



Integrating Industrial Property Education into the Curricula of Technical Studies: Some Examples

Vključevanje izobraževanja o industrijski intelektualni lastnini v kurikule tehniških študijev: nekaj primerov

**Angela Repanovici, Manolis Koukourakis,
Ionela Maria Barsan, Dan Savescu**

Oddano: 19. 10. 2023 – Sprejeto: 19. 11. 2023

1.04 Strokovni članek
1.04 *Professional article*

UDK: 347.77/.78:374.7(047)
DOI: <https://doi.org/10.55741/knj.67.3-4.7>

Abstract

The paper presents some aspects and examples of handling intellectual property (IP) at universities or R&D institutes regarding how to promote and to protect innovative results or products. The first example is an outline of a strategy for the implementation of a university policy in the field of intellectual property. The second example is the European IPEDU project and its implications in the continuing education of librarians. The project is an original initiative with ethical implications for and considerations of intellectual property. The paper focuses on the main result of the project: the postgraduate course with five modules aimed at librarians and recent graduates to strengthen their knowledge in the field of intellectual property and industrial property. The structure of the course and the main modules are outlined. This course is considered essential for librarians and non-law students, as understanding the wide range of relevant information and practical implications of intellectual property is critical in today's world of information-based careers. As a freshly accredited programme, it needs evaluation, because there has not yet been any feedback from the learners.

Keywords: education, intellectual property, technical studies, strategy

Izveček

Prispevek prikazuje nekatere vidike in primere ravnanja z intelektualno lastnino (IL) na univerzah ali raziskovalnih inštitutih glede vidikov promoviranja in zaščite inovativnih rezultatov ali produktov. Prvi primer je oris strategije za implementacijo univerzitetne politike na področju IL. Drugi primer je evropski projekt IPEDU in njegove implikacije za permanentno izobraževanje knjižničarjev. Pri projektu gre za izvirno iniciativo z etičnimi implikacijami glede upoštevanja IL. Prispevek se osredotoča na glavni rezultat projekta, podiplomski predmet s petimi moduli, usmerjen na knjižničarje in sveže diplomante, da bi izboljšali svoje znanje na področju IL in industrijske IL. Prikazana sta struktura predmeta in glavni moduli. Predmet je nepogrešljiv za knjižničarje in študente na nepravniških področjih, saj je razumevanje široke palete relevantnih informacij in praktičnih implikacij glede IL nujno v današnjem svetu, kjer so službe in kariere odvisne od informacij. Ker je predmet pravkar akreditiran, potrebuje evalvacijo, ker še ni bilo povratnih informacij od slušateljev.

Ključne besede: izobraževanje, intelektualna lastnina, tehniški študiji

1 Introduction

Intellectual property refers to creations of the mind, such as inventions, literary and artistic works, designs, and symbols, names, and images used in commerce. It involves property characterised by intangible creations and the rights associated with them. The main purpose of intellectual property protection is to encourage the creation and development of a wide variety of intellectual goods, fostering innovation and creativity. To encourage the creation of a wide variety of intellectual goods, intellectual property law gives people and businesses property rights to the information and intellectual goods they create, usually for a limited period. This gives economic incentives for their creation, as people may benefit from creating intellectual goods and information. Through the law and its accompanying rights, people and businesses may protect their ideas and prevent unauthorised exploitation. Promoting the issue of intellectual property to those working in the field of innovative products, such as students, teachers, and researchers, has long played an important role.

The role of the university in society is fundamentally to create culture (Rânea and Badea, 2003). From a contemporary perspective, its role is also to provide welfare. According to the *Magna Charta Universitatum* (1988), one of the basic principles that a university should always promote is that the university is an autonomous institution which critically produces and perpetuates culture through research and education; this holds true across societies with differing forms of organisation and in different geographical and historical contexts. This also concerns the production of scientific and educational materials on intellectual

property, such as guides (Lupu, 2006) and textbooks (Belous, 1995; Belous and Plahteanu, 2005; Gladcov, 2003; Nagît, 2001a, 2001b; Nagît and Slătineanu, 1998; Rânea and Badea, 2003).

2 Example 1: Outline of a university strategy for handling intellectual property in romania

In the last years, the numbers of patents, demands for patents, trademarks, and industrial models have not been high at all Romanian universities, sometimes because of taxes (the cost of protection, maintenance) and sometimes because of a lack of understanding of the importance of this activity. For example, in some universities, the issue of intellectual property does not correspond the time spent on research, or the number of research activity credit points is insignificant compared to a scientific article published at an international conference (Săvescu and Budală, 2010). These were the reasons for establishing a methodology to stimulate the protection of innovative parts of scientific research, with the goal of establishing this methodology at some prominent universities and extending it at the national level (if autonomy of the university would allow it) (Brad et al., 2006; Ciupan, 1999; Iclănzan and Popa, 1995; Iclănzan and Stan, 2005).

2.1 Focus of the University Policy in the Field of Intellectual Property

For a technical university, the main points of focus/objectives were:

- enhancing personal creation (especially regarding industrial property) and
- knowing and observing intellectual property rights (especially regarding literary-artistic and scientific property copyright).

The suggested operational systems used in studies encompassing intellectual property, along with their instruments and interconnectedness, are presented by Belous and Plahteanu (2005) and Manolea (2006) and shown in figure 1.

For such collaboration to be successful, the support of the universities' management policy is necessary. However, a fundamental change in the long- and short-term university policies can only be made, according to the institutional law of the university, with the initiative of its board (Crum, 1985; Dalota and Mocan, 1995; Manolea, 2006; Mocan, 2003).

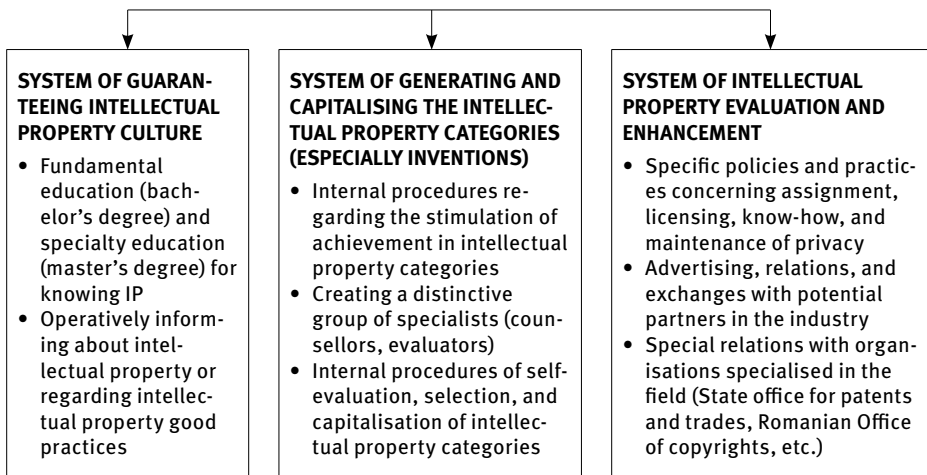


Figure 1: *Operational systems used in intellectual property studies*
(Belous and Plahteanu, 2005; Manolea, 2006)

2.2 Outline of the Intellectual Property Strategy in Universities and Research & Development Units

Intellectual property strategy in universities and research & development units is considered an essential component of general business strategy in order to promote the innovative creation, protection, and commercialisation of intellectual property rights in new products. Some authors (Belous, 1995; Belous and Plahteanu, 2005; Gladcov, 2003; Lupu, 2006; Nagîț, 2001a and 2001b; Nagîț and Slătineanu, 1998; Rânea and Badea, 2003) present systemic approaches to developing an intellectual property culture at technical universities (figure 2). For Romania, it is important that universities and research & development institutes become key generators of intellectual property capital activity. The stakeholders involved in this activity are:

- teachers and researchers;
- doctoral students in their last years, or students in general;
- sponsors;
- technological transfer units;
- Consumer Protection Office;
- National Council of Private Small and Medium Enterprises;
- Chamber of Commerce and Industry, etc.

Sometimes there are conflicting interests between these stakeholders, so intellectual property strategy must harmonise the interests of all stakeholders from universities and research & development institutes.

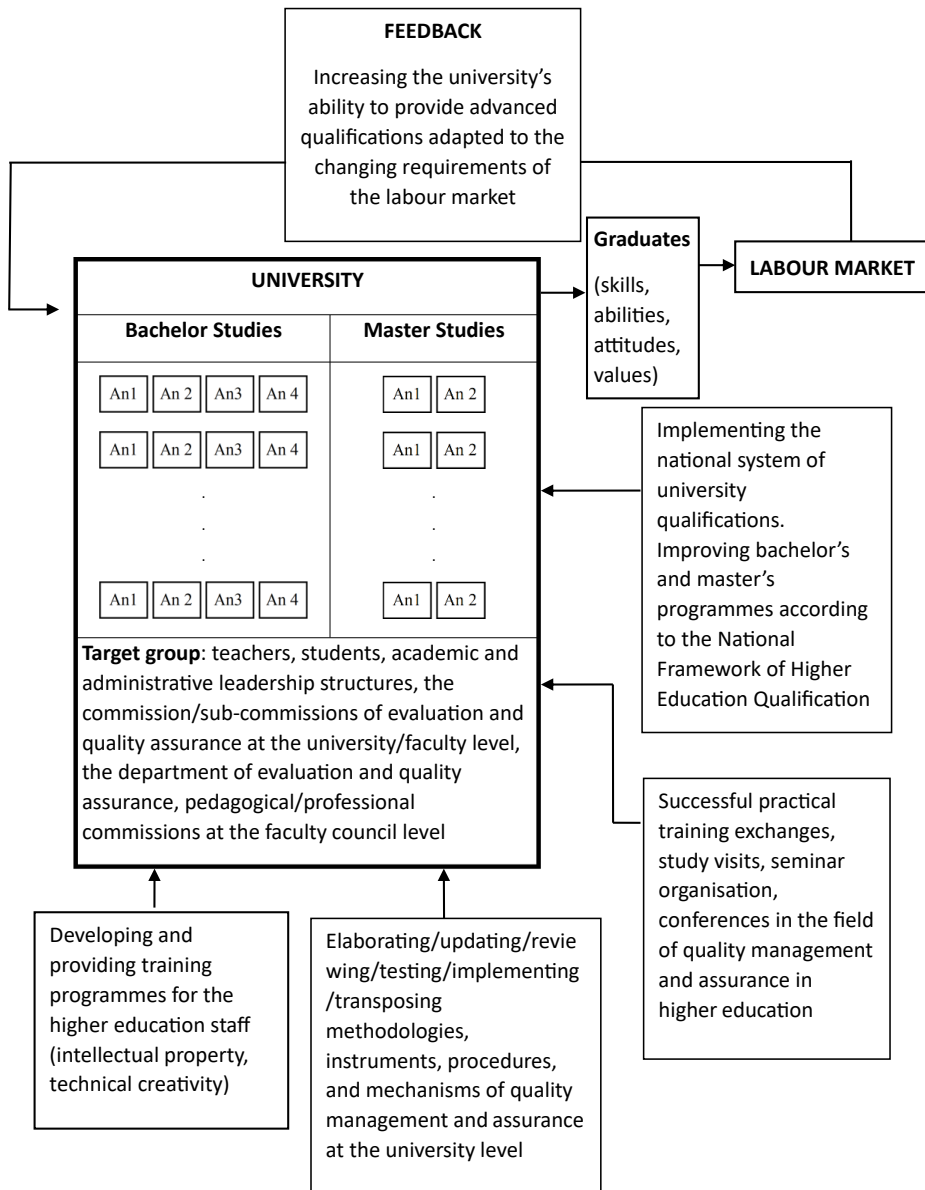


Figure 2: Systemic approach at technical universities

2.3 Objectives of Intellectual Property Strategy

Intellectual property strategy, based on the factors presented above, means:

- a path towards a framework for disseminating new knowledge for the benefit of the public;
- fair distribution of the financial benefits or other benefits as result of the commercialisation of the innovative product, taking into account both the inventor's contribution and the institution's contribution (university, research institute);
- promoting, encouraging, and supporting the scientific research;
- students attracted to intellectual property and the promotion of young creativity;
- creating stimulus for research and rewarding intellectual propriety assurance.

Previous research offers some suggestions (Brad et al., 2006; Crum, 1985; Dalota and Mocan, 1995; Mocan, 2003) concerning several steps that should be taken to create an intellectual property culture and to integrate intellectual property in various faculties, particularly in science, engineering, and business faculties (entrepreneurship, innovation management):

1. investigating the level of the development of intellectual property culture at universities by identifying the following indicators:
 - disciplines that discuss the issue of intellectual property (inclusively and exclusively);
 - number of university teachers qualified in intellectual property;
 - number of students taught about intellectual property in one year;
 - educational aids developed for the field;
 - post-university courses;
2. systematising information about the state of intellectual property culture in Romanian universities;
3. establishing successful practices in the field in Romania;
4. studying the level of intellectual property culture development in various European universities;
5. systematising information about the development of intellectual property culture in various European universities;
6. establishing successful practices in the field in Europe;
7. elaborating a guide of successful practices for the development of an intellectual property culture at Romanian universities.
8. disseminating the guide on successful practices to Romanian universities;
9. establishing a methodology for the periodical implementation of the guide on successful practices.

2.4 Prejudice, Frequent Negative Reactions, and Some Solutions

Many scientists associate intellectual property with the study of law and copyright and have difficulties seeing the relevance of intellectual property to their research activities. At best, some of them consider intellectual property as a way to obtain control over their own intellectual production, because they worry about publishing their research results due to the possibility of assuming patentability through the divulgation of an invention.

There is a contrary reaction in the arena of taxation, as most consider the tax level a little too high. Sometimes, especially when the research team is large and there is effective collaboration among multiple participants in the process of developing innovative ideas to be proposed for protection, it is difficult to establish who the actual rights holder is, and even more difficult to discuss the allocation of benefits after the technological transfer. Often a conflict of interests can arise.

These reactions are well known and expected, but it is very simple to find solutions through the management of negotiation in the field of innovation. An important factor is communication: meetings and debates among teachers from different faculties, students, doctoral students, and all involved researchers. In this way, choosing the right team and the best leader to develop the intellectual property strategy is a good and viable solution. The leader must have the support of the entire team, along with the support of the head of the faculty, university, or research institute. Sometimes it is necessary to include external experts on the team.

Much attention must be dedicated to understanding the specific conditions for each type of intellectual property and adopting an acceptable level of legal language, since legal language that is too harsh often discourages scientists. Strategically, intellectual property projects must be discussed at all levels, from top to bottom.

2.4.1 Ten Questions About Intellectual Property Strategy

Intellectual property strategy implemented by the members of a research team must address questions like:

1. Who is the holder of the intellectual property rights generated by research using governmental funds?
2. How will benefits which resulted from the commercialisation of intellectual property be distributed between researchers/inventors, department, institutes, and the financing team?

3. Are there legal regulations about the commercialisation of intellectual property resulting from research using government funds?
4. Who is the intellectual property rights holder in case research is based on private funds?
5. Have there been any “spin-off” companies or licensing contracts for the technological transfer to the private sector constituting commercialisation?
6. Who is the administrator of intellectual property activities, including licence negotiations and royalty distribution?
7. How does the institution encourage the commercialisation of research results through entrepreneurial activity?
8. Which funds are dedicated to maintenance costs?
9. What is the position of researchers regarding the disclosure of a secret?
10. How are conflicts of interests between educational responsibility and research projects of a commercial nature to be resolved?

It also happens quite often that products reappear but are no longer innovative. In such cases, due to the absence of intellectual property knowledge or an intellectual property specialist, the responsibility lies with the institutional framework, such as technology management offices or intellectual property departments at universities and research institutes.

It is necessary to develop an administrative body (service, office, department, etc.) or involve a person who is a specialist in intellectual property rights, certified by the State Office for Inventions and Trademarks (OSIM). It is recommended that this institution, directly subordinate to administration/board (rector/senate, technical or scientific director, or to technical scientific council), have a jurist (for contracts, legal disputes, juridical actions, etc.) and at least one specialist for the documentation of evidence, phases of patents applications, demands of patents, obtained patents, profit obtained, tax payment, royalty paid to authors, evidence of contracts, and offers for works not requiring university studies. The departmental administration depends on institute size, financial resources, and general or sectorial managerial policy on intellectual property. Salesman samples (SMSs) and small entrepreneurs or inventors can access services offered by authorised counsellors on intellectual property.

Brad et al. (2006) suggest some operational systems to be established by universities:

- an intellectual property culture assurance system (education, good practice, operational information);
- an evaluation system (procedures, methods, specialists);
- a capitalisation system (rules, patents department, intellectual property department);
- an evaluation system (cessions, licensing, expertise).

To develop an intellectual property culture at universities, Brad et al. (2006) have proposed some activities which focus on the national and international situation:

- systemising information about the culture of intellectual property at Romanian universities;
- establishing successful Romanian practices in intellectual property;
- developing a level of study in intellectual property culture in different European universities;
- establishing European successful practices in intellectual property;
- creating a guide to best practices to develop intellectual property culture in Romanian universities;
- disseminating guides in Romanian universities;
- establishing a methodology for the periodical update of the guide to best practices.

As a result, intellectual property culture developed in universities can be expressed and evaluated by identifying some indicators:

- number of disciplines that discussed the topic of intellectual property (implicit and explicit);
- number of teachers specialised in intellectual property;
- number of students trained by year in intellectual property;
- number of educational materials developed on intellectual property;
- number of postgraduate courses, etc.

2.5 Example of Handling Intellectual Property at Transilvania University of Braşov

Transilvania University of Braşov has had an Invention Department ever since its foundation. Starting in 2007, this became the Department of Legislation and Intellectual Property (*Dintellectual property* – DIP). Taking into account the major importance of industrial property protection to the economy and the necessity of competitive information management in the field of intellectual property, *Dintellectual property* focuses on promoting intellectual property by developing a service system that offers useful information regarding industrial/intellectual property protection. *Dintellectual property* offers training for educational staff and scientific research, as well as student training on patenting, artistic creation protection, and documentation in the realm of intellectual property protection.

This department has its own headquarters, equipped with all necessary office facilities and staff. It consists of two sections: Intellectual Property, and Legislation and Permanent Development.

The department is assisted by a scientific council consisting of teachers, researchers, and specialists in the main scientific fields of intellectual property, including technical sciences and technologies, modern art, natural sciences, legislative sciences, etc. The role of this scientific council is to analyse intellectual property objects (intellectual creations) and industrial property objects, which are liable to be protected by copyright laws or intellectual property rights according to the law. This council also must offer counselling regarding the opportunity to request protection. During the first year of activity (2008), the department registered 38 patent applications from Transilvania University of Braşov, with the authors being teachers, doctoral students, and students involved in scientific research (Săvescu and Budală, 2008, 2010).

In 1993 Transilvania University of Braşov founded the Centre of Technologies, Inventors, and Business (CTIB), which acts mainly as an interface between the university and the business environment on three levels:

- a. micro-production and technology transfer:
 - creating prototypes and experimental models resulting from scientific research papers;
 - transferring technologies from the university to the business environment;
- b. inventors – encouraging students, researchers, and teachers and supporting innovative activities in the university environment;
- c. support of the entrepreneurial initiatives of student innovators through activities specific to business incubators. Since 2000 CTIB, through its Invention Department, has had the status of Regional OSIM-PATLIB.

The centre focuses on promoting industrial property through their team of engineers and consultant lawyers specialised in industrial property and certified by the State Office for Inventions and Trademarks (OSIM).

Within technical faculties, the study programmes of the second and third years of study include courses and seminars about intellectual property; these identify intellectual property objects and ways to protect and enhance them. Within the Faculty of Product Design and Robotics, the study disciplines entitled “Invent: Fundamentals of Technical Creation” and “Creativity Techniques and Methods” include units on intellectual property. The Faculty of Law has a course on intellectual property rights, while the master’s degree programmes include themes in the field of intellectual property. The Doctoral School holds a course on intellectual property with the following unit themes: legislation in the field of intellectual property; identifying intellectual property objectives; documentary research in databases related to industrial property objects; patent applications and how to describe a patent; and ways to evaluate and enhance inventions.

The intellectual property department has the following strategic objectives:

1. annually attracting a minimum of 20 patent applications to the university and forwarding them to OSIM;
2. enhancing the obtained patents (beginning in 2010);
3. training for patent implementation at interested firms;
4. contacting firms known as producers of tools/devices similar to the patented ones;
5. conducting trainings in the field of patenting and intellectual property in all university departments, concentrating on training and promotion activities for senior, master's, and doctoral students;
6. displaying the obtained results and the semi-annual updates on the university website;
7. disseminating updated results quarterly within the intellectual property department;
8. according to the type of patent, creating prototypes and presenting them at profile exhibitions with the purpose of patent enhancement;
9. starting in 2010, editing a magazine centred on inventors' activities.

Transilvania University operates in an environment with a powerful tradition and experience in the technical field, and the current challenge is to continually update information and maintain the high standard imposed by the pace of technological change.

In 2006 a technological and business incubator “Products and Technologies for Sustainable Energy” (ITA Pro-Energ) was formed, which cooperated with the economic institutions in the region to develop an interest in intellectual property among young students and beginners or members of start-ups. Thus, the incubator is involved in many projects, aiming to support the innovative initiative of young researchers (Regional Entrepreneurship Cohort Potential Index – RECPI, Enabling Education Network – EENet, The Business International Studies Network – BISNet, Panels – two-channels of communication, for example Romania-EU, Romania-Small and medium enterprises (SMEP) etc.), and takes part in the most important exhibitions and technical forums (such as the Hannover Messe and the Leibniz-Informationszentrum Technik und Naturwissenschaften und Universitätsbibliothek – TIB).

Within the project, several professional training activities on intellectual property were established for teachers. These teachers are to prepare educational aids, teach, and develop intellectual property in their faculties. The point is not to teach intellectual property to students but rather to create an atmosphere which could lead to the addition of units dealing with intellectual property in as many university courses as possible.

The most important objective is to develop and provide training programmes for higher education staff. The training courses will be held by teachers from the State Office for Inventions and Trademarks (OSIM), from the field of quality and implementation of the National Framework of Qualification in Higher Education, with the help of experts. After that, the teaching staff can teach students, including doctoral students. The teaching staff will also have the opportunity to attend courses displaying modern methods and techniques on teaching and learning about intellectual and industrial property and stimulating technical creativity. Some topics to be considered will be, for example, the development of teachers' responsibility regarding the design of methods and student-centred learning environments; the goal is for the student-teacher relationship to be one of partnership, in which each is responsible for achieving the results of learning. Together with the implementation of new teaching methods and techniques, the development of virtual teaching, learning, and evaluation instruments will be financed within the project during a revision of educational plans and subject matter.

3 Example 2: A postgraduate course in intellectual property

Within the project funded by the European ERASMUS+ Strategic Partnerships in Higher Education entitled "Introducing Intellectual Property Education for Lifelong Learning and the Knowledge Economy – IPEDU" (IPEDU project, 2023), a course with five modules was developed for librarians and recent graduates to strengthen their knowledge in the field of intellectual and industrial property. This course is considered essential for librarians and non-law students, as understanding the wide range of relevant information and practical implications is critical in today's world of information-based careers.

3.1 Presentation of the Project "Introducing Intellectual Property Education for Lifelong Learning and the Knowledge Economy" (IPEDU)

IPEDU (2023) was a project aimed at introducing education in the field of intellectual property to the curriculum of technical universities through training teaching staff, support staff, and librarians in intellectual property. There is much that Europe can do to promote intellectual property education in younger generations. Intellectual property education should not only mean awareness of the intellectual property rights themselves, but also better knowledge of how to manage them in contracts and agreements. Better education regarding knowledge-based assets and better knowledge of the innovation support system are vital for lifelong learning and the knowledge economy (IPEDU project, 2023).

The objectives of the IPEDU project were to set out and forecast the needs of today's and future labour markets in the field of intellectual property, to develop relevant learning methodologies, to identify the gap between skills acquired in higher education and the demands of the real labour market, to identify and implement best practices, and to design methods for the protection of industrial property.

The main objectives of the IPEDU project were:

1. to improve the current state of education in the field of intellectual property;
2. to strengthen the cooperation between universities and the business environment, to facilitate the exchange, flow, and co-creation of knowledge in the field of industrial property protection;
3. to coordinate curricula in the field of industrial property law with the concrete needs of the labour market;
4. to reduce the significant differences in the curricula of the industrial property courses, both at the national and European level;
5. to introduce education in the field of industrial property law to technical faculties;
6. to contribute to the professional development of teaching staff and support staff (librarians) in the field of industrial property law through short-term joint staff training events.

Importantly, IPEDU aimed to involve librarians in the project in order to develop resource centres in the field of industrial property. These centres would be hosted by the university libraries, and the library staff would be trained to deliver both information on the documentation resources and initial training in the field. Regarding the target group, the main objective of IPEDU project was to provide the teaching and support staff from HEIs with the opportunity to improve and adapt their teaching curricula in the field of industrial property to the European level. In addition, students from universities involved in the consortium would form a secondary target group of the IPEDU project and would be granted access to advanced training programmes relevant to the needs of the labour market.

The aim of the IPEDU project was to develop innovative teaching tools that would help the staff acquire the skills and competencies needed to deliver courses in the field of intellectual property to students at technical universities and library users. Moreover, the role of university libraries would be crucial in this project, as they would host resource centres for intellectual property, and the partners involved would draft a guide for setting up and equipping these centres. The support staff, mainly librarians, was of great importance to accomplishing this priority: they would be trained to organise resource centres in the field of intellectual property in libraries, to source bibliographic resources, and to train library users in the essential components of intellectual property.

As a result of the project, the technical universities would be able to provide teaching, support staff, and – through libraries or other internal organisations – courses in the field of intellectual property, with each focusing on the information relevant to the field in which they operate. The individual faculties would be able to introduce intellectual property courses, focusing on industrial property, in their certified curricula. Last but not least, through the resource centres, students and university staff would have access to relevant information in the intellectual property field, having the opportunity to consult documentation on the protection mechanisms existing at the national, but especially the European, level.

The project brought together eight universities and a consulting SME from eight programme countries and would focus on the European dimension of intellectual property, encouraging a unified practice at every step. The implementation of the IPEDU project provided the teaching staff from the HEIs of the consortium with the necessary tools to enhance and adapt their teaching methods while they would also be trained to adopt trans-disciplinary approaches in the delivery of intellectual property courses.

3.2 Presentation of the Postgraduate Course

The study programme is organised on the postgraduate level. It addresses a major need of higher education graduates in the crucial field of engineering, graduates who must have knowledge of key concepts and issues of intellectual property, like understanding proprietary products or knowing which products can be protected under intellectual property rights. The study programme is thus innovative in nature, as it introduces innovative features, such as industrial property and copyright issues, in training engineers. Considering that each researcher must create innovative products in his/her daily work, engineers must know how to protect novel elements against counterfeiting. Learners will acquire knowledge of key concepts and practices regarding methods of protecting innovations. Table 1 shows the curriculum of the course.

The general objective of the course is to provide students with the basic knowledge and skills related to intellectual property, industrial property, and copyright.

The final learning outcomes relate to:

- knowledge of intellectual property objects;
- concrete methods for completing a patent application (CBI) and completing a trademark registration/renewal application;

- understanding the advantages of protecting intellectual property objects;
- related legislation: Law 64, service invention law, copyright law.

Competencies, learning outcomes, and target audience are presented in Table 2.

Table 1: *Curriculum of the course*

Programme structure (curriculum)			
Discipline / Total number of hours	Taught course	Seminar/ applications	Works/ project
Module 1. Intellectual property. Objects of intellectual property	6	8	0
Module 2. Industrial property. Objects of industrial property	6	0	8
Module 3. Invention patent, registered trademark, designation of origin, geographical indication	4	6	4
Module 4. Service secrecy; agreement	6	0	8
Module 5. Law of service invention	4	0	10
TOTAL	26	14	30
TOTAL postgraduate programme hours	70		

Table 2: *Competencies, learning outcomes, and target audience*

CNC/EQF level		6
Description of the programme	The competencies or specific competency concerned	Providing patenting advice to inventors and manufacturers, verifying whether the invention is new, innovative, and viable; preparing patent proposals, presenting the exact description of the invention in legal terms; ensuring the application of legislation, taking appropriate measures in case of non-compliance, in the field of activity;
	Learning outcomes: knowledge/ skills/autonomy/ responsibility	describing the invention proposed for patenting using specific terminology; checking the authenticity of the invention using the databases dedicated to the field; preparing documentation for the proposal of invention patents; identifying the legislation specific to the field of invention protection using specific documentation; analysing situations of non-application of legislation in the field of invention protection; cooperating with and integrating specialists from the same or different fields for the complex approach to the patent proposal.
Programme term (hours)		70 hours
Number of ECTS credits		7
The target audience		Engineers, economists, librarians

4 Conclusions

As demonstrated above, there are some challenges with regard to the protection of innovative creation at universities or research & development institutes. Studies done in the last two to three years have led to the development of a strategy to stimulate and award the creative spirit of researchers. These studies offer a way to find and define a method to separate innovative work as a service duty from innovation after service.

This approach could be efficient, since the methods, work instruments, procedures, and methodologies contained in the guide would come from within the university and would be approved by at least one part of the academic community. Technical universities have an advantage in this respect, since the key leadership position (dean or chair) often belongs to professors who are inventors. This is one way for Romania to raise awareness about the importance of teaching intellectual property to the teaching staff within various faculties. The experience accumulated in those university centres that developed an intellectual property culture could further be generalised at a national level (Săvescu and Budală, 2008)

This could be done by preparing a guide of best practices, including information on elements of intellectual property, regulations/protection by law, description of documentation, methodology for raising awareness and encouraging innovation, service invention, copyright law, patents, utility models, design, trademarks, geographical points, semiconductor products, and models/case studies of introducing intellectual property rights in invention, arts, literature, music, and medicine or pharmaceuticals description. Technical universities, where management often have backgrounds as professors who are also inventors, have an advantage in implementing such strategies. This project could be an effective way to emphasise the importance of teaching intellectual property to the teaching staff across various faculties.

The IPEDU project is of particular importance in the academic world, with persistent implications in our knowledge-based society and the digital economy. Since intellectual property rights play an important role both in academic activities and in every field of knowledge and technology transfer, higher education institutions should invest in providing courses that enable their graduates to address the challenges associated with intellectual property issues. The IPEDU project curriculum shows that such an effort, providing a balanced mix of relevant information and practices, can substantially enhance education provided by non-law faculties.

References

- Belous, V. (1995). Performanța [*Performance*]. Performantica Publishing House.
- Belous, V., and Plahteanu, B. (2005). Fundamentele creației tehnice [*Fundamentals of technical creation*]. Performantica Publishing House.
- Brad, S., Ciupan, C., Pop, L., Mocan, B., and Fulea M. (2006). Proprietate intelectuală [Intellectual property], In *Engineering and innovation management* (Chapter 3). Editura Economică.
- Ciupan, C. (1999). Proprietate industrial [Industrial property]. In *Technical creativity* (p. 72). Editura Dacia.
- Crum, V. (1985). Valoare inginerească [*Value engineering*]. Editura Tehnica.
- Dalota, M., and Mocan M. (1995). Managementul business-ului productiv [*Productive business management*]. Sedona Publishing House.
- Gladcov, P. (2003). Proprietate industrial și inventică [*Intellectual-industrial property and invent*]. Politehnica Press.
- Iclănzan, T., and Popa, H. (1995). Inventică și valoare inginerească [*Invent and value engineering*] Timisoara Polytechnical University.
- Iclănzan, T., and Stan D. (2005). Valorificarea invențiilor brevetabile [*Valorisation of patentable invent*], Editura Politehnica.
- IPEDU project. (2023). <https://www.ipeduproject.eu>
- Lupu, A. (2006). Ghid de proprietate intelectuală pentru studenți [*Guide for industrial propriety for students*] Politehnica Press.
- Magna Charta Universitatum*. (1988). https://www.magna-charta.org/magna-charta-universitatum/mcu-1988/mc_english.pdf/@@download/file/mc_english.pdf
- Manolea, G. (2006). Bazele cercetării creative [*Basics of creative research*], Editura AGIR.
- Mocan, M. (2003). Manual de consultatii in business [*Consulting in business manual*], Editura Solness.
- Nagîț, G. (2001a). Inovatie tehnologica [*Technological innovation*], Editura Tehnica – Info.
- Nagîț, G. (2001b). Metode si tehnici de stimulare a creatiei [*Techniques and methods of creativity stimulation*]. Editura Tehnica – Info.
- Nagîț, G., and Slătineanu, L. (1998). Bazele tehnicii creative [*Basics of technical creation: Practical guide*]. U.T. “Gh.Asachi”.
- Nicolescu, O., and Verboncu, I. (1995). Management. Editura Economică.
- Rânea, C., and Badea, D. (2003). Bazele inovarii si transferului tehnologic [*Basics of innovation and technological transfer*]. Electra Publishing House.

Săvescu, D., and Budală A. (2008). Proprietate industrială în România; I alte țări din Uniunea Europeană [*Intellectual propriety in Romania and some countries from EU*]. LUX LIBRIS Publishing House.

Săvescu, D., and Budală A. (2010). Simulare proprietate intelectuală și conștientizare [*Intellectual property stimulation and awareness*]. LUX LIBRIS Publishing House.

Dr. Angela Repanovici

Transilvania University of Brasov, Department of Product Design,
Mechatronics and Environment
e-poșta: arepanovici@unitbv.ro

Manolis Koukourakis

University of Crete
e-poșta: manolis@uoc.gr

Ionela Maria Barsan

Transilvania University of Brasov, Faculty of Law
e-poșta: maria.barsan@unitbv.ro

Dr. Dan Savescu

Transilvania University of Brasov, Product Design and Environment Faculty
e-poșta: dsavescu@unitbv.ro