

European Space University for Earth and Humanity

UNIVERSEH is an alliance of five European universities established to develop a new way of collaboration in the field of Space, within the "European Universities" initiative.

The alliance aims to create new higher education interactive experiences for the university community, teachers and students, and for the benefit of society as a whole. Such initiatives will enable broadminded, informed and conscientious European citizens to capture and create new knowledge and become smart actors of European innovation, valorisation and societal dissemination within the Space sector, from science, engineering, liberal arts to culture.

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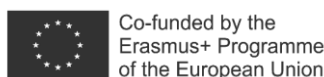
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Document History

Version	Date	Author	Partner	Summary of main changes
1	2022-03-03	Erik Elfgrén (LTU), AnnaCarin Larsson (LTU), Britta Moormann (UDUS)		Creation, structure
2	2022-04-20	Britta Moormann (UDUS)	AnnaCarin Larsson (LTU), Sandra da Silva Teixeira (UFT), Pawel Swierk (AGH UST), Sylvain St-Amand (ULUX), Victoria Barabash (LTU).	Adding ECHE charter related to recognition, integrating ideas on how to improve co-operation regarding recognition in the future, providing Guidelines for granting the stars in the 5-star-system.

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1. Definition of terms

a. Accreditation

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Accreditation means that the universities recognise the UNIVERSEH courses as valid courses (see Guidelines attached).

b. Recognition

The recognition of credits achieved by a student during a mobility period varies at the institutional level and in some cases involves different departments. The following section describes how each institution deals with the recognition of credits (ECTS) earned during an Erasmus mobility.

c. UNIVERSEH student

The following definition of an UNIVERSEH student has been formally approved by the Steering Committee in December 2021:

“Any person enrolled in one of the UNIVERSEH Alliance partners or UNIVERSEH Alliance third-party including at short-cycle, bachelor, master or doctoral level or equivalent, and that attended a course or teaching module that has received the “UNIVERSEH label” (subjected to

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the approval of the academic council), an UNIVERSEH language course or attended a Summer or Winter School.”

2. Past work

In June 2021, a workshop was organized by HHU/UDUS in cooperation with LTU to present and discuss validation or rather recognition and accreditation processes at institutional level. The title of the workshop was “Learn abroad and validate at home”, it was a 2-hour time slot and involved around 15 colleagues from different departments of the alliance except French partners. Each alliance partner presented their recognition process in a short presentation, after which room was given to discuss the topic in more detail and in smaller groups. A Mural was used outlining a few general items (Decrease work for students and institutes, computerize information exchanges, handling of mandatory/elective courses, students taking (multiple) single courses or spending a term/year abroad) supporting a structured discussion.

Over the course of the workshop, it became clear that the question of how to proceed with validation depends on the scope of UNIVERSEH as a project designing unique courses just as much as on the institutional processes and national legislation on what can be accepted and validated as proof of academic achievements in forms of transcript of records. The implications for the field of credit recognition and validation depends on many variables yet to be defined (e.g. can “paperless Erasmus” contribute to easing the process?).

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3. Implementation process

a. Accreditation process

Please see attachment on how accreditation of courses with the 5-star system is foreseen and developed by WP3.

b. Recognition process

1) AGH University of Science and Technology

At AGH UST, the higher education system is organized in accordance with the structures and principles of the Bologna Process, including the three-cycle structure. The AGH University of Science and Technology provides education for all types of studies:

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full-time, part-time, doctoral and postgraduate studies, offering a wide profile of education adapted to the emerging trends on the labour market.

- I degree (6-7 semesters) ending with obtaining the professional title of engineer or bachelor's degree,
- II degree (3-4 semesters) culminating in obtaining a master's degree,
- 3rd degree - preparing for independent research and teaching activities and ending with the award of a doctoral degree.

The university has implemented recommendations on full automatic mutual recognition of higher education and training qualifications and learning outcomes achieved during periods of study abroad.

The AGH UST uses transparency tools in accordance with the guidelines of *the European Credit Transfer and Accumulation System* (ECTS) , thus ensuring consistency and reducing the administrative burden for the University and learners in the form of:

a) the current catalog of subjects with descriptions of study programs, a list of individual educational units and grading tables;

AGH publishes on its website and regularly and timely updates its catalogs to ensure transparency of information for all interested parties. The course catalog is available in the form of the AGH UST Syllabus System, which was implemented to unify and standardize access to the University's didactic offer, in Polish and English. This program allows, in particular, the presentation of the learning outcomes for each field of study, full information about the study programs and courses and their content, as well as the conditions of program implementation and graduation. <https://syllabuskrk.agh.edu.pl/>

(b) Diploma Supplements for all graduates, issued automatically and free of charge in a commonly used language and, where possible, in digital format;

(c) transparent recognition criteria applied in each higher education institution.

The credit system used by AGH corresponds to the ECTS standard (European Credit Transfer System). Throughout the studies, the student accumulates ECTS points assigned to subjects (education modules) and classes provided for in the study plan and

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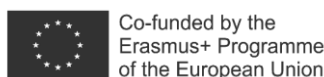
program, as well as optional subjects. Each subject in each semester is assigned a total number of ECTS credits, as determined by the Discipline Council. The number of ECTS points assigned to a course reflects the student's workload necessary to complete the course, including classes organized by the University, in accordance with the study plan, and his individual work.

The implementation of student mobility is carried out on the basis of previously concluded inter-institutional agreements, which define the role and obligations of each party and oblige them to comply with certain quality criteria used during the recruitment of candidates, preparation of mobility participants, their admission to a foreign institution and integration with the local community. In the case of students going to study abroad, the basic documents enabling the transfer of achievements are the agreement on the curriculum of studies / internships (drawn up at the "before departure" stage) along with possible changes (preparation at the "during stay at a foreign university" stage) and a list of grades issued by the host university after the end of the stay. The curriculum is prepared in consultation with the relevant Dean, Faculty Coordinator, partner university, based on the subject offer of the host university (course catalog). It includes a list of subjects planned to be carried out during the stay at the host university. Subjects are selected on the basis of convergent learning outcomes and the number of ECTS credits - the decisive factor is comparing the curriculum content. It is recommended that a period of part-time studies at a foreign university should lead to the achievement of no less than 30 ECTS credits per semester. The internship program specifies the goals, tasks and expected results of the internship. An internship abroad may be compulsory (an internship resulting from the study program in a given field of study) or optional (an internship carried out additionally, e.g. after completing a compulsory internship). In each case, the internship related to the field of study is recorded in the Diploma Supplement.

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Academic recognition: all achievements and the points assigned to them accumulated by the student during the mobility, which were entered in the final version of the learning agreement, are recognized by the sending institution of the student's achievements to obtain qualifications (diplomas) without the need to re-participate in any classes or examinations. The decision on crediting the subjects is made by the Dean of the Faculty, at the student's request, after reviewing the presented documentation of the course of studies completed abroad.

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AGH UST provides the incoming mobility participants and their home institutions with certificates containing a complete and accurate record of their achievements in a timely manner.

2) Heinrich Heine University Düsseldorf

Generally applicable rules in the examination regulations ensure that credits obtained abroad are fully recognised in accordance with the Lisbon Credit Transfer Convention. The International Office and the Student and Examination Administration jointly ensure that credits obtained abroad are recognised in accordance with the learning agreements previously agreed with the students by the Erasmus representatives in the faculties. The International Office provides detailed instructions on the website to help representatives and students complete the learning agreement. At the faculty or departmental level, Erasmus Coordinators in the study subjects check the content and validity of any achievements gained abroad on a case to case basis. Recognition requests are processed at the faculty or departmental level of the respective study subject. The integration of recognised credits into the transcript of records of the students is then a joint effort between Erasmus Coordinators, Examination Boards of the Faculties and the Student and Examination Office who is responsible for issuing certificates and diplomas.

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In the coming years, the International Office will inform the Erasmus officers about the possibilities offered by the Erasmus+ programme in the area of blended mobility and support them in developing appropriate measures.

3) Luleå University of Technology

In the Higher Education Ordinance (1993:100) the possibility of obtaining transfer of credits for previous studies and equivalent knowledge and skills acquired in professional context is regulated.

At the University there is a local Policy document which is well established, clear, transparent and with efficient routines.

At all HEIs in Sweden, the student always has to apply for recognition of studies which enables students to choose which courses they want to recognize in their degree.

On the web site, information and the process on how to apply for transfer of credits is well described. We support the students in finding courses at the receiving university. To secure

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the possibility to get recognition of the courses into their programmes, students get their Learning agreements approved by their programme coordinators. When the students return from their exchange, they receive information on how to apply for transferring the credits.

Academic recognition for blended mobility will be handled the same way and follow the same rules as a traditional physical mobility abroad.

Students preferably choose their free elective courses during their exchange period which enhances the chances of recognition at the home institution.

Learning agreements for traineeships, also have to be approved by the departments before departure. A routine to include the Erasmus training placement in the Degree Certificate is established. Incoming students have access to our course catalogue well in advance before their arrival. The Learning agreements are handled and signed by staff at the International office. The incoming students apply for their Transcript of Records on-line.

4) ISAE-SUPAERO

After the mobility

In order to structure the recognition of mobility within the Erasmus+ program, ISAE-SUPAERO has the following actions:

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We enter into exchange agreements with partners who share our requirements in terms of programs, learning procedures, teaching and assessment. The list of partner institutions is also available online for all students and includes links to course catalogs, academic calendars etc.

ISAE-SUPAERO offers its course catalog in which the courses are explained, as well as the evaluation methods and the general functioning of the institution.

The best window of opportunity for mobility is semester 4, as the teaching units are more easily transposable abroad.

The study contract, necessary for the transfer of credits, includes the list of courses to be taken, the associated ECTS credits, and the signature of the 3 parties involved: student, host institution and home institution.

We have teaching staff in charge of approving or modifying the study contract and ensuring the pedagogical follow-up of the student during his or her mobility and making

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the link with the referent teacher in the host institution. At ISAE-SUPAERO, they are called International Academic Referents (RAI).

ISAE-SUPAERO produces an official transcript which is given to the student.

In order to clarify the nature, level and content of the courses followed by the student, a diploma supplement in French is also provided. For better readability, this diploma supplement will be translated into English.

Courses taught outside of ISAE and intended to be validated as part of the engineering program are subject to special validation procedures determined by the director of engineering programs; these procedures are based on the assessments provided by the host institution or organization. The results transmitted by the host institution are brought to the attention of the jury, which decides on validation for the ISAE engineering program concerned.

Mixed mobilities will be recognized in the same way as "classic" mobilities if they result in ECTS credits issued by the partner.

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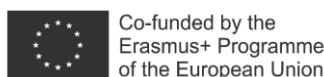
5) UNIVERSITÉ TOULOUSE JEAN JAURÈS (UT2J)

The UT2J has set up a procedure for the validation of credits in the context of the international mobility of exchange students (in studies, internships or assistantships). It facilitates the process for students, teachers and the administration, according to the following methodology:

The IR coordinator carries out an overall validation of the semester or year spent abroad. The coordinator validates 30 or 60 ECTS globally, by determining an average mark for the semester(s), once he/she has ensured that the student has complied with the study contract and has met the conditions for validating the study period in the host university. This global validation allows the student to obtain his/her validation more quickly, and his/her transcript of records accordingly. The student receives his or her diploma with a descriptive appendix highlighting the mobility.

The UT2J promotes the mobility of its staff (teachers-researchers, administrative and technical staff) through the website, the organisation of information meetings specially

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dedicated to this public and the distribution in the departments and laboratories of a leaflet presenting these schemes.

To guarantee permanent and transparent access to information, the application procedures according to the type of mobility (STT, STA) are available on the University's website and on the ENT for staff: <https://www.univ-tlse2.fr/accueil/navigation/international/mobilite-du-personnel/>

Recently, an insert was created in the university's bi-annual IR newsletter to highlight a testimonial from a staff member returning from an STT or STA mobility. This new section will not only promote staff mobility and the Erasmus+ programme, but also enhance the value of this type of mobility for the academic community of the institution.

The UT2J has been working in recent years to recognise international staff mobility. Obtaining a promotion to the next grade (or obtaining the PES, Prime d'Excellence Scientifique) favours the consideration of "international influence" as an essential criterion. The recruitment of new teacher-researchers favours profiles involving mobility and the ability to teach in a foreign language (English, Spanish, Arabic, German, Italian, Russian, Chinese, Portuguese, Japanese, Polish, etc.).

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As far as training mobility is concerned, it is carried out during the staff member's working time and can be included in the list of training courses followed by the staff. Where appropriate, the institution will pay the additional registration fees for training in one of the member countries of the programme.

6) UNIVERSITE TOULOUSE III PAUL SABATIER (UT3)

Our institution systematically applies the automatic recognition of credits obtained by students during their mobility. The allocation of credits is carried out for each teaching unit according to the volume of hours of lectures, tutorials, practical work and personal work. The number of ECTS credits associated with each teaching unit is available on our website. ECTS credits can also be used to validate an internship, an associative experience or a stay abroad.

Student mobility is subject to a study contract drawn up between the student and the pedagogical coordinator, in relation with the counterparts in the host institution, and

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signed before the mobility. The DREIC and the schooling service are associated for the validation of credits at the end of the mobility period. On the basis of the courses followed by the student, the conditions of validation of the study period, the transcript of records, the study period in the host university is validated by the pedagogical coordinator and the ECTS credits are allocated to the student on the basis of 30 ECTS credits for one semester / 60 ECTS credits for 2 semesters.

This process guarantees that, both institutions being in agreement, the allocation of ECTS credits by the host university will be accepted without any condition by our university. The teachers know the host universities quite well and have full confidence in their counterparts, just as the latter accept the allocation of ECTS by our teachers.

In accordance with Erasmus+ rules, each student in mobility receives a transcript of records and a diploma supplement. To date, none of our outgoing students has had any difficulty in receiving their transcript of records or diploma supplement. Moreover, all the university's courses are described in the catalog available on our website and are thus accessible to the greatest number of people.

The issue of automatic mutual recognition of diplomas acquired abroad is managed in France by France Education International. This is a highly political issue that goes beyond the sphere of our university.

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Please describe the measures taken by your institution to support, promote and recognize staff mobility:

This is a much thornier issue than recognition for students.

Long-term mobility, of more than six months, for research faculty is recognized in their career path and can help them for advancement or to access responsibilities within research laboratories or governance. However, these staff members are very often away from home, even for short periods, and the rewarding nature of these trips is less crucial for them, both personally and professionally, than it is for administrative staff. Indeed, for the latter, the French civil service context means that this investment is not recognized as such. In our university, however, there are opportunities to recognize prior learning:

1 - staff, who have a contractual status in our institution, are quite capable of relying on and mentioning their periods of mobility when they take civil service competitions,

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for example. Some internal competitions are organized by writing a document on the recognition of professional experience (RAEP). The agent is free to draw on his or her experience and to use it in this test,

2 - civil service administrative employees are encouraged to mention their mobility and their experience during their annual professional interviews and to ask that this experience be taken into account when ranking for promotion.

Up to now, mobility in training organizations has been taken into account and considered as such by the university's training department. They are thus mentioned in the official career of the agents.

Recognition for all staff, especially for those who have made short mobilities, is a subject that will be discussed with the human resources department in order to be introduced into the criteria that will be put in place when the management guidelines are drawn up (see the paragraph on the Erasmus+ policy statement).

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7) TBS EDUCATION

Mobility for education and training purposes is at the heart of TBS programs. The examination regulations provide for automatic recognition of credits earned during a period of mobility upon receipt of the official transcript of records. Semester or double degree students benefit from the transfer of credits on their transcript of records for the purpose of advancing to the next year and/or obtaining the degree. Students doing an internship as part of the Erasmus+ program obtain ECTS credits for the validation of their academic year, the internship with the writing of a report being mandatory in the curriculum.

In the framework of an admission to one of the TBS programs, the diploma(s) obtained by the candidate in a Member State are automatically recognized and give access to a program if the eligibility criteria (applicable to all) are respected. A Master's program is accessible on condition of having validated 180 ECTS, an MSc will require 240 ECTS etc. TBS reserves the right to verify the authenticity of all documents provided.

The provisions of the Council Recommendation for the automatic mutual recognition of higher education qualifications are already in force. The presence of European and

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international students in the programs contributes to the internationalization at home of the school, to the intercultural dialogue, to the openness of our whole community and to an active European citizenship.

8) UNIVERSITÉ FÉDÉRALE TOULOUSE MIDI-PYRÉNÉES (UFTMiP)

The member institutions of the UFTMiP have each put in place procedures for evaluating the results obtained by students at the host institution on the basis of the learning agreement, the placement assessment and/or the transcript of records. These procedures are usually available on the intranet of the institutions' websites.

Please describe the measures taken by your institution to support, promote and recognise staff mobility:

Several institutions on the site have already put in place incentive mechanisms to support the mobility of teaching and administrative staff. The UFTMiP has submitted a KA103 project in 2020 for the mobility of its administrative staff, which could be integrated into an HR training plan and valued as such as a tool for developing professional skills.

Finally, the UFTMiP offers all staff of its member institutions the possibility of taking English courses adapted to their level and needs as part of its Fluent@UT programme. This scheme is also an incentive and facilitator for potential candidates.

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9) Toulouse INP

Incoming students

The process towards recognition of credits by the home university begins as soon as we get the nomination. We only issue the acceptance letter to the incoming student if the Learning Agreement is signed by the International Relations (IR) department and by the academic supervisor, who undertakes to recognise the credits obtained. Some schools offer specific UEs for foreign students (for example a 6 ECTS UE linked to participation in the INP-ENSEEIH FLE Summer School). Transcripts are available on the digital workspace and the validation of

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credits is recorded after the semester jury. The grades obtained in each UE can be detailed on request.

Outgoing students

All academic exchange students must commit to at least 30 ECTS.

At the time of nomination, they must propose a Learning Agreement validated by the department's IR correspondent. This document must correspond to the skills to be acquired in order to validate the semester. On arrival at the partner university, the student is invited to check the correspondence between the Learning Agreement and the timetable of the host institution. In principle, second year students should choose a learning agreement that covers most of their school's programme. In 3A, they have more freedom to choose their courses. They can also choose non-scientific courses (e.g. language courses), depending on the school.

To validate the semester, the student must validate 30 ECTS. If the validation is partial:

- The jury may propose additional points in order to validate the semester
- If the number of credits not validated is less than 10, the student must validate these credits in session 2, either at the host university if this is possible, or by an equivalent assessment offered by the department in which they are studying
- If the number of non-validated credits is greater than 15, the student may be asked to repeat the year.

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Mobility is mentioned on the diploma supplement.

Please describe the measures taken by your institution to support, promote and recognize staff mobility:

Each year, Toulouse INP encourages its staff (teacher-researchers (EC),

teachers and administrative staff) to go abroad and, in particular, to Europe within the framework of Erasmus programme. The institution offers to any member of staff on mobility individualised logistical support as well as financial support adapted to each situation. The institution may cover the additional costs.

Particular attention is paid to young EC who are encouraged, following a resolution adopted by the Toulouse INP Board of Directors in 2012, to carry out a teaching mobility abroad during their first 5 years of practice.

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Their application is studied with great care and the international mobility will be supported by Toulouse INP's own funds. As far as administrative staff are concerned, training mobility is encouraged, with the objective of carrying out intensive courses in a foreign language (Spanish, English).

Teaching assignments are valued in the careers of ECs. Indeed, through these, they can disseminate and export their teaching and research work abroad, build an international network of contacts and increase the visibility of Toulouse INP. They are real assets for their careers. These mobilities also enable the development of partnerships with foreign partners and encourage student or EC exchanges, and collaboration or even association between research laboratories working on the same theme. Thus, they contribute to the establishment of a European research and higher education area.

Regarding the training of non-teaching staff in foreign languages, they are primarily aimed at staff receiving foreign visitors (welcome desks, international relations, communication, laboratories, school departments, library, language and external relations department). They are then valued and included in the staff member's annual professional interview report. This report is used in the promotion procedure. In addition, staff return with an enriching and rewarding experience. They feel more at ease in their daily work. Welcoming the foreign public (students, teachers), whether by telephone, digitally or physically, is facilitated and improves in quality.

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By training its staff in this way, Toulouse INP improves its international image and attracts a varied and ever increasing number of foreign students each year. Finally, these training mobilities contribute to increasing the participants' sense of European belonging by meeting various European nationalities at the training site.

In conclusion, these mobilities could be further developed and promoted if we were to obtain a favourable response to our MIC requests.

10) University of Luxembourg

The University of Luxembourg guarantees the full recognition of all ECTS credits acquired during the mobility. The obligation is inscribed. In fact, given the obligation of mobility for all our Bachelor students, we pay particular attention to the students, we pay particular attention to the recognition of the credits obtained during recognition of credits obtained abroad.

Before signing any bilateral agreement, the program director ensures that the course offer proposed by the partner university will allow the student to register for a minimum of 30 ECTS.

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The importance of learning is also emphasized during each information meeting. This is checked and validated by a resource person from the faculty, respectively by the program director of the course.

In case of modification, the student has one month after the beginning of the course to submit a new proposal.

Upon receipt of the transcript, the faculty contact person will verify that the courses listed correspond to those in the signed learning agreement. If the acquired ECTS are registered on the learning agreement, they are automatically recognized.

The student does not have to take any additional steps to obtain recognition of the ECTS acquired during his/her mobility abroad.

Only the ECTS acquired that are not listed on the learning agreement and have not been validated beforehand are subject to validation by the program director.

The promotion of staff mobility is done in different ways. On our website we have a page specially dedicated to mobility within the framework of the Erasmus with useful information, but also a link to the motion platform which lists all the Mobility proposed by the different universities or organizations.

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For ICM mobility, the partner universities that can host staff are directly listed. Invitations to participate in training courses and Staff Weeks are forwarded in a targeted manner, according to the topics covered, to staff likely to be interested. All information is also available on the staff intranet. Information meetings are organized and doctoral students are informed of the possibility to participate in the program as soon as they arrive.

As far as recognizing staff mobility is concerned, we will draw on the recommendations and good practices suggested by the REALISE project in order to initiate a dialogue with our Human Resources Department

4. Cooperation for improved recognition

In the future, a list of common courses providing details to exchange students on which courses have already been recognised at which alliance partner could help for orientation just as much as for the recognition of ECTS after mobility. More cooperation in terms of data exchange such as sharing course plans additionally help to build a mutual understanding of curricular, study

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plans and formal requirements for recognition of courses. Such course plans could be made publicly available on either Moplat or the project's edu platform.

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Guidelines for granting the stars in the 5 Star system for new courses

List of the 5 stars

- * Active learning techniques
- * Digital content
- * Interdisciplinarity
- * Multilingualism
- * European

General terms

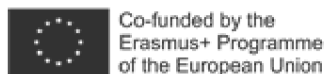
A new UNIVERSEH course should have a minimum of 3 stars.

The star rating will be used to label UNIVERSEH courses and make clear the specific objectives of courses linked to the UNIVERSEH project. In the second phase of the project (year 4+) we will strive to increase the number of stars for all courses up to 5.

In addition to the star rating priority is given to being able to provide courses over the matrix of 6 academic fields combined with 4 space application segments.

Matrix Application Segment vs Academic Field

Application segment / Academic field	Our Earth from space	Sustainable space and Earth orbit	Space exploration and discovery	Space settlement and resources
Science and engineering				
economy-business-finance				
Medecine and health				
Social and Human sciences				
Art and cultural studies				
Innovation patents and entrepreneurship				



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Also we will strive to:

- Involve all partners
- Work in collaboration with the other WPs
- Harmonise efforts between partners through collaborative decisions.

A minimum of ten courses will be proposed, with an indicative minimum number for each partner according to the ratio of person-months attributed for WP3. The target for each course is 3 ECTS (around 75-90 student work hours and approximately 30 hours of structured learning). However, each partner can propose additional courses above this minimum if they have sufficient resources to do this and courses have a minimum of three stars.

Each partner assigns stars according to the information given by the course leader (s) and the guidelines agreed together. Each course proposal will have to include a few lines justifying the stars it wants to obtain. A purpose built template is available for this.

The stars given to a course will be validated by the Academic Council (TBD). A course of less than 3 stars will not be labelled "UNIVERSEH"

A Moodle platform will be setup specifically for UniverseH courses support. This platform will be the unique portal for student enrolment and authentication. Moodle is a Learning Management System (LMS) for implementing the digital part of courses and to set up communities of learners around content and activities. Each UniverseH course will be present on this platform and will be able to make use of integrated tools with many resources and a very rich set of activities. It will be also possible to integrate WP4 Micro-content ADN or IREAL labs into the various course spaces.

It is expected that the breakout room functionalities offered by classic videoconferencing softwares (Zoom, BigBlueButton, Webex, Teams...) are widely used. The basic use of a web platform for diffusion of course material or collection of student work will not be taken into account for the "digital" star and will be mandatory.

The courses have to be defined in terms of objectives and involve at least 2 groups of students from different universities, possibly from different backgrounds

1. The course should include active learning techniques

Student active and student-centred teaching is something that is emphasised in research and literature about quality in student learning in Higher Education (ESG European standards and guidelines, Chickering och Gamson 1987; Ramsden 2003; Hedin, 2006, Pettersen; 2008, Marton och Säljö 2000, High Level Group on the Modernisation of Higher Education, 2013 etc).

The essential points of student active learning design are:

- outcome-based, where the course design aims at developing the skills to achieve the program outcomes
- based on constructive alignment (aligning the predetermined competencies, the learning and teaching activities, and the assessment types).
- allows for the student to process and reflect on the knowledge
- provides authentic cases to work with and experiences to mimic future working life
- the assessments also measure practical and generic skills such as critical thinking, analytical competences, communication and collaborative and intercultural skills
- considers the student an active agent in their education (not a passive receiver of the teacher's knowledge) to foster student independence and prepare for lifelong learning
- for UNIVERSEH using the methods developed in WP4 such as
 - 4.4 “student to teacher”, emphasising the students’ active involvement and responsibility for processing course content and challenging the traditional role of a student as a passive receiver by requiring students to become teachers for parts of courses
 - 4.5 Hybrid learning covering the notion of flipped classroom, where the students prepare asynchronously before meeting up for deep discussion and interaction in class.

The teaching methods should include extensive use of innovative active learning techniques. Below is a non-exclusive list of ideas that are presently proposed and supported by WP4; webinars will be organized on each. During the whole course, students will be partially supervised and will work independently.

- Students are allowed to explore independent and active roles which could involve problem/project-based learning, students contributing to teaching by creating material or acting as a source of knowledge for other students. UNIVERSEH proposal, task 4.4
- «A hybrid approach to course delivery combines face-to-face classroom instruction with online activities. The virtual classroom takes the concept one step further, and completely eliminates the physical meeting place. The aim is to be able to connect in synchronized sessions from anywhere in the consortium, in high quality and with an audio-visual production. This re-creates the face-to-face learning experience students can have in on-campus sessions. » cf. UNIVERSEH task 4.5
- 4.3 PLN – Personal Learning Network, explore and benefit from the net-based accessibility to professional networks in the area of the future profession. Tasks and assessments require student to develop the digital skills in locating, accessing, curating and sharing digital content in their own relevant personal network during their education.
- Problem based learning and solving.
- Flipped classroom: The Flipped classroom is a pedagogical approach that reverses the nature of learning activities with the teacher (e.g., in the classroom) and alone (e.g., at home). Traditional learning roles are modified to include « course at home" and « homework in class". In particular, this approach can use digital content to deliver lessons asynchronously, making extensive use of the ADN (Aerospace Digital Nuggets) reusable micro-content proposed in WP4.8. Students can even prepare labs at home with the WP4.7 IREAL platform (Interactive Remote Experiments for Active Learning) and then discuss during a physical or virtual class with the teacher.

2. The course should be digital

Digital content is both digital aspects of a course such as pre-recorded content, software, digital tools, asynchronous collaboration by the use of a learning platform and also course design as in hybrid Learning, blended learning, and MOOC-like mini-courses with flexible modularized thematic content available online.

In our UNIVERSEH project the methods developed in WP4 that relate to benefit from the accessibility advantages that digital education allows for are:

- as in 4.5 Hybrid learning and 4.7 virtual Labs where student from several parts of the consortium unite in the same course, and in the same class, but are mixed in virtual or physical presence
- 4.8 ADN – Aerospace digital nuggets where flexible digital modules allow for repetition on the student's own initiative (and time) and also integration of self-study preparation in regular courses.

The course should include significant use of digital tools, among the following items:

- Specialized realtime polling devices and smartphone applications (such as iQuiz, Socrativ, Wooclap, or Plickers...) that allow a large group of students to be engaged in a regular practice of formative assessment through multiple choice questions (MCQ), either face-to-face or remotely,
- Asynchronous polling systems (such as with the Universeh **Moodle** platform) for formative assessment through MCQ and/or summative assessment such as exams,
- Tools which extend the practice of MCQ by adding a written discussion phase and reproducing the Peer Instruction technique, The myDALITE and Elaastic web platforms for example,
- Social annotation platforms pre-class reading assignment, text and video documents that allow students to collectively study and understand course material, such as Perusall;
- Social annotation platforms for “digital post-its” with Mural or Padlet for example
- Interactive simulation platforms such as PhET (specific simulators for introductory courses on different domains) Remote control of instructional devices (such as LabsLand ...) that allow practical work in science to be proposed remotely
- Platforms for pre-recorded experiments (such as **IREAL**)
- « *short reusable learning content by the way of “**Aerospace Digital Nuggets” (ADN)**» and the **MLearn platform**, UNIVERSEH proposal, task 4.8, proposed by ISAE SupAero*

Tools indicated in bold will be supported by WP4, training sessions will be organized, and you are encouraged to use them.

Those underlined are free tools and you are encouraged to use them also.

A certain degree of homogeneity in the choice of the digital tools will be required to make student learning easier, taking into consideration the IT policy of each institution...

3. The course should be interdisciplinary

The course should have a 4-dimensional coherence

- justification and detailed motivation of the interdisciplinary association: what are the targeted skills and knowledge for the students...
- the teaching teams involved must come from different academic fields as listed below
- the public of students concerned (either a heterogeneous group of several academic fields, or an academic field specifically identified for an introductory course in another academic field), teaching techniques which fit for the interdisciplinary practice (introductory conferences, problem-based learning, group project...)

Interdisciplinarity should be understood as the involvement of two (at least) of the academic fields listed below:

- Science & Engineering
- Economy, Business, Finance
- Medicine & Health
- Social & Human Science
- Art & Cultural Studies
- Innovation & Patents, Entrepreneurship

Examples of possible combinations:

- Non-specialist opening courses, designed for students from other fields
- Develop the systemic approach and the ability to work in a multidisciplinary team with work in project mode between teachers and students from different academic fields
- Development of training through research with specific bi-disciplinary associations (several disciplines identified in the teaching team and in the student team)
- Awareness of global issues, with courses / conferences / projects open to all on a voluntary basis

4. The course should be multilingual (course in at least 2 languages)

- **3-year objective:** The course should be understandable by students of two different native languages of the consortium. Also, the course should include teaching in two different languages with a significant use of each.
- **7-year vision:** The course should be understandable by all students within the consortium. At least two languages must be used for new courses. At least one additional language should be added for already existing courses. One, of these languages could be English

The languages to be used must be clearly indicated to the students before the beginning of the course.

A non-exclusive list of suggestions is given below for the 3-year objective but the idea is to be flexible. Any choice may be made as to the best method to respect the overlying guidelines given above.

- Two full versions of the course in each language
- For asynchronous (on line) learning - talking in language 1 + audio track or subtitles in language 2
- Use of an appropriate mix of oral and written content in both languages (e.g, talking in one language and slides in another).
- Exchange on projects or discussions are given so as to be understandable to all students
- Specific documents, films etc are given in their original language with necessary explanation
- Teaching by a tandem of teachers of different native languages
- Teaching by one teacher fluent in both languages
- Ice breaker games (small amount of course time only) or discussions in both languages
- Collaboration with members of WP2 in producing the course
- Collaboration with WP6 - sign language can count as one of the two languages

In all cases a lexicon (and if possible a glossary) of the most important technical terms used should be made in both languages (this could be linked

with: <https://www.checkyoursmile.fr/app.php> as well as helping to create the UNIVERSEH space dictionary).

Student Assessment (3-year objective)

- **At the bachelor level:** The language must be chosen so that the students are linguistically at ease. In most cases this will involve having (identical) versions in the students' native languages.
- **At the masters level:** The assessment can be given either in English or in both of the two languages used for the teaching

Student Assessment (7-year vision)

At least part of the assessment will be designed to test the ability of the students to work in at least two of the different languages chosen.

5. The course should be European cooperation with another Universeh partner

The course should result from the cooperation between two Universeh partners from at least two different countries.

Contribution of the partners should be balanced (40%-60% for example in case of 2 partners)