



## **ANNOUNCEMENT – CIVE 537 Residuals Management for Fall 2015**

Dr. Thomas G. Sanders will be presenting his course CIVE 537 Residuals Management in the Fall 2015 semester at Colorado State University. The course worth 3 graduate credits will be presented on campus and available online. Although a small portion of the course was presented in CIVE438 to all CE students from 1974 to 2012, this is the graduate course taught many years at CSU by Dr. Sanders which has not been presented since 2012 when Dr. Sanders retired.

The objective of Residuals Management is to present to the student the problems, issues and solutions of residuals management. Although a small part of the overall residual management problem, hazardous waste management will be discussed. "Solid wastes (residuals) comprise all the wastes arising from human and animal activities that are normally solid and that are discarded as useless or unwanted." Tchobanoglous et al., Integrated Solid Waste Management: Engineering Principles and Management Issues, McGraw-Hill Inc., 1993.

"Solid Waste management may be defined as the discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations, and that also is responsive to public attitudes." Tchobanoglous et al., Integrated Solid Waste Management: Engineering Principles and Management Issues, McGraw-Hill Inc., 1993.

Learning objectives:

1. Be able to design a sanitary landfill, the leachate collection system, the gas collection system and determine the expected life of the landfill.
2. Design a municipal solid wastes collection system which includes the sizing and number of collection vehicles, the routing of the vehicles and the estimated costs of the entire system.
3. The economic analysis and design for a transfer station.
3. Critically review the social, political, economic and environmental impacts of many of the recycling systems.
4. Be familiar with the legislation associated with solid waste management and hazardous waste management.

Specific topics covered:

1. Functional elements of solids waste management.
2. Characteristics of solid wastes.
3. Legislation.
4. Generation and storage of solid wastes.
5. Collection, processing and recycling solid wastes.
6. Disposal, leachate and gas production and collection.
7. Thermal, biological and chemical conversion.
8. Landfill closure and post closure, remedial action.
9. CERCLA, SARA and TSCA legislation.