



NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Course Syllabus

Course Information

Course Number/Section CIEN 560 (CRN 16641)
Course Title Water Resource Engineering Design

Term Fall Semester 2012
Days & Times Tuesday-Thursday 11:30 AM - 12:45 PM

Professor Contact Information

Professor Dr. Manoj K Jha
Office Phone 336-285-3678
Email Address mkjha@ncat.edu
Office Location McNair Hall - Room 456
Office Hours Monday through Thursday 9 - 11 AM

Course Pre-requisites, Co-requisites, and/or Other Restrictions

CAAE 362 (hydraulics), CAAE 363 (lab), and CAAE 364 (hydrology)

Course Description

This course involves the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. Topics include rainfall-runoff analysis (design storm, streamflow generation), design of open channel (efficient and natural channel), flood control structures (reservoir, spillway), water distribution systems (demand, pipe flow analysis, Hardy-Cross, pumps), and storm and sanitary sewer systems (design flow, culvert, gutter). Water resources design and modeling tools such as HEC-HMS, HEC-RAS, EPANET, and SWMM are also introduced.

Student Learning Objectives/Outcomes

1. Rainfall-runoff relationships
2. Design of open channels
3. Design of reservoir operation
4. Design of water distribution system
5. Design of storm and sanitary system
6. Enhance critical thinking skills; and
7. Enhance communication skills

Required Textbooks and Materials

Required Texts:

Larry W. Mays, *Water Resources Engineering, 2nd Edition, 2010. John Wiley & Sons, ISBN 978-0-470-46064-1*

Suggested Course Materials

1. Any book related to water resources engineering
2. Lecture notes

Assignments & Academic Calendar

Topics, Reading Assignments, Due Dates, Exam Dates

- Midterm exam (October 4)
- Fall break (October 8-9)
- Project presentation (November 27)
- Final exam (December 6 at 1:00 PM)

Grading Policy

Class Participation	5%
Homework	20%
Quiz	20%
Mid-term exam	20%
Final Exam	20%
Projects	15%

Grading Scheme

A: 90-100 B: 80-90 C: 70-80 D: 60-70 F: Less than 60%

Course Policies

Make-up exams

None

Extra Credit

None

Late Work

Every late day of submission results in 20% loss of overall points of the assignment. Justifiable excuses for late submission should be preceded by early notification (email or otherwise).

Special Assignments

None

Class Attendance

Class attendance is mandatory. Absences should be preceded by notification (email or otherwise). Attendance will be taken at random and class participation score will be partly based on these records.

Classroom Citizenship

The students are expected to be on time. Talking or carrying conversations with other students in class is not permitted; this behavior is disrespectful to the faculty and to other students that wish to listen to the lecture.

ABET Outcomes Assessment

This course will document following ABET Outcomes:

c.) An ability to design a system, component, or process to meet desired needs. The assessment of this outcome will be based on the following five indicators:

- 1.) Identifies design objectives;
- 2.) Identifies realistic constraints;
- 3.) Identifies milestones;
- 4.) Performs feasibility analysis; and
- 5.) Performs design optimization.

f.) An understanding of professional and ethical responsibility. The assessment of this outcome will be based on the following four indicators:

- 1.) Aware of ethics code;
- 2.) Identifies ethical issues;
- 3.) Makes ethical judgments; and
- 4.) Demonstrates professional growth.

h.) The broad education necessary to understand the impact of engineering solutions in a global and societal context. The assessment of this outcome will be based on the following three indicators:

- 1.) Knowledge of global events;
- 2.) Knowledge of societal concerns; and
- 3.) Knowledge of environmental issues.

Academic Support

Freshmen and sophomores seeking tutorial assistance should contact the Center for Academic Excellence in Hodgin Hall, 3rd Floor, 336.285.4088, <http://www.ncat.edu/~cae/home.html>.

Technical Support

If you experience any problems with your A&T account, call AggieTech Support (formerly Help Desk) at 336.334.7195.

Field Trip Policies / Off-Campus Instruction and Course Activities

Student Affairs website <http://www.ncat.edu/~staffair/>;

Student Handbook:

- Go to **A&T's Homepage**
- Go to Left Menu - click **CURRENT STUDENTS**
- Highlight **STUDENT HANDBOOK**

Student Travel Procedures and Student Travel Activity Waiver

<http://businessfinance.ncat.edu/policies%20and%20procedures%20index.htm>

*Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address: **Student Travel Procedures and Student Travel Activity Waiver***

<http://businessfinance.ncat.edu/policies%20and%20procedures%20index.htm>.

Additional information is available from the office of Student Affairs. Please check the website at <http://www.ncat.edu/~staffair/>.

Other Policies (e.g., copyright guidelines, confidentiality, etc.)

Student Handbook: <http://www.ncat.edu/~deanofst/Handbook.htm>

Family Educational Rights and Privacy Act

http://www.ncat.edu/~registra/ferpa_info/index.htm

Student Conduct & Discipline

North Carolina A&T State University has rules and regulations that govern student conduct and discipline meant to ensure the orderly and efficient conduct of the educational enterprise. It is the responsibility of each student to be knowledgeable about these rules and regulations. Please consult the:

- undergraduate bulletin at http://www.ncat.edu/~acdaffrs/Bulletin_2010_2012/toc.htm
- graduate catalogue: <http://www.ncat.edu/~gradsch/cstudents.html>, and
- student handbook <http://www.ncat.edu/~deanofst/Handbook.htm>

for detailed information about specific policies, such as academic dishonesty, cell phones, change of grade, disability services, disruptive behavior, general class attendance, grade appeal, incomplete grades, make up work, student grievance procedures, withdrawal, etc.

These descriptions and timelines are subject to change at the discretion of the professor.

Revised 01.01.2011