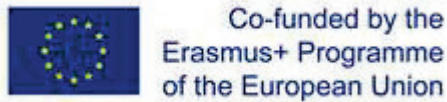




SQELT PROJECT

SUSTAINABLE QUALITY ENHANCEMENT IN HIGHER EDUCATION LEARNING AND TEACHING. Integrative Core Dataset and Performance Data Analytics



Key Action: **Cooperation for innovation and the exchange of good practices**
Action Type: **Strategic Partnerships for higher education**

Partners: evaluation Agency Baden-Wuerttemberg, UNIVERSIDADE DE AVEIRO, BIRMINGHAM CITY UNIVERSITY, UNIVERSITEIT GENT, UNIWERSYTET JAGIELLONSKI, UNIVERSITÄT FÜR WEITERBILDUNG KREMS, UNIVERSITEIT LEIDEN, UNIVERSITÀ DEGLI STUDI DI MILANO, UNIVERSITETET I OSLO, Centro de Investigação de Políticas do Ensino Superior

<https://ec.europa.eu/programmes/erasmus-plus/projects/eplu-project-details/#project/b8a93e06-2000-4a82-9fac-90b3bcacadee>
<https://www.evalag.de/en/research/sqelt/the-project/>

Intellectual Output 01:

Benchlearning Report on Project Partner HEIs' Performance Data Management Models

The Case of the University of Milan (UNIMI)

Giovanni Barbato

Roberto Cerbino

Manuela Milani

24th of October, 2018

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Table of contents

List of acronyms and abbreviations	3
1. Executive summary	4
2. The Italian higher education system	4
3. The Università degli Studi di Milano	5
4. The QA system for L&T activities in Italy and UNIMI	6
5. UNIMI'S performance data management (PDM) in L&T	9
5.1 The quantitative PIs	9
5.2 The students' questionnaire	9
5.3 Other sources of core data in L&T	10
5.4 Comparison between UNIMI's core data and PIs in L&T and the SQELT typologies	10
..	
6. SWOT analysis of UNIMI's PDM in L&T	21
References	24
Appendix	25

List of acronyms and abbreviations

ANVUR – Italian National Agency for the Evaluation of Universities and Research

AVA – Autovalutazione, Valutazione periodica e Accreditamento

CdS – Corso di studio (study programme)

CPSD – Commissione Paritetica Studenti Docenti

EU – Evaluation unit

HE – Higher education

HEI – Higher education institution

L&T – Learning and teaching

MIUR – Ministero dell’Istruzione, dell’Università e della Ricerca

PDM – Performance data management

PI – Performance indicator

QA – Quality assurance

QAC – Quality Assurance Committee

UNIMI – Università degli Studi di Milano

VQR – Valutazione Qualità della Ricerca (the national research assessment exercise)

1. Executive summary

The University of Milan (Università degli Studi di Milano: UNIMI) started to adopt a large and comprehensive quality assurance (QA) system only in 2010 as a result of a comprehensive reform on the Italian higher education (HE) system (law. n. 240). The QA system (running from 2013) is based on three connected processes, namely the initial accreditation of study programmes (I), the external periodic institutional accreditation of higher education institutions (HEIs) (II) and the ongoing self-evaluation process of HEIs (III). The self-evaluation procedure is carried out at the level of the single study programme based on annual and periodic procedures which are defined by the national evaluation agency (ANVUR). The internal QA process sees the participation of several statutory actors as well as ad-hoc advisory bodies in which the presence of students is mandatory. To carry out this process several types of core data and performance indicators (PIs) in learning and teaching (L&T) are taken into account, among them quantitative PIs, students' questionnaires and other pieces of information about students, academics and facilities. Even if the set of quantitative PIs is provided directly by ANVUR, each study programme can select the PIs on which they intend to monitor their performance and outcomes over the next few years. A preliminary analytic assessment of UNIMI's performance data management (PDM) in L&T is provided by the SWOT analysis depicted in Table 1.

Table 1: Preliminary SWOT analysis of UNIMI's performance data management

Strengths	Weaknesses
<p>Increasing institutional commitment towards the quality of teaching</p> <p>Possibility of benchmarking exercises</p> <p>Orientation of the Pis set towards the improvement of teaching activities</p> <p>Consideration of the students' viewpoint in the QA process</p>	<p>Lack of teachers' viewpoints in the PIs set</p> <p>Gaps in the L&T environment indicators</p> <p>Unbalance towards policy-driven Pis</p> <p>Lack of a central management system of all core data and Pis in L&T</p>
Opportunities	Threats
<p>Introducing new PI in L&T</p> <p>Supporting the diffusion of an evaluation culture in teaching</p>	<p>Dependence on the commitment of programmes' directors</p> <p>Academics' lack of incentives towards teaching activities</p> <p>Low flexibility in the type of Pis to measure the quality of teaching activities</p> <p>Internal disciplinary heterogeneity</p>

2. The Italian Higher Education system

The Italian HE system is one of the most extensive in Europe with over 1.6 million enrolled students, over 300,000 graduates every year and 90 HEIs, 61 of them are public universities and 29 are private universities (11 of them are online universities). Despite the presence of a relevant number of private institutions, these universities enrol only 10% of the entire students' population. The Italian HE system has been traditionally described as highly institutionalised context, with weak competitive forces and a

medium-low degree of institutional autonomy of HEIs (Capano et al., 2016). Three main actors compose the systemic governance of the Italian HE system.

First, the government through the Ministry of Education, University and Research (MIUR). Second, the Italian National Agency for the Evaluation of Universities and Research (ANVUR) is in charge of assessing and monitoring the quality of HEIs' activities. Concerning QA, ANVUR has the task of establishing the processes and indicators through which the quality of L&T activities is assured and evaluated. ANVUR was founded through law n. 286 of 2006 but it started to act officially only in 2010 as the result of the law n. 240. Third, the 90 HEIs that operate in the HE system. According to the classification provided by the European University Association (EUA, 2018), the Italian HEIs represent medium-low level institutional autonomy in particular referring to the selection and management of human resources (administrative staff and academics) and the introduction of new academic programmes which is the result of an external process of accreditation managed by ANVUR. Autonomy is instead medium-high in terms of financial management and organisational autonomy. Referring to this last issue, it has to be mentioned that the reform n. 240 of 2010 changed significantly the governance of Italian HEIs given that it strengthened the roles of both the executive body (Council) and the Rector and reduced those of the main collegial body (Senate), expression of the academic community. The Rector is elected by all the academics (with a tenured contract) and the administrative staff, and its term of office lasts six years. The above-mentioned reform has exerted also a major impact on QA of Italian HEIs' activities as later illustrated.

3. The Università degli Studi di Milano (UNIMI)

The Università degli Studi di Milano (UNIMI) was established in 1923 and is one of the youngest universities in the North of Italy. UNIMI is a generalist research-intensive university that offers high quality teaching at all levels in a broad spectrum of disciplinary fields. The University of Milan is one of the top Italian universities in most international rankings and is the only Italian university among the 23 institutions that belong to the League of European Research Universities (LERU).

With a teaching staff of about 2.200 tenured professors and with almost 66.000 students, the University of Milan is the largest university in Lombardy, the third-largest in the North of Italy after the University of Bologna Alma Mater and the University of Padua.

The University of Milan offers several study programmes covering three macro-disciplinary areas: i) Humanities, Social Sciences and Law, ii) Medicine and Healthcare, iii) Natural Sciences.

The broad range of subjects taught, in the running 79 undergraduate programmes, 57 master programmes, nine single-cycle programmes, 21 doctoral schools, and several advanced vocational programmes, attracts students from all over Italy and the whole world.

Finally, research activities are organized in 32 Departments and 22 Inter-departmental Research Centres, with more than 24,000 scientific publications in the last three years, 222 patents and 24 active spin-offs. Five scientists from the University have been ranked as highly cited by the ISI – Institute for Scientific Information (USA). The University's researchers occupy leading positions in numerous research programmes conducted both at a national and international level. The main figures of UNIMI are summarized as follows:

Academic and Research Resources and Facilities

- Eight Faculties and two Schools
- 32 Research departments
- 22 Main libraries
- A digital library with 62,522 e-journals, 368,940 e-books and 87 databases

Staff

- 2,200 tenured professors
- 1,900 technical and administrative staff

Study programmes

- 65 Bachelor programmes (3 years)
- 54 Master programmes (2 years)
- 9 Single-cycle programmes (5-6 years)
- 33 Doctoral programmes (3-4 years)

Students

Total enrolled: 65,933

- 38,169 Undergraduate
- 22,651 Master's and single-cycle students
- 4,055 Postgraduate professional specialization students
- 1,058 PhD students

4. The QA system for L&T in Italy and at UNIMI

Although Italy is one of the founding members of the Bologna Declaration (1999), is a 'latecomer' in implementing a large and comprehensive QA system within the European Higher Education Area (EHEA) (Agasisti et al., 2017). Only in 2013, the Italian universities adopted an accreditation system for institutions and courses designed by ANVUR (legislative decree n.19 of 2012). The QA system introduced in 2013 called 'AVA' (self-evaluation, periodic evaluation and initial accreditation) is explicitly inspired by the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).

AVA consists of three parts, namely the initial accreditation of new programmes (**I**), the external periodic accreditation of each HEI conducted by ANVUR (**II**), and the ongoing process of internal evaluation at the level of each entire institution and individual degree courses (**III**).

It is important to underline that AVA provides standardized national guidelines for every HEI. Therefore, the description of the QA system of UNIMI, and the connected quantitative PIs correspond with those prescribed by the national legislation.

(I) The initial accreditation is the process through which ANVUR authorizes HEIs to open new academic programmes (undergraduate, postgraduate and doctoral) and campuses. The approval follows the verification of the presence of some teaching, structural, organizational and financial quality standards formulated by ANVUR (ANVUR, 2017a). The conformity towards these requirements is the object of the periodic external evaluation of HEIs carried out by ANVUR.

(II) The external periodic accreditation consists of two main processes. First, official documents and the trends of PIs are analysed by ANVUR annually. Second, based on the result of the first preliminary external evaluation, ANVUR visits and evaluates each HEI *in loco* through the appointment of an Evaluation Expert Committee (CEV), every five years. Both practices aim at verifying the respect of the above-mentioned requirements (quality standards). A CEV involves a variable number of QA experts that issue an assessment of the compliance with the quality standards, and its assessment process is supported by the university's Evaluation Unit. Each visit includes the examination of the effectiveness of the internal QA system in the university and in about 10% of its degree courses (preliminary chosen through a sampling procedure). For each quality standard, an evaluation is given according to a rating scheme. Based on the evaluations obtained by the university and its individual degree courses, ANVUR recommends whether the Ministry of Education should accredit a university.

(III) The third part of the QA system is the internal evaluation system developed by each HEI at the level of the single study programme (CdS). The ultimate goal of this process is to continuously monitor that each study programme respects the quality standards defined by ANVUR, especially those concerning L&T activities (R3)¹. There are four main actors that are involved in this process:

- **Evaluation Unit (EU):** It is the body that evaluates the quality of each programme's activities and verifies the correct management of the entire QA process in accordance with the guidelines established by ANVUR. The majority of its members has to be external to the HEI in which they operate. During the initial and periodic accreditation (section 4. points n. **I** and **II**), the EU supports ANVUR in the monitoring process and expresses binding assessment for the opening of new study programmes. During the self-evaluation process (point n. **III**), the EU draws up annually an evaluation report that is then sent to ANVUR to illustrate the respect of the quality standards and the overall implementation of a proper internal QA system.

- **QAC (Quality Assurance Committee):** The QAC is the unit in charge of coordinating and guaranteeing the quality of L&T in each university. It does not perform the evaluation of L&T activities since this is under the responsibility of the Evaluation Unit. On the contrary, the QAC coordinates the entire process of QA, organizing and collecting the data for the annual and periodic monitoring of each programme and supporting the relationship between the actors involved in the QA process. UNIMI's QAC consists of 14 members, among them five members of administrative staff and nine members of academic staff.

- **Commissione paritetica studenti-docenti (CPSD):** It is an advisory body composed of an equivalent number of students and academics at the level of each department (law n. 240 of 2010). Its main task is to write an annual report on the provision of teaching activities for each programme of the department, highlighting the presence of specific problems (if any). The report is based in particular on the results of the students' questionnaire carried out at the level of the single course. The report is then sent to the Evaluation Unit and the Senate. Moreover, CPSD is in charge also to assess how well the 'Review Group' (see below) operates.

- **Programme directors:** The programme directors are the main figures in charge of carrying out the self-evaluation processes for each study programme. They are responsible for collecting the data (through the compilation of the SUA_CdS form²) that are required to perform the annual monitoring of the programme. They then appoint the 'Gruppo di Riesame' (Review Group) that is the ad-hoc body that organizes and performs the annual (A) and periodic (B) evaluation of the study programme. The Review Group has to present some students that are enrolled in that specific study programme.

The self-evaluation process (see also Figure 1) is developed at the level of each programme (CdS) and is structured on the two main documents/processes described below. The first (A) is an annual procedure while the second (B) is carried out cyclically (every five years). The contents and structure of both these

¹ The R3 quality standard is formulated as follows: "The objectives identified in the Academic Programme planning are consistent with the cultural, scientific and social needs and consider the characteristics that distinguish the Bachelor's and Master's degree Programmes. For each Programme the availability of adequate teaching resources, personnel and services are guaranteed, monitoring of results and strategies adopted for correction and improvement and student-centred learning are included." The R3 quality standard consists of four indicators that are cultural and professional profile (R3.A); the promotion of student-centred teaching (R3.B); an adequate amount of teaching and technical-administrative personnel (R3.C); the ability of the programme to recognize its teaching organization's critical aspects and to define subsequent actions (R3.D).

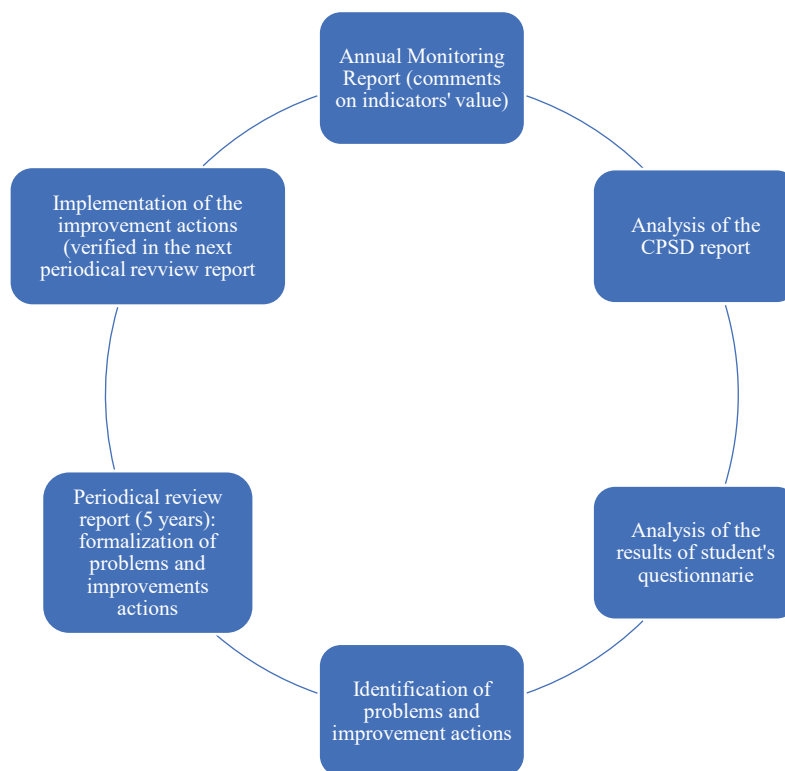
² **Scheda SUA_CdS:** This is a technical document for each study programme that is functional for development of the annual and periodical monitoring reports (A and B). In this document, the learning outcomes of the programme are illustrated along with all the core data and quantitative indicators to be used in the self-evaluation process.

reports are provided by the national evaluation agency (ANVUR 2017b). The execution of both A and B is supported and coordinated by the QAC.

A) The Annual Monitoring Report ('Scheda di Monitoraggio Annuale'): The 'Review group' (Gruppo di Riesame) each year comments the annual values of the quantitative PIs (described in section 4) provided in the SUA_CdS, highlighting major problems that will be taken into account during the periodic review (B). This monitoring process is based also on the results of the students' questionnaire and the annual report developed by the CPSD.

B) The Periodical Review Report ('Rapporto di Riesame Ciclico'): The 'Review group' evaluates in detail and every five years, the trend of each quantitative PI in order to verify whether the quality standards (R3) of the programme are still achieved or not. In the case of negative trends, the 'Review group' has to illustrate how these problems will be faced in the next cycle (five years) by highlighting some operative actions for the improvement of the programme's performance. This periodical review process is based also on the information provided by the annual monitoring reports.

Figure 1: Cycle of the self-evaluation and QA process for each programme



The Annual Monitoring Report (A) has primarily a monitoring purpose whereas the Periodical Review Report (B) has the main goal of suggesting detailed actions that face the problems highlighted by the PIs within the Annual Monitoring Report. The evaluation of the teaching activities of each programme is instead given within the annual relation of the Evaluation Unit (EU), in which the best practices and 'negative' cases are reported to ANVUR. In addition, the EU assesses cyclically, through the analysis of quantitative PIs, the operation and results of each study programme of the HEI.

5. UNIMI's Performance Data Management (PDM) in L&T

The set of core data and PIs in L&T within UNIMI derives from two main sources: the set of quantitative PIs defined by the national legislation (5.1) and the students' questionnaires (5.2). Other minor core data are provided instead by UNIMI's IT office (5.3). There is no unique central office that coordinates and manages the entire set of core data and PIs on L&T within UNIMI since these come from different sources and are collected for different levels of analysis by different actors such as the informative system of UNIMI, each department's informative office, the employability office and the libraries.

5.1 The quantitative PIs

In 2016, the national legislation (ministerial decree n. 987 of 2016) identified a set of 37 quantitative PIs that must be used in the annual and periodic process of self-evaluation of Italian HEIs (section 4, III). Even if the set of PIs is established by law, this leaves to each programme director (in collaboration with the QAC and the EU) the selection of those specific PIs through which the outputs and outcomes of the programme are monitored and how these respect the above-mentioned quality standards. The values of PIs are updated every three months directly by ANVUR through the online compilation of the SUA_CdS of each study programme. The 37 quantitative PIs are structured into six areas:

1. Teaching (nine indicators at the level of the entire HEI and at programme level);
2. Internationalization (three indicators at the level of the entire HEI and at programme level);
3. Environment and quality of research (five indicators at the level of the entire HEI);
4. Economic and financial sustainability (three indicators at the level of the entire HEI);
5. Further indicators for the evaluation of teaching (eight indicators at programme level);
6. Indicators for testing and experimentation (nine indicators at programme level).

The value of each PI is computed for three consecutive academic years in order to facilitate the identification of longitudinal trends. Moreover, all the PIs present also the average values for other study programmes that belong to the same disciplinary area within the same geographical areas as well as at the national level. The PIs of the first, second, fifth and sixth area are those used in the internal self-evaluation process of teaching activities (section 4, point n. III), in the annual evaluation report of the Evaluation Unit and for the external periodic evaluation of each HEI (section 4, point n. II). The PIs of the first, second, fifth and sixth area as formulated by Italian higher education law are listed in Tables 7-10 in the Appendix.

5.2 The students' questionnaire

The second major source of performance data at UNIMI is the students' questionnaire. The survey presents a 'compulsory' and an 'elective' set of items (questions). The former is established by ANVUR since 2013, while the latter can be modified by each HEI. The compulsory items of the questionnaire cover the areas depicted in Table 2.

Table 2: Sections and section dimensions of the students' questionnaire

Questionnaire sections	Section dimensions	Number of questions
Teaching process	Ex-ante (preliminary) knowledge	13
	Student workload	
	Teaching materials	
	Assessment methods	
Lecturers	Lessons time-table	7
	Quality of teachers' teaching (clarity of communication, availability, punctuality)	
	Additional teaching activity (laboratories; group works; internships in companies, ...)	
	Website of the course	
Interest	Overall degree of satisfaction about the course	1

The level of analysis of the questionnaire is the single course and its compilation is compulsory for students before the online enrolment in the learning evaluation (final exam). Consequently, the response rate is 100% given that every student has to complete the survey. The evaluation scale is organized with a Likert approach as follows: “definitely no”, “mostly no”, “mostly yes”, “definitely yes”. The QAC is the body in charge of organizing and delivering the questionnaire throughout the university, whereas the results are evaluated by the CPSD, the Evaluation Unit, and the ‘Review Group’ in order to develop the Periodical Review Report.

5.3 Other sources of core data for teaching and learning

Other core data can be found from other minor sources such as the annual evaluation of library services, the IT system of UNIMI, the research database of UNIMI (‘AIR’) and the graduates’ questionnaire that is managed by the Inter-University Consortium ‘Almalaurea’³.

5.4 Comparison between UNIMI’s core data and PIs in L&T and the SQELT typology

All data and PIs in L&T of UNIMI have been classified according to the typology provided by the SQELT project, namely: Learning and teaching environment (Table 3); Teaching process (Table 4); Learning process (Table 5); and Learning outcomes and their assessment (Table 6).

³ Inter-university Consortium that collect data on graduates and their trajectories for several Italian universities.

Table 3: Performance types and PIs of L&T environment

Performance type	PI description SQELT framework (PI0a-PI21)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by polittics/law	Repre-sented/not represented in our HEI
Quality of incoming students	Student entrance score/secondary school grades (PI0a)							Not available
	University entrance tests (PI0b)	There are data about this but they are not managed centrally but by each program. In addition not each programme presents a specific entrance test.	On-going monitoring of students composition	Programme Coordinator; Governance	Nothing indicated in the strategic plan	Internal data of the University	For Medicine and health related disciplines is prescribed by the law, for the others can be introduced by each program	
Learning resources	Number of book titles, periodical & website subscriptions held in library (PI1)	Number of book titles and periodicals	Annual monitoring of libraries services	Management of the libraries; Students; Governance and academic staff	Indicated within the Strategic plan + Public service charter	Informative system of each library (24) and the digital library (unique for each library)	Not required by law, promoted by the governance of the university	
		Number of open-access scientific journals	Annual monitoring of libraries services	Management of the Libraries; Governance and Academic staff	Indicated by the University Performance plan	Archivio della Ricerca (AIR) (research informative system of the university)		
		Number of downloads from open-access journal from the digital library of the university	Annual monitoring of libraries services	Management of the Libraries; Governance and Academic staff	Indicated by the University Performance plan	Archivio della Ricerca (AIR) (research informative system of the university)		
	Expert assessment of quality of book titles, periodical & website subscriptions (PI2)							
Teaching resources	Student assessment of library services (PI3)	Student assessment of the quality of libraries services	Annual monitoring of libraries services	Management of the Libraries; Students; Governance	Indicated within the Strategic plan + Public service charter	Survey managed by each library of the university (24 libraries)	Not required by national law, promoted by the governance of the university	
	Course capacities and diversity (with respect to topics, class options, time, place, lecturers) (PI4)							Too wide
	Ratio of students to teaching staff (PI5)	Ratio between regular enrolled students and member of the FTE academic staff	Annual monitoring of the quality of teaching activities (for each program)	Programme Coordinator; Internal Evaluation Unit; Students representatives; Governance	Required by HEI council for each programme	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	

Performance type	PI description SQELT framework (PI0a-PI2I)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by polities/law	Represented/not represented in our HEI
		Ratio between enrolled students and total number of academic staff (weighted for teaching hours)	Annual monitoring of the quality of teaching activities (for each Program)	Programme Coordinator; Internal Evaluation Unit; Students representatives; Governance	Required by HEI council for each programme	Anagrafe Nazionale Studenti (Ministerial informative system) / programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
		Ratio between first-year students and total number of first-year lecturers (weighted for teaching hours)	Annual monitoring of the quality of teaching activities (for each program)	Programme Coordinator; Internal Evaluation Unit; Students representatives; Governance	Required by HEI council for each programme	Anagrafe Nazionale Studenti (Ministerial informative system) / programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
	Proportion of teaching staff with verified doctoral qualifications (PI6)	Each tenured teacher must have the doctoral qualification to teach. Yet, there are also member of the teaching staff that might not present a doctoral qualification (not tenured academic staff)	On-going monitoring of the academic staff	Governance and programme coordinators	Required by the law (there is a threshold to respect)	Statistical office of the Ministry of Education/University		
	Proportion of teaching staff participating in professional development activities (PI7)	Proportion of (both tenured and not) teaching staff participating in professional development activities	Ad-hoc Improvement of teaching activities	Governance	Indicated in a previous strategic plan	Internal data of the University	Only suggested by the National Evaluation Agency (ANVUR)	
Facilities & equipment	Provision of student places (PI/a)							Not available
	Expenditure on IT (PI8)							Not available
	Number of accessible computer terminals (PI9)	There is the core data on the number of accessible computer terminals						
	Teaching staff assessment of adequacy of facilities & equipment (PI10)							Not available
Financial management	Internet bandwidth per user (PI11)							Not available
	Expenditure on laboratory resources (PI12)	Expenditure for the laboratories supplies and ordinary operation	Funds allocation	Governance	Indicated on the annual preventive Budget document	Preventive budget document	Not required by the national law	
	Total operating expenditure for students (other than accommodation & student allowance) (PI13)							Too wide, not comparable with other national budgetary systems
	Proportion of total operating funds (other than accommodation & student allowance) allocated to							Too wide, not comparable with other national budgetary systems

Performance type	PI description SQELT framework (PI0a-PI2I)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by politics/law	Represented/not represented in our HEI
Student composition, student administration & support services	provision of student services (PI14)	Employment status and educational attainment of parents	On-going monitoring of students composition	Governance and programme coordinators	Nothing indicated in the strategic plan	Internal data of the University	Yes	
	Social origin of students (PI14a)	Number and % of female and male students	On-going monitoring of students composition	Governance and programme coordinators	Nothing indicated in the strategic plan	Internal data of the University	Yes	
	Student gender (PI14b)	Percentage of full-time students	On-going monitoring of students composition	Governance and programme coordinators	Nothing indicated in the strategic plan	Internal data of the University	Yes	
	Percentage of full-time students (PI14c)	Percentage of part-time students (there is a very specific rules about 'part-time')	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Internal data of the University	Yes	
	Percentage of international students (PI14d)	Percentage of students enrolled in the first year (undergraduates and postgraduates) who earned their study qualification abroad	Annual monitoring of the quality of teaching activities (for each programme)	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
	Percentage of international students (PI14d)	Number of international (citizenship) students	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes	
	Percentage of international students (PI14d)	Number of international (resident abroad) students	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes	
	Percentage of international students (PI14d)	Number of incoming ERASMUS students	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Internal data of the University	Yes	
	Percentage of postgraduate students (PI14e)	Number and percentage of post-graduate students	On-going monitoring of students composition	Governance and programme coordinators	Nothing indicated in the strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes	
	Percentage of postgraduate students (PI14e)	Percentage of postgraduate students	On-going monitoring of students composition	Governance and programme coordinators	Nothing indicated in the strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes	

Performance type	PI description SQELT framework (PI0a-PI2I)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by politics/law	Represented/not represented in our HEI
	Ratio of students to administrative staff (PI15)	Ratio of students to administrative staff	On-going monitoring of students and administrative staff	Governance	Nothing indicated in the strategic plan	Internal data of the University	No	Not available
	(Final year) Student assessment of academic & career counselling (PI16)							
	Student assessment of student services (e.g., health, housing, food & sport facilities) (PI17)	Student assessment on the infrastructures (classrooms, ICT, library) used during the university career:	Monitoring of the overall students satisfaction after the end of the academic career	Governance and programme coordinators	Required by the HEI council	3 questions of the graduates' survey (after the end of the academic career), managed by the ALMALAUREA consortium	Yes	
	Minority/equity student support (PI17a)	Number of students with disabilities (physical and mental)	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Internal data of the University	Yes	
	Special access provision (PI17b)	Number of students with learning disabilities	On-going monitoring of students composition	Governance and programme coordinators	Indicated as a priority in the current strategic plan	Internal data of the University	Yes	Too wide, what does it mean?
	Percentage of international teaching staff (PI17c)	The only available data is that concerning the number of visiting professor						Not available
Social context	Opportunities for students to find networks that meet their social, cultural, study interests (PI18)							Not available
	Opportunities for students to contact teachers (PI19)							Not available
	Opportunities for linking to community/ collaborating with business and industry (PI19a)							Not available
	Facilities & spaces for stakeholders participation in curriculum development (PI20)	Qualitative report filled by the programme coordinators about the participation of external stakeholders in the course design	On-going monitoring of the quality of teaching activities (for each programme)	Governance and programme coordinators	Nothing indicated in the strategic plan	Internal reports of the university	Prescribed by the national evaluation agency (ANVUR)	
Facilities & spaces for stakeholders participation in decision-making bodies (PI21)	Number of external stakeholders in the council of the university				Internal data of the university	Prescribed by the national law 240/2010		

Table 4: Performance types and PIs of teaching

Performance type	PI description SQELT framework (PI21a-PI32)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/strategy	Data source	Required by politics/law	Not represented in our HEI
Quality of staff	Staff recruitment (PI21a)	Percentage of high quality teachers (based on VQR results) that teach in each post-graduate program (The VQR is the national assessment exercises of academic research in Italy)	Annual monitoring of the quality of teaching activities (for each program)	Governance, Programme coordinators	Nothing included in the strategic plan	Internal data of the university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
			Teacher assessment of teaching workload (PI21b)					
Teaching staff workload	Student assessment of teachers' subject-matter competence (PI22)	Question of the student survey of each course: "Did the lecturer cover the topics clearly and exhaustively?"	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	Not available
Competences in subject-matter & methodology	Proportion of full time member of teaching staff with at least a certain number [ibid] of refereed publications during a certain period of time [ibid] (PI23)	Qualitative description within the course syllabus The same of (PI22a)						
General education skills	Teachers' respect and interest for students (PI26a)	Question of the student survey: "Did the lecturer stimulate your interest towards the topics of the course?"	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	
			Teachers' stimulation of student interests (PI26b)	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)
General education skills	Teachers' encouraging students' autonomous thinking and acting (PI26c) Teachers' assignments providing choice (PI26d)							Not available
								Not available

Experience of teaching staff	Teacher knowledge of teaching models (PI27)	Question of an internal survey about teaching practices of UNIMI's academic staff	Ad-hoc monitoring of the quality of the academic staff	Governance	Suggested by Governance of the university	Internal survey of the university (2017)	No	Not available
Course quality	Staff assessment of institutional recognition of teaching (surveys) (PI27a)	Question about the stimulation of interest of students from the student survey: "Did the lecturer stimulate your interest towards the topics of the course?"	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes, introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	Not available
	Student assessment of course quality (PI28)							
	Student assessment of teaching quality (PI29) Teacher assessment of teaching quality (PI30)	3 questions from the student survey: 1) Where the examination methods clearly defined? 2) At the beginning of the lessons, were the goals and content of the course presented clearly? 3) Do you think that the course was in-line with the learning outcomes of the whole program?	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	Not available
Teaching diversity	Clarity of course requirements (PI30a)							
	Teacher sensitivity to class level & progress (PI30b) Peer review or participating observation of courses (PI31)	What do you mean for teaching diversity? The only information that we have about "teaching diversity" is a question of the student survey: - Were the integrated/additional teaching activities provided in addition to the lectures (exercises, seminars, laboratories...) useful to the enhance the learning process?						Not available

Table 5: Performance types and PIs of learning

Performance type	PI description SQEELT framework (PI33-PI40)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by politics/law	Not represented in our HEI
Student workload	Student assessment of student workload (PI33)	From the student survey there are 2 questions: - Is the workload of the course, proportional to the ECTS credits assigned? - If you think that the workload required by this course is not proportional to the ECTS credits prescribed, how do you think this should change?	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	
	Teacher assessment of student workload (PI34)	From the student survey there is the following question: - Are you generally satisfied with this course? In addition there are two quantitative indicators: 1) Percentage of students about to graduate who are generally satisfied with their program 2) Percentage of graduates that would enroll in the same study programme again	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators, CPSPD	Required by the HEI council and national law	Student survey (at the level of the single course) + Graduates survey (for the indicators)	FOR STUDENT SURVEY Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR) FOR THE 2 INDICATORS Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	Not available
Quality learning	Development of competence of self-learning (PI35a)							Not available
	Think-aloud protocols of learning processes (PI36)							Not available
	Teacher knowledge of learning models (PI37)							Not available
	Student knowledge of learning models (PI38)							Not available
	Student assessment of learning diversity (PI39)							Not available
Learning diversity	Teacher assessment of learning diversity (PI40)							Not available

Table 6: Performance types and PIs of learning outcomes and their assessment

Performance type	PI description SQELT framework (PI41-PI66)	PI description our HEI	Governance utility	Interested stakeholder group(s)	Relation to profile/ strategy	Data source	Required by politics/law	Not represented in our HEI
Student success rates	Proportion of students entering programs who successfully complete first year (PI41)	<ul style="list-style-type: none"> - Percentage of drops-out after the first academic year - Percentage of freshmen (undergraduates and postgraduates) who continue their 2nd year in a different study programme within the same university - Percentage of ECTS credits achieved in the first year / total ECTS credits to be achieved in the first year. - Percentage of students who continue on to the 2nd year in the same study program - Percentage of students who continue on to the 2nd year in the same study programme having at least earned 20 (or 40) ECTS credits in the 1st year 	Annual monitoring of the quality of teaching activities (for each program)	Governance and Programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
	Proportion of students entering undergraduate programs who complete those programs in specified time (PI42)	<ul style="list-style-type: none"> - Percentage of graduates (undergraduate and postgraduate) within the natural programme duration - Percentage of graduates (undergraduate and postgraduate) within 1 year beyond the normal duration of the program - Percentage of freshmen (undergraduate and postgraduate) who graduate within the normal timeframe for the programme of reference 	Annual monitoring of the quality of teaching activities (for each program)	Governance and Programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) / available for each programme and at the level of the whole university	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
	Proportion of students entering postgraduate programs who complete those programs in specified time (PI43)	The same indicators for (PI41) and (PI42)						
Student & alumni satisfaction	Freshman satisfaction (surveys) (PI44)							Not available
	Senior satisfaction (surveys) (PI45)							Not available
Employability	Alumni satisfaction (surveys) (PI46)							Not available
	Proportion of (under-) graduates who within a period of time [ibd] of graduation are employed (47)	<ul style="list-style-type: none"> - Percentage of graduates employed 1 year from obtaining their qualification (undergraduate and postgraduate) 	Annual monitoring of the quality of teaching activities (for each program)	Governance and Programme coordinators	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) + graduates survey managed by the ALMALAUREA consortium	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)	
	Proportion of (under-) graduates who within a period of time [ibd] of graduation are enrolled in further study (PI48)	<ul style="list-style-type: none"> - Percentage of graduates employed or who are enrolled in another study programme within one year of obtaining their qualification (degree) - Percentage of graduates employed or who are enrolled in another study programme within 3 years of obtaining their qualification (degree) 	Annual monitoring of the quality of teaching activities (for each program)	Governance and Programme coordinators	Indicated as a priority in the current strategic plan	Indicated as a priority in the current strategic plan	Anagrafe Nazionale Studenti (Ministerial informative system) + graduates survey managed by the ALMALAUREA consortium	Yes, introduced ministerial decree n. 987/2016 and promoted by the National Evaluation Agency (ANVUR)

Achievability of high level L&T goals	Employer satisfaction (surveys) (PI49)	The question of the student survey that most resemble this indicator is the following: "Do you think that the course was in-line with the learning outcomes of the whole program?"	Annual monitoring of the quality of teaching activities (for each course)	Programme and course coordinators; CPSD	Required by the HEI council and national law	Student survey (at the level of the single course)	Yes introduced in 1999. From 2013 questions developed by the national evaluation agency (ANVUR)	Not available
	Student assessment of L&T goals achievability (PI50)							
Problem solving	Teacher assessment of L&T goals achievability (PI51)							Not available
	Documentation of problem-based learning processes (PI52)							Not available
Research	Observation of students performing a task (PI53)							Not available
	Observation of students in application of scientific methods (PI54)							Not available
ICT	Observation of students using ICT (PI55)							Not available
	Observation of students applying knowledge in practice (transdisciplinarity) (PI56)	Descriptive reports about the compulsory apprenticeship in the medicine and nursery area → they are very descriptive and they differ from one course to another						Not available
Applied knowledge	Observation of students in exercising social & self-competences (PI57)							Not available
	Motivation for lifelong learning (PI57a)							Not available
Personality (social & self-competences)	Fostering sustainability values (social, ecological, economical) (PI57b)							Not available
	Engaging assessment formats (PI57c)							Not available
Assessment of learning outcomes	Grades (PI58)	Data about grades are collected by an internal software (called SIFA) managed by the university which does not release any information about them						Not available
	Adequate focus on understanding & methodological knowledge (PI58a)							Not available
Assessment of learning outcomes	Student self-assessment of their knowledge (PI59)							Not available
	Pre-post test documentation of learning achievements (PI60)							Not available
Assessment of learning outcomes	Student assessment of assessment forms (PI61)							Not available
	Teacher assessment of assessment forms (PI62)							Not available
Assessment of assessments	External stakeholder assessment of assessment forms (PI63)							Not available
	Student assessment of assessments (peer grading) (PI64)							Not available
Assessment of assessments	Peer review or participating observation of assessments (PI65)							Not available
	Analysis of assessment protocols (PI66)							Not available

6. SWOT analysis of UNIMI's PDM in L&T

Table 1: Preliminary SWOT analysis of UNIMI's performance data management

Strengths	Weaknesses
Increasing institutional commitment towards the quality of teaching Possibility of benchmarking exercises Orientation of the PIs set towards the improvement of teaching activities Consideration of the students' viewpoint in the QA process	Lack of teachers' viewpoints in the PIs set Gaps in the L&T environment indicators Unbalance towards policy-driven PIs Lack of a central management system of all core data and PIs in L&T
Opportunities	Threats
Introducing new PI in L&T Supporting the diffusion of an evaluation culture in teaching	Dependence on the commitment of programmes' directors Academics' lack of incentives towards teaching activities Low flexibility in the type of PIs to measure the quality of teaching activities Internal disciplinary heterogeneity

STRENGTHS

I) Increasing institutional commitment towards the quality of teaching: This commitment is expressed by both the previous and current governance of UNIMI through the inclusion of several of the above-mentioned performance indicators and related targets in the strategic plan (2017-2019) of UNIMI.

II) A possibility of benchmarking exercises: The actual values of performance indicators within disciplinary areas can be used as internal (UNIMI) benchmarks and external (national) benchmarks. For example, the 'Review Group' can thus have a comparative perspective on how similar study programmes perform in specific indicators and use it as an internal competitive benchmark.

III) The set of PI is oriented towards the improvement of teaching activities: The performance indicators must be used to identify negative circumstances and develop actions for the improvement. The measurement of teaching performance is indeed well structured in the ongoing self-evaluation process (see section 3, III, both A and B) that is also carried out through the collaboration of several actors (Programme directors, Evaluation Unit, CPSD, QAC).

IV) Consideration of the students' viewpoint in the QA process: The entire QA process includes bodies (e.g. the 'Review Group' and the CPSD) in which students participate in and are able to express their opinions on the relevance of performance indicators selected for the monitoring process as well as on the actions developed to improve the performance of each study programme during the periodic self-evaluation procedure.

WEAKNESSES

I) Lack of teachers' viewpoint in the performance indicators system: There are no performance indicators that take into account the teachers' perspective in assessing the quality of the L&T process. For example, 'Teacher assessment of student workload' [PI34] and 'Teacher knowledge of learning models' [PI37], cf. Table 7, are not available within UNIMI.

II) Gaps in the Learning and teaching environment performance indicators: There are no performance indicators at UNIMI on the quality of incoming students; financial management and the stakeholders' participation in the curriculum development.

III) Unbalance towards policy-driven performance indicators: Some performance indicators are clearly correlated with national policy goals such the reduction of the students' drop-out that is one of the highest within the EHEA. There are indeed eleven performance indicators on the student success rates and no indicators about other relevant dimensions of the learning outcomes such as the 'assessment of learning outcomes'.

IV) Lack of a central management system of core data and performance indicators in L&T: The set of core data and performance indicators in L&T at UNIMI is currently managed by different actors according to different assessment processes. For example, the quantitative performance indicators are primarily managed by the study programmes and directly provided by ANVUR whereas other core data are instead directly collected by the libraries or other administrative structures such as the administrative office for research (for all the data about publications etc...).

OPPORTUNITIES (What does UNIMI expect from the SQELT project?)

I) New performance indicators on teaching and learning: The SQELT project can introduce new indicators in areas where the UNIMI's PDM in L&T has gaps, particularly in the areas of teaching processes and learning processes.

II) Supporting the diffusion of an evaluation culture on teaching: While Italian academics traditionally used to be assessed on their research performance, the implementation of the SQELT project might represent a new opportunity to involve programme directors and individual academics in the language, goals and benefices of the evaluation of teaching activities.

THREATS

I) Dependence on the commitment of programme directors: The internal QA system of UNIMI is structured at the level of each study programme. For this reason, the effectiveness of QA in L&T, the monitoring, self-evaluation and improvement activities, heavily relies on the individual commitment of the programme directors. The support of the QAC is in this case crucial for not leaving alone the programme directors in those bureaucratic procedures that have to be undertaken in order to be compliant with the national legislation.

II) Lack of incentives for academics towards teaching activities: Despite growing attention towards teaching from UNIMI's governance, the career system of Italian academics does not usually encourage them to invest time and resources in the L&T process given that they are only evaluated based on their scientific publications (Capano et al., 2016). Therefore, commitment to teaching activities is often based on voluntary and individual decisions of academics.

III) Low flexibility in the type of performance indicators to measure teaching activities: Study programmes can select those performance indicators they want to use in the self-evaluation process. Yet, the set of indicators is established by the national legislation and ANVUR, which does not provide the

opportunity to introduce new indicators within the QA process on a voluntary basis. The employment of a common set of national performance indicators supports indeed the external periodic accreditation of each HEI conducted by ANVUR.

IV) *Internal disciplinary heterogeneity*: UNIMI is a generalist university with several study programmes that cover a broad range of disciplines. When performance indicators are analysed at the level of the entire institution, the internal disciplinary heterogeneity has to be taken into account in interpreting the score of the indicator.

References

Agasisti, T., Barbato, G., Dal Molin, M., and M. Turri. 2017. "Internal quality assurance in universities: does NPM matter?" *Studies in Higher Education* (article in press) DOI: [10.1080/03075079.2017.1405252](https://doi.org/10.1080/03075079.2017.1405252)

Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca (ANVUR). 2017a. "Requisiti di Qualità per l'Accreditamento degli Atenei e dei Corsi di Studio (English version of 'Annex 8 of AVA guidelines')." (July 2017), Rome; document available at: <http://www.anvur.it/attivita/ava/accreditamento-periodico/linee-guida-per-laccreditamento-periodico/>. (04-10-2018).

Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca (ANVUR). 2017b. "Linee Guida per l'Accreditamento Periodico delle Sedi e dei Corsi di Studio Universitari" (July 2017), Rome; document available at: http://www.anvur.it/wp-content/uploads/2017/08/LG_AVA_10-8-17.pdf. (04-10-2018).

Capano, G., M. Regini, and M. Turri. 2016. *Changing Governance in Universities: Italian Higher Education in Comparative Perspective*. New York: Palgrave-Macmillan.

Pruvout, E. B., and T. Estermann. 2017. "University Autonomy in Europe III. The Scorecard 2017." Brussels: European University Association (EUA).

Appendix

Table 7: Performance indicators on Teaching

Indicator Code	Indicator Description	Source
IC01	Percentage of regularly-attending students who have earned at least 40 ECTS credits during the academic year	Anagrafe Nazionale Studenti ⁴ (ANS)
IC02	Percentage of graduates (undergraduate and postgraduate) within the natural programme duration	Anagrafe Nazionale Studenti (ANS)
IC03	Percentage of freshmen of an undergraduate programme, coming from different regions	Anagrafe Nazionale Studenti (ANS)
IC04	Percentage of freshmen in the 1 st year of a post-graduate programme who graduated from another university	Anagrafe Nazionale Studenti (ANS)
IC05	Ratio between regular enrolled students and member of the academic staff	Anagrafe Nazionale Studenti (ANS)
IC06	Percentage of graduates employed or who are enrolled in another study programme within one year of obtaining their qualification (degree)	AlmaLaurea
IC07	Percentage of graduates employed or who are enrolled in another study programme within three years of obtaining their qualification (degree)	AlmaLaurea
IC08	Percentage of tenured faculty members that belong to scientific disciplinary sectors (SDS) characterizing the programme (in which they teach)	SUA_Cds
IC09	Percentage of high quality teachers (based on VQR results) that teach in each post-graduate programme	SUA_Cds

Table 8: Performance indicators on internationalization

Indicator Code	Indicator Description	Source
IC10	Percentage of ECTS credits earned abroad by regularly-enrolled students over the total of ECTS credits earned by students enrolled during the natural duration of the programme	Anagrafe Nazionale Studenti (ANS)
IC11	Percentage of regular graduates (within the normal programme duration) that have earned at least 12 ECTS credits abroad	Anagrafe Nazionale Studenti (ANS)
IC12	Percentage of students enrolled in the 1 st year (undergraduates and postgraduates) who earned their study qualification abroad	Anagrafe Nazionale Studenti (ANS)

⁴ Anagrafe Nazionale Studenti (ANS) is the national statistical agency under the control of the MIUR (Ministry of education, university and research).

Table 9: Further performance indicators for the evaluation of teaching

Indicator Code	Indicator Description	Source
IC13	Percentage of ECTS credits achieved in the 1 st year / total ECTS credits to be achieved in the first year	Anagrafe Nazionale Studenti (ANS)
IC14	Percentage of students who continue on to the 2 nd year in the same study programme	Anagrafe Nazionale Studenti (ANS)
IC15	Percentage of students who continue on to the 2 nd year in the same study programme having at least earned 20 ECTS credits in the 1 st year	Anagrafe Nazionale Studenti (ANS)
IC16	Percentage of students who continue on to the 2 nd year in the same study programme having at least earned 40 ECTS credits in the 1 st year	Anagrafe Nazionale Studenti (ANS)
IC17	Percentage of graduates (undergraduates and postgraduates) within one year beyond the normal duration of the course of study	Anagrafe Nazionale Studenti (ANS)
IC18	Percentage of graduates that would enroll in the same study programme again	AlmaLaurea
IC19	Hours of teaching by tenured faculty members on the total of teaching hours	SUA_Cds
IC20	Ratio between tutors and enrolled students (for online programmes)	SUA_Cds + ANS

Table 10: Performance indicators for testing and experimentation

Indicator Code	Indicator Description	Source
IC21	Percentage of students that continue in the 2 nd year regardless whether in the same university and the same programme	Anagrafe Nazionale Studenti (ANS)
IC22	Percentage of freshmen (undergraduates and postgraduates) who graduate within the normal timeframe for the programme of reference	Anagrafe Nazionale Studenti (ANS)
IC23	Percentage of freshmen (undergraduates and postgraduates) who continue their 2 nd year in a different study programme within the same university	Anagrafe Nazionale Studenti (ANS)
IC24	Percentage of drop-outs after the 1 st academic year	Anagrafe Nazionale Studenti (ANS)
IC25	Percentage of students about to graduate who are generally satisfied with their programme	AlmaLaurea
IC26	Percentage of graduates employed within one year from obtaining their qualification (undergraduates and postgraduates)	AlmaLaurea
IC27	Ratio between enrolled students and total number of academic staff (weighted for teaching hours)	SUA_Cds + ANS
IC28	Ratio between 1 st -year students and total number of 1 st -year lecturers (weighted for teaching hours)	SUA_Cds + ANS
IC29	Ratio between tutors with a doctorate degree and enrolled students (for online programmes)	SUA_Cds + ANS