



**RE-ACCREDITATION OF THE
FACULTY OF MINING, GEOLOGY AND PETROLEUM
ENGINEERING UNIVERSITY OF ZAGREB**

**Date of the site visit:
23rd & 24th April, 2012**

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COMPOSITION OF THE EXPERT PANEL

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INTRODUCTION

Note: "SA" refers to the RGNF Self-Analysis document and "p" to the page number.

Short Description of the Evaluated Institution

The Faculty of Mining, Geology and Petroleum Engineering is one of 33 faculties in the University of Zagreb. It traces its origins to the Chair of Mineralogy and Geology, which was established at the Technical College in 1919 (p3 SA). The Faculty in its current form covers scientific and professional work in the technical and natural sciences, with emphasis on mining, geology and petroleum engineering. Although the University of Zagreb has a separate Geology department in the Faculty of Natural Sciences, the Faculty of Mining, Geology and Petroleum Engineering is currently the only Faculty in Croatia which covers this spectrum of disciplines (p3, 11 SA). The research laboratories, classrooms and administrative offices are housed in a large, centrally-located campus in Zagreb which it shares with the Faculty of Food Technology and Biotechnology. In addition the Faculty has access to facilities outside the city of Zagreb.

The Faculty employs 107 teaching staff (2010, p278 SA) and 51 non-teaching staff (p277 SA). Its student population totals 743 (2010/2011, p193 SA) across a spectrum of undergraduate and graduate programmes (e.g. p24 SA).

The Faculty states that its mission is to educate competent graduates and to perform high quality research (p10 SA). To realise this pragmatic mission, the Faculty has set itself ambitious strategic goals (p13 SA) while identifying possible barriers (p14 SA).

The Expert Panel's work

In the first instance, the panel members studied the self-evaluation report prepared by a Faculty committee. Subsequently, the panel met in Zagreb on 22nd April 2012 for preliminary discussion, exchanging first impressions of the self-evaluation report and drafting a list of questions. A site visit to the Faculty was carried out on 23rd and 24th April 2012. During the site visit, the panel met with representatives of Faculty staff and students and inspected the library, classrooms, and laboratories.

DETAILED ANALYSIS BASED ON STANDARDS AND CRITERIA FOR RE-ACCREDITATION

1) Management of the Higher Education Institution and Quality Assurance

- 1.1 The mission of the Faculty is to educate competent experts and to conduct high-level research (p10 SA). Its vision for future development, set out in its development strategy document for 2012-2016, addresses how the Faculty wishes to cement its position in the European Higher Education Area and the European Education Area (p10 SA). Engagement with stakeholders occurs through activities in a Lifelong learning programme, which includes PEX seminars, the Petroleum Engineering Summer School and short courses/ workshops (p32 SA), as well as through individual contacts (p26 SA). The Faculty envisages development of an alumni organisation in its strategy document for 2012-2016 (p171 SA). ***It is recommended that the Faculty continues to develop its strategic planning and review that the goals are met in line with its mission.***
- 1.2 The Faculty detailed its organisational structure (p7, 8 SA) and operates in accordance with the laws of Croatia (p4 SA). During the visit, it was mentioned that, in recent years, 15 acts were implemented, of which 7 related to the Bologna process (p3, 27, 31 SA). **The panel is satisfied that this structure is effective and suitable for its intended purpose.**
- 1.3 The Faculty is represented in various University councils and working groups (p7 SA). The Dean is a member of the University Senate (p7 SA). **Through its participation in the various committees, the panel is satisfied that the Faculty contributes positively to University policies and strategy.**
- 1.4 The Faculty has a suite of undergraduate, graduate and postgraduate study programmes (p22, 24 SA) which are set up as Bologna-compliant. On an undergraduate level, there are three programmes whose titles reflect the Faculty title. On a graduate and postgraduate level, Geology is introduced as an additional strand. There are 9 graduate

programmes. ***It is recommended that the Faculty reviews the viability of its graduate programmes in terms of number of students on each programme and the cost to teach a student on each programme. Following this analysis, it is recommended that the Faculty optimises the total number of students and the average cost to teach a student.***

- 1.5 The Faculty is the only faculty in the University of Zagreb which has established a Quality Management System (QMS) with ISO 9001 certification for administrative services (p 171 SA). An increase in student satisfaction has been observed during the last four years (p12, 17 SA). The Faculty's strategy document for 2012-2016 targets expansion of QMS in other segments of the Faculty's operation (p13, 14, 171 SA). ***The panel is satisfied that the Faculty's approach is aligned with the Baseline of the Croatian Qualifications Framework.***
- 1.6 The Faculty has a system in place for monitoring student satisfaction with the courses and, during the site visit, showed the questionnaire completed by students. Periodic student surveys have been conducted since 2003/2004 and help inform decisions regarding appointments (p15 SA). It is observed that only a small percentage of students participate in the surveys (p168 SA). ***It is recommended that the Faculty considers a mechanism to raise the percentage of students who participate in the survey.***
- 1.7 The Faculty set up a committee which analysed the use of laboratories with a view to improving facilities and utilisation by all stakeholders including students (p11 SA). A Strategy document for 2012-2016 was drafted which, among others, addresses teaching quality. The document states that the organisation and quality of teaching methods could be improved (p177 SA) and suggests ways in which this can be achieved (p35 SA). It also suggests that there is room for additional pedagogical improvement of the teachers (p179 SA). ***It is recommended that the Faculty continues to focus on maintaining and, where appropriate, strengthen its teaching quality.***
- 1.8 The Faculty articulates high-quality scientific research in its mission (p10 SA) and emphasises three goals for research activity in its strategy document for 2012-2016 (p194 SA). A self-assessment of research outputs was prepared for the Re-accreditation

process which is presented in Chapter 5 of the SA. ***It is recommended that the Faculty implements a system for monitoring research outputs on an annual basis.***

- 1.9 The Faculty adopted the University of Zagreb's Code of Ethics in May 2007 and formed an Ethics Committee in March 2008 (p10, 217 SA). A member of the Faculty was elected as a member of the Ethics Council of University of Zagreb from 2007 to 2011 (p10, 217 SA). An example of ethical process in Faculty is given with respect to recruitment (p217 SA). ***The Panel is satisfied that the Faculty has formal rules for the highest level of ethical behaviour.***
- 1.10 The Faculty expects all staff to adhere to the Code of Ethics, and its Ethics Committee discusses issues which arise (p10, 217 SA). New students are provided with a Code of Ethics in their "Guide for Freshmen" (p167 SA). ***The panel is satisfied that the Faculty's staff and students are aware of the rules for ethical behaviour.***

2) Study Programmes

- 2.1 The enrolment quotas are proposed by the Faculty and the needs of society are assessed through monitoring of graduate employability via the Unemployment Office (p23 SA). There is evidence that graduates are also in demand on the international market through companies like Schlumberger (p23 SA). There is a net influx of students from other undergraduate programmes into the Graduate study programme of the Faculty, which may translate to a change in the enrolment quota (p24, SA). ***It is felt that enrolment quota planning could be improved. Any link between enrolment quota and unemployment data for planning purposes is tenuous as employability is subject to external factors which can change by the time the freshly enrolled students graduate. Instead, the panel agrees that the Faculty fulfills an important role in the development of graduates in the fields of mining, geology and petroleum engineering for Croatia and abroad. The success of the Faculty, the satisfaction of its students, and the low student-to-staff ratio (~7:1) suggest that an increase of the enrolment quota of the Undergraduate study programme and especially of the***

Graduate study programme is possible. It is therefore recommended that the enrolment quotas are revised upwards and that the Faculty's excellent performance is extended to recruitment of more excellent students.

- 2.2 Institutional resources for quality teaching are in evidence through the classrooms, laboratories and library. The Faculty has analysed the pass rates and established a correlation between the entry grades of students on individual undergraduate programmes and their academic success in the first year (p166 SA). The Faculty has several prizes for students and encourages student participation on international conferences. ***It is recommended that the Faculty strives to improve the academic achievement of students on all undergraduate programmes, and especially on the mining programme.***
- 2.3 The Faculty's programmes have course descriptions which provide information on the course content and intended learning outcomes (shown during site visit). ***It is recommended that the Faculty ensures that the course descriptions are updated on an annual basis.***
- 2.4 During the site visit, it was demonstrated that a combination of assessment methods is applied in each year of the study programmes. A significant proportion of the courses are assessed by a combination of a colloquium, homework assignments, seminar and a final exam. ***It is recommended that the Faculty periodically assesses whether the mixture of assessment methods is appropriate for the intended learning outcomes.***
- 2.5 The ECTS allocation has been modified significantly in recent years (p120-158 SA) and there is now a good, if sometimes approximate, correlation between the student workload and the ECTS allocation. ***It is recommended that the Faculty continues to allocate ECTS in line with student workload as its programmes develop.***
- 2.6 The Faculty has taken care in the development of its study programmes that the quality and content is comparable to those of international institutions which award degrees in similar fields (p27 SA). ***The panel is satisfied that the Faculty's programmes match with programmes of its international peers in terms of content and in quality.***

- 2.7 Teachers have developed appropriate learning strategies for the classroom and laboratories on campus. A large number of teachers have also produced textbooks for their classes (in Croatian) (p178, 179 SA). ***It is recommended that the Faculty feeds into the widespread availability of personal computers among students by making learning resources available online to registered students. The Faculty should also consider whether to extend this to teacher books because it is easier periodically to update material which is published online.***
- 2.8 A library is available on campus. There are a number of online resources (p282, 283 SA). The Faculty is aware of the trend towards e-learning and has become a user of the University's Merlin system (p30 SA). The Merlin system is available to the Faculty free of charge (p31 SA) and the Faculty increasingly makes use of this facility (p179 SA). The reason for the occasional cessation of access rights to electronic journals is caused by failing to pay subscriptions on time (p284 SA). ***It is recommended that the Faculty strives to further develop student access to online resources, including the library catalogue. It is also recommended that the Faculty encourages staff make available appropriate learning resources in an online format.***
- 2.9 Summer work placements and fieldwork are a regular feature of the student learning experience on the Faculty's programmes (p273 SA). Good links between the Faculty and mining and petroleum industry create opportunities for the Faculty's students to gain first-hand experience in industrial settings. For geology students, fieldwork reinforces the teaching in the classroom. ***In view of its significance for student learning, it is recommended that the Faculty strives to maintain its programme of summer work placements and fieldwork for all its students. It is recommended that the programme of fieldwork for geology students is, if possible, expanded.***
- 2.10 The institution has formal processes in place for the proposal, approval and implementation of new study programmes (p33 SA) and there are mechanisms for adapting existing study programmes (p34 SA). ***It is recommended that the Faculty continues to encourage stakeholder involvement in the delivery and the further development of its programmes.***

3) Students

- 3.1 The information provided to potential students clearly informs them about the level of the programmes, qualifications and academic titles as well as possibilities for further education and employment (p167 SA). The Faculty also participates in an annual recruitment fair organised by the University of Zagreb and its staff visit events at (trade) schools (p167 SA). ***It is recommended that the Faculty steps up its efforts to advertise its excellent programmes and career opportunities to prospective students.***
- 3.2 Admissions criteria and procedures are publicly stated and consistently applied. The effectiveness of these criteria in predicting academic success is reasonable (p166 SA) but is limited by the available choice of high school subjects. ***It is recommended that the Faculty increases its efforts to market its programmes to the best prospective students.***
- 3.3 Upon entry into the Faculty, the student's grasp of mathematics is flagged as a concern (p166 SA). The Faculty addresses this issue in the classroom, although this distracts from the curriculum (p171 SA). ***Given the increasing sophistication of engineering tools, it is recommended that the Faculty re-assesses the balance between the development of fundamental/logical skills and the development of vocational skills in the study programmes.***
- 3.4 The Faculty supports the students in their extra-curricular activities through sports clubs, a student office and canteen (p168, 169 SA). During the site visit, the students stated they are happy with the support they receive for extra-curricular activities from the Faculty. ***The panel is satisfied that the Faculty does what can reasonably be expected of it to support extra-curricular activities of its students.***
- 3.5 The Faculty assigns a guide to each of its students but the level of contact between guides and students varies (p170 SA). ***It is recommended that the Faculty continues to attend to the personal and professional development of all its students.***

- 3.7 The Student Council has its office in the Faculty and offers support to students where appropriate (p170 SA). ***The panel is satisfied that the Faculty supports the work of the Student Council.***
- 3.8 A Book of Regulations documents the rights of students (p170 SA) and student feedback is collected for its courses. ***It is recommended that the Faculty continues to encourage teachers to provide students with feedback.***
- 3.9 The Faculty monitors data from the Unemployment Office (p23 SA). ***It is recommended that the Faculty continues to actively promote the employability of its graduates.***
- 3.10 The Faculty promotes contact between its students and alumni through the “Sretno!” Association (p171 SA). The Strategy document for 2012-2016 envisages the creation of an alumni organisation (p171 SA). ***It is recommended that the Faculty continues to pursue development of an alumni organisation. An alumni organisation typically keeps track of alumni addresses, sends out newsletters describing student life and Faculty projects, organises alumni events, and can channel feedback from alumni.***
- 3.11 The Faculty has 11 student representatives on its 70-member Faculty Council (p170, 171 SA), allowing students to participate in shaping the Faculty strategy. ***The panel is satisfied that the Faculty is providing opportunities for students interested in shaping the future of the Faculty.***
- 3.12 The Faculty communicates to the public through its presence at the University of Zagreb Festival of Science and Open House days at the Faculty (p167 SA). The Faculty wishes to increase its public visibility by popularising scientific work through these events and also by paying visits to high schools (p201, 202 SA). During the site visit, examples of contributions to popular scientific magazines were displayed. ***Given the specialist market covered by the Faculty, it is recommended that the Faculty increases its efforts to inform the public about its excellent programmes, qualifications and employment opportunities.***

- 3.13 Students can express opinions about their programmes through the biannual student survey (p15, 21 SA) and directly to teachers and management (p168 SA). Several tribunals have taken place to address programme-related issues of concern to students (p168 SA). During the site visit, the students indicated that they are happy with the feedback arrangements which are in place. ***The panel is satisfied that students can express freely their opinions and suggestions for improvement.***
- 3.14 The Faculty has a Quality Management Committee which has student members; this committee processes student feedback from the surveys (p15 SA). It is noted that positive student feedback assists career progression of staff (p15 SA). During the site visit, the students indicated that they were reasonably happy with the follow-up to their feedback. ***Noting some issues with modest academic performance of its students, it is recommended that that the Faculty continues to strengthen its communication with its student population.***

4) Teachers

- 4.1 The Faculty has 92 teaching(-related) staff covering the core disciplines for a student population of 743 (p193 SA). ***The panel is satisfied that Faculty staff adequately cover the core disciplines and that the number of teachers and their qualifications adequately support the strategic goals of the Faculty.***
- 4.2 During the site visit, the Faculty emphasised it has a pipeline of scientific novices who could step up when retirements occur. It should be noted that the age distribution of academic staff in the Faculty (p183 SA) suggests that, in the short term, retirements will occur preferentially in the category of senior level academic staff (Full Professors). The Strategy document for 2012-2016 recognises the forward planning required for uninterrupted delivery of its programmes (p176 SA). ***It is recommended that the Faculty ensures that the knowledge and experience of staff who are about to retire is preserved and transferred to the existing teaching staff, including scientific novices.***
- 4.3 With the implementation of the Bologna process, the Faculty has witnessed an increase in the number of courses while the number of teaching staff remained constant (p177

SA). In addition, Faculty staff participate in the delivery of study programmes at other faculties and Universities in Croatia (p177 SA). The Faculty raises concern about the reduction of financing from the national budget and the reduction of the number of scientific novices (p176 SA). The Strategy document for 2012-2016 indicates that there are opportunities for improvement (p177 SA). ***It is recommended that the Faculty reviews the size of its teaching provision and considers a possible rationalisation of its courses.***

- 4.4 The student-to-staff ratio varies between 7 and 8 (p176 SA). This has stated benefits for the educational experience of its students (p176, 177 SA). ***While the student-to-staff ratio is low by international standards, it is recommended that the student-to-staff ratio should be allowed to increase.***
- 4.5 The Faculty has well-developed strategy in place for the development of its teaching staff (p178, 179 SA). The Faculty considers the development of its staff both in the context of teaching and research, where the latter is expressed in publication outputs. The Faculty intends to create a fund to promote publishing in recognised journals (p179, 180 SA). ***It is recommended that the Faculty encourages development of promising research in all areas to support its mission. It is also recommended that research and associated outputs by mining engineering staff should be stimulated in order to ensure this area continues to remain of significance.***
- 4.6 The Faculty's procedures for promotion and other advancement by the teachers are clear and implemented fairly (p201 SA). ***The panel is satisfied that teacher's advancement is governed by fair principles.***
- 4.7 The Faculty has assessed the teaching(-related) activity of staff (p187-190 SA) to reveal significant differences in individual teaching workload. While a significant proportion of the various staff groups have the right workload (p177 SA), a sizable proportion is over- or under-burdened. The Faculty has recognised this matter (p16 SA). During the site visit, the panel felt that the University of Zagreb and the Ministry of Science, Education and Sports should provide better formal guidance. ***It is recommended that the Faculty monitors whether under-burdened teachers compensate a lack of teaching workload***

with evidence of additional research activity, in the form of high-quality outputs. Where under-burdened teachers are not sufficiently research-active, it is recommended that such staff take on additional teaching(-related) duties, preferably away from over-burdened teachers.

- 4.8 The Faculty complies with Croatian legislation and University of Zagreb policy regarding external work of teaching staff (p178 SA). The Dean may impose moderation of such activity should a detrimental effect on the Faculty be discerned (p178 SA). ***While the permissible amount of external work is generous by international standards, it is uncertain whether the benefits and the disadvantages of such activities are balanced. It is recommended the Faculty critically reviews the proportion of any fees associated with external work received by teaching staff in full-time Faculty employment.***

5) Scientific and Professional Activity

- 5.1 The Faculty has published a Strategy document for 2012-2016 which emphasises the need to raise the quality of research, to encourage and empower staff to do research and to disseminate the research results (p194 SA). ***It is recommended that the Faculty implements its strategy across its departments and to ensure, and periodically assess, that relevant outputs of all departments are of comparable status in their respective fields.***
- 5.2 The Faculty enjoys a large number of links with institutions in Croatia and abroad (p270 SA). These links have lead to a significant number of jointly-authored papers (p202, 262 SA). ***It is recommended that the Faculty continues to encourage its academics to develop meaningful international collaborations.***
- 5.3 The Faculty acknowledges that a focus on the acquisition of large research grants is important, also because it opens up the opportunity of procuring new equipment (p270

SA). ***It is recommended that the Faculty continues to encourage its scientific staff to develop high-level research and to produce suitable research outputs.***

- 5.4 The Faculty supports a significant number of scientific novices (p174, 182, 278) who benefit from the experienced supervision and the available facilities in the Faculty. A survey measuring how satisfied doctoral students are with their mentors provides evidence that the students, on the whole, appreciate their mentors (p203 SA). ***The panel is satisfied that the Faculty continuously supports its young researchers.***
- 5.5 The Faculty recognises that promotion of research excellence assists in participation in the European Higher Education Area and the European Research Area. The Faculty can boast a significant number of research projects over the period of assessment (p220-262 SA). A number of these projects involve international collaboration (p201, 211, 213, 214 SA). ***It is recommended that the Faculty continues to implement its strategy aimed at promoting research excellence in an international context.***
- 5.6 The Faculty encourages academic publishing, as witnessed by the extensive and broad range of publications produced by its staff (p262-267 SA). ***It is recommended that the Faculty continues to encourage scientific staff in all areas to publish either in academic journals or magazines which enjoy a large circulation among practitioners.***
- 5.7 The Faculty has produced evidence of its scientific productivity through its Self-Assessment report. ***The panel is satisfied that the Faculty keeps track of its scientific productivity.***
- 5.8 The Faculty allows the delivery of professional activities and services and uses some of the resulting funds to maintain and equip its laboratories and cover consumables (p287, 288 SA). ***The panel is satisfied that the Faculty supports professional activities and services in line with its mission.***

6) International Cooperation and Mobility

- 6.1 The Faculty has inward (and outward) mobility of students from other Croatian higher education institutions (p269 SA) and evidence presented during the site visit shows that a growing number of students transfer to the Faculty's Graduate programmes. ***It is recommended that the Faculty increases its efforts to advertise its graduate programmes to students of other Croatian higher education institutions. It is also recommended that part of the Faculty website is made available in English.***
- 6.2 The Faculty has a number of contracts with foreign universities (p272 SA) and it was mentioned during the site visit that a semester-long exchange with the VU Amsterdam was planned. Language and costs are quoted as barriers to greater popularity of studying abroad. ***It is recommended that the Faculty remains supportive of students who wish to study abroad for a portion of their studies.***
- 6.3 The Faculty recognises in its strategy document 2012-2016 that teacher mobility is beneficial for the teaching quality in the Faculty (p179, 180 SA). Accordingly, the Faculty has enabled a number of academic staff and scientific novices to undertake residencies at foreign universities, sometimes precipitating the departure of the scientific novices (p272 SA). Participation of staff at international conferences is an important mechanism for establishing links and collaborations (p269 SA), also serving to generate a significant number of conference papers (p262, 263 SA). ***It is recommended that the Faculty continues to support staff who have produced work relevant for presentation at international conferences.***
- 6.4 The Faculty is represented by some of its staff in international scientific and professional associations (p272 SA). ***It is recommended that the Faculty continues to seek recognition of the professional qualification of its graduates and, where it is deemed beneficial, involvement in international associations of similar institutions.***
- 6.5 The Faculty programmes are normally taught in Croatian. Although teaching one semester of Geology at Graduate level in English is envisaged (p273 SA), this creates practical issues and has workload implications. However, there may be students with

Croatian links who wish to learn Croatian as part of their studies at the Faculty. ***It is recommended that the Faculty explores the availability of suitable language courses to enable non-Croatian speakers to learn the language prior to the start of its programmes.***

6.6 The Faculty participates since 2009/2010 in the EU LLL programme through the Erasmus scheme, which has seen limited uptake to date (p272 SA). ***It is recommended that the Faculty intensifies, as appropriate, its links with partner institutions in order to enhance the attractiveness of studying abroad for its students.***

6.7 The Faculty has participated in a number of inter-institutional projects, most prominently through the FP6 project relating to carbon dioxide emission reduction, capture and storage (p269 SA). ***It is recommended that the Faculty continues to encourage its staff to acquire research funding through international collaborative projects.***

7) Resources, Administration, Space, Equipment and Finance

7.1 The Faculty has invested in modernisation of its classrooms and equipment in recent years (p34, 171, 280 SA). A survey suggests that further reconstruction of some classrooms is necessary (p280 SA). ***It is recommended that the Faculty continues its programme of modernisation of classrooms and equipment.***

7.2 The Faculty has recognised the difficulty of expansion of its non-teaching staff cohort and is focussing on developing its current non-teaching employees. In the strategy document development of computer skills is highlighted (p279 SA). During the site visit, the Faculty informed the panel that administrative staff can attend selected workshops and there is an annual educational plan for development of its financial, QA and procurement staff. ***The panel is satisfied that the Faculty is committed to developing its non-teaching staff.***

- 7.3 During the site visit, the Faculty's laboratories were visited. The laboratories contained a wide variety of relevant equipment. However, the panel felt that protection of workers from hazards such as x-rays and electricity in wet environments could be improved. ***It is recommended that the Faculty reviews protection of workers in its laboratories and ensures that adequate levels of protection are implemented.***
- 7.4 The Faculty has a dedicated team of technical staff who maintain the building, machines and installations (p6, 175, 278 SA). Computing equipment is deemed to be in need of renewal (p280 SA). ***It is recommended that the Faculty continues to upgrade its computing equipment as dictated by prioritised educational needs and financial resources.***
- 7.5 The Faculty has a well-developed system of internal quality assurance (p21 SA). ***The panel is satisfied that the Faculty strives to continuously improve its activities.***
- 7.6 The Faculty houses a well-stocked library (p6 SA) which is ear-marked for further investment, to be channelled through a library fund (p16 SA). Although the library was renovated in 2008 (p19, 282 SA), student satisfaction with the library is the only negative trending average response (p20 SA). The occasional unexpected loss of access to online resources is quoted as a reason for discontent (p284 SA). ***Noting the efforts to remain up-to-date, the panel is satisfied that the Faculty library adequately supports student learning and research.***
- 7.7 The ratio of teaching to non-teaching staff is about 2 (p278 SA). The Faculty states that the number of non-teaching staff needs to increase to meet the demands of quality assurance, information technology and work protection (p278 SA). ***It is recommended that the Faculty maintains satisfactory levels of support by non-teaching staff for its students and teachers.***
- 7.8 During the site visit, no evidence emerged that the Faculty's students are unable to graduate from their programmes or that institutional autonomy is limited by financial considerations. ***It is recommended that the Faculty continues to seek resources to protect its continuity and promote its mission.***

7.9 The Faculty allocates part of its own resources to improve the quality of teaching and research through acquisition of software (p35 SA) and infrastructure items (p281 SA). ***It is recommended that the Faculty continues to direct investment of its own funds in line with its mission.***

RECOMMENDATIONS BY THE EXPERT PANEL FOR THE ACCREDITATION COUNCIL

STRONG POINTS

- The Faculty provides a good learning environment for its students, as evidenced by student satisfaction and the enthusiasm of its staff during the site visit.
- The Faculty has a good range of teaching resources (laboratories, classrooms, books) available for the delivery of its programmes.
- The Faculty's teaching is informed by a broad programme of research.
- The Faculty has an extensive quality assurance system for its administration.

WEAK POINTS

- The small number of students relative to the number of teaching staff.
- The relatively low pass rates of its students.
- The limited international orientation of its staff and students.
- The uncertainty surrounding the financial support from the government of Croatia.

RECOMMENDATIONS FOR IMPROVEMENT OF QUALTY

It is recommended that the Faculty continues to develop its strategic planning and review that the goals are met in line with its mission [1.1].

It is recommended that the Faculty reviews the viability of its graduate programmes in terms of number of students on each programme and the cost to teach a student on each programme. Following this analysis, it is recommended that the Faculty optimises the total number of students and the average cost to teach a student [1.4].

It is recommended that the Faculty considers a mechanism to raise the percentage of students who participate in the survey [1.6].

It is recommended that the Faculty continues to focus on maintaining and, where appropriate, strengthen its teaching quality [1.7].

It is recommended that the Faculty implements a system for monitoring research outputs on an annual basis [1.8].

It is felt that enrolment quota planning could be improved. Any link between enrolment quota and unemployment data for planning purposes is tenuous as employability is subject to external factors which can change by the time the freshly enrolled students graduate. Instead, the panel agrees that the Faculty fulfills an important role in the development of graduates in the fields of mining, geology and petroleum engineering for Croatia and abroad. The success of the Faculty, the satisfaction of its students, and the low student-to-staff ratio (~7:1) suggest that an increase of the enrolment quota of the Undergraduate study programme and especially of the Graduate study programme is possible. It is therefore recommended that the enrolment quotas are revised upwards and that the Faculty's excellent performance is extended to recruitment of more excellent students [2.1].

It is recommended that the Faculty strives to improve the academic achievement of students on all undergraduate programmes, and especially on the mining programme [2.2].

It is recommended that the Faculty ensures that the course descriptions are updated on an annual basis [2.3].

It is recommended that the Faculty periodically assesses whether the mixture of assessment methods is appropriate for the intended learning outcomes [2.4].

It is recommended that the Faculty continues to allocate ECTS in line with student workload as its programmes develop [2.5].

It is recommended that the Faculty feeds into the widespread availability of personal computers among students by making learning resources available online to registered students. The Faculty should also consider whether to extend this to teacher books because it is easier periodically to update material which is published online [2.7].

It is recommended that the Faculty strives to further develop student access to online resources, including the library catalogue. It is also recommended that the Faculty encourages staff make available appropriate learning resources in an online format [2.8].

In view of its significance for student learning, it is recommended that the Faculty strives to maintain its programme of summer work placements and fieldwork for all its students. It is recommended that the programme of fieldwork for geology students is, if possible, expanded [2.9].

It is recommended that the Faculty continues to encourage stakeholder involvement in the delivery and the further development of its programmes [2.10].

It is recommended that the Faculty steps up its efforts to advertise its excellent programmes and career opportunities to prospective students [3.1].

It is recommended that the Faculty increases its efforts to market its programmes to the best prospective students [3.2].

Given the increasing sophistication of engineering tools, it is recommended that the Faculty reassesses the balance between the development of fundamental/logical skills and the development of vocational skills in the study programmes [3.3].

It is recommended that the Faculty continues to attend to the personal and professional development of all its students [3.5].

It is recommended that the Faculty continues to encourage teachers to provide students with feedback [3.8].

It is recommended that the Faculty continues to actively promote the employability of its graduates [3.9].

It is recommended that the Faculty continues to pursue development of an alumni organisation. An alumni organisation typically keeps track of alumni addresses, sends out newsletters describing student life and Faculty projects, organises alumni events, and can channel feedback from alumni [3.10].

Given the specialist market covered by the Faculty, it is recommended that the Faculty increases its efforts to inform the public about its excellent programmes, qualifications and employment opportunities [3.12].

Noting some issues with modest academic performance of its students, it is recommended that the Faculty continues to strengthen its communication with its student population [3.14].

It is recommended that the Faculty ensures that the knowledge and experience of staff who are about to retire is preserved and transferred to the existing teaching staff, including scientific novices [4.2].

It is recommended that the Faculty reviews the size of its teaching provision and considers a possible rationalisation of its courses [4.3].

While the student-to-staff ratio is low by international standards, it is recommended that the student-to-staff ratio should be allowed to increase [4.4].

It is recommended that the Faculty encourages development of promising research in all areas to support its mission. It is also recommended that research and associated outputs by mining engineering staff should be stimulated in order to ensure this area continues to remain of significance [4.5].

It is recommended that the Faculty monitors whether under-burdened teachers compensate a lack of teaching workload with evidence of additional research activity, in the form of high-quality outputs. Where under-burdened teachers are not sufficiently research-active, it is recommended that such staff take on additional teaching(-related) duties, preferably away from over-burdened teachers [4.7].

While the permissible amount of external work is generous by international standards, it is uncertain whether the benefits and the disadvantages of such activities are balanced. It is recommended the Faculty critically reviews the proportion of any fees associated with external work received by teaching staff in full-time Faculty employment [4.8].

It is recommended that the Faculty implements its strategy across its departments and to ensure, and periodically assess, that relevant outputs of all departments are of comparable status in their respective fields [5.1].

It is recommended that the Faculty continues to encourage its academics to develop meaningful international collaborations [5.2].

It is recommended that the Faculty continues to encourage its scientific staff to develop high-level research and to produce suitable research outputs [5.3].

It is recommended that the Faculty continues to implement its strategy aimed at promoting research excellence in an international context [5.5].

It is recommended that the Faculty continues to encourage scientific staff in all areas to publish either in academic journals or magazines which enjoy a large circulation among practitioners [5.6].

It is recommended that the Faculty increases its efforts to advertise its graduate programmes to students of other Croatian higher education institutions. It is also recommended that part of the Faculty website is made available in English [6.1].

It is recommended that the Faculty remains supportive of students who wish to study abroad for a portion of their studies [6.2].

It is recommended that the Faculty continues to support staff who have produced work relevant for presentation at international conferences [6.3].

It is recommended that the Faculty continues to seek recognition of the professional qualification of its graduates and, where it is deemed beneficial, involvement in international associations of similar institutions [6.4].

It is recommended that the Faculty explores the availability of suitable language courses to enable non-Croatian speakers to learn the language prior to the start of its programmes [6.5].

It is recommended that the Faculty intensifies, as appropriate, its links with partner institutions in order to enhance the attractiveness of studying abroad for its students [6.6].

It is recommended that the Faculty continues to encourage its staff to acquire research funding through international collaborative projects [6.7].

It is recommended that the Faculty continues its programme of modernisation of classrooms and equipment [7.1].

It is recommended that the Faculty reviews protection of workers in its laboratories and ensures that adequate levels of protection are implemented [7.3].

It is recommended that the Faculty continues to upgrade its computing equipment as dictated by prioritised educational needs and financial resources [7.4].

It is recommended that the Faculty maintains satisfactory levels of support by non-teaching staff for its students and teachers [7.7].

It is recommended that the Faculty continues to seek resources to protect its continuity and promote its mission [7.8].

It is recommended that the Faculty continues to direct investment of its own funds in line with its mission [7.9].