UPD 7105 Sustainable Urban Infrastructure Systems

Hours Per Week			Hours per Semester	Weighted Total Mark	Weighted Exam Mark	Weighted Continuous Assessment	Credit Units
LH	PH	TH	CH	WTM	WEM	WCM	CU
3	0	3	45	100	60	40	3

Course description:

Sustainable urban infrastructure systems are emerging as important issues in a rapidly changing urban environment where the world's resource supplies can no longer match demand. In the midst of numerous other challenges, urban authorities need to realize that in order to provide a sustainable and high quality of life to local communities, optimal use of resources is of paramount importance. The increasing complexity and interconnectedness of civil and other interdependent infrastructure systems (electric power, energy, cyber-infrastructures, etc.) require inter- and multidisciplinary expertise to create, manage and maintain sustainable infrastructure systems.

Objectives:

1. To develop an understanding of the increasing complexity and interrelationships of civil and other interdependent infrastructure systems (electric power, water supply, energy, cyber-infrastructures, etc.)
2. To develop an understanding of how urban infrastructure influence the growth, development and performance of cities
3. To learn how to apply sustainability principles in the conceptualization, implementation and management of critical urban infrastructure
4. To evaluate the roles/relationships between/among various professionals/actors involved in implementation and management of urban infrastructure systems

Learning outcomes:

At the conclusion of this course students will demonstrate:

1. Thorough understanding of the complexity and interrelationships of civil and other interdependent infrastructure systems
2. A good understanding of how urban infrastructure influences the growth patterns, development and performance of cities, in addition to being able to assess and analyze them accordingly
3. Their ability to apply sustainability principles in the conceptualization, implementation and management of critical urban infrastructure
4. An awareness of the roles/relationships between/among various professionals/actors involved in implementation and management of urban infrastructure systems

Delivery method:

The course will be delivered in form of lectures and group discussions. Students will additionally be required to make presentations demonstrating an understanding and critical engagement of course readings.

Assessment method:

This will be done through continuous assessment (including coursework and tests) and written examination at the end of the semester. Coursework and test will be assessed out of 40% and examinations, out of 60%.

Course content:

The course covers but is not limited to:

1.	Water Supply & Sanitation	4 CH
2.	Sewage & Waste Water Treatment	4 CH
3.	Solid Waste Management	6 CH
4.	Telecommunications	4 CH
5.	Energy and Public Transportation systems	6 CH
6.	Intelligent transportation infrastructure technologies	6 CH
7.	Assessment frameworks for sustainable urban infrastructure systems	4 CH
8.	Financial mechanisms for urban infrastructure	6 CH
9.	Maintenance, rehabilitation & scheduling activities for pubic infrastructure	5 CH

Proposed staff: Dr. Henry Alinaitwe, Dr. Amin Tamale Kiggundu

References:

1. Lahti, P., Calderon, E., Jones, P., Rijsberman, M., & Stuip, J., (2011): Towards Sustainable Urban Infrastructure: Assessment Tools & Good Infrastructure
2. Workshop Committee and National Research Council (2009): Sustainable Critical Infrastructure Systems: A Framework for Meeting 21st Century Imperatives
3. **Kasthurirangan Gopalakrishnan** (Ed), **Srinivas Peeta** (Ed) (2010): Sustainable and Resilient Critical Infrastructure Systems: Simulation, Modeling, and Intelligent Engineering Springer; 1st Edition
4. Anthony G. Bigio and Bharat Dahiya (2004): Urban Environment and Infrastructure: Toward Livable Cities (Directions in Development), World Bank Publications
5. S. Bry Sarte (2010): Sustainable Infrastructure: The Guide to Green Engineering and Design
6. (CourseSmart), Wiley