Modules of Professional Competence
in Spatial Planning and Design
Формирование новых образовательных программ

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The well known words such as "built environment ", "spatial planning" and even "sustainable development " have different essence in Russian language. Spatial structure of built environment may be considered as the most durable part of modern culture, a mirror of our times and subject of research for modern anthropologists.

Due to the call of globalization and strive for educational mobility, modern education system is in an urgent need of comparativ e standards and curriculums. At the same time it is important to nourish the traditions and identity of educational senters and open the way for new ideas. It is important to define the basic, core competencies of various professions involved in the creation of form and structure of built environment. Graduated specialists in Urban Planning, Architecture and Environmental Design produce different products that should work together for the benefit of human space: Spatial Plans, Architectural Space, Spatial Design. Space is a common word, and it is taken for granter that space has different scales**.**

Scale Levels in Spatial Design

Scale levels are a natural base of professional language in which we describe the environment and produce design papers

The difference in "SCALE" alters not only the process of construction and use but also assessment for environment and responsibility for the client on charge of change.

Scale levels of built environment are associated with self-similarity and nestedness of scales within living matter[1]. Scales are the essential characteristic of man-made environment and using a scale approach we can define the whole range of design objects and introduce the system or professional competences that are required from design professionals.

 "A scale of levels is the manifestation of a hierarchical principle of ordering, aimed at efficient control, policy-making and management of organizations" (3). Greece architect Doxiadis K.L (1942) believed that we must organize our system of life from Anthropos (individual) to Ecumenopolis (global city) in hierarchical levels. So he articulated a general hierarchical scale with fifteen levels of Ekistic Units. Names of Units comes from Population Scale (final version, from C.A.Doxiadis' last book, ACTION for Human Settlements, p. 186, Athens Center of Ekistics, 1976). However, the classification turned out to be rather cumbersome, and the objects in one level were not comparable.

We presume that more important for the scales of Built Environment is not the number of persons but the opportunity of their interaction: handling, watching, moving, talking, walking, driving, riding and so on. This activities set the standards and principles for MORPHOTYPES OF BUILT ENVIRONMENT. Traditionally, the different levels of human space (built environ-

ment) are formed in accordance with the physical abilities of man: the level of things-(hand), the level of the room (human body), the level of the building (space of social groups), cluster (a group of dwellings and other buildings gathered in the planning units), district (areal of pedestrian connectivity for all inhabitants), city (the system of specialized districts, typically incorporating all places for lifelong activities of citizens.). Further on, some planners allocate "region level" - (urban area, united by daily migrations of residents.) At the city and regional level significance of anthropomorphic parameters of space decreases giving floor to social(time), ecological(health), economic(money) and administrative considerations.

We can notice that the "scale" –is one of the main characteristic of the designed object, which allows you to focus on the most important of its characteristics: problems, design objectives and key issues of quality.

According to the current practice of design we indicate six scale levels of built environment: M-1 - level of small forms, furniture, architectural details and equipment, M-2 - the level of room and interior space; M-3 - level of buildings and constructions; F-4- level of urban clusters; M-5 - level of district or pedestrian town, M-6 – level of urban regions, or "Agglomeration" of cities united by daily migrations.

Sequence of levels is open on both sides, and the difference in scale is approximately 1:10 from one level to the other. (Scheme 1.) May be, with time, we would need higher levels of physical planning (M-7), including international and transcontinental networks of urbanized corridors, but until now this type of works are rare and do not need specially educated professionals in spatial planning. At the other side of a scale line (M-0) lie the objects smaller than the pencil –The "level of human palm" deals not with the Built environment but rather with things.

FURNITURE & DETAIS	INTERIOR DESIGN	BUILDING DESIGN	URBAN DESIGN	TOWN PLANNING	REGIONAL PLANNING
M-1	M-2	M-3	M-4	M-5	M-6

Scheme 2. One of the important rules of design activity is that, the spatial solutions should be considered in relation with higher and lower context level of the environment. It is important to define the role and place of design objects in the hierarchy of spatial and temporal scales of built environment.

Products and Services of Project-based Organizations

Combination of different professional technologies is most effectively achieved in so called project-based organizations (PBO). By integrating strategic planning, design development, and property management - project oriented company produce environments that enhance the productivity and spirits of those who occupy them, win respect and appreciation from the community and return solid investment performance. Project-based organizations are also optimal organizational structures to integrate knowledge both within and outside the company, and to generate business models for new products and services.

For design professionals the range of "goods" delivered to the "client" include three types of products: PROJECT IDEA, PROJECT DOCUMENTATION AND PROJECT MANAGEMENT. This three broad areas were first described as «technologies» of engineering and architecture firms[i].

"Project idea" - conceptual proposal usually based on strategic vision. It is usually based on preliminary research, knowledge of history, current trends, urban context and theoretical manifestos. The invention and selection of conceptual proposals, cutting off poor decisions, aimed at forming *the ideal model of the object.* This model should be described in the language, suitable both for public presentation and for professional "design assignment".

"Project documentation" – is a physical model based on "design assignment". Physical model require professional scales and acknowledgement with the full range of related issues of design, rules and standards. Corporate Standards and Government Standards, Building codes and Zoning codes ensure the quality and timing of project. The result of this stage is an approved - "document" (with visas for all participants, performers and experts). "Document" determines the expected Value and required Recourses of the Physical model.

«**Project management**" is a service for the client that includes planning and supervising of practical realization of the "Project Plan". "Project Plan" blends an understanding of strategy and context, as well as the ability to solve tactical and practical tasks of the project. The art of management is aimed to avoiding the risks: technical, temporal, economic and legal. «Project management" include financial consulting, organization and quality management, sale management or maintenance based on deep professional awareness of the project context.

Using the technology approach we can, derive the fare method of payments for the different parts of the contract:

Leading technology	fee estimation t
"Project idea"	"royalties or honoraria [ii]"
"Project documentation"	"accord payment or payment by the scope of work" for design development and construction documentation
«**Project management**"	"time base fee with interest"- for on the amount of time and effectiveness of service

Key "technology" determines also the organizational structure of design firms and the requirements for specialists[iii].

Professional Competence

The **competence of graduates**, as the performance criteria of education have arisen as "applied knowledge" trend against "academic knowledge" or and practical skills against learning skills. With the use of Competencies we can estimate readiness for practical activities of graduates –The   success of professional practice is associated with the ability to "generate " the concept, to "produce" the project and to "provide" the services,
In general this requires competence of three types:
   A - competence in formation of strategic objectives and creative ideas,
   B - competence in the development and production of complex project documentation,
   C - competence in innovative management and implementation (delivery) skills.

Three types of TECHNOLOGY aligned through SCALE LEVELS represent general scope of professional competence in spatial planning and design.

	A/ IDES AND PROGRAMS	B/ DESIGN AND PROJECTS	C/ DELIVERY AND MANAGEMENT
M-1	Fine arts and styles	Modeling	Interior decoration
M-2	Composition in Visual design	Interior design	Operation & maintenance
M-3	Pattern language of Architecture	Architectural design	Project management
M-4	Environment and planning	Urban design	Urban Development
M-5	Land Use Policy	Town planning	Monitoring & Management
M-6	Spatial Planning	Spatial planning	Legislation & GIS services

M-6
M-6-A : Strategy of spatial planning
M-6-B : Spatial planning schemes
M-6-C : Urban planning Legislation

M-5
M-5-A: Urban Policy
M-5-B : Town planning and zoning
M-5-C: Urban Management

M-4
M-4-A: Environment and planning
M-4-B : Urban design
M-4-C: Urban Development

M-3
M-3-A: Pattern language of architecture
M-3-B : Architectural design
M-3-C: Project management

M-2
M-2-A: Composition in visual design
M-2-B : Interior design
M-2-C: Operation and maintenance

M-1
M-1-A: Fine arts and styling
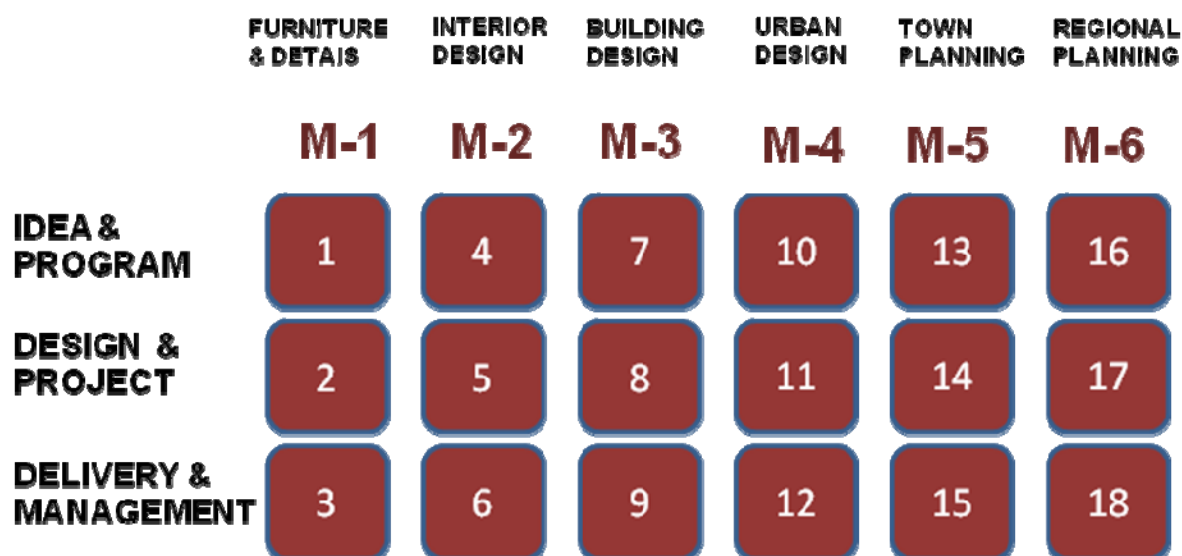M-1-B : Modeling and design
M-1-C: Interior decoration

Scheme 3 General issues of core curriculum of spatial planners and design professionals. M-1 to M-6 - scale levels of built environment. A, B, C - types of Professional Technologies producing *the concept, the project, the services.*

Core Curriculum Modules

The Bologna Process, aimed at the unification of education, involves definition of the Core Curriculum Modules - that can be compatible and equally structured. Classification of the Core Curriculum can help to solve several methodological issues in education, determine the objectives and content of Professional training.[iv]
Core Curriculum Modules of Professional Competences are presented in the form of matrix, where the columns are the "levels scale" of spatial design and the lines are the "products and services" produced by design professionals. (Scheme 3)
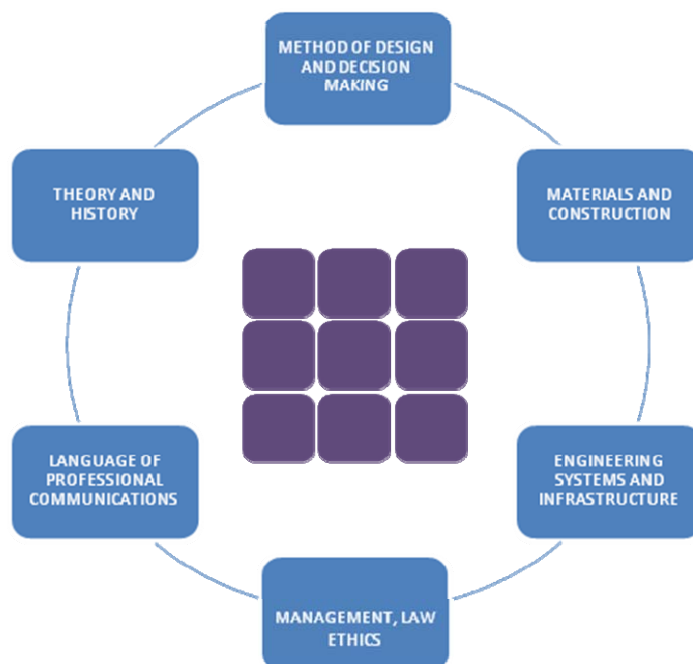
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	FURNITURE & DETAIS	INTERIOR DESIGN	BUILDING DESIGN	URBAN DESIGN	TOWN PLANNING	REGIONAL PLANNING
	M-1	M-2	M-3	M-4	M-5	M-6
IDEA & PROGRAM	1	4	7	10	13	16
DESIGN & PROJECT	2	5	8	11	14	17
DELIVERY & MANAGEMENT	3	6	9	12	15	18

Scheme 4 Core curriculum modules: The columns are the "levels scale" of design, the lines are the "products and services" produced by design professionals. Cells are Modules of professional competence This matrix represents modern "paradigm^v" of spatial planning and design – and can be used as a framework or system of knowledge.

The Core and Shell Part of the Curriculum

The matrix of Core Competences possessions basic knowledge and skills required from a specialist. However, in addition to the basic and essential core competencies modern practice requires knowledge of professional context and specialized skill of "Professional Profile". "Professional Profile" gives the attidude, associated with the special practical context which is learned through additional educational modules.

Professional Profile of Architect	Professional Profile of Urban Planner	Professional Profile of Designer
" Method of design and decision making",	"Analytical skills and Public relations	Skills and Method of Applied art
" Materials and Construction,"	"Landscape and Built environment"	Materials, texture and colors
"Engineering systems"	"Engineering and transport infrastructure",	
"History and Theory af architecture",	History and Theory of the City	"History and Theory of Styles",
Language of professional communications",	Language of professional communications	Language of professional communications
Law, Ethics & Management skills of the architect"	Law, Ethics & Management skills of urban planner"	Law, Ethics & Management skills in design delivery."

CORE CURRICULUM form the center of competence structure of the PROFESSIONAL PROFILE and SHELL CURRICULUM provide the context of professional practice (the bachelor level) This special blend of CORE and SHELL competences characterize the profile of particular High School. **Scheme 5.**

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Scheme 5. SHELL CURRICULUM- In the center are the core competences from the Core Competences Matrix,. ADDITIONAL EDUCATIONAL MODULES OF PROFESSIONAL COMPETENCE. are arranged around the core elements.

The Internal Structure of Training Modules

Each training module consists of three or four levels of development: BASICS, PROFES-SIONAL SKILLS and ADVANCED SOLUTIONS.

BASICS: - introductory sections. "Basics" include the study of professional culture, terminology, history and theory, as well as exercises and practice in essential skills. these academic course gives students 1-2 credits The result is General awareness -Knowing where to go for further advice and information. Maintaining and enhancing this awareness could be achieved through reading or by distant learning methods. Often this material is openly published on the websites of the institution. This knowledge level could be maintained and enhanced by attendance at courses or conferences (whether face to face, online or distance) plus experience.
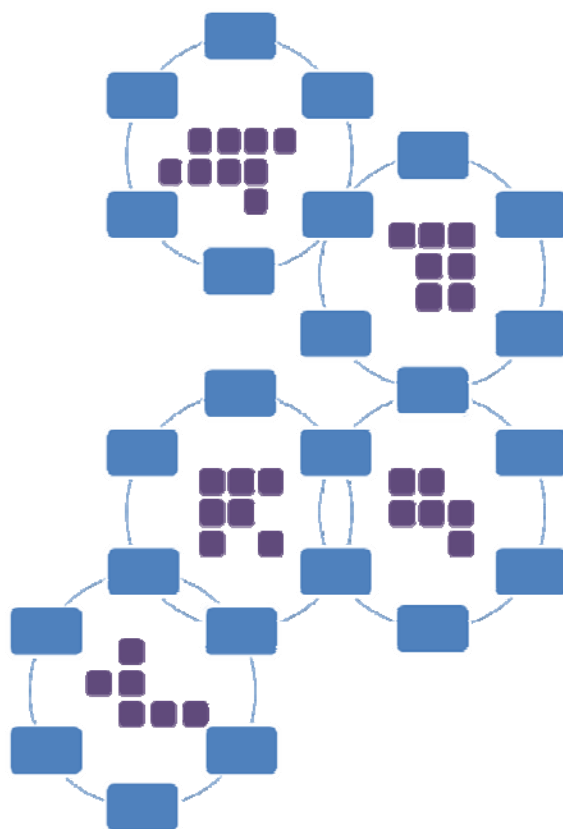
SKILLS - the ability to perform professional tasks within the job assignments. Syllabus, usually include exercises for the development of professional knowledge and skills, learning of guidelines, recommendations, rules for solving practical problems. Exercise and theory on average gives student 2-4 credits. Practical applied knowledge of the subject area achieved through learning and training.

. ADVANCED SOLUTIONS – the possession of an in-depth understanding of the contradictory aspects of theory and practice, the ability to develop its own program of work and to justify the innovative techniques for solving non- standard assignment. Independent study projects and exercises to improve professional skills, experience and advises others of the implications .This level of **Advanced knowledge** within the general practice - is intended primarily for training of Masters and Professional Development of working specialists.

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Number of Professional aspects in Spatial Planning and Design is unlimited.   Over time, the number of professional attitudes will expanding due to the identification of new important features of built environment. For example, the growing importance of city networking, or environmental protection, or energy saving systems, or virtual imitation of reality - would bring the demand for experts in the field of Trance-regional planning, Constructive ecology, Virtual architecture, etc.   These new fields of study would take part of basic core modules and "look" at it through new context. Some parts of **SHELL CURRICULUM** can be shared with other schools:

- "Methods",
- "Materials,"
- "Systems",
- "Context",
- "Language",
- "Management"

This structural schemes and modules diagrams were inspired by the process of developing the new Federal Standards of education and curriculum for architectural, town-planning and design schools in Russia. Until 2007 urban planners came generally from architectural background, City Planners were one of the graduated architects profiles. Nowadays, with the New Urban Development Codex of RF   (2004) and the efforts of the Bologna Process – the Association of School of Architectural Profiles of Russia[vi] are targeted to ensure more comparable, compatible and coherent systems of higher education with European Higher Education Area.

In the age of experimentation and scientific deduction in which we now find ourselves it is

important to preserve the integrity of the system of knowledge in Spatial Planning and Design of Built Environment.

Scheme 6
Interposition of High Schools taking different set of modules from core curriculum matrix and sharing some additional modules.

Endnote

[i] **Success Strategies for Design Professionals**: Super Positioning for Architecture and Engineering Firms / Edition 1byWeld Coxe, David H. Maister, Nina F. Hartung, Hugh Hochberg, Brian J. Lewis, Krieger Publishing Company 1987.

[ii] **Royalties** - include compensation paid to the owner for the use of property, usually copyrighted material (e.g., books, music, or art). An **honorarium** is an honorary or free gift, reward, or donation usually provided gratuitously for services rendered (e.g., guest speaker), for which no compensation can be collected by law.

[iii] **Design approach in management toward to business excellence**. M. Bobrek a, V. Majstorovic b, M. Sokovic , Journal of Achievements in Materials and Manufacturing Engineering.   VOLUME   16,   ISSUE   1-2,   May-June   2006 http://www.journalamme.org/papers_cams05/1104.pdf

[iv] **АРХИТЕКТУРНЫЙ ПРОЕКТ КАК ОРГАНИЗАЦИОННОЕ МЕРОПРИЯТИЕ. Алексей Крашенинников.   АВ   5   (74)   2003.   Режим   доступа   : http://archvestnik.ru/ru/magazine/868**

[v] "a philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated; *broadly: a philosophical or theoretical framework of any kind.*"[5] Masterman, Margaret, "The Nature of a Paradigm," pp. 59–89 in Imre Lakatos and Alan Musgrave. *Criticism and the Growth of Knowledge.* Cambridge: Cambridge Univ. Press, 1970. ISBN 0-521-09623-5

[vi] Association of School of Architectural Profiles of Russia unites more than 40 schools in Universities, Institutes and Academies. http://umo.architecture.edu.ru

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