EAH 416 RIVER CONSERVATION AND REHABILITATION

Student learning outcome

1. Able to acquire knowledge on natural river characteristics
2. Able to identify and recognize the cause of flood and water scarcity and possible reuse of water
3. Able to attain knowledge on sediment transport and to apply them in river modeling and assess various design conditions based on modeling results and to judge the best solution to be taken.
4. Able to acquire knowledge on sediment data collection in rivers.
5. Able to apply various options based on modeling results and to judge the best solution to be taken.

Topics

Natural river characteristics:

Types of rivers and river corridor components including wetland, floodplain and their relationship with flora and fauna

Problems and Opportunities:

Flood cause, water scarcity, and water reuse

River Conservation:

Application of sediment transport engineering and river modeling in river engineering using HEC-RAS, HEC-6, and FLUVIAL-12. River modeling as a tool for river design.

River Rehabilitation:

Back to Nature Concept, Flood mitigation project rehabilitation using river modeling, river water quality improvement using Best Management Practices (BMPs).

Course Evaluation

Assignment: 20%

Test: 20%

Mini Project: 60%

References

Ab Ghani, A., Azamathulla, H.Md., Chang, C.K., Zakaria, N. A., & Abu Hasan, Z.(2010). Prediction of Total Bed Material Load for Rivers in Malaysia: Case Study of Langat, Muda and Kurau Rivers, *Journal of Environmental Fluid Mechanics,* ISSN 1567-7419

Ab. Ghani, A., Ali, R., Zakaria, N.A., Abu Hasan, Z., Chang, C.K. &. S. Ahmad, M. S. (2010). A Temporal Change Study of the Muda River System over 22 Years, *International Journal of River Basin Management,* IAHR., Vol. 8, No.1, pp. 25-37, ISSN 1571-5124

Julien, P., Ab. Ghani, A., Zakaria, N.A., Abdullah, R. & Chang, C. K. (2010). Case Study: Flood Mitigation of the Muda River, Malaysia, *Journal of Hydraulic Engineering,* ASCE, Vol. 136, No. 4, April, pp. 251-261. ISSN 0733-9429

FISRWG - Federal Interagency Stream Restoration Working Group. (2001). *Stream Corridor Restoration: Principles, Processes, and Practices.*

Lagasse, P. F., Schall, J. D. & Richardson, E. V. (2001). *Stream Stability At Highway Structures*, US Department Of Transportation, Federal Highway Administration. Publication No. FHWA NHI 01-002 (Hydraulic Engineering Circular No. 20), 3rd Edition

Richardson, E. V., Simons, D. B. & Lagasse, P. F. (2001). *River Engineering For Highway Encroachments* – Highways In The River Enviroment, US Department Of Transportation, Federal Highway Administration. Publication No. FHWA NHI 01-004 (Hydraulic Design Series Number 6).

American Society of Civil Engineers. (1997). *Channel Stability Assessment for Flood Control Projects*, Technical Engineering and Design Guide No. 20, ASCE Press, New York.

United States Army Corps of Engineers. (1995). *Sedimentation Investigations Of Rivers And Reservoirs. USACE Engineering and Design Manual*. Publication No. EM 1110-2-4000.