Indicator Book

Ranking Indicators 2015

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Content

Institutional Ranking

Teaching and Learning

Bachelor graduation rate	
Level	Institutional
Dimension	Teaching & Learning
Definition	The percentage of new entrants that successfully completed their bachelor programme.
Rationale	The graduation rate shows how well the university's programmes are organised and reflects the effectiveness of its teaching.
Data source	Institution questionnaire
Data elements	Number of bachelor degrees awarded in period T (2011, 2012, 2013) Number of new entrants in bachelor programmes (in period T-x, x being the standard length of bachelor programmes in years).
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=0}^{2} graduates\_ba_{t-i}}{\sum_{i=0}^{2} new\_entrants\_ba_{t-x-i}} * 100$

Masters graduation rate

Level	Institutional
Dimension	Teaching & Learning
Definition	The percentage of new entrants that successfully completed their master programme.
Rationale	The graduation rate shows how well the university's programmes are organised and reflects the effectiveness of its teaching.
Data source	Institution questionnaire
Data elements	Number of master degrees awarded in period T (2011, 2012, 2013) Number of new entrants in master programmes (in period T-x, x being the standard length of master programmes in years).
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} graduates\_ba\_within\_normative\_time_i}{\sum_{i=1}^{n} ba\_degrees\_awarded_i} * 100$

Graduating on time (bachelors)

Level	Institutional
Dimension	Teaching & Learning
Definition	The percentage of graduates that graduated within the time expected (normative time) for their bachelor programme.
Rationale	The time to degree reflects how well the university's programmes are organised and shows the effectiveness of its teaching.
Data source	Institution questionnaire
Data elements	Number of graduates that graduated within the time expected for their bachelor programme Number of bachelor degrees awarded
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} graduates\_ba\_within\_normative\_time_i}{\sum_{i=1}^{n} ba\_degrees\_awarded_i} * 100$

Graduating on time (masters)

Level	Institutional
Dimension	Teaching & Learning
Definition	The percentage of graduates that graduated within the time expected (normative time) for their masters programme.
Rationale	The time to degree reflects how well the university's programmes are organised and shows the effectiveness of its teaching.
Data source	Institution questionnaire
Data elements	Number of graduates that graduated within the time expected for their master programme. Number of master degrees awarded
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} graduates\_ma\_within\_normative\_time_i}{\sum_{i=1}^{n} ma\_degress\_awarded_i} * 100$

Research

Citation rate	
Level	Institutional
Dimension	Research
Definition	The average number of times that the university's research publications (over the period 2010-2013) get cited in other research, adjusted (normalized) at the global level to take into account differences in publication years and to allow for differences in citation customs across academic fields.
Rationale	Indicator of the scientific impact of research outputs within international scientific communities. The measure takes into account differences in citation customs across academic fields ('normalisation').
Data source	CWTS/Web of Science
Data elements	Mean Normalised Citation Rate
Time reference	Period 2010 - 2013
Formula	

Research publications (absolute numbers)	
Level	Institutional
Dimension	Research
Definition	The number of research publications (indexed in the Web of Science database), where at least one author is affiliated to the university.
Rationale	The number of publications in academic journals is a measure of the institution's research activity and its capability in producing research publications at the international level.
Data source	CWTS/Web of Science
Data elements	number of research publications
Time reference	Period 2010 - 2013
Formula	

Research publications (size-normalised)

Level	Institutional
Dimension	Research
Definition	The number of research publications (indexed in the Web of Science database), where at least one author is affiliated to the university (relative to the number of students).
Rationale	The number of publications in academic journals is a measure of the institution's research activity and its capability in producing research publications at the international level. Correcting for the size of the institution (approximated by student enrollments) enables a more fair comparison to other institutions.
Data source	CWTS/Web of Science external sources (IAU database; internet)
Data elements	Number of research publications Number of students enrolled
Time reference	Period 2010 - 2013
Formula	$\frac{total\_number\_of\_research\_publications_{2010-2013}}{total\_number\_of\_students\_enrolled_{2013}}$

External research income

Level	Institutional
Dimension	Research
Definition	Revenue for research that is not part of a core (or base) grant received from the government. Includes research grants from national and international funding agencies, research councils, research foundations, charities and other non-profit organizations. Measured in € 1,000s, using Purchasing Power Parities (PPP). Expressed per fte academic staff.
Rationale	The indicator expresses the institution's success in attracting grants in national and international competitive, peer reviewed programmes. This reflects the quality of an institution's research.
Data source	Institution questionnaire
Data elements	Revenue for research that is not part of a core (or base) grant received from the government. PPP (GDP) in euros
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n}(researchrevenues\_from\_external\_sources_i / PPP(GDP)\_in\_€_i)}{\sum_{i=1}^{n} fte\_academic\_staff_i} * 100$

Art related output

Level	Institutional
Dimension	Research
Definition	The number of scholarly outputs in the creative and performing arts, relative to the full-time equivalent (fte) number of academic staff.
Rationale	This measure recognises outputs other than research publications and reflects all tangible research-based outputs such as musical compositions, designs, artifacts, software, et cetera.
Data source	Institution questionnaire
Data elements	Number of art related outputs (concerts, exhibitions, artefacts, media productions) Academic staff (fte)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} art\_related\_outputs_i}{\sum_{i=1}^{n} fte\_academic\_staff_i} * 100$

Top cited publications

Level	Institutional
Dimension	Research
Definition	The proportion of the university's research publications that, compared to other publications in the same field and in the same year, belong to the top 10% most frequently cited.
Rationale	This is a measure of international research excellence. Departments with well over 10% of their publications in the top percentile of frequently cited articles worldwide are among the top research institutes worldwide.
Data source	CWTS/Web of Science
Data elements	The number of publications of a university that, compared with other publications in the same field and in the same year, belong to the top 10% most frequently cited. Total publication output
Time reference	Publications: period 2010 - 2013; citations until 3rd quarter 2014
Formula	$\frac{score\_on\_topcited\_publications}{total\_publication\_output} * 100$

Interdisciplinary publications

Level	Institutional
Dimension	Research
Definition	Percentage of research publications within the field's top 10 % publications with the highest interdisciplinarity scores.
Rationale	The more a publication refers to publications belonging to different fields of science and the larger the distance between these fields, the higher the degree of interdisciplinarity. Given that the frontiers of research are often at the edge of disciplines, the multidisciplinarity of research reflects its innovative character. **Example of the calculation of the interdisciplinarity score of an individual publication** Consider a publication with three references. Reference 1 points to a publication in field A, reference 2 to a publication in field B, and reference 3 to a publication in field C. Suppose that fields A and B are both in the social sciences, while field C is in astronomy. The distance between fields A and B may then for instance be 0.3, while the distance between fields A and C is 0.6 and the distance between fields B and C is 0.7. The distance of a field with itself always equals 0. The interdisciplinarity score of the publication then equals (0 + 0.3 + 0.6 + 0.3 + 0 + 0.7 + 0.6 + 0.7 + 0) / 9 = 0.356. **Example of the calculation of the interdisciplinarity score of an institution** Suppose that a publication must have an interdisciplinarity score of at least 0.25 in order to belong to the top 10% most interdisciplinary publications in all fields of science. Consider an institution with 1000 publications, of which 231 have an interdisciplinarity score of at least 0.25. This institution then has an interdisciplinarity score of (231 / 1000) * 100 = 23.1. Hence, the interdisciplinarity score of an institution simply equals the percentage of the publications of the institution that belong to the top 10% most interdisciplinary publications in all fields of science.
Data source	CWTS/Web of Science
Data elements	Interdisciplinary scientific publication output Total publication output
Time reference	Period 2010 - 2013

Formula

$$\textit{Interdisciplinarity score of an individual publication : } I^{pub} = \frac{1}{m^2} \sum_{i,j} d_{ij}$$

m = *number of references in the publication to other WoS - indexed publications*

d_{ij} = *distance between the field of reference i and the field of reference j*

$$\textit{Interdisciplinarity score of an institution : } I^{inst} = \left(\frac{1}{n} \sum_{k} \#\left(I_k^{pub} \geq I_{threshold}^{pub}\right)\right) * 100$$

n = *number of publications of the institution;* I_k^{pub} = *Interdisciplinarity score of publication k*

$I_{threshold}^{pub}$ = *minimal interdisciplinarity score in order to belong to the 10% publications with the highest interdisciplinarity score*

Post-doc positions

Level	Institutional
Dimension	Research
Definition	The number of post-doc positions relative to the number of academic staff (headcount).
Rationale	As post doc positions are often externally (and competitively) funded, an institution with more post-doc positions is more likely to have a higher research quality.
Data source	Institution questionnaire
Data elements	Post doc positions (headcount) Academic staff (headcount)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} postdoc\_positions_i}{\sum_{i=1}^{n} fte\_academic\_staff_i} * 100$

Co-publications with industrial partners	
Level	Institutional
Dimension	Knowledge Transfer
Definition	The percentage of all the university's research publications that list an author affiliate with an address that refers to a for-profit business copmpany.
Rationale	The more research is carried out with external partners the more likely it is that knowledge transfer takes place between academia and business.
Data source	CWTS/Web of Science
Data elements	The number of all the university's research publications that list an author affiliate with an address that refers to a for-profit business company. Total publication output
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_co-publications\_with\_industry}{total\_publication\_output} * 100$

Income from private sources

Level	Institutional
Dimension	Knowledge Transfer
Definition	Research revenues and knowledge transfer revenues from private sources (incl. not-for profit organisations), excluding tuition fees. Measured in €1,000s using Purchasing Power Parities. Expressed per fte academic staff.
Rationale	The degree to which research is funded by external, private organisations reflects aspects of its research quality - most notably its success in attracting funding and research contracts from end-user sources.
Data source	Institution questionnaire
Data elements	Revenues of research related contracts and services, consultancies and other project funds from industry/private business; research related revenues from charities, private foundations, trusts and other non-profit organisations; revenues from licensing. PPP (GDP) in euros Academic staff (fte)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n}(revenues\_from\_private\_sources_i / PPP(GDP)\_in\_€_i)}{\sum_{i=1}^{n} fte\_academic\_staff_i} * 100$

Patents awarded (absolute numbers)	
Level	Institutional
Dimension	Knowledge Transfer
Definition	The number of patents assigned to (inventors working in) the university (over the period 2002-2011).
Rationale	The number of patents is an established measure of technology transfer as it indicates the degree to which discoveries and inventions made in academic institutions may be transferred to economic actors for further industrial / commercial development.
Data source	PATSTAT database
Data elements	Counts on the level of patent families
Time reference	Period 2002 - 2011
Formula	

Patents awarded (size-normalised)

Level	Institutional
Dimension	Knowledge Transfer
Definition	The number of patents assigned to (inventors working in) the university over the period 2002-2011 (per 1,000 students).
Rationale	The number of patents is an established measure of technology transfer as it indicates the degree to which discoveries and inventions made in academic institutions may be transferred to economic actors for further industrial / commercial development. Correcting for the size of the institution (approximated by student enrollments) enables a more fair comparison to other institutions
Data source	PATSTAT database
Data elements	The number of patents assigned to (inventors working in) the institution Total number of students enrolled
Time reference	Period 2002 - 2011
Formula	$\frac{number\_of\_patents\_assigned\_to\_the\_institution_{2002-2011}}{total\_number\_of\_students\_enrolled_{2013}} * 100$

Industry co-patents

Level	Institutional
Dimension	Knowledge Transfer
Definition	The percentage of the number of patents assigned to (inventors working in) the university over the period 2002-2011, which were co-applied with at least 1 applicant from the industry.
Rationale	If the university applies for a patent with a private firm this reflects that it shares its knowledge with external partners and shows the extent to which it is willing to share its technological inventions for further commercial development.
Data source	PATSTAT database
Data elements	Patents Co-patents with industry
Time reference	Period 2002 - 2011
Formula	$\frac{number\_of\_co-patents\_with\_industry_{2002-2011}}{total\_number\_of\_patents_{2002-2011}} * 100$

Spin-offs

Level	Institutional
Dimension	Knowledge Transfer
Definition	The number of spin-offs (i.e. firms established on the basis of a formal knowledge transfer arrangement between the institution and the firm) recently created by the institution (per 1000 fte academic staff)
Rationale	A new firm that is based on knowledge created in a university signals a successful case of knowledge transfer from academia to industry.
Data source	Institution questionnaire
Data elements	Start-up firms Academic staff (fte)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} number\_of\_start-up\_firms_i}{\sum_{i=1}^{n} fte\_academic\_staff_i} * 100$

Publications cited in patents

Level	Institutional
Dimension	Knowledge Transfer
Definition	The percentage of the university's research publications that were mentioned in the reference list of at least one international patent (as included in the PATSTAT database).
Rationale	This indicator reflects the technological relevance of scientific research at the university, in the sense that it explicitly contributed, in some way, to the development of patented technologies
Data source	CWTS/Web of Science
Data elements	Research publications Publications cited in patents
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_publications\_cited\_in\_patents_{2010-2013}}{total\_publication\_output_{2010-2013}} * 100$

Income from continuous professional development

Level	Institutional
Dimension	Knowledge Transfer
Definition	The percentage of the university's total revenues that is generated from activities delivering Continuous Professional Development courses and training.
Rationale	When a university is very active in providing continuing education courses to companies and private individuals it transfers knowledge to its environment.
Data source	Institution questionnaire
Data elements	Total income Income from CPD
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} income\_from\_CPD_i}{\sum_{i=1}^{n} total\_income_i} * 100$

International Orientation

Foreign language bachelor programmes	
Level	Institutional
Dimension	International Orientation
Definition	The percentage of bachelor programmes that are offered in a foreign language.
Rationale	Offering degree programmes in a foreign langauge signals the commitment of the university to welcome foreign students and to prepare its students for working in an international environment.
Data source	Institution questionnaire
Data elements	Bachelor programmes in foreign language Bachelor programmes
Time reference	Latest year
Formula	$\frac{number\_of\_ba-programmes\_offered\_in\_foreign\_language}{total\_number\_of\_ba-programes\_offered} * 100$

Foreign language master programmes

Level	Institutional
Dimension	International Orientation
Definition	The percentage of masters programmes that are offered in a foreign language.
Rationale	Offering masters programmes in a foreign language testifies the commitment of the university to welcome foreign students and to prepare its students for working in an international environment.
Data source	Institution questionnaire
Data elements	Master programmes in foreign language Master programmes offered
Time reference	Latest year
Formula	$\frac{number\_of\_ma-programmes\_offered\_in\_foreign\_language}{total\_number\_of\_ma-programes\_offered} * 100$

Student mobility

Level	Institutional
Dimension	International Orientation
Definition	A composite of international incoming exchange students, outgoing exchange students and students in international joint degree programmes.
Rationale	Having an international student body and offering students the opportunity to do part of their degree abroad signals the international orientation of the university.
Data source	Institution questionnaire
Data elements	Incoming students Students sent out in international exchange programmes Students in joint degree programmes Total enrolment
Time reference	Three year average 2011 - 2013
Formula	*This indicator consists of three subindicators: the percentage incoming exchange students, the percentage exchange students sent out and the percentage of students in international joint degree programmes. Since the ranges of scores on these indicators differ the scores are normalised (z-scores).* *The composite indicator value is calculated as the mean of the normalised scores on the three subindicators. If a score on one or two subindicators is missing, the score is based on two or one subindicator. The resulting composite indicator has a range between -0,8 and 5,3. To create a score that is between 0 and 1 the scores are rescaled. For this rescaling the formula* $(x_i\text{-min})/(\text{max-min})$ *is used*

International academic staff

Level	Institutional
Dimension	International Orientation
Definition	The percentage of academic staff (on a headcount basis) with foreign citizenship.
Rationale	Having an international academic staff reflects the international orientation of the university and its attractiveness as an employer for foreign academics.
Data source	Institution questionnaire
Data elements	Academic staff (headcount; excluding doctorate candidates counted as staff) International academic staff (headcount; excluding doctorate candidates counted as staff)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} academic\_staff\_with\_foreign\_nationality\_headcount_i}{\sum_{i=1}^{n} academic\_staff\_headcount_i} * 100$

International joint publications	
Level	Institutional
Dimension	International Orientation
Definition	The percentage of the university's research publications that list at least one affiliate author's address in another country.
Rationale	The number of international joint publications reflects the degree to which a university's research is connected to international networks.
Data source	CWTS/Web of Science
Data elements	International joint research publications Research publications
Time reference	Period 2010 - 2013
Formula	

International doctorate degrees

Level	Institutional
Dimension	International Orientation
Definition	The percentage of doctorate degrees that are awarded to international doctorate candidates.
Rationale	The number of doctorate degrees awarded to international candidates reflects the international orientation of an institution
Data source	Institution questionnaire
Data elements	Doctorate degrees awarded to foreign candidates (headcount) Doctorate degrees awarded (headcount)
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} doctorate\_degrees\_awarded\_to\_candidates\_with\_foreign\_nationality_i}{\sum_{i=1}^{n} total\_number\_of\_doctorate\_degrees\_awarded_i} * 100$

Student internships in the region	
Level	Institutional
Dimension	Regional Engagement
Definition	Out of all the university's students who did an internship, the percentage where the internship was with a company or organisation located in the region.
Rationale	Internships of students in regional enterprises are a means to build co-operations with regional partners and connect students to the local labour market.
Data source	Institution questionnaire
Data elements	Internships in regional/local enterprises Internships
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} students\_in\_internships\_in\_the\_region_i}{\sum_{i=1}^{n} students\_in\_internships_i} * 100$

Regional joint publications

Level	Institutional
Dimension	Regional Engagement
Definition	The percentage of the university's research publications that list at least one co-author with an affiliate address within close proximity of the institution (within a distance of 50 km).
Rationale	Co-publications with authors located elswhere in the institution's geographical region are a reflection of regional linkages between the university and regional partners.
Data source	CWTS/Web of Science
Data elements	Number of research publications that list at least one affiliate address of co-authors in the same 'region' (50 km range) Total publication output
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_regional\_co-publications_{2010-2013}}{total\_publication\_output_{2010-2013}}$

Income from regional sources	
Level	Institutional
Dimension	Regional Engagement
Definition	The proportion of external research revenues - apart from government or local authority core/recurrent grants – that comes from regional sources (i.e. industry, private organisations, charities).
Rationale	A high proportion of income from regional/local sources indicates a more intense relationship between the university and the region
Data source	Institution questionnaire
Data elements	percentage indicated
Time reference	Three year average 2011 - 2013
Formula	

Bachelor graduates working in the region	
Level	Institutional
Dimension	Regional Engagement
Definition	The percentage of bachelor graduates who found their first job (after graduation) in the region where the university is located.
Rationale	If a relatively large number of an institution's graduates is working in the region this reflects strong linkages between the university and its regional partners
Data source	Institution questionnaire
Data elements	Proportion (or range) indicated.
Time reference	Latest year
Formula	

Master graduates working in the region	
Level	Institutional
Dimension	Regional Engagement
Definition	The percentage of masters graduates who found their first job (after graduation) in the region where the university is located.
Rationale	If a relatively large number of an institution's graduates is working in the region this reflects strong linkages between the university and its regional partners
Data source	Institution questionnaire
Data elements	Proportion (or range) indicated.
Time reference	Latest year
Formula	

Field-Based Ranking

Teaching & Learning

Student-staff ratio	
Level	department
Dimension	Teaching & Learning
Definition	The number of students (headcount) per member of the academic staff (headcount*). *fte for Medicine
Rationale	Indicator for the (expected) intensity of mentoring/tutoring and of contact between students and teachers.
Data source	Department questionnaire
Data elements	Number of students (head count) Number of academic staff (head count) - doctoral candidates are excluded For Medicine: fte academic staff; staff involved in research only, staff involved in patient care only and doctoral candidates are excluded
Time reference	Latest academic year
Formula	$$\frac{students\_major \; + \; (students\_minor * 0.5)}{Academic\_staff\_head - doctoral\_candidates\_counted\_as\_staff\_head}$$ *For Medicine : based on fte; staff only involved in research and only involved in patient care are excluded in the denominator*

Graduating on time (bachelors)

Level	department
Dimension	Teaching & Learning
Definition	The percentage of graduates that graduated within the time expected (normative time) for their bachelor programme.
Rationale	Although influenced by other factors, too, the possibility to graduate within the norm period of a programme reflects the organisational quality of the programme.
Data source	Department questionnaire
Data elements	Number of BA graduates within the standard period Total number of BA graduates
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} graduates\_ba\_within\_normative\_time_i}{\sum_{i=1}^{n} ba\_degress\_awarded_i} * 100$

Graduating on time (masters)

Level	department
Dimension	Teaching & Learning
Definition	The percentage of graduates that graduated within the time expected (normative time) for their masters programme.
Rationale	Although influenced by other factors, too, the possibility to graduate within the norm period of a programme reflects the organisational quality of the programme.
Data source	Department questionnaire
Data elements	Number of MA graduates within the standard period; Total number of MA graduates
Time reference	2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} graduates\_ma\_within\_normative\_time_i}{\sum_{i=1}^{n} ma\_degress\_awarded_i} * 100$

Academic staff with doctorates

Level	department
Dimension	Teaching & Learning
Definition	The percentage of academic staff holding a doctorate (PhD or equivalent).
Rationale	Highly qualified academic staff is a precondition for high quality education/programmes. In an international perspective it can be measured and compared by reference to the percentage of staff which holds a PhD. A PhD may be seen as a minimum qualification for independent scientific work.
Data source	Department questionnaire
Data elements	Academic staff (headcount) with a completed PhD (or equivalent) Number of academic staff (head count); doctoral candidates counted as staff are excluded
Time reference	Latest academic year
Formula	$\frac{Academic\_staff\_with\_completed\_doctorate\_degree * 100}{Academic\_staff - doctoral\_candidates\_counted\_as\_staff}$

Contact with work environment (bachelors)	
Level	department
Dimension	Teaching & Learning
Definition	A composite measure representing at bachelor level: (1) the inclusion of internships or phases of practical experience in the curriculum; and (2) the percentage of students doing an internship; and (3) teaching by practitioners from outside the university departments.
Rationale	The inclusion of work experience and contacts to the work environment is an important factor to enhance the employability of students.
Data source	Department questionnaire
Data elements	Inclusion of internships / phases of practical experience in degree programmes Percentage of students doing an internship Percentage of courses delivered by practitioners from outside higher education
Time reference	Current academic year
Formula	

Contact with work environment (masters)	
Level	department
Dimension	Teaching & Learning
Definition	A composite measure representing at bachelor level: (1) the inclusion of internships/phases of work; and (2) the percentage of students doing an internship; and (3) teaching by practitioners from outside university departments.
Rationale	Including work experience for students into the programme is an important aspect of enhancing employability.
Data source	Department questionnaire
Data elements	Inclusion of internships / phases of practical experience in degree programes Percentage of students doing an internship Percentage of courses delivered by practitioners from outside higher education
Time reference	Current academic year
Formula	

Innovative forms of assessment

Level	department
Dimension	Teaching & Learning
Definition	The percentage of exminations (in medical doctor training programmes) which use innovative forms of assessment (assessment of practical work by faculty and structured clinical cases).
Rationale	This indicator measures the share of forms of assessments of students in medical examinations which are more interactive and focus on medical qualifications and competencies.
Data source	Department questionnaire
Data elements	Percentage of method faculty/resident rating Percentage of methods objective structured clinical eximination (OSCE)
Time reference	Current academic year
Formula	$\%\_\ faculty\_rating + \%\_objective\_structered\_clinical\_examination$

Hospital beds available for teaching

Level	department
Dimension	Teaching & Learning
Definition	The number of beds available for teaching in university hospital and affiliated hospitals per 100 students.
Rationale	
Data source	Department questionnaire
Data elements	Number of beds in university hospitals Number of beds in affiliated hospitals Number of students in medical doctor training programmes
Time reference	Latest year
Formula	$\frac{beds\_university\_hospital + (0.5 * beds\_affiliated\_hospital)}{\frac{number\_of\_students}{100}}$

Overall learning experience	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the quality of the overall learning experience, based on a survey of the students.
Rationale	
Data source	Student survey
Data elements	Overall learning experience
Time reference	Current sample of students
Formula	

Quality of courses & teaching	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the quality of teaching provision, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including the breadth of teaching offerings, the quality of basic courses, didactic quality of teaching, interdisciplinary elements, options to chose elective courses, laboratoy courses (engineering only).
Time reference	Current sample of students
Formula	

Organisation of program	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the organisation of the programme, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including transparency of entrance requirements/admission regulations, access to classes, average class size, completeness of courses offered compared to the study guide, transparency of the examination system.
Time reference	Current sample of students
Formula	

Contact with teachers	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the feedback given by teachers, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including commitment of teaching staff to students, availability of teachers/professors, informal advice and coaching, feedback on homework, assignments and examinations.
Time reference	Current sample of students
Formula	

Inclusion of work/practical experience	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the inclusion of work experience and of elements related to work practice, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including opportunities of including a practical work period/an internship, information about relevant professional fields, number of courses related to practice/work.
Time reference	Current sample of students
Formula	

Inclusion of practical experience/clerkships (Medicine)	
Level	department
Dimension	Teaching & Learning
Definition	The integration of practical experience with patient contact into the study programme, based on a student satisfaction survey.
Rationale	The inlcusion of practical elements is an important element to enhance the employability of students.
Data source	Student survey
Data elements	
Time reference	Current sample of students
Formula	

Library facilities	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the quality of library services for students, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including availability of literature needed for your work, access to on-stock books and academic journals, access to electronic journals, user support, availability of study/reading places, open hours.
Time reference	Current sample of students
Formula	

IT provision	
Level	department
Dimension	Teaching & Learning
Definition	Student assessment of the quality of IT services for students, based on a student satisfaction survey.
Rationale	The IT provision marks a major aspect of facilities for teaching and learning.
Data source	Student survey
Data elements	Several items in the questionnaire including hardware and software available, maintenance of the computers, user support, number of available work places
Time reference	Current sample of students
Formula	

Room facilities	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of lecture halls and seminar rooms, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including maintenance, technical facilities, number of places available with regard to class size.
Time reference	Current sample of students
Formula	

Laboratory facilities	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the quality of laboratories available to students, based on a student satisfaction survey.
Rationale	
Data source	Student survey
Data elements	Several items in the questionnaire including maintenance of laboratoires, technical facilities, number of places available.
Time reference	Current sample of students
Formula	

Bedside teaching	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of bedside teaching concerning mentoring, suitability of rooms and variety of diagnostic techniques applied, based on a student satisfaction survey.
Rationale	The support in and monitoring of bedside teaching by academic staff is an important factor for the quality of medical doctors education.
Data source	Student survey
Data elements	Bed side teaching
Time reference	Current sample of students
Formula	

Linking clinical/preclinical teaching	
Level	department
Dimension	Teaching & Learning
Definition	The integration of pre-clinical/theoretical and clinical courses, based on a student satisfaction survey.
Rationale	Linking thereotical /pre-clinical and clinical courses is an important element of a good medical doctor education
Data source	Student survey
Data elements	
Time reference	Current student sample
Formula	

Skills Labs	
Level	department
Dimension	Teaching & Learning
Definition	An assessment of the skills labs and training centers concerning maintenance, accessibilty, technical facilities and mentoring, based on a student satisfaction
Rationale	The access to skills labs is an importnat factor of modern teaching facilities in medicine.
Data source	Student survey
Data elements	Skills lab
Time reference	Current sample of students
Formula	

Research

External research income

Level	department
Dimension	Research
Definition	Research revenue that is not part of a core (or base) grant received from the government. Includes research grants from national and international funding agencies, research councils, research foundations, charities and other non-profit organisations. Measured in €1,000s using Purchasing Power Parities (PPP). Expressed per fte academic staff.
Rationale	The indicator expresses the department's success in attracting grants in national and international competitive, peer reviewed programmes. This reflects the quality of its research.
Data source	Department questionnaire
Data elements	Research income from national and international funding agencies, research councils, research foundations, charities and other non-profit organisations Full time equivalent (fte) number of academic staff; doctoral candidates counted as staff are excluded*
Time reference	Three year average 2011 - 2013
Formula	$$\frac{\sum_{i=1}^{n} external\_research\_income_i - \sum_{i=1}^{n} external\_research\_income\_for\_professorships_i}{\sum_{i=1}^{n} fte\_academic\_staff_i - \sum_{i=1}^{n} fte\_doctoral\_candidates\_counted\_as\_staff_i}$$ *(normalized by Purchasing Power Parity (PPP) and recalculated in Euro)* ** For Medicine : fte patient care only is also excluded in the denominator*

Doctorate productivity

Level	department
Dimension	Research
Definition	The number of doctorate degrees, relative to the number of academic staff (fte)
Rationale	The number of doctorate degrees may be seen as an expression of the research activity of a higher education institution. The doctorate thesis is a significant research publication.
Data source	Department questionnaire
Data elements	Number of doctorate degrees awarded Full time equivalent (fte) number of academic staff
Time reference	Three year average 2011- 2013
Formula	$$\frac{\sum_{i=1}^{n} doctorate\_degrees_i}{\sum_{i=1}^{n} fte\_academic\_staff_i - \sum_{i=1}^{n} fte\_doctoral\_candidates\_counted\_as\_staff_i}$$ *For Medicine : fte patient care only is also excluded in the denominator*

Research publications (absolute numbers)	
Level	department
Dimension	Research
Definition	The number of research publications (indexed in the Web of Science database), where at least one author is affiliated to the university.
Rationale	The number of publications in academic journals is a measure of the institution's research activity and its capability in producing research publications at the international level.
Data source	CWTS/Web of Science
Data elements	Number of research publications indexed in Thomson Reuters data base
Time reference	Period 2010 - 2013
Formula	

Citation rate	
Level	department
Dimension	Research
Definition	The average number of times that the university department's research publications (over the period 2010-2013) get cited in other research, adjusted (normalized) at the global level for the field of science and the year in which a publication appeared.
Rationale	Indicator of the scientific impact of research outputs within international scientific communities. The measure takes into account differences in citation customs across academic fields ('normalisation').
Data source	CWTS/Web of Science
Data elements	Mean Normalised Citation Rate
Time reference	Publications 2010 - 2013; citations until 3rd quarter 2014
Formula	

Top cited publications

Level	department
Dimension	Research
Definition	The proportion of the department's research publications that, compared to other publications in the same field and in the same year, belong to the top 10% most frequently cited.
Rationale	This is a measure of international research excellence. Departments with well over 10% of their publications in the top percentile of frequently cited articles worldwide are among the top research institutes worldwide.
Data source	CWTS/Web of Science
Data elements	The number of publications of a university that, compared with other publications in the same field and in the same year, belong to the top 10% most frequently cited Total publication output
Time reference	Publications: period 2010 - 2013; citations until 3rd quarter 2014
Formula	$\frac{score\_on\_topcited\_publications}{total\_publication\_output} * 100$

Interdisciplinary publications

Level	department
Dimension	Research
Definition	Percentage of research publications within the field's top 10 % publications with the highest interdisciplinarity scores.
Rationale	The more a publication refers to publications belonging to different fields of science and the larger the distance between these fields, the higher the degree of interdisciplinarity. Given that the frontiers of research are often at the edge of disciplines, the multidisciplinarity of research reflects its innovative character. **Example of the calculation of the interdisciplinarity score of an individual publication** Consider a publication with three references. Reference 1 points to a publication in field A, reference 2 to a publication in field B, and reference 3 to a publication in field C. Suppose that fields A and B are both in the social sciences, while field C is in astronomy. The distance between fields A and B may then for instance be 0.3, while the distance between fields A and C is 0.6 and the distance between fields B and C is 0.7. The distance of a field with itself always equals 0. The interdisciplinarity score of the publication then equals (0 + 0.3 + 0.6 + 0.3 + 0 + 0.7 + 0.6 + 0.7 + 0) / 9 = 0.356. **Example of the calculation of the interdisciplinarity score of an institution** Suppose that a publication must have an interdisciplinarity score of at least 0.25 in order to belong to the top 10% most interdisciplinary publications in all fields of science. Consider an institution with 1000 publications, of which 231 have an interdisciplinarity score of at least 0.25. This institution then has an interdisciplinarity score of (231 / 1000) * 100 = 23.1. Hence, the interdisciplinarity score of an institution simply equals the percentage of the publications of the institution that belong to the top 10% most interdisciplinary publications in all fields of science.
Data source	CWTS/Web of Science
Data elements	Interdisciplinary scientific publication output Total publication output
Time reference	Period 2010 - 2013

Formula

$$\text{Interdisciplinarity score of an individual publication : } I^{pub} = \frac{1}{m^2} \sum_{i,j} d_{ij}$$

m = number of references in the publication to other WoS - indexed publications

d_{ij} = distance between the field of reference i and the field of reference j

$$\text{Interdisciplinarity score of an institution : } I^{inst} = \left(\frac{1}{n} \sum_{k} \#\left(I_k^{pub} \geq I_{threshold}^{pub}\right)\right) * 100$$

n = number of publications of the institution; I_k^{pub} = Interdisciplinarity score of publication k

$I_{threshold}^{pub}$ = minimal interdisciplinarity score in order to belong to the 10% publications with the highest interdisciplinarity score

Research orientation of teaching	
Level	department
Dimension	Research
Definition	The degree to which the education is informed by research in the field (based on a survey of students in the programme).
Rationale	The degree to which education is informed by research reflects the innovative character of the teaching in the programme.
Data source	Student survey
Data elements	Single item research orientation of teaching
Time reference	Current sample of students
Formula	

Post-doc positions

Level	department
Dimension	Research
Definition	The number of post-doc positions relative to the full-time equivalent number of academic staff.
Rationale	As post doc positions are often externally (and competitively) funded, an institution with more post-doc positions is more likely to have a higher research quality.
Data source	Department questionnaire
Data elements	Number of post-doc positions (headcount) Full-time equivalent (fte) number of academic staff
Time reference	Three year average 2011 - 2013
Formula	$$\frac{\sum_{i=1}^{n} number\_of\_post\ -\ doc\_positions_i}{\sum_{i=1}^{n} fte\_academic\_staff_i\ -\ fte\_doctoral\_candidates\_countes\_as\_staff_i}$$

Income from private sources	
Level	department
Dimension	Knowledge Transfer
Definition	Research revenues from private sources as a share of total external research income
Rationale	The degree to which research is funded by external, private organisations reflects aspects of a department's research quality - most notably its success in attracting funding and research contracts from end-user sources.
Data source	Department questionnaire
Data elements	Research income from industry/private business; Total external reseaerch income
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} income\_from\_private\_business_i * 100}{\sum_{i=1}^{n} total\_third\_party\_funds_i}$

Co-publications with industrial partners

Level	department
Dimension	Knowledge Transfer
Definition	The percentage of all the university's research publications that list an author affiliate with an address that refers to a for-profit business copmpany.
Rationale	The more research is carried out with external partners the more likely it is that knowledge transfer takes place between academia and business.
Data source	CWTS/Web of Science
Data elements	Co-publications with industrial partners; Total publication output
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_co-publications\_with\_industry}{total\_publication\_output} * 100$

Patents awarded (absolute numbers)	
Level	department
Dimension	Knowledge Transfer
Definition	The number of patents assigned to (inventors working in) the university over the period 2002-2011.
Rationale	The number of patents is an established measure of technology transfer as it indicates the degree to which discoveries and inventions made in academic institutions may be transferred to economic actors for further industrial / commercial development.
Data source	PATSTAT database
Data elements	Counts on the level of patent families
Time reference	Period 2003-2012
Formula	

Publications cited in patents

Level	department
Dimension	Knowledge Transfer
Definition	The percentage of the department's research publications that were cited in the reference list of at least one international patent (as included in the PATSTAT database).
Rationale	This indicator reflects the technological relevance of the department's scientific research, in the sense that it explicitly contributed, in some way, to the development of patented technologies.
Data source	CWTS/Web of Science
Data elements	Publications cited in patents; Research publications
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_publications\_cited\_in\_patents_{2010-2013}}{total\_publication\_output_{2010-2013}} * 100$

International orientation of bachelor programmes	
Level	department
Dimension	International Orientation
Definition	A composite measure taking into account (1) the existence of joint/dual degree programmes; (2) the inclusion of study periods abroad; (3) the percentage of international (degree and exchange) students; and (4) the percentage of international academic staff.
Rationale	The integration of international learning experiences and learning with international students and teachers are central elements of the internationalisation of teaching & learning.
Data source	Department questionnaire
Data elements	Existence of joint degree programmes / stay abroad Percentage of international students Percentage of incoming exchange students Percentage of international academic staff
Time reference	Current academic year
Formula	

International orientation of master programmes	
Level	department
Dimension	International Orientation
Definition	A composite measure taking into account (1) the existence of joint/dual degree programmes; (2) the inclusion of study periods abroad; (3) the percentage of international (degree and exchange) students; and (4) the percentage of international academic staff.
Rationale	The integration of international learning experiences and learning with international students and teachers are central elements of the internationalisation of teaching & learning.
Data source	Department questionnaire
Data elements	Existence of joint degree programmes / stay abroad Percentage of international students Percentage of incoming exchange students Percentage of international academic staff
Time reference	Current academic year
Formula	

Opportunities to study abroad	
Level	department
Dimension	International Orientation
Definition	An assessment of the opportunities for studying abroad, based on a survey of the students.
Rationale	Students' judgments about their possibilities and the support by their university to arrange a study period or an internship abroad.
Data source	Student survey
Data elements	Several items in the questionnaire including attractiveness of the exchange programme/partner universities, support and advice for studying abroad, financial support, recognition of the results obtained during the study abroad period (e.g. Credits).
Time reference	Current sample of students
Formula	

International doctorate degrees

Level	department
Dimension	International Orientation
Definition	The percentage of doctorate degrees that are awarded to international doctorate candidates.
Rationale	The international orientation of an institution is reflected in the number of doctorate degrees awarded to international candidates.
Data source	Department questionnaire
Data elements	Number of doctorate degrees awarded to international doctorate candidates (citizenship) Total number of PhDs awarded
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} doctorate\_degrees\_awarded\_to\_candidates\_with\_foreign\_nationality_i}{\sum_{i=1}^{n} total\_number\_of\_doctorate\_degrees\_awarded_i} * 100$

International joint publications

Level	department
Dimension	International Orientation
Definition	The percentage of research publications that list at least one affiliate author's address in another country.
Rationale	The number of international joint publications reflects the degree to which a university's research is connected to international networks.
Data source	CWTS/Web of Science
Data elements	International joint research publications Research publications
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_international\_co - publications_{2010-2013}}{total\_publication\_output_{2010-2013}} * 100$

International research grants

Level	department
Dimension	International Orientation
Definition	The proportion of external research revenue – including public and private funding organisations and businesses – that comes from other countries.
Rationale	The existence of research projects that are funded by foreign and international souces is a good indicator of the international orientation of research activities.
Data source	Department questionnaire
Data elements	Research revenues from international sources (public and private funding organisations and firms from abroad); Total external research income
Time reference	Three year average 2011 - 2013
Formula	$\frac{\sum_{i=1}^{n} external\_research\_funds\_from\_international\_sources_i}{\sum_{i=1}^{n} total\_external\_research\_funds_i} * 100$

Regional Engagement

Student internships in the region	
Level	department
Dimension	Regional Engagement
Definition	Out of the students who did an internship, the percentage where the internship was with a company or organisation located in the region (Applied only to Psychology and Computer Science.)
Rationale	Internships of students in regional enterprises are a means to build co-operations with regional partners and connect students to the local labour market.
Data source	Department questionnaire
Data elements	Number of students who did an internship in the region Total number of students who did an internship
Time reference	Three year average 2011- 2013
Formula	$\frac{\sum_{i=1}^{n} students\_in\_internships\_in\_the\_region_i}{\sum_{i=1}^{n} students\_in\_internships_i} * 100$

Regional joint publications

Level	department
Dimension	Regional Engagement
Definition	The percentage of research publications that list at least one co-author with an affiliate address within close proximity of the institution (within a distance of 50 km).
Rationale	Co-publications with authors located elsewhere in the region are a reflection of regional linkages between the university and regional partners.
Data source	CWTS/Web of Science
Data elements	Number of research publications that list at least one affiliate address of co-authors in the same region; Total number of academic publications
Time reference	Period 2010 - 2013
Formula	$\frac{score\_on\_regional\_co - publications_{2010-2013}}{total\_publication\_output_{2010-2013}}$