

# ETES 5040/7040- CONSTRUCTION SYSTEMS

**SEMESTER** Fall 2002 (August 19 to December)

**Monday evenings 4:30 to 8:30**

**INSTRUCTORS** John Scott, Occupational Studies, 850 College Stations Road, 215 Rivers Crossing Building, The University of Georgia, Athens, GA 30602, and Jimmy Williamson, 224 Rivers Crossing Bldg.

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**REQUIRED TEXTS:** *Construction Technology* (3<sup>rd</sup> ed.), Mark W. Heath (1996) Thompson Learning Tools. *Developing Shop Safety Skills* (AAVIM) (If Available)

## **COURSE DESCRIPTION:**

The course is designed to engage students in construction practices used to produce structures in the construction types of light, commercial, industrial, and civil. Construction techniques are employed in laboratory activities that center around the phases of light construction. The course provides information about construction technology and provides laboratory experiences in several areas of construction including fundamental processes in masonry, electrical wiring, welding, carpentry, and plumbing. Special instruction will be provided on the use and care of hand and power tools and machines used in occupational education technical laboratory programs.

## **COURSE OBJECTIVES**

At the end of the course students should be able to:

1. Develop problem-solving skills in working with team members
2. Provide the leadership required for middle school and high school technology education n students to design, plan and produce a construction product.
4. Recognize the special terminology and tools and machines associated with construction technology.
5. Respond satisfactorily to concepts used in construction that may appear on course test and eventually in the TCT in the areas of (a) types of construction; (b) designing for construction; (c) architectural drawings; (d) specifications and contracts; (e) business of construction; (f) concrete and masonry materials and processes; (g) construction materials and products; (h) measurement and layout; (i) Machines and tools used in construction; (j) site work; (k) foundation systems; (l) floor systems; (m) wall framing systems; (n) roof systems; (o) structure enclosure; (p) heavy construction systems –soils and foundations, floor systems, structural frames and walls; (q) highway construction; (r) industrial construction, (s) plumbing systems; (t) climate control; (u) electrical wiring; (v) interior finishing; (w) painting; (x) landscaping; (y) manufactured construction; and (z) construction in space.
6. Maintain and operate power tools used in manufacturing and construction environments.
7. Organize and maintain a technical laboratory such as a technology education or construction technology laboratory.
8. Demonstrate a knowledge of safety principles and practices for the home and work environment.
9. Complete tasks in carpentry, masonry, wiring, plumbing, and welding
10. Demonstrate good intra personal and interpersonal skills
11. Demonstrate learning how to learn skills

## **TEACHING/LEARNING MODES:**

The following methods will be utilized in class:

1. Field trips to a construction sites (if possible to schedule) (CTL)
2. Lecture/class discussions
3. Small group work and cooperative learning
4. Laboratory planning and production activities
5. Viewing videotapes on construction technology
6. Team problem solving activities. (CTL)
7. Individualized instruction.
8. Volunteer work at a habitat for humanity site (CTL)
9. Guest presentations

### **GENERAL REQUIREMENTS:**

Each student is responsible for securing and wearing approved eye protection (safety glasses, goggles, etc.) in the laboratory when work is taking place. Students are also responsible for purchasing or sharing textbooks and for bringing work clothing or aprons, shop coats, etc. to protect their regular clothing. Finally students are expected to attend **all** class sessions except in case of emergency and then the instructor needs to be notified in advance. This class requires all students to work together in teams and absent workers cause problems for work teams. Handout materials should be maintained in 3-ring notebooks.

### **SPECIFIC COURSE REQUIREMENTS:** (All students)

- \* Midterm Exam over one half of the required readings and materials covered in the first half of the course including textbook assignments, handouts, videos and the safety manual.
- \* Final examination over course content in the second half of the course including the required readings provided and the balance of the chapters/units in the textbook.
- \* Cooperative learning project in which each team of students will design, provide sketches or drawings, estimate materials and labor costs, develop a construction schedule, and fabricate parts of a small utility building. (CTL)
- \* Visit a construction site and observe construction practices and talk with workers. Write a report on this visitation. (CTL)
- \* Go to lumber supply or hardware stores and observe the many building products that are used in construction. While there, pickup any free materials about the products and how to install them. Organize the obtained materials into a notebook with an introduction that includes a report on the experience of visiting the stores. (CTL)
- \* Prepare for and deliver a demonstration lesson on a selected machine or power tool used in construction technology. **(Graduate Students Only)**
- \* Complete an electrical wiring project that involves wiring a number of circuits used in residential construction. (CTL)
- \* Complete a masonry project that involves building corners and laying brick to a line. Complete a concrete project involving mixing and pouring a small concrete slab (CTL)

- \* Complete a carpentry project that involves cutting wood materials using several machines, power tools and hand tools and laying our wood framing members. (CTL)
- \* Complete a plumbing project that involves joining plastic and copper tubing and pipes.
- \* Sharpen hand tools including a hand saw, circular saw, twist drill, spade bit, plane iron or knife, and wood chisels.
- \* Cut plastic and glass and glaze glass
- \* Organize all handout materials into a 3-ring notebook.

**Graduate Student Requirements:**

Graduate students will have additional items on the midterm and final exams. Graduate students also must prepare for and present a demonstration lesson on a selected machine or power tool.

<b>ASSESSMENT SYSTEM:</b>	<b>(Graduate Students)</b>	<b>WEIGHT/POINTS</b>
<b>FACTORS</b>		
* Participation/attendance (2 points off final grade for each unexcused absence)		
* Group utility building Project (Group members receive same grade)	20 pts	
* Individual and/or small group assignments		
Cut plastic and glass and glaze glass	2 pts	
Machine/tool lesson presentation	8 pts	
Construction site visitation report	4 pts	
Tool sharpening	2 pts	
Wiring project	7 pts	
Plumbing Project		3 pts
Carpentry Project (Stair, Rafter layout; cuts, Bd Ft. Problem)	6 pts	
Masonry Project	5 pts	
Lumber Supply Store Visitation	2 pts	
Small construction project	6 pts	
* Midterm Examination	16	
* Final Examination	17 pts	20%
* Class Participation and attitude	2pts	
		100 pts 100%

**ASSESSMENT SYSTEM: (Undergraduate Students)**

<b>FACTORS</b>	<b>WEIGHT/POINTS</b>
* Participation/attendance (2 points off final grade for each unexcused absence)	
* Group utility building project (Group members receivesame grade)	20 pts
* Individual and/or small group assignments	
Cut plastic and glass and glaze glass	2 pts
Construction site visitation report	4 pts

Tool sharpening	2 pts	
Wiring project		7 pts
Plumbing Project		3 pts
Carpentry Project (Cuts, Stair & Rafter layout, Bd Ft Problem)	6 pts	
Masonry Project	5 pts	
Lumber Supply Store Visitation	2 pts	
Small construction project	9pts	
* Midterm Examination	18pts	
* Final Examination	20 pts	20%
* Class Participation and attitude	2pts	
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		100 pts 100%

**LETTER GRADE CONVERSION:**

Letter grades will be assigned according to the following criteria:

- 90% or better "A" superior (Requires high quality work)
- 80% to 89 % "B" Good (Requires better than average work)
- 70% to 79% "C" Average ( Requires steady and satisfactory work)
- 60% to 69% "D" Minimal (Demonstrates poor attitude and dedication to learning)
- 59% or below "F" Failing (This is a category that should be avoided at all cost)

"I" Incomplete grades. An "I" or incomplete grade will only be awarded under extreme emergency conditions and then can not be converted to higher than a grade of "B".

**ATTENDANCE/PARTICIPATION POLICY**

Punctuality and attendance are a necessity in receiving the amount and quality of instruction required for this course. Attendance will be taken at the beginning of each class meeting. Participation in class discussions and activities is expected of all students and will be closely monitored. Class participation is a grading factor and could be critical in the grade earned for this course. The drop policy is described in the University Undergraduate Bulletin, page 45.

**COURSE CHALLENGE:** Students only profit from courses when they become actively involved in instructional activity. The amount and quality of learning is dependent upon the participation of each class member and how well the class works together in teams.

**ENRICHMENT ACTIVITIES:** Students are encouraged to bring a twist drill bit 3/16" or larger to practice grinding a new cutting edge. They are also encouraged to bring scissors, hand saws, chisels, plane blades, and other cutting tools to learn how to sharpen them.