

## Advanced Environmental Hydraulics Suggested Term Project Topics

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### 1. Commercial Software

Modeling pollutant transport in a meandering river using RAMS/SMS

Modeling hydrodynamics of flow near the river structures using FLOW-3D/EFDC

Modeling sediment transport in a river using RAMS/SMS/CCHE-2D

Modeling mixing characteristics of multiport diffuser using CORMIX

([www.cormix.info](http://www.cormix.info))

Modeling mixing characteristics of multiport diffuser using VISJET

([www.aoe-water.hku.hk/visjet/visjet.htm](http://www.aoe-water.hku.hk/visjet/visjet.htm))

### 2. Numerical Modeling

Numerical modeling of suspended solids using FE method

Numerical modeling of non-conservative pollutants using FD method

### 3. Analytical Study

Analytical solutions of 2D A-D equation for non-conservative substances

Analytical investigations of dispersion tensor in 2D A-D equation

Theoretical equation for dispersion coefficient based on velocity profiles in shear flows

#### **4. Laboratory Experiments**

Investigation of pollutant transport using tracer tests in meandering channels

Vertical diffusion of pollutants in varied slope channels

#### **5. Field Study**

Investigation of pollutant transport using tracer tests in rivers

Field measurements of pollutants concentration in estuaries and bays