

**UNIVERSITY POLITEHNICA OF BUCHAREST**

***EVALUATION REPORT***

*February 2019*

Team:

Öktem Vardar, Chair

Melita Kovacevic

Benôît Lesaffre

Inguna Blese

Lewis Purser, Team Coordinator

## **Contents**

1. Introduction.....	3
2. Governance and institutional decision-making.....	6
3. Quality culture.....	10
4. Teaching and learning .....	14
5. Research .....	18
6. Service to society.....	23
7. Internationalisation .....	25
8. Conclusion .....	27

## **1. Introduction**

This report is the result of the evaluation of the University Politehnica of Bucharest, by the Institutional Evaluation Programme (IEP). The evaluation took place in autumn 2018.

### **1.1 Institutional Evaluation Programme**

The Institutional Evaluation Programme (IEP) is an independent membership service of the European University Association (EUA) that offers evaluations to support the participating institutions in the continuing development of their strategic management and internal quality culture. IEP is a full member of the European Association for Quality Assurance in Higher Education (ENQA) and is listed in the European Quality Assurance Register for Higher Education (EQAR).

The distinctive features of IEP are:

- A strong emphasis on the self-evaluation phase
- A European and international perspective
- A peer-review approach
- A support to improvement

The focus of IEP is the institution as a whole and not the individual study programmes or units. It focuses upon:

- Decision-making processes and institutional structures and effectiveness of strategic management
- Relevance of internal quality processes and the degree to which their outcomes are used in decision-making and strategic management as well as perceived gaps in these internal mechanisms.

All aspects of the evaluation are guided by four key questions, which are based on a “fitness for (and of) purpose” approach:

- What is the institution trying to do?
- How is the institution trying to do it?
- How does the institution know it works?
- How does the institution change in order to improve?

### **1.2 University Politehnica of Bucharest’s profile**

The University Politehnica of Bucharest (UPB) is a large technical university in Bucharest. Founded in 1818, it is the largest and oldest technical university in Romania, with approximately 30,000 students in the 2017/18 academic year.

UPB has fifteen faculties: electrical engineering; power engineering; automatic control and computer science; electronics, telecommunications and information technology; mechanical engineering and mechatronics; engineering and management of technological systems; biotechnical systems engineering; transports; aerospace engineering; material science and

engineering; applied chemistry and materials science; engineering in foreign languages; applied sciences; medical engineering; and entrepreneurship, business engineering and management. UPB's research is spread very broadly across these same fields, with a multitude of devolved research centres through which most research activity takes place, although research funded through competitive European programmes is concentrated in a much smaller number of areas.

The formal UPB mission statement is centred around education and training, and research for the generation of knowledge and innovation. The IEP team was informed that this very broad mission was the result of long debate within the university and the difficulty to be more specific. During its visits, the team learned that the mission statement appears to be quite fluid, insofar as it changes when a new leadership team is put in place and evolves continuously. The team was also informed that the mission was interpreted as UPB training engineers for the future, and training strong characters for life. In this context, *the IEP team suggests that it would be useful for the university's mission statement to reflect UPB's profile and context better*, and thus provide a more specific framework on which to build the university's strategy.

As the first and largest technical university in Romania, UPB also sees itself as a national institution, with a symbiotic relationship between its mission and the country. This is reinforced through the fact that it was not until the latter years of the Communist period that the university's name was modified to refer to Bucharest.

However, as with all other universities in Romania, UPB is operating in a particular economic and social context, with rapid growth and unmet needs in many sectors of the economy, while at the same time the country faces significant social challenges. Rapid demographic decline is one of these, and while UPB – due to its location in the capital city and its ability to attract good students from across the entire country – is sheltered from the worst effects of the significant reductions in young people in Romania, the challenge nevertheless remains. The country is likewise in the middle of long drawn-out political, social and economic change processes, which all have significant effects on higher education, but to which universities must also contribute part of the solutions. And from the perspective of the IEP team, the legislative and bureaucratic frameworks under which UPB operates continue to be onerous and inefficient, and not necessarily supportive for the development of high performing, strong and autonomous universities. UPB does however enjoy a unique capacity for influence in Romania, within both the public and private sectors, and needs to use this influence effectively, not just for UPB but for the greater good of the university system and the country as a whole.

### **1.3 The evaluation process**

The self-evaluation process was undertaken by a self-evaluation group composed of ten members and chaired by the Vice-Rector for International Relations. Members were drawn from a range of UPB central services (quality office, international office, scientific research

management, etc.), including the Vice-Rector for Resources and Quality Assurance and the Chair of the Council for Doctoral Studies. A student representative was also included as part of the group.

The IEP team was informed that the self-evaluation group worked efficiently during the first half of 2018 and was able to share drafts of the self-evaluation report with the university management team, and then with the deans and faculties. Feedback and comments were integrated into the draft, and the final report was discussed and approved by the UPB Board. The IEP team was informed that UPB's prior experience of preparing documentation for other bodies, including SWOT analyses and accreditation reports, had proved useful in the self-evaluation phase.

While the IEP team found that this inclusive and iterative process resulted in the self-evaluation report being widely known across the university, the team also found that the report was more descriptive than analytical, with limited reflection on and diagnosis of the internal and external strengths, weaknesses, opportunities and threats at UPB. One consequence of this is that the IEP team was of the opinion that the report had in some respects undersold the strengths of UPB. In addition, while acknowledging the challenges of producing a consistent report in English, the IEP team found the inconsistent use of key terminology (including of offices, roles and functions across UPB) lessened the impact of the good work undertaken by the self-evaluation group and is likely to be a recurring challenge for UPB in its relations with European and international partners.

The UPB self-evaluation report was sent to the evaluation team in August 2018. The two visits of the evaluation team to Bucharest took place from 19 to 21 September and from 20 to 23 November 2018, respectively.

The IEP evaluation team (hereinafter named the team) consisted of:

- Öktem Vardar, former Rector, TED University, Turkey, team chair
- Melita Kovacevic, former Vice-Rector, University of Zagreb, Croatia
- Benoît Lesaffre, former Senior Vice-Rector, Université Paris-Est, France
- Inguna Blese, postgraduate student, University of Latvia, Latvia
- Lewis Purser, Director Learning, Teaching and Academic Affairs, Irish Universities Association, Ireland, team coordinator

The team would like to thank Rector Mihnea Costea for his invitation and kind welcome to UPB. The team would also like to thank Luciana Mihai, UPB Director of International Relations and her team, who were most pleasant and efficient contact persons for the entire process. The team also expresses its gratitude to the very broad range of UPB staff, students and stakeholders it met during the two visits, and who generously shared their expertise, experience and opinions with the team.

## **2. Governance and institutional decision-making**

In its evaluation methodology, IEP examines a university's governance and institutional decision-making processes within the context of that university's mission and strategy, in order to understand how these processes work and how they lead to ongoing quality enhancement at the university. In its evaluation of UPB, the IEP team examined the university's decision-making bodies and the links between them, the decision-making processes at central institutional and decentralised levels, and the involvement and contribution of UPB's stakeholders to these processes.

### **2.1 Structures**

The UPB structures and decision-making bodies are defined by the 2011 Law, which aims to separate the academic and managerial decision-making processes into two distinct structures, the Senate and the Administrative Board. The Senate, led by its President and composed 75% of academic staff and 25% of students, has overall oversight responsibility for the academic management of the university. The Administrative Board, led by the Rector, includes the vice-rectors, the faculty deans, the UPB general administrative manager and a student representative. Both the Senate and the Administrative Board have executive panels which meet more frequently than the formal structures. The term of office for all office holders is four years, and these can be repeated once.

These structures are relatively new in UPB, and indeed in all Romanian universities. The IEP team was informed that, in order to avoid potential divergence between these structures, UPB has taken a conscious decision that the Senate and Board should work together. This is now reflected in the UPB Charter. The IEP team was reminded several times during its visits by UPB staff that these new structures are still in the processes of embedding, and that it remained important to ensure that neither the system of checks and balances designed by the 2011 Law, nor the distinct roles and responsibilities of both the Senate and the Board, are confused or compromised.

Following the 2011 Law and the changes this introduced, the UPB Rector can now decide on the number of vice-rectors and also the responsibilities of these. At the time of the UPB visits there were four vice-rectors in office, with responsibility for a broad range of functions. The IEP team noted the motivated leadership team at the university, whose experience and close involvement in national policy developments meant that they were also able to translate these locally for UPB.

Faculties are led by Deans who chair the respective Faculty Councils. The Deans are selected through a public competition organised by the Rector, and as a result of the 2011 Law can be appointed from within or external to UPB. Faculty Councils, like the UPB Senate, are composed 75% of academic staff and 25% of students. Each department also has a departmental council.

While the IEP team witnessed the strong collegial structures at UPB, given the relatively recent nature of the fundamental governance and structural changes which have taken place since the 2011 Law, it is to be expected that there may still be some ongoing transitional implementation issues as the new structures are embedded. In this context, stability is important, and while the mandates of vice-rectors may change, it is important for UPB staff, students and stakeholders to know clearly who within the senior university management team is responsible for what, and for continuity in key strategic developments over the mandates of different office holders.

Likewise, the team found that UPB's organisational chart needed to be revised and simplified so that the relations between the members of the Administrative Board and the central and decentralised academic management and administration are clear to all.

*The IEP team recommends therefore that UPB communicate better the new roles and responsibilities of the senior university management team, to ensure these are clear and well understood across the university.*

## **2.2 Decision-making processes**

The UPB Senate's attributes include overall oversight and ultimate authority for educational and research policy decisions at UPB. The proposals on which these decisions are made come from the Rector. The Rector is responsible for the operational management of the university, based on the Rector's management contract with the Senate. This includes the negotiation and signing of UPB's contract with the Romanian Ministry.

Faculties have autonomy in structuring and managing their educational programmes, with final approval by the Senate following preliminary approval by the Rector. The faculties however report annually to the Administrative Board. While most regulations regarding student life are approved by the Senate and apply across all faculties, some specific issues are decided locally by faculties. Faculties also enjoy significant autonomy regarding research, in terms of setting priorities and managing resources.

The strategic planning process at UPB is essentially filled by the managerial plans of the incoming Rector and Deans. In essence, the candidate Rector's manifesto becomes – following the successful candidate's appointment by the Senate – *de facto* the strategic plan of the university. A similar situation exists at faculty level, where candidates for dean prepare their plans based on the existing Rector's managerial programme. The faculty council takes these proposed managerial plans into account when shortlisting candidates, and – as with the candidate Rectors' programmes - provide feedback on these to the candidates. On election, the successful candidate's managerial plan then becomes the faculty strategic plan.

The IEP team identified a number of weaknesses which arise from this process. The most obvious is one of effective correlation between the university strategic plan and faculty strategic plans. The second is that a managerial plan is not a strategic plan, and that it would be necessary to convert the incoming Rector's manifesto into a strategic plan over the first

few months in office, working with the UPB structures (including faculties and Senate) and administrative expertise from different functions. From these strategic plans, specific action plans could then be derived. Linked to these issues, the team noted the very limited use of indicators in UPB's overall strategic documentation. *The IEP team therefore recommends that the strategic planning process at UPB needs more careful elaboration, with relevant action plans and effective follow-up.*

As part of the changing relationship since 2011 between the university and the faculties, the team noted a variety of ways in which different issues are managed in this relationship; some issues hinted at greater independence of the faculties, while others hinted at more integration. While there are no absolute norms in this area, it is important to have clarity and consistency across the university in terms of these decision-making processes. *The team therefore recommends that UPB decide where the balance between integrated and decentralised management systems should lie, and in what areas.* Such clarity will encourage enhanced effectiveness and efficiency in decision-making across the university, in all main areas of activity.

### **2.3 Involvement of stakeholders**

As noted above, students are represented in both the UPB Senate and the Faculty Councils, where in both cases they hold 25% of the seats. These representatives are elected by a UPB-wide student body, whose primary purpose appears to be the organisation of such elections. There are also student members in ad hoc Commissions created by the university for specific purposes. The IEP team noted during its visits the clear place that students occupy in these UPB structures and the motivation they bring to these. A large number of student societies – many of which are discipline based – also exist across the faculties. The student societies are all members of the national student federation, which helps provide training for students to organise their contributions to the life of the university and to its decision-making processes. The team was however surprised to note that, apart for the purpose of organising student elections, there is no UPB-wide student parliament or similar representative body.

The involvement of other stakeholders in the decision-making processes is on an informal basis, although this appears to have grown in strategic importance in recent years. As well as the UPB stakeholder consultative committee, faculties have multiple contacts with a range of stakeholders. The IEP team was informed that a major priority for the current UPB management was to ensure much better relations with society and with companies. This has resulted in a significant increase in the number of signed agreements, internships for students, industry investment in laboratories, increased employability of graduates, and improved overall relations with UPB alumni.

### **2.4 Professional and specialised staff**

When examining the governance and decision-making structures and processes at UPB, the IEP team noted that almost all senior management and administrative roles were occupied by

academic leaders who continued to retain a part-time academic function during their senior management / administrative mandate.

The IEP team was informed that no reduction in this teaching obligation was normally allowed for academic staff who assume a senior management or administrative position. In the opinion of the IEP team, this is not a sustainable approach. *While it is normal and correct that senior leadership roles in a university should be occupied by academics, these should be in a full-time capacity, with those persons released from their academic duties for the duration of their term of office.*

In addition to having the right people in senior leadership roles on a full-time basis, *the team would also like to stress the importance of ensuring that key professional functions at the university are occupied by specialised support staff.* This will help ensure a clear and healthy distinction between academic decision-making processes and the professional support services needed to ensure successful strategic implementation of the decisions taken. It would also allow more effective monitoring of university-wide data and as funding. Greater analysis of the various components of UPB's budget and their fluctuations over time would provide greater insight for institutional policy development and decision-making.

### 3. Quality culture

#### 3.1 Quality concepts and instruments

During its visits, the team explored the concept of quality culture and what this means at UPB. The team noted that the university was operating in a highly defined national context, and that UPB has been successfully accredited by ARACIS, the Romanian accreditation and quality agency. UPB uses a very comprehensive set of quality measures with a large number of indicators.

During the team's meetings with UPB staff, it became clear that there was a broad general awareness across the university's different faculties and structures of the importance of developing a culture of quality at the university, and the diverse ways in which this is being achieved, both in terms of teaching and learning, and research. However, the instruments and indicators for these appear to be very significantly dominated by those imposed by the national agency.

The IEP team noted that no mention was made during its visits of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). These set out the underlying principles for quality assurance in universities and for the work of quality assurance agencies across the European higher education area. *The team recommends that UPB explicitly use the ESG to inform the development of its own internal quality assurance mechanisms and indicators.*

While UPB senior leaders assured the IEP team that time spent on quality assurance activity at the university was significantly weighted towards its own enhancement processes, rather than on ensuring compliance with national requirements, in the opinion of the IEP team this is not reflected in the operations of quality at grass roots level in the university, nor in the qualitative analysis undertaken across UPB's main strategic priorities. Given that UPB is one of Romania's leading universities, and its largest and highest performing technical university, *the team recommends that UPB should combine the existing accountability function of the ARACIS process with a greater focus on UPB's own internal quality enhancement.* This would allow the university to take more ownership of its quality assurance concepts, strategies and instruments, and decide itself what are the relevant quality indicators it wishes to monitor as part of these.

As part of this process, *the team recommends that UPB should examine carefully how it could reduce the bureaucratic overhead currently associated with quality assurance.* For example, a more systematic and consolidated data collection process across the university would allow for greater internal analysis of data which UPB itself considers important, while at the same time allowing the central administration to respond to external demands from other agencies (quality assurance, ministries, research funders, etc.) without issuing multiple data requests in different formats at short notice across the various internal UPB faculties, departments, and centres.

### **3.2 Structures and implementation**

UPB has put a number of structures and mechanisms in place to support the implementation of quality assurance across the university. The UPB Quality Council (created in 2002), chaired by the Rector, is a consultative council with members from all faculties, including the relevant Vice-Deans from each faculty, and may include external stakeholder representatives. There is also a university-wide quality assessment and assurance commission (CEAC, created in 2006), which reports to the Senate. This commission, which is a legal requirement for UPB, brings together representatives from teaching staff, students and non-academic staff, as well as one representative from both employers and trade unions. Quality commissions also exist within each faculty, led by the dean and composed of the quality management officers from each department in that faculty. The faculty commission analyses the faculty's study programmes and makes proposals to the faculty council for change. Within each department there is likewise a quality working group, run by the quality management officer of that department.

A Quality Office exists at university level to support and inform the work of these structures, and to help implement quality procedures and processes across UPB. It does this through the development of quality assurance procedures for the university's main activities, and by helping faculties to develop self-evaluation reports for ARACIS and other external requirements.

In addition, there is an Internal Control Department (under the UPB General Director, not the Rector) which requires a twice-yearly report from each UPB department, to include a SWOT analysis. These reports are not the same as the internal quality assurance (QA) or other reports. The IEP team was informed that this Internal Control mechanism is a legal requirement, and the templates for these reports are likewise defined by legislation. The added value in terms of quality enhancement of this structure or these reports was not clear to the IEP team.

In addition to the above, there is an annual scientific research evaluation audit. This is conducted annually by the UPB Research Department, not the Quality Office. This audit results in an annual UPB research activity report, which is then transmitted to the Ministry and other external agencies.

As far as the IEP team could ascertain, there did not appear to be any formal collaboration between the Quality office and the Research Department. Such structured cooperation would be useful in terms of ensuring coherent and consolidated data collection processes, with no unnecessary overlaps, and in producing UPB-wide analysis across faculties and different internal units. This is fundamental to developing a more global and streamlined approach to quality enhancement. *The team therefore recommends that consideration be given to how the Quality Office and the Department of Scientific Research Management could work closely together to enhance both the structures and implementation for UPB's culture of quality.*

### **3.3 Staff evaluations**

Staff evaluations at UPB take place at the department level, where each academic completes an annual self-evaluation form, composed of the main national excellence indicators, to report on their activity for the year. The department completes this evaluation of each staff member by incorporating student feedback (see below). The department may also conduct discussions with individual academics if their performance is not seen as satisfactory, including advice regarding how they could improve in specific areas.

The consolidated forms for staff members in each department are then sent to the faculty, where the vice-dean for quality assurance collects them and produces a faculty report, which is submitted to the university Quality Office for the annual UPB Quality report. The Rectorate also computes average scores across all faculties and across the university. This process provides the basis for salary increases for individual teachers, where 16% of department members (those with the highest scores) will receive a 25% salary increase for five years. Staff whose results come below the median level are obliged to teach extra classes. The team was however informed that no staff member can exceed 16 teaching hours per week, with the maximum for full professors set at seven hours per week: these limits are set in legislation. It did not appear that any further use was made of these staff evaluation reports. *The team therefore recommends that UPB examine what other tools it could use to help identify staff development needs.*

Alongside this incentive-based mechanism, staff promotion at UPB also depends on a range of objective criteria. The team learned however that student evaluations are not taken into account in these. Promotion criteria are set by the National Council for Attesting Titles, Diplomas and Certificates within the Ministry, and while a university may add additional criteria, UPB does not. The team was informed that recent promotions processes had been postponed by government for budgetary reasons. As the highest performing technical university in Romania, *the team recommends that UPB should have higher recruitment and promotion criteria than the minimum.*

### **3.4 Student and stakeholder feedback**

Student feedback is gathered in a systematic way across UPB, through a questionnaire used by all faculties. This questionnaire is online, although in many cases it is used in paper format to encourage higher response rates. While the questionnaire was designed by the Quality Office and is used across the entire university, the student responses remain in each department (and sometimes in the faculties), where they are analysed and discussed, but are not brought together at the Quality Office. Departments use this feedback when updating programmes, to enhance student-teacher interactions, to address timetabling issues, etc. As noted above, student feedback is also incorporated into the staff evaluation process but not for the purpose of staff promotion.

While UPB has a systematic university-wide approach to gathering student feedback, the team found that the approach to ensuring feedback from employers and other stakeholders

operated in a much more devolved way across the university. Although there are a number of high-level forums organised by the Rectorate to ensure open dialogue with such stakeholders, there was no description available of UPB-wide processes of engaging with employers to obtain feedback as part of the QA process. While there are many advantages to managing this locally within the university, the effectiveness of this process in all parts of the university is unclear. Each faculty appears to operate its own agenda in this regard, and to use the feedback locally. As there may be transversal issues arising across faculties which could be identified on a UPB-wide basis, and which would be useful to address collectively, *the team recommends that these also be monitored at central level, as part of the quality assurance and enhancement process.*

### **3.5 Quality culture**

The team found that the culture of quality across UPB was heavily dependent on and influenced by the requirements for external accountability through the national QA agency. These requirements are far reaching and apply across all Romanian universities, and therefore are not necessarily adapted to suit the specificities of UPB.

More broadly, the team found that student feedback is sought both formally and informally and taken into account in the ongoing development and implementation of academic programmes. UPB is likewise responsive to stakeholder interests, in particular to those expressed by employers.

The team found that very significant quantities of data are collected across UPB as part of the current QA processes, but formed the opinion that much of this data was not used effectively for quality enhancement. While the team supports an evidence-based approach to QA, it encourages UPB to only collect meaningful data, and then to use it effectively. This would both help reduce what appears to be a significant bureaucratic load across the university, but also assist in closing the “quality loop”: deeper analysis of more relevant data should provide more useful feedback to staff and students, which in turn facilitate actions to improve quality.

In order for this to succeed, *the team recommends that the Quality Office adopt a renewed focus on quality enhancement, including closing the quality cycle and greater use of student feedback data.* This will help ensure more follow-up on useful recommendations from previous evaluations. UPB will need to ensure full time staff are employed to successfully achieve this renewed focus. Such an approach will also contribute to greater added-value of central UPB services.

## **4. Teaching and learning**

When evaluating the effectiveness of a university's teaching and learning structures and processes, the IEP team looks at issues related to design, approval, monitoring and review of study programmes, at approaches to student-centred learning and at the services and resources for student supports that may be available. It also assesses the extent to which a university's policies and processes support all phases of the student life-cycle, and the provision of suitable information regarding these.

In examining these topics at UPB, the team found a broad consensus among students that they are happy with their university and proud to be there, and that they enjoy good relations with their teachers. The team noted that UPB's study programmes are accredited through the national quality assurance agency, and that they follow the basic Bologna structures for bachelor, masters and doctoral studies. The team also noted the good use of student internships and placements across the university, and the very good employment record of UPB graduates. These factors all provide confidence in the underlying quality of UPB's teaching and learning processes.

### **4.1 Study programmes**

Study programmes at UPB are organised within each of the fifteen faculties, and more specifically within each department of those faculties. New programmes are proposed by departments, and must then be approved by the faculty, validated by the Rector and Administrative Board, and then finally be approved by the UPB Senate.

According to the UPB self-evaluation report, during the academic year 2017/18, there were 88 bachelor programmes and 191 master programmes at the university, across 21 study domains. These study domains are defined nationally and can cut across different UPB faculties. The fundamental, domain-specific and specialisation elements of each programme are also defined at national level. The team was informed that some faculties have programmes across four study domains.

A number of faculties provide courses taught through a foreign language (English, French or German), which are attractive for both foreign and domestic students.

There is one central UPB admission exam for bachelor programmes across the university; admitted students can then choose their preferred faculty and study programme. Given that study programmes belong to faculties, and in order to meet the variable teaching demand each semester, faculties identify what teaching they need to "import" from other faculties to meet their requirements. Some faculties (for example Applied Sciences, Engineering in Foreign Languages) are significant providers of such teaching across the university. These local arrangements across faculties and departments appear to be widespread, with significant numbers of teachers involved in teaching outside their "home" department. Indeed, for many staff these arrangements appear to be essential in obtaining enough teaching to meet their minimum contractual requirements. For many staff, these hours also

represent a way to earn additional salary. While these local arrangements appear to function reasonably well, they also highlight the complexity of study programme organisation across the university.

While the team was informed that many faculties have programmes across several study domains, it also learned that there were very few programmes at UPB shared across two or more faculties, despite the similarities between many such programmes and the relatively small student numbers in many. The IEP team heard calls during its visits for better coherence across UPB regarding programme structures, and on the distribution of student numbers across these programmes. *The team suggests that an element of central planning would help improve the coherence and organisation of study programmes* and would be useful for faculties and departments, as currently the teaching and learning portfolio is entirely based on a bottom-up approach from departments. Likewise, *a strategic review of all current programmes might also be useful*, leading to some consolidation where this makes sense due to curriculum overlap and reduced student demand. It might also lead to a more coherent overall supply of programmes and modules across the university. *The team likewise recommends that UPB avoid the narrow specialisations currently associated with many study programmes*, for both educational and organisational reasons.

In addition, the IEP team learned that despite the large numbers of bachelor study programmes in many faculties, most students follow the same modules during the first few semesters, before progressing to more domain-specific studies and then only specialising in the final semester/s. These programme structures appeared to differ significantly across faculties, with in some faculties all students following the same programme over six semesters before branching out, while in others they followed five semesters. The team was informed that students may take up to 15 ECTS from other programmes in the same faculty or from other faculties, but that in reality very few do this. In addition, the team learnt that elective elements were in addition to the core programme, over and above the normal ECTS workload per semester. As a result of these structural barriers, very few students use the flexibility which is theoretically in place, despite the wish of many students, as related directly to the IEP team, to broaden their programmes and strengthen their other core skills and competences. *The IEP team therefore recommends that UPB introduce greater curriculum flexibility for students within all study programmes*, so that students can benefit effectively from the broad range of modules available across the university and develop their own interests and skills within a broad programme structure.

Given the very high numbers of programmes, the narrow degree of specialisation associated with many of them, as well as the very uneven distribution of programmes and students across faculties, the question should be asked whether there are simpler and more efficient ways to organise this. While the team was informed that the academic tradition in Romania was to provide highly specialised programmes, particularly in the technical fields, the pace of technological and economic change in the 21<sup>st</sup> century means that the labour market now evolves extremely rapidly. Many examples were given of graduates entering new types of jobs in manufacturing and industrial settings which now seek a much broader range of

graduate competences. As a result, the provision of highly specialised programmes at bachelor level may no longer be best suited to meeting the longer-term education needs of students. *The team therefore recommends that UPB revisit the learning outcomes of all its programmes, to ensure these are fit for purpose from a longer-term perspective than the specific needs of today's labour market.*

#### **4.2 Student-centred learning and student life-cycle**

As already noted, the IEP team formed the impression that UPB students are happy to be at the university, are proud of it, and that - in general – the UPB teachers work hard with their students to help them in their studies. The team learned that UPB is in a unique situation in Romania, in that it has been able to increase its student numbers regularly over recent years, despite the significant demographic decrease among young people.

There is a significant emphasis at UPB on student internships, with close to 6,000 bachelor students taking part in internships in nearly 900 companies during the 2016/17 academic year alone. Internships are an integral part of almost all bachelor programmes, usually in the third year of study. In addition, internships are also obligatory for masters' students in some programmes. Internships generally take place during the summer for 12 weeks, which is a longer placement than usually required by the programme accreditation. This contributes to the high employment rates of UPB graduates, as many students are taken on immediately by their host companies and complete their final year of study on a reduced study / flexible study basis. Internships also provide an important channel for faculties to obtain feedback from companies on their programmes and broader educational issues.

The team was informed by many students of the positive role that student projects, competitions and research activities can play in their learning process. There were good examples of such student-centred learning activities, often offered through or in cooperation with local student societies within each faculty. The students met by the IEP team valued such opportunities to improve their core competences in ways which are useful for both their studies and their future employment.

While the team learned that student dropout rates had reduced significantly in recent years, this phenomenon continued to be an important one. A number of possible reasons for these levels of dropout were mentioned in different parts of the university, including the challenge of new students being adequately prepared for their university studies, and the attraction for some students to leave their studies and enter fulltime employment, given the current labour market demand for technical skills. However, while steps such as support classes for students to strengthen their basic mathematics and physics have in some cases been put in place, the team noted that there did not appear to be a strategy to address the issue of student dropout in any systematic way across UPB, despite the fact that faculties lose money once students have dropped out. *The team therefore recommends that UPB analyse the ongoing high levels of dropout rates and put in place a university-wide strategy to address these.*

When the IEP team asked students what the university could do to help them succeed in their studies, a key issue which arose repeatedly was one of adequate communication. Students regularly stated that they were not informed of supports that were available, or relevant events which were taking place, and that if they were it was often more by accident than by design. While ensuring an effective information flow to a very large student body across a large and diverse university structure is not straightforward, it is nevertheless crucial to ensure that students are informed about what happens and how to get involved, and that there is a pro-active student-centred approach to promoting UPB services and facilities which can assist students. Students themselves noted that among themselves, at very local level, they had effective information distribution mechanisms through various social media platforms. The university may be able to build on these local platforms and the student representative structures in place, to ensure better information and communication for students in general.

In terms of helping UPB teachers to improve their didactic skills and adopt innovative student-centred learning methods, the team learned that new staff are obliged to pass a pedagogical development course available through the UPB Centre for Liaison with the Socio-Economic Environment (sometimes referred to as the Education Department). Workshops are likewise organised on an occasional basis within faculties for development of particular academic staff skills, but there did not appear to be a regular programme of professional development available for staff across the university. Linked to this, apart from the staff evaluation forms discussed in section 3.3 above, there did not appear to be any UPB-wide system to identify staff needs in this respect. *The IEP team therefore recommends that UPB invest in staff development, including through a systematic approach to assist teachers improve their teaching and introduce new didactic practices, adopt new teaching technologies, and use innovative assessment methods.*

## **5. Research**

Bearing in mind the four key questions of IEP, the team examined the alignment of UPB's research activities with its mission and goals, the management of these research activities, and how research results are used. The team also accorded special attention to the situation regarding doctoral education at UPB.

From its position as the oldest and largest technical university in the country, based in the capital and particularly well networked with the Romanian political and economic decision-making structures, UPB enjoys natural advantages regarding technical education in Romania. It enjoys strong partnerships with industry and some other research performing organisations. It has benefited from significant recent investments in infrastructure and has made good use of EU structural funds in this respect. While the university's approach to research is very much based on a bottom-up entrepreneurial strategy, it has also had a number of recent notable successes in obtaining highly competitive funding from the European Research Council.

### **5.1 Alignment of research activities with mission and goals**

As acknowledged in the university's self-evaluation report, the strategic planning for research, development and innovation at UPB represents a significant weakness. The strategy has been opportunistic in nature, based on national and European priorities, and encouraging the decentralised research centres across UPB to perform as well as possible. The IEP team concurs with this perspective, and notes that while UPB's research agenda should naturally be its strongest point, in reality this is diminished by the lack of a strategic and coherent approach.

As a result, the IEP team found that research is under-represented in UPB's profile and communications, and that this results in a lack of international visibility, even for its successful European Research Council grants. Likewise, this decentralised approach does not allow for any significant scaling or development of critical mass in priority areas. This in turn impacts significantly on UPB's ability to compete for international research funding. The university's self-evaluation report accurately notes that the first element of a UPB research strategy should therefore be the establishment of a longer-term strategy in this area for UPB.

This strategy will need to identify UPB's areas of excellence, and to build on these to strengthen critical mass in these areas. This is currently difficult at the university, as there is no explicit prioritisation between the research taking place across the fifteen faculties, even if in reality a small number of research fields stand out at UPB in terms of their ability to attract competitive European funding. While faculties typically each have between 10-15 contract research projects with local industrial partners per year, only a small number have any substantial European projects.

This more strategic approach would also help to find alternative sustainable sources to make up for the ongoing decrease in the research component in the core government grant. While

this core government funding is expected to cover the normal research activity of academic staff members, as well as a very small allocation for a centralised support structure, in reality it is not sufficient to sustain an active research base at the university. A strategic approach would also be necessary, in the opinion of the team, to ensure best possible use is made of the significant additional buildings for research activity that UPB is now preparing to build.

Given the international trend towards greater integration of research fields, particularly in Science, Technology, Engineering and Mathematics (STEM) areas, UPB will need to find the right structures and professional support services to encourage and facilitate this across UPB, and with organisations with whom UPB might usefully cooperate. Such integration should build on the examples of joint research activities across several UPB faculties which already exist, for example in the large new research centres (Campus, Precis) where several faculties share facilities.

*The IEP team therefore recommends that UPB develop its institutional research profile and strategy, basing this around the need for collaboration within UPB, with other Romanian partners (other universities, public or private research centres) and internationally (both within Europe and further afield), to become competitive. In developing this profile and strategy, UPB should carefully analyse its research capacity, matching and using the range of available human, infrastructural and financial resources.*

As part of this development, *the team recommends that UPB should strike a clear strategic balance between teaching and research activity at the university.* This will also involve reviewing and improving staff incentives such as promotion criteria, teaching load, salaries, staff recognition/awards, and research funding mechanisms.

## **5.2 Management of research activities and use of research results**

Research at UPB is overwhelmingly based in research centres, which are separate administrative units within the university to facilitate the management of research projects, including the financial aspects of these. Research centres have their own managers and their own budgets, and may share staff with faculties or employ their own. The normal limitations on total working hours per year do not apply for hours worked as part of a research centre. When research projects are managed through these centres, staff may receive additional salary payments; the use of external research funds for purchasing equipment or consumables for research is likewise facilitated.

At university level, there is a vice-rector for research whose overall role is to support and facilitate the development of research across the university. This includes working with relevant government ministries and agencies, as well as helping private sector organisations to find relevant research expertise in the university.

Given the limited institutional-level oversight currently in place, *the team recommends that UPB revisit its research governance and structures,* to ensure a more strategic and coherent

approach to the research agenda, so that all research structures at UPB are embedded into the institution in terms of responsibilities and reporting.

Under the vice-rector sits the UPB Department of Scientific Research Management, which fulfils two main functions. The first of these is to help manage the financial and legal aspects of research contracts across UPB, including for research centres where requested. The IEP team heard on many occasions that this was highly valued across the UPB research community. The other main function is that of technology transfer office. It manages intellectual property for UPB and negotiates the specific arrangements regarding this in each situation. Under Romanian law, intellectual property ownership lies with the individuals who developed the product, rather than with the university.

In addition to these functions, the Department provides information about research funding opportunities which arise and encourages young UPB staff to participate in internal and national competitions, to help them gain experience in getting competitive funding. It does not however provide support for those seeking to apply for European research funding.

The breakdown of UPB's research budget between the different kind of sources (core governmental support, national competitive funds, European competitive programmes, other international funds) was not provided to the IEP team, nor the details of fluctuations in these funding streams from year to year, which appeared to be rather high. While much of this income is earned at a very local level across research centres, there appears to be limited analysis of the origin of the funds and of the causes for variation each year. Such analysis would help understand the potential risks for the university and any implications in terms of building a more sustainable research strategy.

Given the important role the Department of Scientific Research Management plays, and the need for greater capacity for research management across UPB, *the team recommends that UPB strengthen its research management and professional support capacity.* The UPB research community needs a well-resourced professional support service to assist them to successfully compete for international research funding. The standard 25% overhead applied by UPB to research income can help meet the initial costs of strengthening this support service.

Alongside the above, *the team also recommends that UPB strengthen the quality assurance of research across the university.* This should include strengthening collaboration between disciplines, supporting research groups and more interdisciplinary projects, and encouraging young researchers and doctoral students. UPB should also consider using higher criteria for research and doctoral education than the minimum government criteria.

### 5.3 Doctoral education

Given UPB's position in Romania, doctoral education should be a flagship activity within the university, and it should be known as the leading centre in the country for young researchers in technical fields, with a very high profile of PhD studies within the university.

Doctoral education is structured in 14 doctoral schools across UPB. These doctoral schools mirror the faculty structures in all cases but one; this was recently created in the field of lasers and accelerators, in cooperation with a national research institute. However, many of these doctoral schools are small and have a range of overlapping relationships with faculties and research centres.

In the 2016/17 academic year, there were 2,304 doctoral students at UPB, representing about 7.7% of the entire student population. It should be noted that the numbers of PhD graduates have decreased significantly since 2013, when EU Structural Fund support for doctoral studies stopped.

While UPB has had a system of doctoral studies for many years, the doctoral school structure was first introduced in 2011. The new three-year programme is structured as one semester of advanced studies, with the remainder being devoted to a research project. Each doctoral school has a small amount of administrative support and is governed by a faculty-level doctoral education council elected for a four-year period. These councils each include two students and the doctoral school secretary among their membership. While doctoral schools currently function as a local administrative structure aligned with each faculty, their link to the research agenda at UPB remains unclear.

At university level, there is a Council for Doctoral Studies, whose chair has the same rank as a vice-rector. While responsibility for PhD supervision is at faculty level, and students report every semester to a supervisory panel, the doctoral schools report to the Council for Doctoral Studies. This Council organises a number of joint transversal courses for students across all the doctoral schools.

It became clear during the IEP team's visits that the current fragmented structure of doctoral schools was not optimal, and that greater collaboration between them would be a positive step. Likewise, their close alignment with the faculty structures was now seen as a disadvantage. *The team therefore recommends an increased emphasis on doctoral education at UPB, removing current organisational and structural limitations, reducing the number of doctoral schools and improving interdisciplinarity, internationalisation and networking.*

The IEP team was informed that PhD students and graduates can easily find suitable jobs, including abroad, but that the local salaries offered were not competitive. Effective tracking of graduates takes place through the alumni lists, with high response rates obtained.

The graduation rate is however very low compared to the annual intake of new PhD students. While many possible reasons were provided to the IEP team for this, no satisfactory analysis

of the significant dropout rates was available. In addition, it became apparent that, in some doctoral schools, significant numbers of PhD students were effectively non-active, thus distorting the situation. *The IEP team recommends that UPB take measures to reduce the non-active PhD students across the university and address the significant non-completion rates associated with doctoral studies.*

## **6. Service to society**

The IEP team explored the topic of UPB's social responsibility and how it seeks to serve the society in which it is situated and of which it is part. This is a standard and integral part of the IEP evaluation methodology. In doing so, the IEP team sought to examine UPB's broader institutional aims and definitions in this area, and the specific activities it carries out to achieve these. This aspect of a university's activity is often referred to as its "third mission".

As with all universities, UPB exists in a specific context and has its own unique set of relevant stakeholders, both public and private. There were however very few indications in the self-evaluation report regarding UPB's overall approach to its third mission. Nevertheless, the team found that UPB had extensive relations with a broad range of stakeholders, manifested through the university-level "stakeholder committee": the IEP team was informed by the Rector that this Committee normally meets three times per year with the UPB Board to discuss labour market issues, internships, training for students, and other relevant topics.

The IEP team also learned that there is cooperation at decentralised level with more than 1,000 companies, managed locally by each faculty with their own stakeholder groups. In addition to those topics discussed at the UPB stakeholder committee, faculties also have numerous contract research projects with industry every year.

Given the very significant issues facing the supply of qualified engineers in Romania over the coming years, as related to the IEP team by external stakeholders and the UPB leadership, this structured dialogue between the university and its most important stakeholders is highly commendable.

In addition to working with industry to ensure an adequate supply of graduates and to provide research services, the team was also informed that UPB provides a range of lifelong learning services for industry, including those in regulated occupations where ongoing professional development is a requirement. UPB also provides a successful programme – in addition to the students' main field of study – aimed at preparing teachers for technical high schools, but which also helps develop the broader transversal "softer" competences which are needed in many roles in enterprise today.

This provision of lifelong learning services is however managed in a very decentralised manner within UPB, including a fragmented approach to the marketing and administration of these services. As a result, while in universities in other contexts such services often represent a very significant income stream, the IEP noted that less than 10% of income in the overall category of Service to Society at UPB could be attributed to lifelong learning.

*The IEP team recommends that UPB should develop a clear policy regarding its approach to lifelong learning, and that if it decides to become an active player in this service, it should develop a professional lifelong learning centre which can take a pro-active approach to identifying and meeting the lifelong learning needs in relevant sectors of the labour market.*

Technology transfer (or more generally knowledge transfer and innovation) is another major aspect of service to society, where the university markets its research expertise to interested partners; this should naturally be a major aspect of a technical university's work. At UPB, this is managed within the Department of Scientific Research Management. The self-evaluation report noted that there was an overall low level of technology transfer to the enterprise sector.

While graduate employment, the provision of lifelong learning opportunities, and technology transfer can all be considered integral to the broader teaching and research missions of the university, less emphasis was placed in the self-evaluation report and during the IEP visits on other aspects of the university's third mission, including relations with local communities and social responsibility. The IEP team was however informed of an initiative which allows students to acquire credits for volunteering as student mentors, organised closely with the local UPB student associations. A promising initiative with external funding aimed at widening diversity and supporting academic success in the broader student body was also noted. The team encourages UPB to support these and further such initiatives to develop social responsibility across UPB, helping address societal challenges and facilitate progressive public policies.

As the leading technical university in the country, UPB should also be playing an important role in public communication about science and technology, helping address societal and ethical issues which these may raise.

Other areas which were mentioned to the UPB team include the provision of university facilities for external events and making other UPB resources more available to a broader range of potential partners. In the opinion of the IEP team, a more systematic approach to such initiatives would present considerable opportunities for expanding the university's contribution to society and indeed in some cases for income generation.

As part of the broader renewal of UPB strategy over the coming years, *the IEP team recommends that the university take a more integrated approach to its third mission, including technology transfer*, to ensure that the current range of services provided to society is more embedded across the entire university, and that the overall value and visibility of these to stakeholders is enhanced.

## **7. Internationalisation**

Strengthening the international dimension of education and research at UPB is one of the university's strategic priorities, as noted in the UPB strategic plan and also in its more specific internationalisation strategy for the period 2016-2020. This work is led by a vice-rector for international relations and partners, and supported by a well organised international relations department and a foreign students recruitment desk.

The IEP team noted that UPB's strategy in this area is centred around strengthening the university's international reputation, recruiting international students, becoming more involved in European and international networks, and developing institutional partnerships with other universities and organisations.

As regards networks, the IEP team received little information on how international agreements are decided according to UPB's strategy and criteria. While UPB's European networks appear to link it with well-known technical universities and to favour student exchanges, it is not clear if these networks are also used for research purposes, for example by promoting joint projects within the European Framework Programmes for Research and Technological Development.

In terms of concrete activity, the more obvious aspects of the university's internationalisation work on campus are associated with student mobility. This is led by the international relations department, encouraged and supported by individual academics. Given the size and breadth of UPB, *the IEP team recommends that these international supports should also be embedded across the university's decentralised structures*, in order to have a more direct link to staff and students in faculties and departments. The team was informed that the recognition of ECTS for mobile students was done by each faculty, and that this worked much better now than a few years previously.

While a target exists to reach a mobility rate of 5%, the IEP team was informed that only a few faculties had reached this. In addition, the team found that these targets need to be communicated better and shared across UPB. Despite the Erasmus grant and an additional top-up grant, as well as a lump sum provided by UPB to cover initial travel and other costs, some destinations remain too expensive for UPB students. To complement this, and in order to support student mobility for others who may not be in a position to participate otherwise, UPB has recently joined a network to encourage and support very short-term student mobility. *The IEP team recommends that UPB enhance its institutional commitment to outgoing mobility, through better communication and supports.*

UPB welcomes small numbers of incoming students exchange students each year; these generally attend the UPB programmes taught in foreign languages. The success of these programmes would suggest that UPB should broaden the offer of courses available through English and other languages. A European project semester is organised for incoming students, working with local students in teams to undertake a particular research project.

In addition to student mobility, the university needs to ensure other elements of internationalisation are also developed through policies and targets, for example, *the team suggests that UPB should also use its research profile to promote a broader range of international activities*, such as hosting summer schools, supporting doctoral student mobility, international internships and research placements, etc.

## **8. Conclusion**

As detailed in this report, the IEP team found many positive developments underway across the university, with strong leadership, good ideas, and lots of energy to carry these forward.

The team experienced a positive dynamic on UPB's campus with new buildings and investments very visible. These all suggest that UPB is well positioned as a leading national higher education and research institution.

The strategic implementation of important reforms is now key to unlocking the full potential associated with these positive developments. For this, consistency and continuity over the medium term are required.

The team wishes the UPB community every success in this endeavour.

### **8.1 Summary of recommendations**

#### **Governance and institutional decision-making**

- The IEP team suggests that it would be useful for the university's mission statement to reflect UPB's profile and context better.
- The team recommends that UPB communicate better the new roles and responsibilities of the senior university management team, to ensure these are clear and well understood across the university.
- The team recommends that the strategic planning process at UPB needs more careful elaboration, with relevant action plans and effective follow-up.
- The team recommends that UPB decide where the balance between integrated and decentralised management systems should lie, and in what areas.
- While it is normal and correct that senior leadership roles in a university should be occupied by academics, these should be in a full-time capacity, with those persons released from their academic duties for the duration of their term of office.
- The team would like to stress the importance of ensuring that key professional functions at the university are occupied by specialised support staff.

#### **Quality culture**

- The IEP team recommends that UPB explicitly use the Standards and Guidelines for Quality Assurance in the European Higher Education Area to inform the development of its own internal quality assurance mechanisms and indicators.
- The team recommends that UPB should combine the existing accountability function of the ARACIS process with a greater focus on UPB's own internal quality enhancement.
- The team recommends that UPB should examine carefully how it could reduce the bureaucratic overhead currently associated with quality assurance.

- The team recommends that consideration be given to how the Quality Office and the Department of Scientific Research Management could work closely together to enhance both the structures and implementation for UPB's culture of quality.
- The team recommends that UPB examine what other tools it could use to help identify staff development needs.
- The team recommends that UPB should have higher recruitment and promotion criteria than the minimum.
- The team recommends that the transversal issues arising across faculties which could be identified on a UPB-wide basis, and which would be useful to address collectively, should be monitored at central level, as part of the quality assurance and enhancement process.
- The team recommends that the Quality Office adopt a renewed focus on quality enhancement, including closing the quality cycle and greater use of student feedback data.

### **Teaching and learning**

- The IEP team suggests that an element of central planning would help improve the coherence and organisation of study programmes.
- The team suggests that a strategic review of all current programmes might be useful, leading to some consolidation where this makes sense due to curriculum overlap and reduced student demand.
- The team recommends that UPB avoid the narrow specialisations currently associated with many study programmes, for both educational and organisational reasons.
- The team recommends that UPB introduce greater curriculum flexibility for students within all study programmes.
- The team recommends that UPB revisit the learning outcomes of all its programmes.
- The team recommends that UPB analyse the ongoing high levels of dropout rates and put in place a university-wide strategy to address these.
- The team recommends that UPB invest in staff development, including through a systematic approach to assist teachers improve their teaching and introduce new didactic practices, adopt new teaching technologies, and use innovative assessment methods.

### **Research**

- The IEP team recommends that UPB develop its institutional research profile and strategy.
- In developing this profile and strategy, UPB should carefully analyse its research capacity, matching and using the range of available human, infrastructural and financial resources.
- The team recommends that UPB should strike a clear strategic balance between teaching and research activity at the university.
- The team recommends that UPB revisit its research governance and structures.
- The team recommends that UPB strengthen its research management and professional support capacity.

- The team recommends that UPB strengthen the quality assurance of research across the university.
- The team recommends an increased emphasis on doctoral education at UPB, removing current organisational and structural limitations, reducing the number of doctoral schools and improving interdisciplinarity, internationalisation and networking.
- The team recommends that UPB take measures to reduce the non-active PhD students across the university and address the significant non-completion rates associated with doctoral studies.

#### **Service to society**

- The IEP team recommends that UPB should develop a clear policy regarding its approach to lifelong learning, and that if it decides to become an active player in this service, it should develop a professional lifelong learning centre.
- The team recommends that the university take a more integrated approach to its third mission, including technology transfer.

#### **Internationalisation**

- The IEP team recommends that these international supports should also be embedded across the university's decentralised structures.
- The team recommends that UPB enhance its institutional commitment to outgoing mobility, through better communication and supports.
- The team suggests that UPB should also use its research profile to promote a broader range of international activities.