

# Teaching design in the Faculty of Architecture at Cracow University of Technology

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**ABSTRACT:** The goal of teaching the art and skill of design is to prepare students, the future architects, to independently make the right design decisions in terms of the shaping of architecture and the associated open space, in accordance with the needs of individuals and social groups. The architect, as a representative of a profession of public trust, should be aware that space is a common good. The modern living environment should be shaped in accordance with the modern philosophy of sustainable development. The tackling of real-world subjects in design modules and diploma projects, along with co-operation with local governments and the business sector supports the development of skills that are required by the current employment market. The teaching of the art and skill of design should facilitate the integration of knowledge, ethics and social competencies, while simultaneously developing the individual predispositions of students.

## INTRODUCTION

From among the many definitions of architecture, which attempt to describe its essence, it is the Vitruvian triad that appears to accurately characterise it:

*Architecture is the art and skill of shaping space for the needs of man. Its duty is utility, while beauty - is its inseparable element [1].*

Architecture involves composing shapes to provide meaning and sense to enclosed spaces, as well as shaping open spaces, defined through both designed and existing spatial forms. From this perspective, architecture includes both buildings and the space between buildings, deliberately and consciously shaped enclosed spaces, demarcated and divided by partitions, as well as open interiors, defined by the walls of buildings or trees and bushes, shaped so that they can properly fulfil their intended functions and create a harmoniously composed living environment. It should satisfy all users' needs - physical, physiological and psychological.

## TEACHING AT THE FACULTY OF ARCHITECTURE OF CRACOW UNIVERSITY OF TECHNOLOGY (FA-CUT)

How then, to educate students - future architects - to master the knowledge necessary to shape a living environment and master the art of creating new, previously non-existent spatial forms and their surroundings? It is, undoubtedly, necessary to develop the individual sensitivity and predispositions of every student, as well as their creativity in terms of shaping architectural spaces. This is the fundamental difference in the education of students of architecture when compared to educating students of other branches of technical studies.

If discussing the necessity to develop individual predispositions, then this means selecting, through the recruitment process, those candidates who already possess these predispositions. This is why the fundamental selection instrument in the recruitment process in the Faculty of Architecture at Cracow University of Technology (FA-CUT) traditionally has been a specialist architectural predispositions examination, one that has been modified and adapted to changing requirements in terms of the knowledge and skills required of future students.

## The Architecture Course and its Accreditation

Teaching architecture is based on a curriculum that is approved by the Council of the Faculty of Architecture as part of its autonomic statutory competencies, on the basis of programmatic minima defined in the official document of the *Ordinance of the Minister of Science and Higher Education - on the matter of education standards for architecture and veterinary medicine study courses* [2]. The curriculum has been expanded by 20% in relation to the programmatic

minima by adding content associated with the specifics of the so-called *Krakow School of Architecture*, the Faculty's international co-operation, as well as the individual competencies of the teaching staff. The educational effects that are obtained in this manner meet the requirements of the *National Qualifications Framework* defined in separate ordinances [3]. The Architecture course is conducted as two-tiered studies, in accordance with the Bologna Declaration of 1999. This is despite negative opinions concerning this form of organisation of architectural studies expressed by academic, professional and creative organisations interested in the education of architects in Poland.

Education at the Faculty of Architecture of Cracow University of Technology is highly regarded by prestigious international and domestic accreditation institutions. In November 2017, the Faculty received an accreditation for the years 2017-2022 for both first- and second-tier studies for the Architecture study course, awarded by the Royal Institute of British Architects (RIBA). This is another confirmation by RIBA of the Faculty's high quality education - the FA-CUT was given the first accreditation by RIBA in the year 2000. The Accreditation Commission for Technical Universities has the power to grant the EUR-ACE® (European Accredited Engineer) Label certificate. It granted the European Accreditation of Engineering Programmes EUR-ACE Bachelor certificate for first-tier studies and the European Accreditation of Engineering Programmes EUR-ACE Master certificate for second-tier studies [4] to the Architecture study course conducted by the Faculty of Architecture at Cracow University of Technology in November 2017.

At the grand Engineering Studies Ranking Gala of the 17th of April 2017, organised by the prestigious Perspektywy Education Foundation, the Faculty of Architecture of Cracow University of Technology honourably represented its mother University, having reached second place among the 13 universities that provide architectural education in Poland [5]. The first place in this ranking was the Faculty of Architecture at Warsaw University of Technology, while the third was the Faculty of Architecture of Wrocław University of Science and Technology.

#### Programme of Studies

The development of the individual predispositions of students in terms of creativity in shaping works of architecture and the spaces that surround them is undertaken right from the first semester of studies through design tasks, to gain knowledge concerning spatial and functional relations, as well as legal and economic ones, while solving issues of increasing complexity during successive design modules. Design classes, taught in small groups of 10 to 15 students, facilitate direct contact between students and their instructors, who can better identify the individuality and sensitivity of each student. The semester-long modules conducted in small groups cover:

- urban architecture;
- architectural conservation;
- urban design;
- spatial and regional planning;
- rural architecture;
- planning of rural areas;
- urban regeneration.

These constitute 30% of the overall curriculum of the first-tier studies and 40% of second-tier studies. Lectures on design theory and seminars directly associated with design modules and construction technology, constitute 13% of first-tier studies and 27% of second-tier studies in terms of teaching hours.

Teaching design is, without a doubt, the leading factor in shaping the imagination and minds of future architects. Technically, it is the most effective method of integrating general and specialist knowledge, and includes:

- history of architecture and urban planning;
- culture and the arts;
- contemporary architecture;
- design theory;
- construction technology (building construction, materials science, structural mechanics and physics);
- the economy;
- regulations and construction law;
- technical skills (drawing, painting and digital techniques);
- urban analysis;
- evaluating site-specific conditions;
- formulating design guidelines and interpreting these assumptions in individual design solutions.

#### Integrated Teaching

The knowledge and skills concerning building technology, construction law regulations and graphical design presentation techniques are essential, and are integrated with design classes conducted as a part of semester-long design

modules at each level of education. Agreements are reached between the organisational units of the Faculty, as well as the instructors and, where appropriate, consultants and specialists, for joint tasks of integrated modules, to ensure they have appropriately defined scopes and can use specialists, e.g. from fields such as construction technology, or graphical techniques.

The integration efforts at the FA-CUT described above have been implemented for a couple of years and are being successively expanded. The integration process is being implemented under the supervision of Prof. Dr hab. inż. arch. Grażyna Schneider-Skalska - the Vice-Dean of the FA-CUT in charge of Education and the Accreditation of Studies, as well as by Dr hab. inż. arch. Magdalena Jagiełło-Kowalczyk, a Professor at Cracow University of Technology, and Head of the Faculty Commission on Education Quality.

The education process using integrated modules has yielded very good results and is highly regarded by both students and graduates of the Faculty, as well as the institutions granting accreditation to the Faculty. This is being implemented for second-tier studies taught in English to a smaller group of students (Master's Degree Studies in Architecture in English). The Plenipotentiary of the Dean of the FA-CUT in charge of International Didactic Co-operation and English-language Studies, as well as the author of the English-language studies modular curriculum is Dr hab. inż. arch. Anna Franta, Professor at CUT. Integrated modules will be introduced for a similar group of students for first-tier studies (Bachelor's Degree Studies in Architecture in English), which the Faculty intends to start offering in the coming academic year.

#### Design, the Employment Market and Co-operation with External Entities

Design modules should prepare students for taking up employment in the architectural and urban design profession, be it in design practices or institutions, organisations or companies employing architects. Thus, tying the process of teaching with the realities of the employment market is essential. The opening of the FA-CUT to co-operation with the broader economic environment, local government authorities, state-owned companies and the private business sector from the area of the Lesser Poland voivodship (area or province), has been formalised by the signing of a series of letters of intent and co-operative agreements. This has created good conditions for solving actual spatial and functional problems as a part of module and diploma projects. The Plenipotentiary of the Dean of the FA-CUT in charge of Co-operation with Local Government Authorities and the Economic Environment, who formally supervises this co-operation is Dr hab. inż. arch. Krystyna Paprzyca, a Professor at Cracow University of Technology.

Students of the FA-CUT, as a part of their semester-long design modules and diploma projects at both tiers of study, prepare around 6,000 projects from the field of architecture, urban design and spatial or regional planning during each year of study. This provides an exceptional opportunity to introduce multi-layered studies and use varied designs, which reflect individual predispositions of each student that develop over the course of the studies.

Design work is preceded by in-depth analyses of site-specific conditions and a site's relations with its surroundings. Co-operation with local government and public and private stakeholders ensures that the process is associated with local needs and the realities of the employment market. Module and diploma projects are exhibited during cyclical exhibitions and a selection of the best projects is further developed as putative designs, which allow local communities and developers to identify potential spatial developments and attractive, innovative architectural solutions. As a part of these activities, the students also hone and develop skills regarding scientific work.

The process of the integration of teaching with the needs of the employment market is also aided by the co-operation between the Faculty of Architecture of Cracow University of Technology with the statutory architectural professional organisation - the Lesser Poland Regional Chamber of Architects, the Krakow Branch of the Association of Polish Architects and the Lesser Poland Chamber of Commerce.

The unique role of design in the shaping of individual sensitivity, the development of creativity and professional architectural skills, is highlighted by the accreditation standards of the Royal Institute of British Architects, as mentioned above. These standards are reflected in the education process at the Faculty of Architecture of Cracow University of Technology, from 1999 to the present day. Practising architects are also invited over the course of the term projects for discussions or as a part of project grading. Defences of Engineer's and Master's projects mandatorily feature the participation of external examiners. These are practising architects from Lesser Poland's design practices, chosen by the Council of the Lesser Poland Regional Chamber of Architects. A local observer from the RIBA also participates in diploma commissions.

Currently, passing grades from design modules have to be obtained by students towards the end of a semester, but before the examination session. This method of organising the passing of design modules although compliant with the study regulations of Cracow University of Technology made it difficult to carry out the project defence procedures described above, lowering their perceived importance at the same time. In the past academic year, the Council of the Faculty of Architecture accepted the Dean's motion to change the manner of passing design modules. The final defences of design module projects have been assigned the status of examinations. This has increased significantly

the prestige and rank of final defences, which will be carried out as examinations during the winter and summer examination session.

Engineer's and Master's design modules are supervised by independent researchers with the academic title of Professor or an academic degree of Doctor Habilitated (DSc equivalent), obtained in the discipline architecture and urban planning. Often there is the participation of an auxiliary supervisor, a role that can be played by a younger researcher, an adjunct or an assistant with the academic title of Doctor (PhD equivalent). In this manner, younger researchers gain the necessary didactic experience concerning the teaching of diploma design modules necessary for further advancement within the University. Upon request by the head of an organisational unit of the Faculty, the Dean can grant independent Engineer's and Master's diploma design supervision to a researcher with the academic degree of Doctor - provided the researcher possesses the requisite didactic practical experience and a professional licence to fulfil an independent technical function in construction in architecture: a licence granted by the Chamber of Architects of the Republic of Poland.

The first-tier studies diploma project is a verification of the knowledge, technical skills and creativity of an Engineer candidate, with particular emphasis placed on technical design solutions. The scope of the diploma project is limited compared to the Master's project and can be either a new topic or a continuation of a preceding project, highlighting new developments including solutions specific to a technical design.

The Master's diploma design module - during second-tier studies - is a module that finalises studies, during which a Master's candidate should display the skill to independently make design decisions using the knowledge gained during their studies, knowledge that is necessary to take up professional employment and for further self-education. The supervisor is a guide to making the appropriate choices through discussion, stimulating questioning and the joint discovery of paths forward. Module term projects are prepared as group projects concerning urban studies and analyses or site development conceptual designs. This is good teamwork training for students. The more detailed part of the project - concerning the architectural solutions or urban design details - is prepared in the form of individual projects by each student from a group.

Diploma projects usually are individual or two-person group assignments. There are also diploma projects that are supervised jointly by two or more faculties, where candidates from more than one faculty develop a joint project, e.g. candidates from the Faculty of Architecture co-operate with candidates from the Faculty of Civil Engineering or the Faculty of Environmental Engineering with the participation of supervisors from these faculties. This form of integration could be used more widely during the supervision of diploma projects to the benefit of all of the participants.

## CONCLUSIONS

The goal of teaching the art and skill of design is to prepare students, future architects, for making independent design decisions concerning the shaping of architecture and the associated open spaces to satisfy the needs of individuals and social groups. When participating in the development process, an architect should be aware that space is a common good, which is why there is the need to shape the environment for human life in accordance with the contemporary philosophy of sustainable development, while ensuring compliance with contemporary aesthetic, utilitarian and technical requirements.

Architecture, as it was highlighted earlier, is an applied art, which has the inseparable attribute of beauty, while utility is fundamental. Architecture is always built in a specific spatial, social and cultural context. Humans are social. The creative continuation of tradition and striving to maintain appropriate relations between existing and designed structures and the spaces they create during the transformation of existing urban tissue or the design of new areas of a city, is the foundation for the harmonious development of urban spaces.

Teaching design as an integrated scientific discipline seems rational and effective. Architecture and urbanism are connected with issues of aesthetics, engineering, urban planning, culture and history. Architecture is also concerned with ergonomics, economics and social needs. This is a rational way to achieve goals.

## REFERENCES

1. Gyurkovich, J., *Architektura w Przestrzeni Miasta. Wybrane Problemy*. Wydawnictwo Politechniki Krakowskiej, Kraków, 12 (2010) (in Polish).
2. Dziennik Ustaw, 2011, nr 207, poz. 1233 (in Polish).
3. Krajowe Ramy Kwalifikacji dla Polskiego Szkolnictwa Wyższego - National Qualification Framework for Polish Higher Educations, 18 April 2018, <http://www.nauka.gov.pl/krajowe-ramy-kwalifikacji/> (in Polish).
4. Komisja Akredytacyjna Uczelni Technicznych, 18 April 2018, <http://www.kaut.agh.edu.pl> (in Polish).
5. Rankingu Studiów Inżynierskich Perspektywy 2018 i Międzynarodowe Forum Liderów Kształcenia Inżynierskiego, 18 April 2018, [http://www.perspektywy.pl/portal/index.php?option=com\\_content&view=article&id=3937:ranking-perspektyw-najlepsze-studia-inzynierskie-2018&catid=24&Itemid=119](http://www.perspektywy.pl/portal/index.php?option=com_content&view=article&id=3937:ranking-perspektyw-najlepsze-studia-inzynierskie-2018&catid=24&Itemid=119) (in Polish).