

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



MASTER SYLLABUS

**COURSE NUMBER – COURSE NAME
CONS 432 - CIVIL DRAFTING AND DESIGN**

Created by: Robert Blickwedehl

Updated by: Joseph Reilly

Canino School of Engineering Technology

Department: Civil and Construction Technologies

Semester/Year: Spring/2019

A. **TITLE:** CIVIL DRAFTING AND DESIGN

B. **COURSE NUMBER:** CONS432

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

Credit Hours: 3

Lecture Hours: 2 per week

Lab Hours: (1) three-hour lab per week

Other: per week

Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** Yes No

E. **GER CATEGORY:** None: Yes: GER
If course satisfies more than one: GER

F. **SEMESTER(S) OFFERED:** Fall Spring Fall & Spring

G. **COURSE DESCRIPTION:**

This course covers the design of infrastructure for land development and the preparation of plans and specifications to construct it. Students design and prepare drawings for water supply, storm sewers, sanitary sewers, roads and site grading and drainage using CAD software.

H. **PRE-REQUISITES:** None Yes If yes, list below:

Pre-requisites: CONS 322 (Hydraulics), CONS 385 (Hydrology and Hydrogeology), CONS 216 (Soils in Construction), CONS 372 (Highways and Transportation)

CO-REQUISITES: None Yes If yes, list below:

I. STUDENT LEARNING OUTCOMES: (see key below)

By the end of this course, the student will be able to:

<u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO & SUBSETS</u>	
a. Design a small water distribution system for a small residential or commercial development			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets
b. Design a storm drainage system for a small residential or commercial development			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets
c. Design a street system for a small residential or commercial development			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets
d. Prepare a site grading plan			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets
e. Prepare an erosion and sediment control plan			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets
f. Design a sewer system for a residential development			5-Ind, Prof, Disc, Know Skills 2-Crit Think ISLO	Subsets PS Subsets Subsets

			ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
			ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
			ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
			ISLO ISLO ISLO	Subsets Subsets Subsets Subsets

KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

*Include program objectives if applicable. Please consult with Program Coordinator

J. **APPLIED LEARNING COMPONENT:** Yes No

If YES, select one or more of the following categories:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement |
| <input type="checkbox"/> Internship | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement | <input type="checkbox"/> Research |
| <input type="checkbox"/> Practicum | <input type="checkbox"/> Entrepreneurship |
| <input type="checkbox"/> Service Learning | (program, class, project) |
| <input type="checkbox"/> Community Service | |

K. **TEXTS:**

Dewberry & Davis (2008) Land Development Handbook 3rd Ed. McGraw Hill

L. **REFERENCES:**

M. **EQUIPMENT:** None Needed: Technology enhanced classroom and computer laboratory

N. **GRADING METHOD:** A - F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Exams

Homework

Design Projects

P. **DETAILED COURSE OUTLINE:**

- I. Land development design overview
 - A. Types of development
 - B. Government and regulatory functions
 - C. Project planning
 - D. Obtaining approvals
- II. Site selection and analysis
 - A. Feasibility studies
 - B. Environmental considerations
- III. Project design
 - A. Design criteria
 - B. The design process
 - C. Documents
 - D. Site investigations
- IV. Street design
 - A. Design considerations
 - B. Cross sectional elements

- C. Horizontal alignment
- D. Vertical alignment
- V. Wastewater design
 - A. Planning studies
 - B. Design criteria
 - C. Sewer systems
 - D. Pumping stations
 - E. Wastewater treatment
- VI. Water supply design
 - A. Demand estimates
 - B. Design criteria
 - C. Piping systems
 - D. Pump stations
 - E. Groundwater supply systems
- VII. Storm drainage design
 - A. Review of hydrology
 - B. Estimation of peak discharge
 - C. Pavement drainage
 - D. Swales and ditches
 - E. Culvert design
 - F. Storm sewers
 - G. Detention basins
 - H. Check dams
- VIII. Erosion and sediment control
 - A. Consequences of excessive erosion
 - B. Factors influencing soil erosion
 - C. Universal soil loss equation
 - D. Sediment trapping facilities
 - E. Sediment control planning
- IX. Grading plans
 - A. Design considerations
 - B. Estimation of earthwork quantities
 - C. Plan drafting

Q. **LABORATORY OUTLINE:** None Yes

1. Subdivision layout (1 week)
2. Street plan (2 weeks)
3. Sewer design (2 weeks)
4. Water supply design (3 weeks)
5. Stormwater drainage design (4 weeks)
6. Erosion and sediment control plan (2 weeks)
7. Final design presentation (1 week)