# Developmental Guidelines for the Master's Degree Program in Smart Urban and Community Planning

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## Abstract

This research was aimed at: 1) studying the market demand of employers for graduates and the demand for continuing studies at the master's degree level in the Smart Urban and Community Planning Program; 2) studying the factors influencing the students' decision to continue their study in the Smart Urban and Community Planning Program; 3) obtaining guidelines for developing the Smart Urban and Community Planning Program of the Faculty of Architecture, Urban Design, and Creative Arts, Mahasarakham University. The study was conducted by surveying the target group, comprising agencies and potential applicants for a graduate degree program, and by interviewing qualified individuals and the private sector. The agencies were found to see the importance of knowledge in urban planning and design, analysis based on the principles of economics, urbanism, community participation, and the use of modern technologies. Applicants were found to prefer a program that provided practices in real areas, integrated various fields, and trained learners according to their needs so that they possessed knowledge. and expertise in urban planning for applying in their profession, and emphasizes collaboration with other universities, both in the country and abroad.

**Keywords: Curriculum Development, Employers of Graduates, Master's Degree, Smart Communities, Community Planning**

## 1. Introduction

External situations in socio-economic and cultural development, the changes occurring from natural disasters and contagious diseases, the stepping into an aging society, and the world's environmental and technological contexts have brought about the necessity for revision and change of the former program in urban and environmental planning of the Faculty of Architecture, Urban Design and Creative Arts, Mahasarakham University to a master's degree program in smart urban and community planning, to attain higher potentialities and to be in time with the various changes that are occurring

(Faculty of Architecture, Urban Design and Creative Arts, 2020), and to be in parallel with the National Higher Education Plan (Announcement of the Ministry of Education on Curriculum Standards for Graduate Level B.E. 2558, 2015). Thus, the 2017-2021 strategic plans of the Faculty of Architecture, Urban Design and Creative Arts, Mahasarakham University, have been revised to be in accordance with the 12th Mahasarakham University Education Plans (2017-2121), in which the vision has been changed to incorporate more challenging vision of "Academic excellence and integration of local knowledge towards internationality". This responds directly to the graduate quality development strategy by modern instruction that meets the national and international qualities and standards (Faculty of Architecture, Urban Design and Creative Arts, 2017).

A recent and important problem from the decrease of budget allocation that supported officers in local administrative organizations to continue their education at a higher level has considerably reduced the target students of the program at roughly 80%. It thus becomes necessary to set an additional target group, from the undergraduate students who are completing their degrees in different institutions as well as officers in both governmental and private sectors who are interested in the program and students from the international and national institutions that have signed an agreement with the University. It is therefore necessary to conduct a study in order to obtain the developmental guidelines of the program that correlates to the implementation in receiving a new target group of students and to know the potential future work places of the students.

The study was aimed at learning the graduate users' needs for the qualities of the graduates, from various organizations, and at knowing the demand for continuing the studies in this program. The results would be used in the planning and management of development in instruction and program of Smart Urban and Community Planning for the interested people.

## 2. Research Objectives

2.1 Study the market demand of employers of graduates and the demand of people wishing to continue their studies at a master's degree level.

2.2 Study the factors influencing the decision to continue studying in the Smart Urban and Community Planning program.

2.3 Obtain guidelines for developing the Smart Urban and Community Planning program of the Faculty of Architecture, Urban Design and Creative Arts, Mahasarakham University.

## 3. Research Methodology

3.1 Scope of the Research

3.1.1 Scope of the content – This research was a study of primary data conducted on market demands of employers of graduates and the demand of students for continuing their studies, and a study of secondary data from relevant national and international documents and from meetings with experts who were certifying the program.

3.1.2 Scope of the population and the sample groups – The first sample group was selected by the Quota Sampling Method, from the group of employers of the graduates in urban architecture and related fields, totaling 50 agencies and organizations. The other group comprised people who were interested to study in the program, who were working in governmental and private organizations in the country and those who were going to receive a bachelor's degree in relevant fields as stipulated in the Mahasarakham University Regulations on Graduate Study of 2014 (Mahasarakham University, 2014). The number of informants from the target group was 100, including the experts certifying the program.

3.2 Methodology

The research tool was the questionnaire, with the Likert Rating Scales for scoring. The details and the research methodology are as follows:

3.2.1 Compiling information related to organizations and contents of courses to be offered in the new program, from the Program Committee, documentary studies, and recommendations from the experts.

3.2.2 Surveying the needs in terms of graduates' qualifications of the employers of graduates in different organizations through construction of questionnaire that was to be administered online and by telephone.

3.2.3 Surveying the demand to continue studying in the program among officers in different organizations through construction of questionnaire that was to be administered online and by telephone.

3.2.4 Analyzing the information obtained from the questionnaire according to the scores obtained from Likert Rating Scales, by calculating the means ($\overline{X}$) for conclusion and making recommendations and guidelines for developing the instruction and the revision of the program for the Faculty.

## 4. Research Results

4.1 Contents of Courses

The content related to urban planning of agencies and organizations would be incorporated in the program. From the small group meetings with the experts in urbanism and related sciences, documentary studies, and studies through the employers of graduates in relevant organizations led to the following particulars:

4.1.1 Concepts and Theories Related to Urbanity

(1) The theory in urban planning architecture used by most agencies and organizations is the Urban Design Theory (Mean = 4.9), which is also widely applied in the science of urban planning architecture. Cities in Thailand are often found being expanded at the suburban areas, and increasing population is settling down there. Thus, there are needs for a variety of theoretical knowledge, the important ones being Multiple Nuclei Model and Townscape (Means = 4.75, equally) for developing the urban areas which are part of the nature. Meanwhile, urban expansion also witnesses obvious zoning and the circumferential expansion of business centers. Thus, the Concentric Zone Theory is also applied in

managing the expanded areas, along with the Garden Cities Theory, which is normally used for managing or designing cities that accounts for healthiness and good living as well as the different standards and regulations. At the same time, the Theory of The Image of the City and the Design of Urban Space Theory (means = 4.5, equally) take their roles in managing, designing, and solving the problems in urban areas to create good perception and higher usage efficiency. Additionally, the following theories are applied in solving urban problems: City Planning According to Artistic Principle, Finding Lost Space, Jane Jacobs' The Death and Life of Great American Cities, The Social Life of Small Urban Spaces, Life Between Buildings, Kevin A. Lynch's A Theory of Good City Form, Public Places Urban Spaces, and Making People-Friendly Towns (Means = 4.0 equally). Other theories involved are: Sector Theory, Collage City, Space Syntax, Urban Space, The City Shaped, and Responsive Environments, which are occasionally used (Means = 3.8 equally) for solving specific problems in a particular area, as shown in Figure 1.

(2) The concept of urban development – Most agencies and organizations usually rely on the concepts of sustainable development and sufficient economy for their understanding and solving of urban problems (Means = 4.8), where use of resources is often mentioned with a city or with the balancing of economic, socio-cultural and environmental development of a city. The Basic Human Needs concept, however, is used to explain urban creation to respond to Maslow's hierarchy of needs and the concept of Creative Economy (Means = 4.1 for both). The two concepts have acquired their roles in explaining creative economic development on the basis of bodies of knowledge, intellectual properties, and research studies that link to cultural and historical foundation (Royal Decree on Establishment of the Office of Creative Economy Promotion (Public Organization) B.E. 2561).

(3) Urban Design Concepts – Presently in Thailand, there are many concepts dealing with urban design, depending on the usage in solving urban problems. The mostly practiced concepts are the Livable City Concept (Mean = 4.9) and the Green City Concept (Mean = 4.45), which are applied in designing a friendly city, a creative city, a walkable city, and an eco-city (Means = 4.2 equally). The concept of Creative City has been used in a UNESCO Project in parallel with the natural and historical world heritage, and this has led to a network of different categories of creative cities. Thus, urban planning necessitates the importance to be placed on more profound bodies of knowledge and sciences Designated Areas for Sustainable Tourism Administration (Public Organization), n.d.). In addition, there are the concepts of Smart City, Resilient City, and Healthy City (Means = 4.0 for all), and the concept of Compact City (Mean = 3.9), which are increasingly applied in the future, especially the Resilient City, which are used by the urban planning field to explain the capacities of individuals, communities, organizations, businesses or urban systems to survive, improve, and grow, notwithstanding whether they are confronted with chronic or immediate problems (Research and Innovation Center for Sustainability Center, 2020).

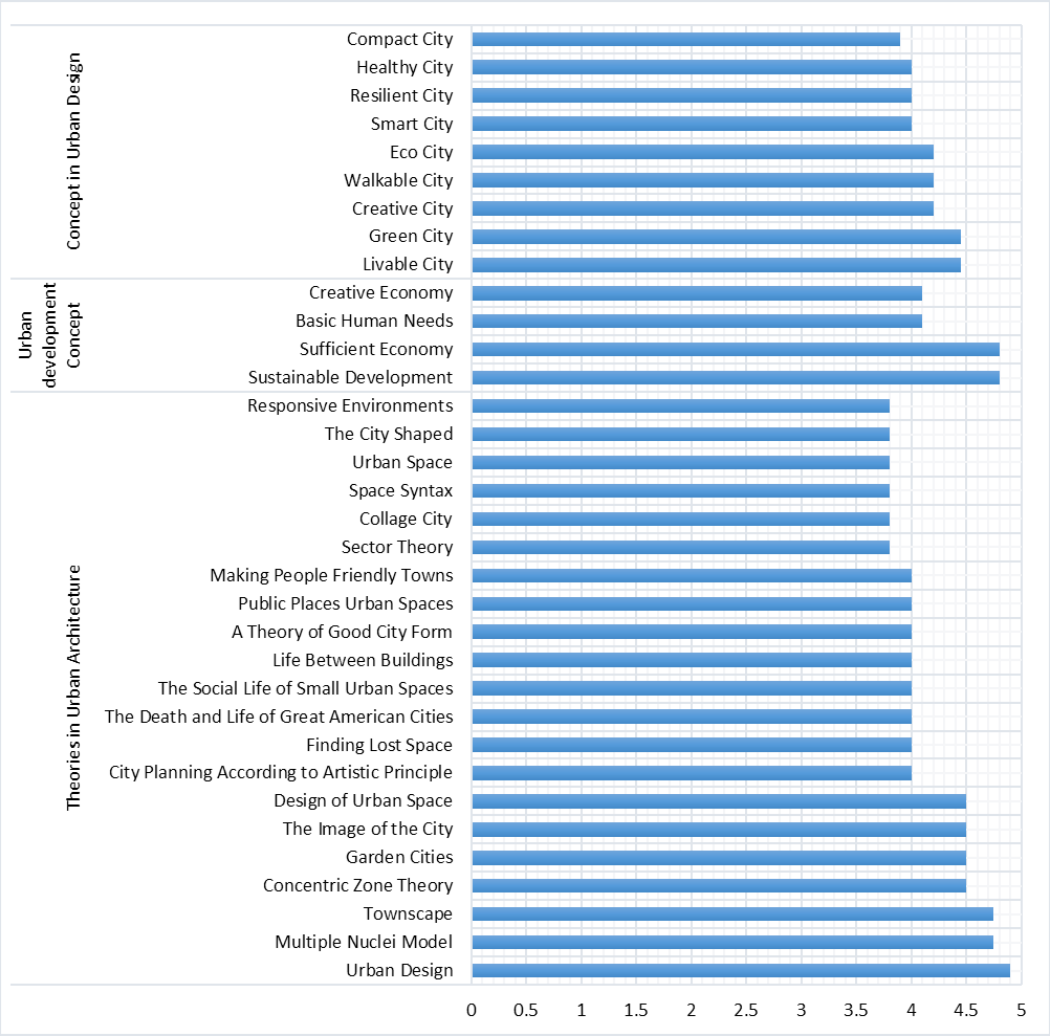


**Figure 1** Urban-related concepts and theories applied by agencies or organizations

4.1.2 Principles or Standards in Urban Planning and Policies Related to Urban Development

(1) The principles or standards in urban planning work applied by agencies or organizations are mostly meant for the purpose of universal design (Mean = 4.8). With Thailand entering an aging society, there is the necessity for the design that encompasses all walks of lives, including the elderly, normal people, the disabled, so that there is the impartiality in the access to all service venues in a city. In addition, the principles of smart growth and leadership in efficient energy design at a district level (LEED ND) (Means = 4.2 equally) are also mentioned for appropriate development of urban plans, especially in terms of energy efficiency in traveling and various activities in a city. The principle of Transit Oriented Development (TOD) (Mean = 3.8) has been applied in some cities where planning is required around mass transportation for higher efficiency.

(2) The policies related to urban development – Since most of the organizations that are going to recruit the graduates are governmental, the national strategies and socio-economic development plans are prioritized (Mean = 4.7). Efficient urban planning will propel national strategies, which in turn are

the integrating tools for spatial management. The policy second in importance is the ASEAN Economic Corridors (AEC) policy (Mean = 4.5). This enables connection to other economic corridors in the sub-region, including links from the economic corridor to the port, goods distributing points, and terminal markets (Thai Parliament, 2015). Therefore, it is necessary to stipulate a means to develop cities and accommodating urban plans. Additionally, the millennium development goals and the Green Economy and Trade policy by UN (Means = 4.1 for both) have been applied in urban planning that takes into account fight against poverty, starvation, illiteracy, different diseases, gender inequality, deterioration of natural resources and the environment. Economic development has been carried out that is aiming at human well-being and social equality while impacts on the environment and the ecological resources are mitigated. Moreover, there are talks about the world health (WHO-World Health Report) (Mean = 3.9) to be integrated with urban plans in terms of green area addition and urban pollution reduction, as shown in Figure 2.

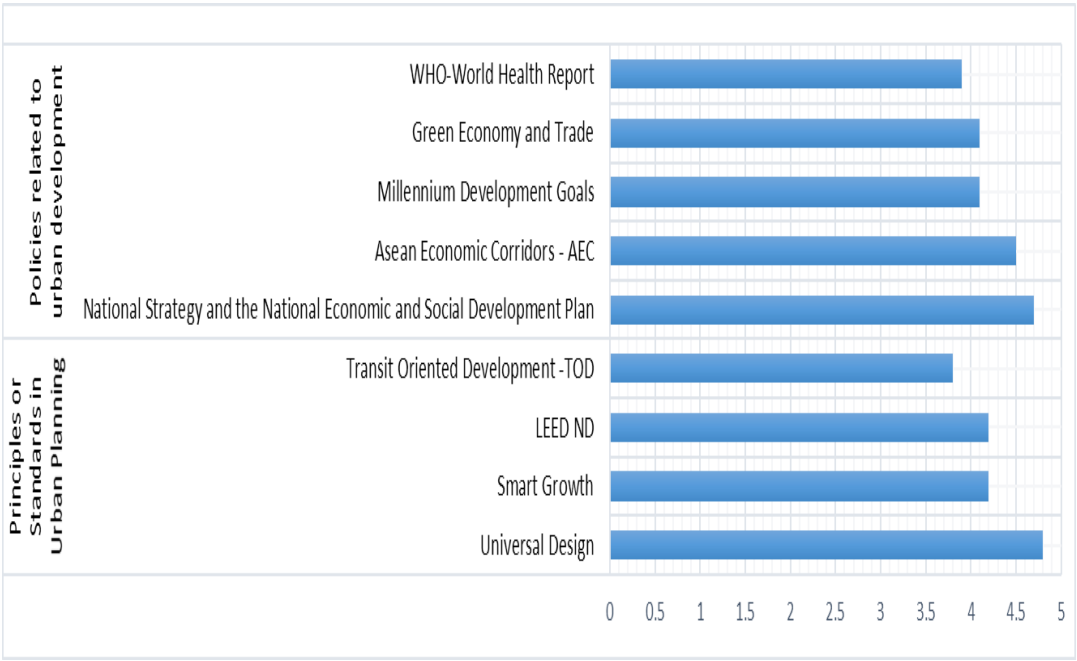


**Figure 2** Principles or standards in urban planning and policies related to urban development carried out by agencies or organizations

4.1.3 Urban Future Scenario Study – The market of employers of graduates begins to increasingly see the future education and urbanism. The market places the importance on the issues related to forms, concepts, and theories in Urban Future Scenario, Futurology, and creation of imagination and skills in creating future scenario (Mean = 4.86), followed by urban planning that aims at a comprehensive community, specific community and other development plans that are appropriate to the locality. Importance is also placed on the benefits from the following: appropriate land use plans and the principle of land use planning (Mean = 4.72), physical, social, and economic urban development, through

the development of urban community towards sustainability, history of technological changes in technologies and innovations of the world and Thailand (Mean = 4.58), sustainable land development for living, commerce, industry, agriculture, and others (Mean = 4.44), and socio-economic strategic planning (Mean = 4.42), as shown in Figure 3

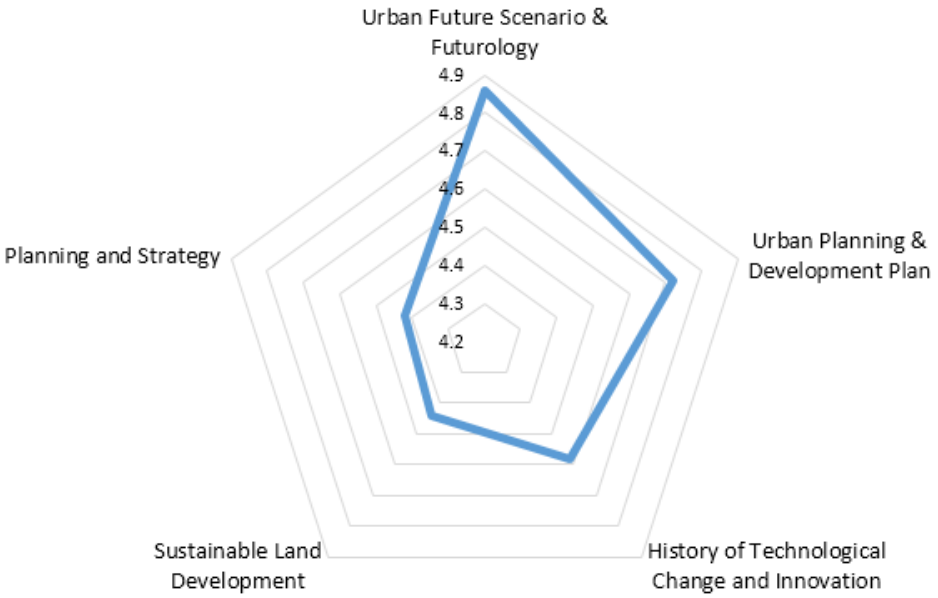


**Figure 3** Issue of urban future scenario study practiced by agencies or organizations

4.1.4 Spatial analysis and development of a smart city – The study showed that the issue seen as important or used as the practicing guidelines by agencies and organizations are the spatial analysis and physical, social and economic relationships (Mean = 4.72), followed by the analysis and calculation of geographic form, finding location, and advanced prediction based on the geographic information system. The Geographic Information System (GIS) (Mean = 4.58) includes concepts and theories of spatial analysis, smart city, implementation methods for data collection, compilation and storing of data, and analyses in various forms for displaying in the form of a smart city (Means = 4.44, equally), as well as the issue related to Smart City Solution (Mean = 4.30), and the issue of the use of Big Data, multiplicity of data, compiling of complicated data, all of which are occupying increasing roles in a smart city (Mean = 4.20), as shown in Figure 4.

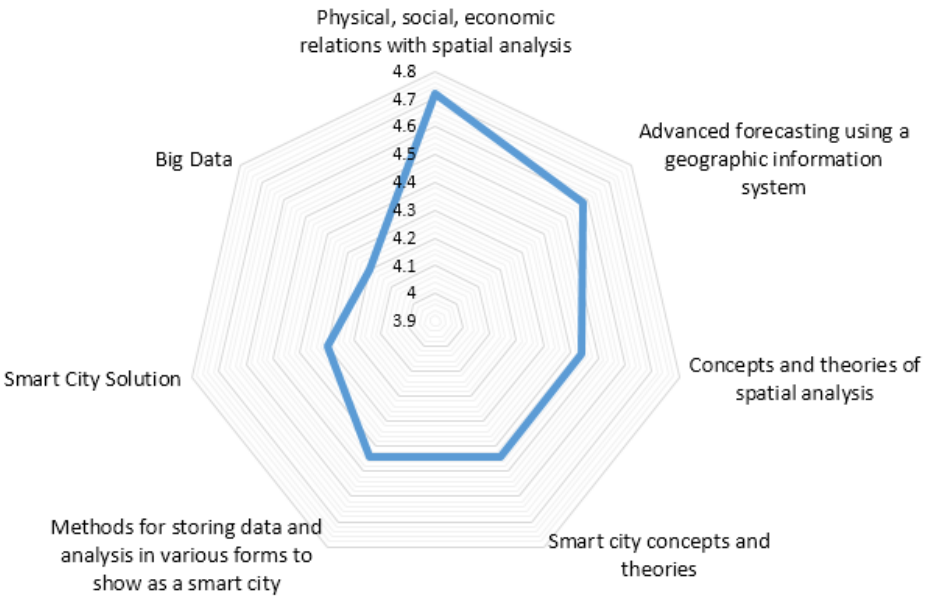


**Figure 4** Issue of spatial analysis and development of a smart city practiced by agencies or organizations

4.1.5 Urban environmental management – the aspects considered the first priorities are water management, water basin management, management of wetlands, and management of urban water resources, green areas, infrastructures of green areas, urban bio-diversities, the cultural and historical areas in a city, management of water pollution, community and industrial waste water, including environmental impact assessment (the mean of each category is equally 4.72). The aspects second in importance include the following: management of garbage and wastes from communities and industries and management of disasters (Means = 4.58 equally), soil resource and land use management that are appropriate to soil qualities, the concepts of sustainable cities in terms of environment, e.g., an Eco City, a Low-Carbon City, Resilient Cities, and Symbio-City (Means = 4.44 equally), energy management and the use of environmental tools (Means = 4.42 equally); management of light and sound qualities in the city (Mean = 4.14), sustainable management of transportation system (Mean = 4.00), and management of air quality and climatic change (Lowest mean of 3.94), as shown in Figure 5. Nevertheless, the Thailand Environment Institute (2021) indicated that the results of the study on Global Climate Risk Index 2021 (CRI), conducted by "Germanwatch" stated that Thailand is at the 9th place among the risk areas to receive impact from climatic changes, where severe disasters can occur, with effects on broad circles of economy, social, and environment, especially in community areas with intensive land use, lack of good urban planning, and high population density (Thailand Environment Institute, 2021).

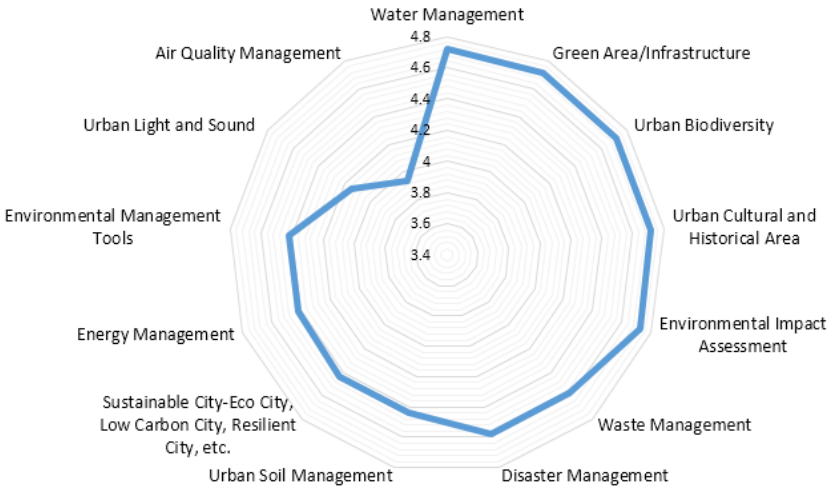


**Figure 5** The environmental issues taken into account by agencies or organizations

4.1.6 Good governance and leadership that agencies or organization see as important and hold as practices are the issues of: leadership roles in setting public policies and impacts in all sectors (Mean = 4.72), followed by the understanding of the emergence of state in the form of political power of an institute and a modern state (Mean = 4.20), understanding of challenges faced by a modern state between dictatorship and democratic government at present, the components determining leadership of the 21st Century, from the structural and individual perspectives, the setting of main values, capacities, behaviors, developmental method for leadership, management concept, monitoring, analysis of individual influence, and citizen group as the leaders of different sectors through benefit-based groups and social movements (Means = 4.14 equally), as shown in Figure 6.

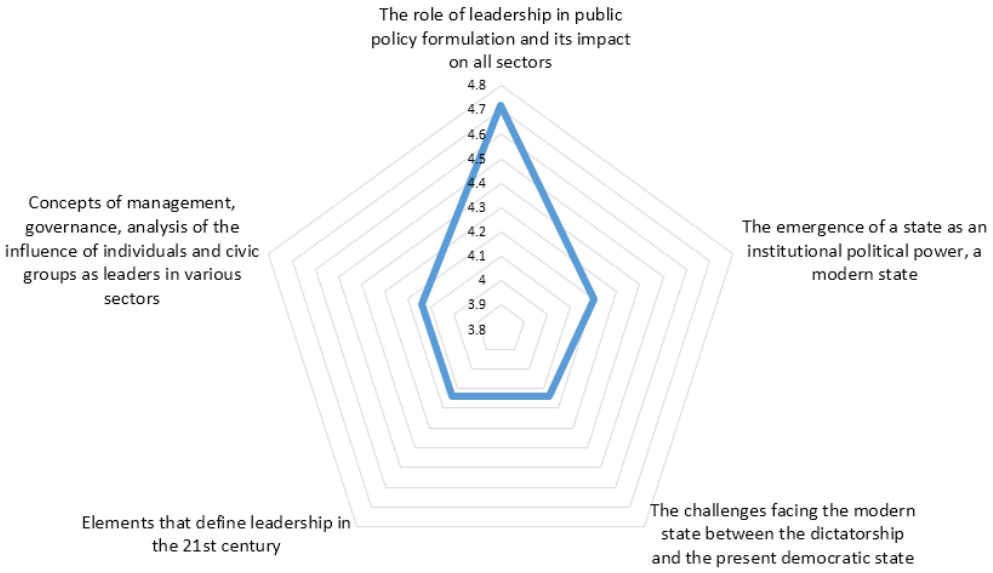


**Figure 6** Good governance and leadership practiced by agencies or organizations

4.2 Knowledge, Competence, and Skills of Graduates Required by Graduate Users

Conclusions have been drawn from the study of the relevant programs in Thailand and overseas, as illustrated in Table 1. The conclusions of the requirements for knowledge, competency and skills by graduate users; consultation with experts; and the results of the questionnaire administered with the groups of employers of graduates and people who wanted to continue their studies in the program, led to classification of the knowledge, competency and skills in 11 categories: (1) urbanism, (2) sustainability, (3) climate change and resilience, (4) innovation and technology, (5) human behavior, (6) research and method skill, (7) data science, (8) creative design thinking, (9) internationality, (10) governance and leadership, and (11) multidiscipline, as shown in Figure 7. (The meanings of scores: 5 means the most important, 4 means very important, 3 means moderately important, 2 means little important, 1 means the least important, and 0 means not important.)

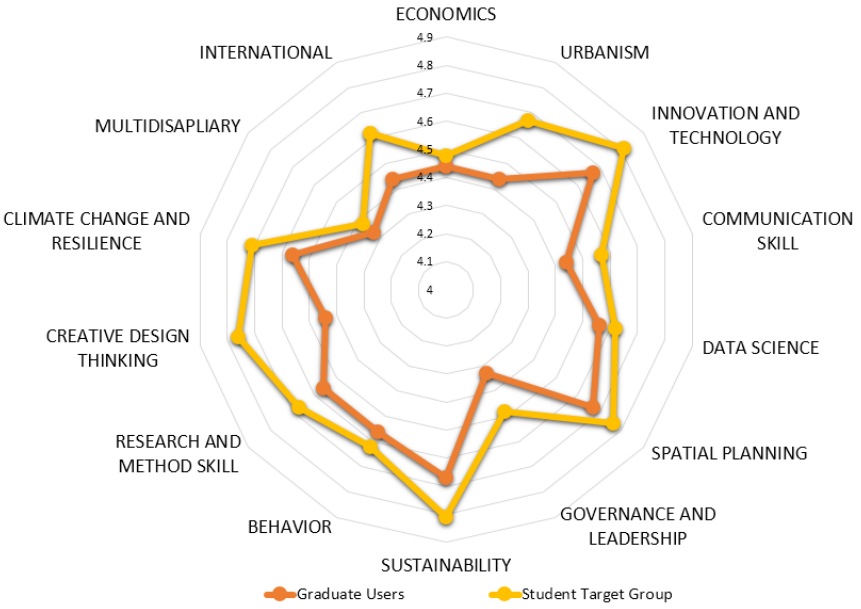


**Figure 7** Knowledge, competency, and skills of graduates required in the job market

**Table 1** The relevant programs in Thailand and overseas

| Order | Program/Institution | Details |
|---|---|---|
| **The programs in Thailand** | | |
| 1 | Master of Urban Environmental Planning and Development (UP), Faculty of Architecture and Planning, Thammasat University (2021) | The program emphasizes academic application of sciences, technologies, arts, cultures, social sciences, and management science that led to creative processes of urbanism with progression and agreement with modern society. At the same time, the program carries on and develops the national art and culture through efficient management processes (2-year master's degree program, 36 credits) |

**Table 1** (Continued)

| Order | Program/Institution | Details |
|---|---|---|
| 2 | Master of Urban and Regional Planning (Urban and Environmental Planning), Faculty of Architecture, King Mongkut's Institute of Technology Ladkrabang (2017) | Study and integration of the physical and value understanding of urban communities with technical knowledge, modern planning theories, and developmental philosophy in order to set policies and means for spatial management that responds to the needs at the urban and community levels (2-year master's degree program, 42 credits) |
| 3 | Master of Urban and Regional Planning (M.U.R.P.), Faculty of Architecutre, Chulalongkorn University (2022) | Instruction covers both planning and design, research skills, as well as professional and practical skills. The program promotes multidisciplinary learning that leads to development of research in planning and design that covers all urban aspects (2-year master's degree program, 36 credits) |
| **Overseas programs** | | |
| 1 | Master in City Planning program, Massachusetts Institute of Technology (MIT), Cambridge, United States (2022) | This program offers four areas of specialization beyond basic teaching. Such as city design, environmental planning, housing, community, and economic development. Master students apply by choosing the field they want to specialize in during the application. (2-years master's program, 150 units of credit) |
| 2 | MSc Architecture, Urbanism and Building Sciences, Delft University of Technology, Delft, Netherlands (2022) | This program is underpinned by the renowned Dutch experience in architecture, spatial planning and the built environment professions and has an international orientation drawing on the multinational faculty of staff and students. The teaching approach borrows from the Dutch tradition of working in a multi-disciplinary way with students working in groups to create integrated solutions for the built environment. (2-year master's program, 120 units of credit) |
| 3 | MSc Urban Development Planning, University College London (UCL), London, United Kingdom (2022) | The program focuses on urban design as a creative planning tool and its relationship with urban planning. It processes urban design theoretically and practically. Besides, it offers extensive research and rethinking opportunities to the complexity of its relationship with the urban planning field. (2-year master's program, 180 units of credit) |

The comparative study on the levels of importance given by employers of graduates and people wishing to continue their studies in the program (prospective students), in terms of knowledge, competency and skills required, showed that both sample groups had correlated tendency of needs. Both groups prioritized knowledge, innovation and technology, and sustainability (employers of graduates = 4.66, prospective students = 4.81), followed by spatial planning (employers of graduates = 4.64, prospective students = 4.76). The difference of score in creative design thinking was 0.32 point, followed by urbanism, in which the difference was 0.23. For other factors, the difference of score was slight. The mean scores of the prospective student group were higher than the means of employers of graduates in all categories. It can thus be seen that the importance given to each of the contents in the program significantly correlated at a close degree. The findings would form key instructional contents to be revised in the program that would prepare students in accordance with the needs of the market at present and in the future.

4.3 Factors Influencing Decision to Continue Studying in the Program

The study conducted with the group of people who wished to continue their studies in the program showed that most (38.00%) held a bachelor's degree and had not been employed, followed by the group of school teachers, university lecturers, part-time lecturers, at 24.00%. Other groups included urban planning architects, landscape architects, and research assistants, at 19.00%. The rest, which was a minority, were operating officers (9.00%), undergraduate students, administrator group and high-level administrators (5.00% each). It was also found that most of those who wanted to continue their studies in the program held a bachelor's degree in urban planning architecture (9.00%). The graduates from architecture program, geography, information geography, and engineering, were at 5.00% equally.
The factors influencing decision to continue studying in the program could be concluded from the findings as follows: (The meanings of scores: 5 means the most important, 4 means very important, 3 means moderately important, 2 means little important, 1 means the least important, and 0 means not important.)

4.3.1 The survey on the instructional system showed that most of the sample groups (62 people, 62.00%) chose the 2-year Part-Time Program, followed by 38.00% who chose the 1-year Full-Time Program. In terms of the informants' interest or the appropriateness of the Credit Bank system, it was found that the mean score of the transferring system from the courses or groups of courses open at the same university had the highest mean score of 4.29, followed by the transfer system from courses or groups of courses open at a different university, which had a mean score of 4.10, the transfer system from academic work outcomes, with a mean score of 4.05, and the transfer system from training outside the university or a non-institutional place, with the lowest mean score of 3.64. Nevertheless, the overall mean scores were at a high level (3.51-4.50), which indicated the degrees of importance to be used as the guidelines for improvement of the program instruction in due course.

4.3.2 The survey on the interest of the sample groups showed that expertise of personnel in the fields related to urban planning architecture between institutions should be used during the study program (Mean = 4.62), followed by the use of personnel expertise in the fields related to urban planning architecture within the university (Mean = 4.52), the use of personnel expertise in other fields or multidisciplinary fields between institutions (Means = 4.29), and the use of personnel expertise in other fields or multidisciplinary fields in the same institution (Mean = 4.19). The overall mean scores, however, were at a high level (3.51-4.50) and a very high level (4.51-5.00), indicating the importance level that could be used as the guidelines for revision of the program instruction. As for the use of personnel with expertise in other fields, there were more questions arising as to what the target group suggested, namely in the field of social work, psychology, history, real estates related to urban planning, humanities and social sciences, environmental management, regional planning, strategy and planning for urban development, target groups, economics, tourism, communication and transportation.

4.3.3 Instructional atmosphere – the survey showed that the mean score of the instruction atmosphere, i.e., onsite classes had the mean score of 4.76, followed by both online and onsite instruction (Mean = 3.90), and online instruction, which received the lowest mean score of 2.97. It can be seen that onsite instruction where learners meet the instructor in person was given the highest level of interest (Means = 4.51 – 5.00), and the system of both methods of instructions, onsite and online, was interested at a high level (Means = 3.51 – 4.50). On the other hand, online learning received moderate level of interest (Means = 2.51 – 3.50). The findings would be used in setting appropriate instruction for the program.

4.4 Developmental Guidelines for Program Development

The recommendations from related agencies and organizations, those who want to study in the program, and the experts, could be concluded as follows:

4.4.1 Urbanism – The knowledge of urbanism should be increased, for it is important especially for the group of administrators who continue their studies in the program so that they could apply as the guidelines in their job. The program should emphasize contents in policy framework and spatial development plan, of which implementers, urban planners or urban planning architects must be able to analyze and carry out the design in accordance with the different plans under the context and roles of the city. In so doing, they should take into account the area's specific identity, history, laws, regulations, rights of land, modern innovations and technologies and be able to appropriately and simultaneously produce projects, set the budget and maps under the urban context.

4.4.2 Sustainability, Climate Change and Resilience – It was concluded that attention should be given during spatial planning in the urban environment and resources as well as the balance between development and conservation.

4.4.3 Innovation and Technology, and Data Science – Contents should be included related to data management based on information and geographic information systems that can be used as a

database for big data and can be applied in laying the national, regional, and provincial policy plans, comprehensive urban plans and specific urban plans.

4.4.4 Creative Design Thinking that takes into account human behaviors – the content should emphasize the importance of people and urban life, which are the heart of understanding or urbanism.

4.4.5 Research and Method Skill – Students should be trained to know how to work with systematic and correct thinking process according to research methods in order to be apply in their future jobs.

4.4.6 Governance and Leadership – Students should be made to understand that leaders of an organization must see the importance of urban planning and understand the planning of a city with common benefits that will not yield any benefits to any particular group. In addition, they should be made to understand the participatory process and holistic administration with integration of all sectors concerned, including city leaders, citizens, youths, and community networks and allies, etc. The operational process should be pro-active and the outcomes of projects or plans could lead to concrete practices.

4.4.7 Multidiscipline – the knowledge about urban analyses using different sciences should be integrated into the program, such as economic principles that can be used in urban planning. Students should be trained to listen to the opinions of people in other fields and to work with them.

4.4.8 Internationality – The public should be made to understand urbanism through presentations at the national and international levels. Students should be trained to seek knowledge and love to learn new things that can lead to changes and internationality.

## 5. Conclusion and Discussion

The study showed that the employers of graduates and those who want to study in the program see the importance of knowledge in urbanism and urban design, ability in analyses based on economic principles, urban planning process and participation. The use of modern technologies should also be incorporated in the program. Recommendations have been given related to instruction methods that develop the qualities of graduates by opportunities to practice in real venues with other institutions. Multidisciplinary sciences should be integrated, with problems set as needed by learners. Students should be trained to use modern technologies and English language for internationality. Employment sources should be located for those who are going to graduate. The graduates should possess knowledge and expertise in urban planning, research methods, international communication skill, and interactive skill with the community. They should also be able to integrate knowledge in different fields in their profession. They should be able to work in team and know how to present their work outcomes in an interesting style. Besides, there are recommendations from private organizations and entrepreneurs in the private sector related to the program that respond to the private sector and entrepreneurs, by emphasizing collaboration with overseas programs. This necessitates the bases such as action research, conferences, publication of works in research and academic journals, use of credit bank, organizing the 4+2, 3.5+1, and

Master of Philosophy (MPhil) programs with collaboration between the University and other universities in the country and overseas.

To conclude, the new program has been revised from the former program in Urban and Environmental Planning, which was aimed at developing skills, cognizance, and creativity for the graduates so that they were able to develop the academic and research processes in the planning, improving, administering urban, community, and the environment (Faculty of Architecture, Urban Design and Creative Arts, 2016) to a program in Smart Urban and Community Planning, with addition in the use of innovations and technologies, increase of skills in creating social innovations, smart urban planning, ability in response to the rapid urban changes from technologies, climate changes and natural disasters in the future. The new program is to be equal to and catches up with other programs both in the country and overseas, to be in time with the world by an overview of the future of the city and technologies. Graduates will be able to conduct smart urban analyses in the digital era, with environmental perspectives, awareness of climate changes and disasters, which are the national agenda.

## 6. Acknowledgements

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