AAiT

Addis Ababa
Institute of Technology
School of Civil and
Environmental Engineering

Water Distribution Modelling
Lecture By Fiseha Behulu (PhD)

Modeling Water Distribution
CENG - 6654

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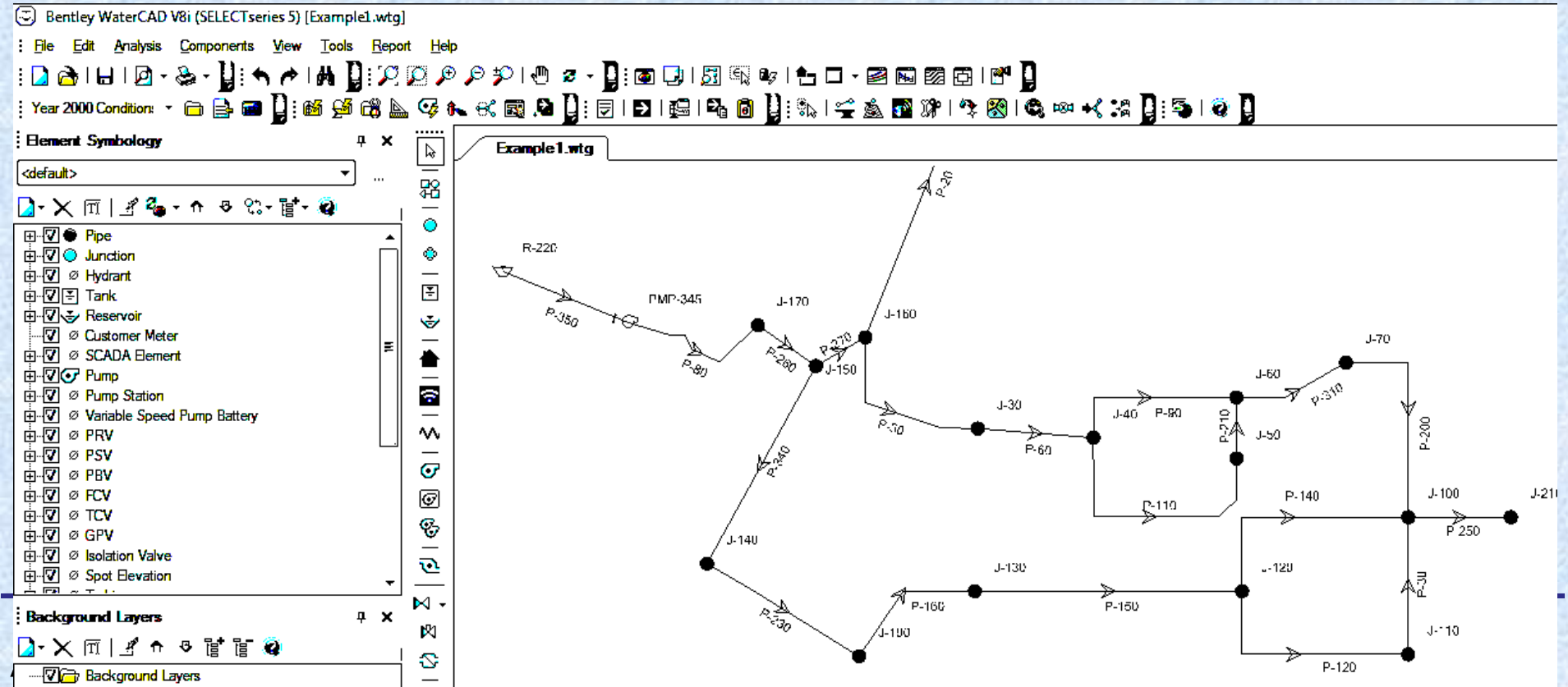


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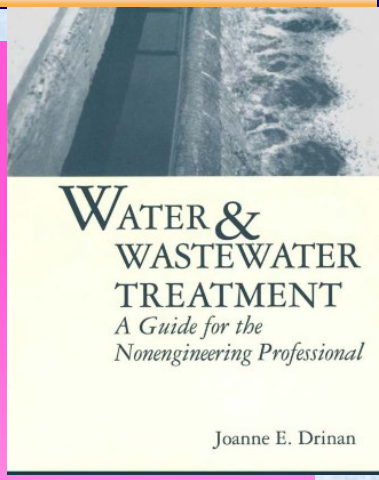
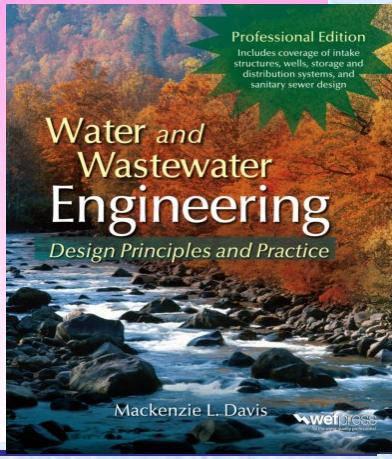
WATER IS LIFE!!

General Information About the Course

- **Course Name:** Modeling Water Distribution
- **Course Code:** **CENG - 6654**
- **Prerequisites:** None
- **Lecture Hours:** 3
- **Tutorial/Practical Hours:** 3
- **Total Credit:** 3 (ECTS 5)
- **Chapters to be covered:** **Five (5)**
- **Duration of the course:** 10 Weeks





Class Schedules- (*Only for block course delivery)*

Weekly Schedule

Time	Monday	Tuesday	Wednesday	Thursday	Friday	S.	S
9:00 A.M. - 10:00 A.M.				**CENG -6654**			
10:00 A.M. - 12:00 A.M.				**CENG -6654**			
12:00 A.M. - 2:00 P.M.							
2:00 P.M. - 4:00 P.M.							

Description of the Course

- **CENG 6654 Modeling Water Distribution (5 ECTS):**
  - The course enables students understand and apply hydraulic analysis models for evaluation of **existing water supply distribution systems** and **design of new ones**. Topics include modeling approaches; model calibration; analyses of pipe networks; water quality in distribution networks; water hammer analysis; optimization of water distribution systems.

Contents of the Course

- **The course Covers the following main topics**

1. Components of Water Supply
2. Basic Principles of Pipe Flow (Hydraulics)
3. The Concept of Modeling
4. Model Calibration
5. Optimization in WDS
6. Water Hammer Theory
7. Water Supply Project Design (Application of Tools)

Objective of the Course

- The module aims :
  - To provide a basic knowledge of classical and contemporary problems in management of water supply and distribution systems for students/engineers.
  - It also offers gaining practical experience in using water supply and distribution modelling tools (Example: EPANET, WaterCAD).

Intended Learning Outcome

1. Subject Specific Knowledge, Understanding and Skills

- To provide a basic knowledge of classical and contemporary problems in design of water supply and distribution systems for engineers.
- It also offers gaining practical experience in using water supply and distribution modelling tools (Example: EPANET, WaterCAD and ArcGIS).

2. Core Academic Skills

- be able to identify, formulate and analyze hydraulic problem in a given water supply/distribution system;
- be able to critically assess research results;
- have acquired some practical experience of using water supply/distribution modelling tools

Intended Learning Outcome…

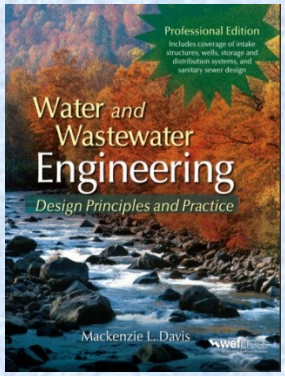
3. Personal and Key Skills

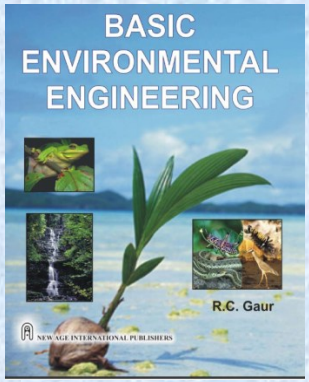
- Improved further the necessary skills for independent learning;
- Enhanced Report and Presentation Skills;
- Improved Some IT skills;
- Literature review capacity enhancement (EndNote).

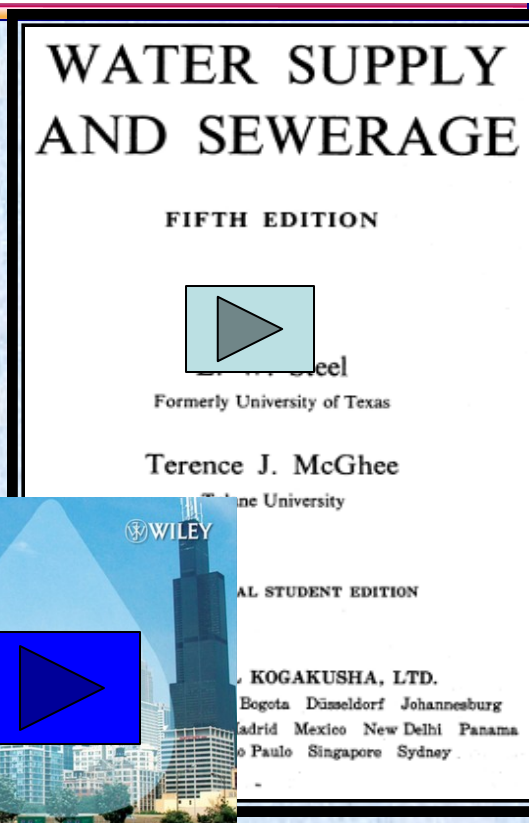
Learning/ Teaching Method

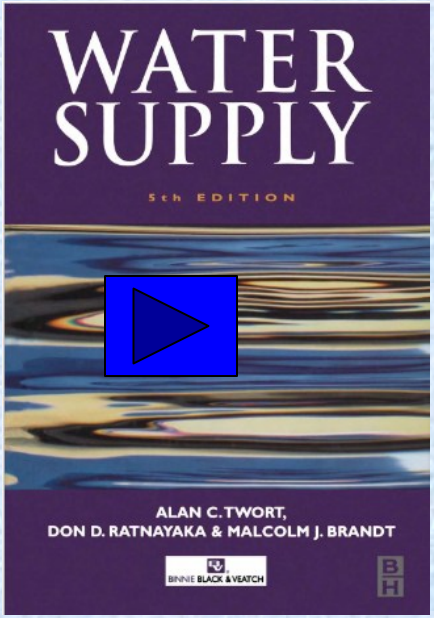
- **The learning/teaching process can be through**
  - Lectures (Supported by slides and Reference books)
  - Tutorials
  - Practical Sessions

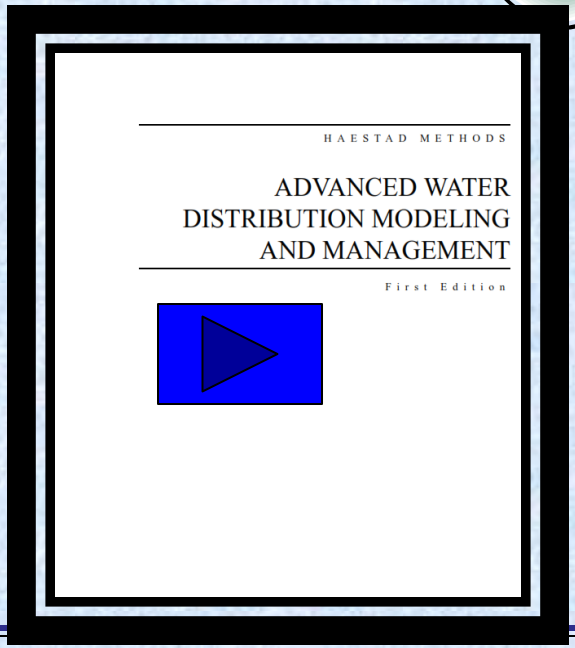
Reference Materials











Journal Review- Mandatory

- The following can be indicative journals for your **term paper preparation**

Journals

Urban Water Journal: https://www.tandfonline.com/toc/nurw20/current
Urban Water Engineering: https://www.drinking-water-engineering-and-science.net/
Water Journal: http://www.mdpi.com/journal/water

AAU Theses:

http://www.aait.edu.et/library-service

Available Tools Review- Mandatory

Common Tools:

EPANET: https://www.epa.gov/water-research/epanet

WaterCAD https://www.bentley.com/en/products/product-line/hydraulics-and-hydrology-software/watercad

ArcGIS https://www.esri.com/en-us/home

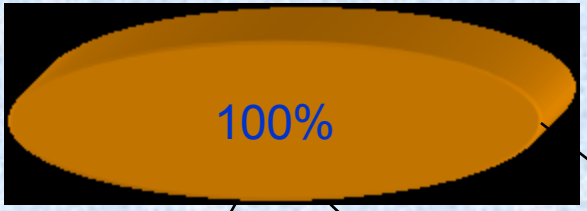
PIPE-FLOW https://www.pipeflow.co.uk/

WADISO: http://www.gls.co.za/software/products/wadiso.html

KYPIPE: http://kypipe.com/

Hammer: http://www.water-simulation.com/wsp/2005/08/07/hammer-version-2/comment-page-1/

Assessment Methods



Project With Presentation

40%

Term Papers and Quizzes

20%

Final Exam

40%

Tentative!

Any suggestions from students….???

Then Read, Read, Read and Ready !!!

Please Feel Free to Contact me any time you Want

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Consultation hour:- Thursday (2:00 P.M- 5:00 P.M)