

South Asia Urban Knowledge Hub

Engagement Strategy for Objective - 3

The logo for the Asian Development Bank (ADB), consisting of the letters 'ADB' in white on a black square background.

Engagement Strategy for Objective - 3

South Asia Urban Knowledge Hub

Co-financed by the Sanitation Financing Partnership Trust Fund under the Water Financing Partnership Facility



University of Moratuwa
Sri Lanka

April 2016

1. Problem Definition

Service delivery for the people in their respective local authority area is one of the main duties of a local authority. Among these services, those area related to environmental sanitation is crucial as they directly affect for the wellbeing of people. But in most of the local authorities the way of handling and providing these services have been neglected and not conducted in proper manner.

According to the studies undertaken by the University of Moratuwa on the field of service delivery in local authorities, it shows many drawbacks in supplying the services for the people. This can be observed mainly in the environmental sanitation services like solid waste management and septic tank management. This has caused mainly due to the lack of knowledge in the field of these respective service deliveries.

In the background, the Department of Town and Country Planning has identified the need of having revised curriculum for the Masters in Spatial Planning, Management and Design Degree Programme conducted by the Department of Town and Country Planning, University of Moratuwa aiming to incorporate key modules on the service delivery sector in local government institutions. This need was identified based on series of researches carried out in the field of service delivery of the local authorities. At the moment focus is on environmental sanitation services like solid waste management and septic tank management. Three elective subject modules were introduced to the curriculum namely; Environmental sanitation management information system, Environmental sanitation practice and environmental infrastructure planning and design.

2. Goals and Objectives

Goal of the curriculum revision is to have improved service delivery in the area of environmental sanitation in local authority areas of Sri Lanka. Objective is to develop recommendations for an improved Masters of Spatial Planning, Management and Design curriculum at the Department of Town & Country Planning by 2016.

3. Context Study (Guidance and clarification to be obtained from Prof. P.K.S. Mahanama & Dr. J.N. Munasinghe)

4. Decision Makers, Key Actors and Relationships

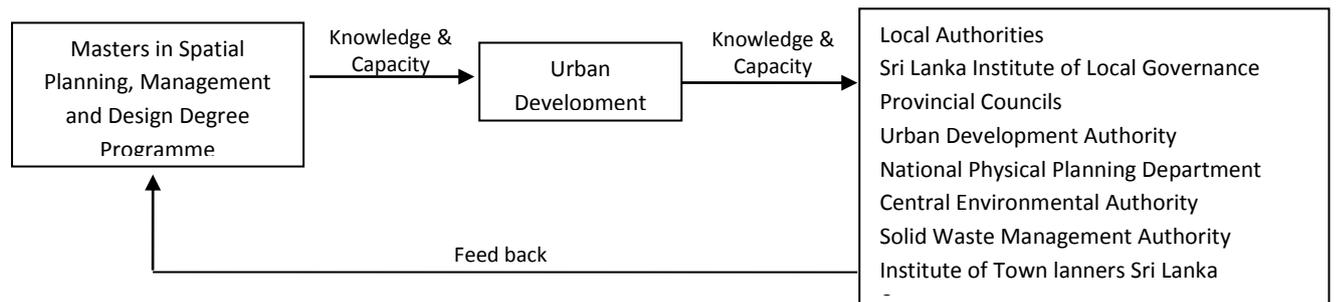
In revising the curriculum to improve service delivery in local authorities, many decision makers, key actors and stake holders need to be involved. Main decision makers of the process are Department of Town and Country Planning, University of Moratuwa, curriculum review committee, institutions which will gain the knowledge and capacity through the Masters in Spatial Planning, Management and Design Degree Programme.

At present, the curriculum of Masters in Spatial Planning, Management and Design Degree Programme focused on urban development. It has not included any sanitation related aspect. The programme is followed by students from many urban development related institutes like local

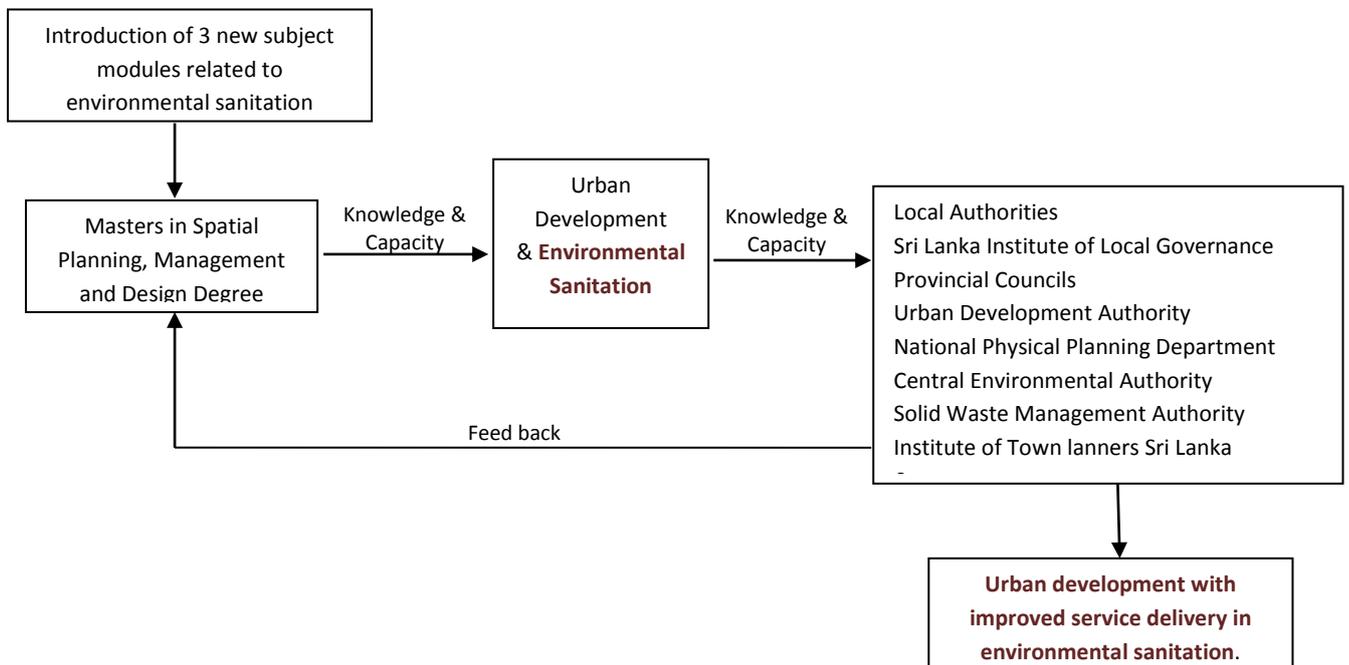
authorities, Urban Development Authority, National Physical Planning Department, Sri Lanka Institute of Local Governance and etc. So introducing modules related to service delivery will affect for better service provision of their respective authorities.

Following diagrams illustrates the relationships among decision makers, key actors and the Masters in Spatial Planning, Management and Design Degree Programme and how the new revised curriculum will benefit the respective institutions.

Present Situation



Future situation with the introduction of new subject modules



5. Engagement strategy

K-Hub team identified the need of having revised curriculum for the Masters in Spatial Planning, Management and Design Degree Programme conducted by the Department of Town and Country Planning, University of Moratuwa aiming to incorporate key modules on the service delivery sector in local government institutions to have better service provision in these institutions.

Discussing with the department of town and country planning, three elective subject modules related to environmental sanitation were developed as; Environmental sanitation management information system, Environmental sanitation practice and Environmental infrastructure planning and design. Then a curriculum review committee was appointed with persons who have experience in service delivery sector in local government institutions to review these three modules with the existing curriculum. Further, these curriculums were discussed in detail at the Annual Department Industrial Committee Board, which is comprised with the representatives of service oriented government and non-government organizations who have well established experience in sanitation management and urban planning. Considering all their recommendations the modules contents were finalized.

After finalizing the curriculum, the relevant memorandums for the curriculum revisions were submitted to the university senate and the Institute of Town Planners' Sri Lanka (ITPSL). With the reception of the university senate and the ITPSL's approval, Masters in Spatial Planning, Management and Design Degree Programme was introduced with the new curriculum. Simultaneous to the introduction of new curriculum, few sessions were delivered by the appointed module lecturers to the present students regarding the importance of learning the new three modules. This is very crucial where the idea of the curriculum should be well described to attract them in order to follow the program. In order to make the session attractive and inspiring two visiting lecturers were invited from Ministry of Health, to describe the importance of learning aforesaid modules to increase the livability of the local authority areas.

Further, to communicate these recommendations to the target audience stakeholder workshop and small group meetings were held at local authorities, Urban Development Authority, National Physical Planning Department, Sri Lanka Institute of Local Governance and etc. Documents explaining the new curriculum and power point presentations were used as tools to communicate. Practical issues in sanitation management in local authorities, and application of theoretical knowledge and significance of international standards for sanitation management to overcome such issues were discussed in detail at the stakeholder meetings.

Since the aforesaid courses are offered to the students with a bachelor degree, it was decided to conduct short courses with duration of 2-3 days to the technical staff who are engaging in sanitary management in local authorities, as per the request by institutions. They will be conducted with training and workshops for the local authorities on service provision of sanitation related services.

6. Monitoring and Learning

As stated earlier, three new modules have already been introduced to the, Masters in Spatial Planning, Management and Design Degree Programme, by considering all the prospective comments received from different intellectual parties including the curriculum review committee appointed by the Department of Town and Country Planning, University of Moratuwa, Department Industrial Committee Board, Stake holder meetings etc. Also, few short courses on sanitation management will

be conducted to the technical staff of the local authorities and other relevant institutions that have the interest. This could be shared with K-Hub partners and could be used by others who interested.

Following table indicates how the progress will track and assessing the degree to which things have changed.

How will you assess if you are heading in the right direction?	Evaluating the outcomes of students through continuous assessments and practical projects. Students should present the knowledge they gained through the modules to the staff.		
How will you track whether you are doing what to planned to do (and take note of what was unplanned)?	<ul style="list-style-type: none"> - Conducting lectures - Registering for the course - Following the course - Output assessment 		
How will you ensure your outputs are the right quality?	<ul style="list-style-type: none"> - Pre revision of curriculum with subject experts from time to time - Curriculum revision by faculty of architecture and senate of the university - Post revision with the comments (feedback sheets) of the participants 		
What indicators of success will you use	Expect to See	Like to See	Love to See
	Implementation of sanitation management practices in plan making and preparation in local authorities.	Incorporating the knowledge gained through the modules to be practiced in local authorities and planning offices.	Transferring the knowledge of proper sanitation management practices from local authorities to the public society
How will you measure this?	Assignments	Assignments	Institutional policy reports, budget reports, annual reports, etc...
What will you do with the results?	<ul style="list-style-type: none"> - Improving the next programme based on the lessons learnt from the results - Revising the content of the existing curriculums according to the changes and demands occur in the international context. - Improving the quality of teaching and resource persons 		

How will you ensure you are learning?	<ul style="list-style-type: none">- Assessing the lessons learnt from the programme- Assessing the anonymous feedback sheets of the participants- Assessing the verbal expressions of the participants
How will you share your learning with others?	<ul style="list-style-type: none">- Through K-Hub web site, annual reports and written documents on outcomes of the programme- Sharing feedback sheets and comments of the participants

DEPARTMENT - INDUSTRY CONSULTATIVE BOARD (DICB)

12th October 2016

AGENDA

8th Meeting

3. 25pm **Arrival of Invitees**
- 3.30pm **Welcome Address**
Dr. Rangajeewa Ratnayake - Head of Department
- 3.45pm **Student Reflections**
Malith Senevirathna, Dushan Bandusiri, Kasun Chathuranga, Ashra Wickramathilake
- 4.00pm **Importance of Industry Collaboration**
Prof R A Attalage - Deputy Vice Chancellor/Chairman ITAB
- 4.50pm **Faculty Perspective**
Prof L de Silva - Dean, Faculty of Architecture
- 5.00pm **Panel Discussion**
Chaired by: Dr R Noordeen - Senior Lecturer
- Department initiatives and the Continuity of DICB Actions
 - Measures for the improvement of Degree program
 - Department Interaction with the Industry
 - Graduate Employment
 - Undergraduate Industrial Training
 - Research & Development
 - Way Forward
- 5.25pm **Vote of Thanks**
Mrs. Ishani Ariyapperuma - Senior Lecturer
- 5.30pm **End of 8th DICB Meeting**

Tea & Refreshments



Department of Town & Country Planning
University of Moratuwa





Department of Town &
Country Planning
University of Moratuwa

DEPARTMENT INDUSTRY CONSULTATIVE BOARD (DICB) MEETING

8TH MEETING

12TH OCTOBER 2016

AT DEPARTMENT OF TOWN & COUNTRY PLANNING.

Executive Summary

The eighth DICB meeting was held at the Department of Town & Country Planning, Auditorium on Wednesday, 12th October 2016 at 3.00pm with the participation of Government and Non-Government Industrial representatives. Dr. Rangajeewa Ratnayake, the Head of the Department of Town & Country Planning having welcomed the guests, presented the progress of activities of the department.

Dr. Ratnayake in his presentation, acclaimed the achievements of the Department throughout the year particularly the relocation of the Department in the new building, fulfilling a long-awaited need! Professor P.K.S. Mahanama initiated the panel discussion underlining the dire need for industry oriented planning. The industry representatives contributed immensely to the discussion including sharing their experiences had with the trainees. The constructive comments paved the way to surface out further improvements to the curriculum in order to sharpen the student's technical as well as soft skills. Some industry members brought to notice of the existing opportunities in the government sector that are not exploited by the planners. In conclusion, it was noted that strengthening of the collaboration with the Industry Partners would amount to eradicate the prevailing limitations in the profession.

1.0 BACKGROUND

The establishment of the Department Industry Consultative Board (DICB) is the outcome of the Five year Strategic Plan 2011-2016 of the Department of Town and Country Planning of University of Moratuwa. Town Planning is a profession that is rapidly evolving and its education involves multi-disciplinary inputs. Thus, the Department needs frequent contribution from the industry practitioners to update the curriculum and to maintain higher standards in teaching, learning and assessing. For this purpose the Department intends to strengthen its contacts, communication and outreach with the respective employers, i.e., the leading members of the industry. With the QIG grant, it is organized as a by-annual event

held at the end of each semester, enabling to review the progress of employability and the relevance of the graduates and student trainees. This concern led to the establishment the Department Industry Consultative Board (DICB) in 2011.

1.1 Previous Meetings

- Meeting I - 22nd January 2011
- Meeting II - 29th October 2011
- Meeting III - 19th May 2012
- Meeting IV - 18th May 2013
- Meeting V - 28th January 2014
- Meeting VI - 27th November 2014
- Meeting VII - 12th November 2015

1.2 Objectives

The primary objectives of the Department Industry Consultative Board (DICB) are;

1. To review and update the degree programme offered by the Department, in terms of their effectiveness to prepare students for career opportunities.
2. To identify new and existing trends in the industry that could be adhered in the degree programme.
3. To strengthen and develop the Department's links with the industry at all levels including teaching, researches, student projects and career advice.

2.0 8TH DICB MEETING DISCUSSION



2.1 Department Initiatives

Dr. Rangajeewa Ratnayake, Head of the Department of Town & Country Planning, presented the initiatives and the continuations of the activities carried out by the Department during the preceding year. It was with pleasure he announced the shifting to the new six storied building in June which facilitates the needs of the department. Another important milestone he noted was the hosting of the International Research Conference, South Asian Urban Forum 2016 at the Cinnamon Lakeside, Colombo in the month of September which gave the department a boost in its achievements. Also, as an objective of the K Hub project, department intends to introduce three new modules in sanitation planning to the Masters in Spatial Planning, Management and Design Degree Programme, addressing an emerging need of the country. The visitations made by Dr. Hans Koster who is an assistant professor at the Department of Spatial Economics at VU University, Amsterdam, Professor Trevor Budge of La Trobe University, Australia and Dr Matthew Rofe of University of South Australia that uplifted the image and the quality of service at the department was acknowledged with gratitude .

The curriculum revision in response to Industry:

- Enhancing knowledge on Resettlement Planning and Water Resource Management following new modules were added to the curriculum.

Land Management & Resettlement – Core Module – Level III

Housing Policy and Systems – Elective Module – Level III

- Improved knowledge in technology was accommodated through the following new modules.

Communication through Information Technology Spatial Information Systems

Remote Sensing I

Geo-Spatial Analysis

Remote Sensing II

Programming GIS

Web GIS

- Knowledge in social aspect of planning was introduced via the following new modules.

Society, Culture & Space

Political Economy of the City

Social Justice in Planning

Housing Policy and Systems

Participatory Planning

- Enhance the knowledge and practice in Sanitation Management and related information systems via introducing three new modules to the Masters in Spatial Planning, Management and Design Degree Programme,

Environmental sanitation management information system

Environmental sanitation practice

Environmental infrastructure planning and design

- The industrial training was rearranged to include two months of full time and 8 months of part time training.
- In the process of exploring employment opportunities in the international market the department has been successful in obtaining expert input from visiting scholars while providing exposure into new and emerging concepts such as; resettlement, green development, climate change, disaster risk reduction, etc. New technology has been introduced and practiced i.e. Open Source Spatial Information Lab is one such initiative
- In developing soft skills an attempt was made by way of introducing English language for Level I students.
- Enhancing the knowledge in environment and resources management, students were exposed to Regional Level Planning Project in the Batticaloa region, a Local Planning Group Project in Nuwara Eliya and a Thematic Planning Project in Beira Lake South.

Plans for the future:

- More collaboration with the Industry Partners
- Specialization- Infrastructure, Environment, Spatial Planning and Designing
- Change the name of the Department and the Degree (comments requested)
- Introduction of new three elective subject modules related to environmental sanitation; Environmental sanitation management information system, Environmental sanitation practice and environmental infrastructure planning and design (Comments requested to improve the module content)

Professor P.K. S Mahanama opened up the panel discussions and stated that the employability is a main focus in education and the curriculum should help to fit into the job market. He also emphasized that gaining knowledge is more important than the employability. The Town Planning graduates are employed in various fields which have direct and indirect relevance to Town Planning. It was noticed that the new curriculum has to help the graduates to find employment in other sectors too.

2.2 Suggestions by the Industrial partners

Mr. Sudarman Siripala, Chairman, Geo Informatics Pvt Ltd.

Acknowledged the input of the trainees in identifying the geographical relationship with the spreading of dengue fever and appreciated their skills pertaining to data collection. However he requested for improvement on technical know-how particularly with the inclusion of the supportive modules such as GIS, RS Modelling and Sanitation Management Information Systems in the curriculum.

Plnr. K A Jayarathna, President, Sewanatha

He emphasized the importance of exposing the trainees to reality particularly engaging in work outstation. He also pointed out that there is a tendency for graduates to target high income generating jobs neglecting the opportunities to engage in work that boost professional development.

Director Engineering, Ministry of Local Government & Provincial Councils

He brought to notice that the planning related work have been overlooked at the Ministerial Projects leaving a gap which could be a bridged with good opportunities for the planners. Inclusion of sanitary management as a new module was highly appreciated by him. He emphasized it as an emerging requirement at local authorities.

Deputy Vice Chancellor, Professor R Attalage

The collaboration of the Industry with the University in providing international standard graduates in the country is a dire need of the hour. Joint responsibility of both sectors has to be realized in order to fulfill this obligation. He appreciated the attempt of introducing new modules on sanitation management. Further, he noticed the importance of delivering knowledge and skills in handling solid and liquid wastes in a sustainable way as well as recognizing communicable and non-communicable diseases that results due to poor environmental sanitation.

Mr. Rathnayake, Planning & Development Dept. - Sri Lanka Tourism Development Authority

Noted the difficulty in accommodating part time trainees as responsibility could not be handed over and suggested restructuring of training to full time. He also expressed that the request made for trainees by SLTDA was not considered.

Plnr. Buddika Jayawardena, Mahaweli Development Authority

The trainees lack the technical skills in analysis and recommended the curriculum to be matched with the needs of the work places. Although the presentation skills are acceptable improvement in communication skills is required.

Also noted the difficulties in part time training most notably the reluctance of trainees to travel outstation due to academic accountabilities during training.

Mr. Dayan Munasinghe, National Building Research Organization

He expressed disappointment with regard to sudden halting of training program before the due completion date as it hampered work at office.

He emphasized the need of expanding awareness on Environmental Infrastructure Planning and Design among students and understand sanitary issues critically in urban areas through a design orientation. Thus, he acknowledged the departments' initiation on introducing sanitation management related modules to the curriculum.

Mr. Snajay Alwis, World Vision Lanka

Importance of using feedback from training meetings in improving teaching was highlighted.

Plnr. Indu Weerosooriya, President, Institute of Town Planners Sri Lanka

She opined that although the communication skills needed improvement the trainees were eager to learn and involve in field work.

Dr Rizvi Noordeen, Senior Lecturer

Dr. Rizvi delivered the vote of thanks appreciating the presence of industry members with their valuable comments in uplifting the image of the department and the efforts of the department staff in successfully concluding the meeting. All present were invited to dinner in promoting fellowship.

3.0 PARTICIPANTS OF THE MEETING

Date : 12th October 2016

Venue : Auditorium, Department of Town & Country Planning.

Participants Present :

Industry:

1. Plnr. K A Jayarathne, Sevanatha
2. Director Engineering, Min. of Local Gov. & Provincial Councils
3. Plnr. Buddika Jayawardena, Director (Planning & Monitoring), Mahaweli Development Authority
4. Mr. Rathnayake, Planning & Dev. Dept. SLTDA
5. Mr. Sudarman Siripala, Managing Director, Geo Informatics Pvt Ltd.
6. Dr. Thanuja Ariyananda, Director, Rain Water Harvesting Forum
7. Plnr. Indu Weerasooriya, President, Institute of Town Planners Sri Lanka
8. Dr. Udan Fernando, Executive Director, CEPA
9. Mr. Dayan Munasinghe, NBRO
10. Mr. Snajy alwis, World Vision Lanka
11. Dr. Sithara Atapattu, Director Business Development, Total Management Solutions Company

Dept. of Town & Country Planning:

1. Prof. Willie Mendis –Emeritus Professor of the University of Moratuwa
2. Prof. R. Attalage, Deputy Vice Chancellor, University of Moratuwa
3. Dr. Rangajeewa Rathnayaka, Head, Dept. of Town & Country Planning
4. Dr. Jagath Munasinghe- Senior Lecturer
5. Mrs. Malani Herath _ Senior Lecturer
6. Plnr. Aruna Bandara - Lecturer
7. Plnr. Shalini Mariyathas - Lecturer
8. Plnr. Prathibhani Bandusena - Lecturer
9. Plnr. Priyanwada Singhepathirana - Lecturer
10. Mr. Chatura De Silva - Lecturer
11. Mr. Pradeep Dissanayaka - Lecturer
12. Malith Senevirathna – Student
13. Dushan Bandusiri - Student
14. Kasun Chathuranga – Student
15. Ashra Wicjramathilake - Student

Faculty Memo

To : Vice Chancellor
Through : Dean, Faculty of Architecture
From : Head, Department of Town & Country Planning
Date : 19th October 2016
**Subject : Proposed Minor Revision to Curriculum
Master of Spatial Planning, Management & Design**

The Department of Town & Country Planning wishes to introduce a minor revision to the curriculum of Master of Spatial Planning, Management and Design Degree programme based on regular feedback received from both academic staff and the students. Accordingly, three new elective modules have been introduced to update the syllabus.

Herewith, I am forwarding following documents for Faculty and Senate approval.

1. Curriculum revision summary sheet (Annexure 1)
2. Summary of Existing Curriculum (Annexure 2)
3. Outline of Proposed Modules (Annexure 3)

The revised curriculum will be effective from 2017 batch.

CURRICULUM REVISION– FACULTY OF ARCHITECTURE

Department : Town & Country Planning.

Name of the Degree: Master of Spatial Planning, Management & Design.

Effective from : Next Intake (2018) ... batch: onwards 2018/2020

Summary of Modules (Total Credits)

Existing Version					Proposed Version				
Level	C	E	NGPA	Total	Level	C	E	NGPA	Total
Level 1	30	4	-	34	Level 1	30	4	-	34
Level 2	24	2	-	26	Level 2	24	2	-	26
Total	54/54	6/12		60	Total	54/54	6/18		60

Revision in Brief

A. Introduction of New Modules

Code	Module Title	Credits	Module Type	Offering Level	Reason in brief
PU5112	Environmental Sanitation Management Information Systems	2	E	1	To enhance GIS based technical skills to manage the environmental sanitation issues
PU5212	Environmental Sanitation Practice	2	E	2	To develop the exposure in understanding challenges to environment sanitation parameters and develop skills in environmental impact assessment from a sanitary perspective
PU5213	Environmental Infrastructure Planning & Design	2	E	2	To enhance the skills on formulating Spatial Plan and Design for Environmental Infrastructure Planning.

Signatures of the Department Academic Committee

Member Name	Member Name	Member Name	Member Name	Member Name
..... Signature Signature Signature Signature Signature

..... Chairperson-FCE	Approval of the Senate is sought. Head of Department
Date:	Date:

Annexure 1
Summary of Existing and Proposed
Curriculum

Existing Curriculum

Year	Semester	Code	Unit	Credits (GPA)	Evaluation	
					WE (%)	CA (%)
Core Modules (Compulsory)						
Year 1	Semester 1	PU5100	Environmental Regional Studio	6		100
		PU5101	Cities, Regions and Economic Development	3	70	30
		PU5102	Transportation and Infrastructure	3		100
		PU5103	Planning for risk and uncertainty	3		100
	Semester 2	PU5200	Urban Planning & Design Studio	6		100
		PU5201	Planning Theory and Strategic Intervention	3		100
		PU5202	Urban Governance, Planning and Environmental Law	3	70	30
		PU5203	Urban Design Management	3		100
Year 2	Semester 1	PU5300	Site Planning Studio	6		100
		PU5301	Project Management and Implementation	3		100
		PU5302	Public policy, Urban Finance and Ethics	3	70	30
		PU5303	Research Methods for Planners	3		100
	Semester 2	PU5400	Master Thesis	9		100

Electives (Minimum 6 credits)				
Code	Unit	Credits	Evaluations	
			WE (%)	CA (%)
PU5110	Heritage and Culture in Planning	2		100
PU5111	Environmental Economics	2		100
PU5210	Environmental and Community Impact Assessment	2		100
PU5211	International Planning Studies I	2		100
PU5310	International Planning Studies II	2		100
PU5311	Housing Studies	2		100
Total Credits		60		

Proposed Curriculum

Year	Semester	Code	Unit	Credits (GPA)	Evaluation	
					WE (%)	CA (%)
Core Modules (Compulsory)						
Year 1	Semester 1	PU5100	Environmental Regional Studio	6		100
		PU5101	Cities, Regions and Economic Development	3	70	30
		PU5102	Transportation and Infrastructure	3		100
		PU5103	Planning for risk and uncertainty	3		100
	Semester 2	PU5200	Urban Planning & Design Studio	6		100
		PU5201	Planning Theory and Strategic Intervention	3		100
		PU5202	Urban Governance, Planning and Environmental Law	3	70	30
		PU5203	Urban Design Management	3		100
Year 2	Semester 1	PU5300	Site Planning Studio	6		100
		PU5301	Project Management and Implementation	3		100
		PU5302	Public policy, Urban Finance and Ethics	3	70	30
		PU5303	Research Methods for Planners	3		100
	Semester 2	PU5400	Master Thesis	9		100

Electives (Minimum 6 credits)				
Code	Unit	Credits	Evaluations	
			WE (%)	CA (%)
PU5110	Heritage and Culture in Planning	2		100
PU5111	Environmental Economics	2		100
PU5112	Environmental Sanitation Management Information Systems	2		100
PU5210	Environmental and Community Impact Assessment	2		100
PU5211	International Planning Studies I	2		100
PU5212	Environmental Sanitation Practice	2		100
PU5310	International Planning Studies II	2		100
PU5311	Housing Studies	2		100
PU5213	Environmental Infrastructure Planning & Design	2		100
Total Credits		60		

Annexure 2

Outline of Proposed Modules

Subject Module	Environmental Sanitation Management Information Systems			
Module Coordinator				
Type	Elective			
Credit Rating	02			
Contact Hours	24			
Independent Study Hours	24			
Aims of the Module	<ol style="list-style-type: none"> To develop knowledge on ESMIS. To demonstrate the use of ESMIS in environmental spatial applications 			
Learning Outcomes	<ol style="list-style-type: none"> Apply relevant technology-related tools and techniques to develop ESMIS. Interpret spatial issues of a context using ESMIS. 			
Outline Syllabus	Information analysis and management; GIS and Web based tools; Data collection, spatial data analysis, storage, processing and usage; ESMIS Process (Preparation of Base Maps, Data Collection, Data Sorting and preparation, Database Development, Implementation, Maintenance and monitoring); Stakeholder participation mapping; Application of ESMIS			
Assessment	<i>Modalities</i>	Examination	Assignment	
	<i>Ratio</i>		100	
	Relationship between Learning Outcome & Assessment Tasks			
	<i>Learning Outcome</i>	Assessment Assignment	Assessment Examination	Assessment
	1 & 3	*		
	2	*		
Readings	To be recommended by the module coordinator.			

Subject Module	Environmental Sanitation Practice			
Module Coordinator				
Type	Elective			
Credit Rating	02			
Contact Hours	24			
Independent Study Hours	24			
Aims of the Module	<ol style="list-style-type: none"> 1. To introduce best practices of environmental sanitation using case interpretations. 2. To demonstrate various parameters of environmental sanitation. 3. To develop skills in environmental sanitation approaches towards a best practice 			
Learning Outcomes	<ol style="list-style-type: none"> 1. Evaluate the principles and parameters of environmental sanitation. 2. Recognize communicable and non-communicable diseases that results due to poor environmental sanitation. 3. Assess skills in pollution measurement and control. 4. Assess skills in vector control. 5. Appraise knowledge and skills in handling solid and liquid wastes of all forms. 6. Appraise knowledge and skills in sanitary planning. 7. Illustrate the hands on skills in participatory approaches to improve environmental sanitation. 			
Outline Syllabus	Define environmental sanitation; Relationship between community health and environment sanitation; Historical developments and current practices; Communicable and Non-communicable diseases due to poor environmental sanitation; Pollution, measurement and control; Water supply and sanitation; Sewage and sewerage; Waste disposal (including hazardous waste and household waste with onsite experiences; Waste water; Sanitation economics; Vector control; Environmental sanitation during emergencies; Sanitation safety planning; Participatory approaches)			
Assessment	<i>Modalities</i>	Examination	Assignment	
	<i>Ratio</i>		100	
	Relationship between Learning Outcome & Assessment Tasks			
	<i>Learning Outcome</i>	Assessment Assignment	Assessment Examination	Assessment
	1,6 & 7	*		
	2,3 & 4	*		
	5	*		
Readings	To be recommended by the module coordinator.			

Subject Module	Environmental Infrastructure Planning & Design		
Module Coordinator			
Type	Elective		
Credit Rating	02		
Contact Hours	24		
Independent Study Hours	24		
Aims of the Module			
	<ol style="list-style-type: none"> 1. To develop a wider awareness on Environmental Infrastructure Planning and Design through investigations of theories and concepts. 2. To orient in a design approach towards addressing environmental infrastructure issues in a locality. 3. To illustrate environmental infrastructure planning and design process and its application within the spatial framework. 4. To identify and develop strategic action projects for the environmental infrastructure development of a locality 		
Learning Outcomes			
	<ol style="list-style-type: none"> 1. Assess a wider awareness on Environmental Infrastructure Planning and Design. 2. Apply a given environmental infrastructure problem situation in an urban area through a design orientation. 3. Apply a comprehensive understanding on the statutory framework and institutional setting of preparing Environmental Infrastructure plan for an urban locality 		
Outline Syllabus			
	Introduction to Environmental Infrastructure Planning and Design, Planning and designing of integrated infrastructure systems (Recycling); Water and Sanitation Planning and Policy; Water distribution system; Sanitary sewer system; Waste water treatment and disposal system; Storm water management; Municipal solid waste management; Hazardous waste management; Technological development of environmental infrastructure planning; Best practices of environmental infrastructure planning		
Assessment			
	<i>Modalities</i>	Examination	Assignment
	<i>Ratio</i>		100
Relationship between Learning Outcome & Assessment Tasks			
	<i>Learning Outcome</i>	Assessment Assignment	Assessment Examination
	1	*	
	2	*	
	3	*	
	4	*	
Readings			
	To be recommended by the module coordinator.		