exchange.

The host university will provide further orientation, which will cover administrative procedures and course information. The host university will:

- a. provide access to student facilities, such as the library and other services provided for its full-time students;
- b. offer assistance in finding accommodation.

Article 13: Dismissal

The two universities (TUM and UNT) reserve the right to dismiss any participating student at any time for disciplinary reasons.

The dismissal of individual students will not affect other program participants.

Article 14: Financial Obligation and Duration

This Agreement will not create financial obligations for the partner universities.

This Agreement shall come into effect upon signature by both Parties and will be valid for a period of five years. It can be renewed by mutual agreement between the Parties, in accordance with the rules of each institution. It may only be modified by the written consent of both parties.

This Agreement may be terminated by either party with six months' notice. In this case the Agreement shall continue to be valid for any teaching staff and students who may still be participating in the program.

Article 15: Data Protection

Processing of personal data is governed by the data protection laws applicable to each party.

Article 16: Solution of Disputes

The parties agree to solve amicably any controversy arising from the interpretation and implementation of this Agreement.

Article 17: Remainder of the Agreement

If any of the above provisions should be invalid, in whole or in part this shall not affect the remainder of the agreement.

In witness whereof two (2) copies in English are signed.

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For the National University of Tucumán

For the Technical University of Munich

Ing. José García
Rector

Date: _____

Prof. Dr. Juliane Winkelmann
Senior Vice President – International
Alliances and Alumni

Date: 30.4.2019

Dr. Ing. Miguel Cabrera
Dean

Date: 30/05/19

Prof. Dr.-Ing. Christoph Gehlen
Dean, TUM Department of Civil, Geo and
Environmental Engineering

Date: 29.07.2019

Prof. Dr.-Ing. Stephan Freudenstein
Dean of Studies, TUM Department of Civil,
Geo and Environmental Engineering

Date: 30.04.2019

SAN MIGUEL DE TUCUMÁN 31 JUL 2019
CONVENIO UNT N° 1.080 2019

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Annex I. Curriculum

As explained in the Double Degree Collaboration Agreement, the Double Degree Master's Program is comprised of 4 semesters over two years. The student should spend the first semester at their home university. At least one semester of studies should be spent at the host university.

For the Double Degree Program, two different curricula are scheduled (cf. Fig. 1), one being intended for TUM students going to UNT (Curriculum 1), one being intended for UNT students going to TUM (Curriculum 2).

Curriculum 1		Curriculum 2	
1 st semester	TUM	1 st semester	UNT
2 nd semester	TUM	2 nd semester	TUM
3 rd semester	UNT	3 rd semester	UNT
4 th semester	Master's thesis at either university	4 th semester	Master's thesis at either university

Fig. 1: Curriculum 1: for TUM students going to UNT
Curriculum 2: for UNT students going to TUM

Full-time study at TUM is equivalent to 30 credits in the European Credits Transfer System (ECTS) per semester (one year equals 60 credits). To obtain a Master's degree, students are required to earn 120 ECTS credits. Of this, 90 credits have to be obtained from courses. Further, students are awarded 30 credits for submitting a written thesis and defending it in an oral presentation. The amount of ECTS credits awarded for a single course corresponds to the workload of the students. Thereby 1 credit means a workload of 30 hours. The total workload of a student is 40 hours per week. One semester is equivalent to 22.5 weeks.

To obtain a Master's Degree in the Argentine system, students need to obtain 700 chair hours, of which 160 chair hours are obtained by developing a Master's Thesis.

In the Double Degree Program, students of TUM must choose three areas of specialization and the transversal specialization. The areas of specialization will include mandatory guidance in Advanced Geotechnics (Geotechnik Vertiefung), Advanced Tunneling (Tunnelbau Vertiefung) and one of the following orientations: Structural Mechanics (Mechanik), Hydromechanics (Hydromechanik), Concrete Constructions (Massivbau), Road, Railway and Airfield Construction (Verkehrswegebau) or Risk Analysis (Risk Analysis). In the event that the new orientation Advanced Tunneling, which is scheduled to start in winter semester 2019/2020, is not available at the time of admission, two orientations of those mentioned above should be chosen.

The transversal specialization (Querschnittsvertiefung) will be replaced by a semester of exchange, which is planned in the third semester of the Master for students of TUM. During

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the exchange, the students of TUM must study courses equivalent to a minimum of 20 ECTS and a maximum of 30 ECTS at UNT. The courses "Slopes and Dams Engineering" and "Applied and Earthquake Geology" are compulsory courses. The number of ECTS required may be completed with elective courses at UNT.

In the second semester, Argentine students participating in the program will complete their stay at TUM and must take the two compulsory courses of Advanced Geotechnics (Foundation engineering and rock construction) and Advanced Tunneling (Concrete Structures and Engineering Geodesy in Tunneling). In addition, they must take elective courses available in these two specializations for a total of at least 180 chair hours. The coordinators of both universities must approve the choice of courses to be studied at TUM.

Examples of Curriculum 1 and Curriculum 2 are shown in Fig. 2 and Fig. 3.

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First Semester	Second Semester	Third Semester	Fourth Semester
Advanced Geotechnics 1 <i>Advanced Geotechnics</i> Compulsory course 6 ECTS	Advanced Geotechnics 2 <i>Advanced Geotechnics</i> Compulsory course 6 ECTS	Slopes and Dams Engineering	Master's thesis
Continuum Mechanics <i>Structural Mechanics</i> Compulsory course 6 ECTS	Structural Dynamics <i>Structural Mechanics</i> Compulsory course 6 ECTS	Applied and Earthquake Geology	
Numerical Methods in Engineering Compulsory Transversal Course 6 ECTS	<i>Advanced Tunneling</i> Elective course 3 ECTS	Specialization courses at the UNT	
<i>Advanced Tunneling</i> Elective course 3 ECTS	<i>Advanced Geotechnics</i> Elective course 6 ECTS		
Engineering Geology and Geotechnics in Tunneling <i>Advanced Tunneling</i> Compulsory course 6 ECTS	Concrete Structures and Engineering Geodesy in Tunneling <i>Advanced Tunneling</i> Compulsory course 6 ECTS		
Soil dynamics <i>Structural Mechanics</i> Elective course 3 ECTS	Integral Transformation Methods <i>Structural Mechanics</i> Elective course 3 ECTS		
30 ECTS 6 Exams	30 ECTS 6 Exams		
			30 ECTS 1 Exam

Fig. 2: Example of curriculum for TUM students

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First Semester	Second Semester	Third Semester	Fourth Semester
Continuum Mechanics 40 h	Advanced Geotechnics 2 <i>Advanced Geotechnics</i> Compulsory course	Slopes and Dams Engineering 50 h	Master's thesis
Numerical Methods 40 h	Concrete Structures and Engineering Geodesy in Tunneling <i>Advanced Tunneling</i> Compulsory course	Applied and Earthquake Geology 50 h	
Mechanical Behavior of Soils and Constitutive Modelling 50 h	Elective courses at TUM	Specialization courses at the UNT	
Mechanics of Rocks and Tunnels 50 h			
Soil Dynamics and Geotechnical Earthquake Engineering 40 h			
220 h	170 h	150 h	160 h

Fig. 3: Example of curriculum for UNT students

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Annex II. Table of equivalences for the recognition of the qualifications obtained at TUM in the file of UNT.

Grades TUM	Grades UNT	Qualitative rating
1.0	10	Sobresaliente
1.3	10	Sobresaliente
1.7	9	Distinguido
2.0	9	Distinguido
2.3	8	Distinguido
2.7	8	Distinguido
3.0	7	Bueno
3.3	7	Bueno
3.7	6	Bueno
4.0	6	Bueno

Annex III. Table of equivalences for the recognition of the qualifications obtained at UNT in the file of TUM.

Grades UNT	Grades TUM	Qualitative rating
10	1.0	Excellent
9	1.7	Very good
8	2.5	Good
7	3.2	Satisfactory
6	4.0	Sufficient


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