AAQ-Cti external quality audit of EPFL (2014)
Executive summary

• Context
In 2012, EPFL requested that the Swiss Accreditation Agency (AAQ) consider the conduct of the planned Institutional Quality Audit as a joint procedure with the French Commission des Titres d’Ingénieur (Cti), for the simultaneous review of its Masters in engineering and architecture. The objective of such procedure was to favor a thorough evaluation of the quality assurance of the institution with the direct implication of all stakeholders.

AAQ and Cti, having cooperated for nearly 10 years, have developed a joint self-evaluation and reference framework, and selected a common group of experts for the on-site visit. Following the audit, two reports were prepared: one for the Swiss authorities, and another one for the French accreditation agency. The audit took place at EPFL on November 24th to 27th 2014.

The EPFL 2014 Quality Audit was performed according to LAU taking into account 17 quality criteria that differentiate the seven quality standards established by the Swiss University Conference (SUC).

• Composition of the panel of experts
Prof. Hans Jürgen Prömel, President of TU Darmstadt, Germany (Chairperson AAQ)
Prof. Jacques Schwartzentruber, French Ministry of Industry, France (Peer leader of Cti)

Dr. Jean-Claude Arditti, former Director of International Relations, Supméca, France
Dr. Endika Bengoetxea, Deputy Head, EU Institute of Innovation and Technology, Budapest, Hungary
Thomas Dewael, President of the Akademischer Ingenieurverein AIV, ETH Zürich, (student expert)
Dr. François Fleury, Researcher in Architecture, ENSA Lyon, France
Prof. Anne-Marie Jolly-Desodt, Ecole polytechnique de l’Université d’Orléans, France
Prof. Guido Langouche, former Vice Rector KU Leuven and former Vice-President NVAO, Belgium
Raphaël Mathieu, member of BNEI, France (student expert)
Prof. Dominique Pareau, former Director of education, Ecole Centrale Paris, France
Robert Pelletier, former Director, Total, France (industry expert)
Prof. Pascal Ray, Director of Ecole des Mines de Saint Etienne, France
Dr. Stéphane Wojcik, Belgian Federation for the Technology Industries, Belgium (industry expert)

• Approbation by the Swiss Accreditation Council (SAC)
The SAC approved the two agencies’ reports on the external quality audit of EPFL during its session held in Bern on June 5th, 2015. It authorized the transmission of the reports to both the secretary of State for Formation, Research, and Innovation, and to the Swiss Conference of Higher Education Institutions, for their information.

• Conclusions of the two agencies
a) AAQ report: the expert group mandated by AAQ concluded that a quality assurance strategy is clearly present at the level of EPFL management and schools, and can be described as a quality culture. The Institution has implemented a strong and comprehensive QMS that provides all required information for the support of continuous quality improvement. The responsibilities for quality and quality assurance are assigned clearly and transparently.

Following its in depth analysis, the expert group concluded that EPFL fulfills 13 out of 17 quality criteria, with four quality criteria being partially fulfilled: governance, teaching, and recruitment and development of staff. The expert group examined the implementation of EPFL’s quality assurance system in study programs. The good compliance with most SUC standards and the study-relevant instruments of EPFL’s quality system demonstrated that EPFL fulfills in large part the requirements according to Article 4 of the SUC Quality Assurance Guidelines.

b) Cti report: following the plenary assembly of CTI, held in Paris on May 12th 2015, the agency gave a favorable opinion and has attributed the EUR-ACE label to all audited engineering and architecture training programs at EPFL. For the 14 engineering degrees already accredited, the Cti requested a period of 6 years from September 2015 for the renewal of accreditation and proposal for the admission by the State. It requested, however, a re-examination and new reports after 3 years with specific recommendations concerning 4 engineering programs: applied math and applied physics (positioning with respect to engineering), materials science (new program of 120 ECTS), environmental science (curriculum positioning). Concerning the 3 new engineering degrees, financial engineering, computational science and engineering, energy management and sustainability, the Cti has proposed their accreditation and admission by the State for 3 years with a re-examination and new reports in 2018, which is the usual procedure for newly accredited programs.

General recommendations included the pursuing of the implementation of learning outcomes and better definition of the professional standards by program with special emphasis on the re-enforcement of skills specific to the professional engineer in industry. Experts also gave specific recommendations by program for their improvement.

• Decision of EPFL senior management
EPFL general management has asked the Provost and the Vice-Provosts for Education and Research, in collaboration with the QMS office, to establish an action plan to implement the required measures of improvement. The main actions envisaged by EPFL general management are summarized in the position statements presented on next pages. Moreover, these measures will be carried out in accordance with the requirements for quality assurance present in the new Federal Act on Funding and Coordination of the Swiss Higher Education Sector (LEHE), in force since January 2015.
A) Recommendations AAQ

1. Governance

   a. Generation of indicators for education at schools and program levels
   Experts identified that, in the area of education, information relies essentially on a centralized dedicated office.
   • Experts recommendation:
     Experts suggested that such centralized system needs to be complemented with other indicators collected at school and program levels.

   b. Institutional and program SWOC analysis
   As underlined by the experts, the most relevant information from EPFL’s QMS is reflected in the SWOC analysis produced at institutional and program levels.
   • Experts recommendation:
     EPFL general management, Schools, and Colleges should use the established Institutional or program SWOC analysis to support their strategy.

   c. Activity of advisory boards, academic commissions, and Alumni survey in programs
   As defined in EPFL QMS, sections dispose of specific committees to advise them (academic commissions, advisory boards) as well as Alumni surveys to monitor the employability of their graduates.
   • Experts recommendation:
     All schools should ensure that their sections use their academic commissions, advisory boards, and alumni surveys as a basis for their strategic decisions for curriculum improvement.

   d. Indicators for the adequacy of resources and infrastructures for teaching
   In view of different testimonies reported during the interviews, the panel of experts has perceived some level of tension concerning the resources (human and infrastructures) needed for education.
   • Experts recommendation:
     The AAQ experts required that specific indicators on these topics should be introduced in the EPFL QMS and used by EPFL general management for strategic decisions.

2. Teaching

   a. Quality assessment of curricula at the semester, year, and program level
   • Experts recommendation:
     The processes for quality assessment, as it is for those implemented at the course level, must also be devised for other strategic curriculum structures (coherent groups of courses, branches, semesters, professional standards, etc.).

   EPFL answer
   EPFL plans to devote specific efforts to develop the capacity of the concerned school entities to participate in the collection of data or at least to better take into account those centrally collected for the improvement of their programs (i.e. graduate employability and Alumni surveys by sections).

   EPFL answer
   EPFL general management, confirm that they will continue to take the best possible advantage of such analysis to orient their strategic decisions and governance.

   EPFL answer
   EPFL general management and Schools will secure that all sections will implement these points in their QMS. An ad hoc task force, including section directors, the director of CAPE, and Deputy to the Vice-president for MQS, has been set up in order to better define the functioning of section committees, and to establish how the advice collected from these various boards, including data from Alumni surveys, should be implemented in the sections’ QMS.

   EPFL answer
   The EPFL will introduce these indicators in its monitoring. Moreover, a better coordination between the VPAA, the VPRI, and the concerned sections for the identification of the necessary measures of improvement is currently underway.

   EPFL answer
   EPFL has already started to implement many of the measures proposed by the review panel. Several recommendations will be addressed within the dedicated “Task Force on Education” created by the Vice-Provost for Education. Performance assessment of the different steps of our curricula, including professional standards, will be a cornerstone in the enhancement of quality assurance for EPFL programs.
b. Involvement of advisory board in section

- **Experts recommendation:**
  As another recommendation, involvement of potential employers through the advisory boards must be enhanced in programs where this is still sub-critical.


c. Role of academic committees and CAPE in the implementation of learning outcomes, performance assessment, and target skills per program

- **Experts recommendation:**
  Academic committees should rely strongly on their current efforts in the clarification of learning outcomes and their consistency with target skills and competencies by program. The teaching support center (CAPE) should be regularly involved in the analysis of the methods used for the assessment of student performance.


3. Recruitment and development of staff

a. Annual qualification review:

Theoretically, all EPFL employees have an annual qualification review in which their performance, competencies, skills or training requirements to improve, are discussed. However, this annual assessment is in fact only available for permanent staff. Moreover, the ATMOS staff survey showed that not all employees benefit from an annual qualification review.

- **Experts recommendation:**
  Recommendation: EPFL should put in practice a formal procedure that provides all EPFL staff levels and categories with an annual review.

b. Situation of collaborators when their group leader retires

When a head of a research group leaves EPFL, the future of the rest of the group may be compromised. Different outcomes of this type of experience were reported during the interview.

- **Experts recommendation:**
  School deans and college directors should report regularly to EPFL senior management the outcomes of situations in which members of a research group remain after the departure of the head of the research group.


B) Recommendations Cti

The general recommendations made for EPFL program improvement during the plenary conference of the Cti held in Paris on May 12th 2015 are summarized below. These indications were forwarded to the QMS office at the end of May by Prof. Jacques Schwarzentruber, head of the Cti delegation. The official documents signed by the president of the agency and the responses concerning the authorization filed by the French Ministry of National Education should be sent to us by the end of this summer.

Since the position statements presented in response to the AAQ recommendations already cover most of the points also raised in the Cti report, they will not be repeated here.

- **General recommendation on programs:**
  a. Set up a mechanism to ensure that all graduates within one program, whatever their selection of courses, have all well-acquired the expected professional skills of their specialty
  b. Review the SHS teaching at Master level, including schools and colleges in the discussion to ensure that teaching will better suit the needs for an education in engineering
  c. Ensure that all graduates have basic training in the transversal skills that are specific to engineering such as general
  

- **EPFL answer**
  EPFL general management and Schools will ensure that all sections implement the consultation of the corresponding advisory board in their QMS.

- **EPFL answer**
  EPFL general management fully supports such recommendations, including the idea that CAPE should be always represented by one of its members in all academic committees. The proposed measures and necessary changes in organization of the sections to enhance quality culture will be one of the cornerstones of our quality enhancement for education for the years to come.

- **EPFL answer**
  Achieving formal interviews in 100% of our collaborators, including non-permanent staff (CDD), will represent a true challenge. One solution will be the introduction of an administrative control and workflow of those reviews; EPFL will continue both to sensitize heads of units to this issue and to provide them with both the appropriate information and the necessary training favoring the accomplishment of this obligation.

- **EPFL answer**
  In the internal regulations of EPFL, this situation is clearly addressed by two legal texts, (LEX 4.1.2 and LEX 5.1.1. art 82), which are respected by our central administration. The related procedures and documentation put in place by the ENAC School for such situations, provides a good example of implementation. As a measure of improvement, EPFL direction proposes to formalize it in all schools and colleges.
management, project management, communication, negotiation etc.

d. Aim for a greater consistency in the duration of industrial work placements/internships between sections, the minimum 8-week period being still very short.

**EPFL answer**

Concerning the general recommendations for program management, the Deputy to the Vice-president for MQS will meet all section directors, and discuss with them the general measures of improvement to be considered, and the points which are specific to their program(s). Moreover, a dedicated commission on education has already been constituted with sections directors, the director of CAPE, and the Deputy to the Vice-president for MQS to discuss the issues raised by the experts (a-d). This commission will provide EPFL general management with specific propositions for improvement by the end of Fall 2015.

Sections will have to discuss their program-specific points internally with their teaching commission, academic and advisory committees, and propose measures for quality enhancement. School management teams will then be consulted. Deans should endorse the actions taken by their sections, in particular when an improved positioning of program is required.

The proposed measures will then be presented to the Vice-Provost for Education. Program improvements should thereafter be validated at the conference of section directors, and, when possible, already implemented for the study plan concerning the academic year 2016-2017 with the approbation of EPFL general management.

WFP, 14.8.2015

**Annexes**