

CV4117 Urban Stormwater Management

[Lecture: 26 hrs ; Tutorial: 13 hrs ; Lab: 0 hr ; Pre-requisite: Year 3 standing ; Academic Unit: 3]

Learning Objective

The objectives of the course are to equip students with the required knowledge and skills to analyse the hydrological, hydraulic and water quality aspects of an urban stormwater drainage management system and be able to undertake the design of appropriate components of an urban stormwater management system for purposes of flood prevention and water quality improvement.

Content

Stormwater quality characterisation, monitoring, modelling and assessment, design of detention and sedimentation basins, urban stormwater management and design of water quality enhancement features in a stormwater management system.

Course Outline

S/N	Topic
1	Urbanization and its impact on urban stormwater quality. Urban stormwater quality characterization, load quantification and modeling buildup and washoff processes.
2	Approximation of erosion and soil loss. Modeling soil loss from urbanized catchments.
3	Detention and Retention basin design. Modeling basin performance.
4	Hydraulic design of street pavement drainage systems.
5	Philosophy of urban stormwater management. Guidelines for water sensitive urban design and water quality objectives.
6	Engineering design for stormwater quality management including bioretention, swales, infiltration devices and wetlands.
7	Seminars
8	Project work

Learning Outcome

At the end of the course, students will be able to:

- examine and analyse non-point source emissions and to characterize and assess the impact of NPS emissions on urban stormwater quality
- model stormwater quality based on lumped and continuous bases
- examine the philosophy of stormwater management and associated design guidelines

- analyse components required for stormwater systems and design such components for quantity and quality control.

References

- David A. Chin. (2006). Water Resources Engineering, 2nd edition. Pearson-Prentice Hall. 963 pp.
- Akan, A. O. and R. J. Houghtalen. (2003). Urban Hydrology, Hydraulics and Stormwater Quality. John Wiley and Sons. 373 pp.