

Course Syllabus

Semester: Fall 2009

CM 3280

Construction Course Title: Mechanical & Electrical Codes and Loads for Buildings (4-0-4)

Prerequisites: CNST 2000

Classroom: VISTA

Class Periods: VISTA

Text: ACCA manual CS – Air Conditioning Contactors of America – Commercial systems
Digital drawings on VISTA

Text used but not required:

ASHRAE handbook – Applications

ACCA manual N – commercial heat load – ISBN – 1-892765 (this book is recommended) – the new 5th edition is also ok

NEC

References/Resources: text from courses in the major, plans and library materials,

Grading Policy:

A = 90 to 100

B = 80 to 89

C = 70 to 79

D = 6- to 69

F = 0 to 59

Examinations = 20%

Final = 25%

Homework = 35%

Paper = 20%

Total 100%

Students are expected to maintain weekly contact (via VISTA) with the professor.

Instructor: John Mench Ph.D., PE, LEED-AP

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Office Hours: Posted on office door.

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**Required for Capstone – specialty concentration

Class	Date	Subject of Lecture/Lab	Assignments Due	Reference(s)
1	Week 1	Introduction: Codes & Loads		CS – 1 & VISTA
2**		Mechanical Loads – ambient air	Homework problem	CS – 2 & VISTA
3**	Week 2	Mechanical Loads - solar		CS – 3 & VISTA
4**		Mechanical Loads – related to building use	Start heat load cal.	CS – 4 & VISTA
5	Week 3	Heat & Building Electrical Systems	Homework problem	CS – 5 & VISTA
6**		Electrical Loads–compressors, fans, & pumps	Code analysis	Building Code - classification
7	Week 4	Electrical Loads - lighting	Cooling Tower problem	CS – 6 & VISTA
8		Cogeneration & Emergency Systems	Equipment selection problem	ASHRAE Applications C42
9	Week 5	The NEC & Loads - continuous	Heating problem	CS – 7 & VISTA
10		The NEC & Loads – non continuous	M.A.R.C.	ASHRAE Applications C43
11	Week 6	Examination One	Heat Pump problem	CS – 8 & VISTA
12		Loads & Codes – building type - residential	Pumping requirements	Plumbing Code
13	Week 7	NEC – wire and conduit	Condensation problem	CS – 9 & VISTA
14		ASHRAE – pipe and insulation	Heat Load Calculation	ASHRAE Applications C45
15	Week 8	Air Quality		USGBC - website
16**		Fresh Air – mixed air streams & filtration	Moisture problem	CS – 10 & VISTA
17	Week 9	Building Controls – mechanical systems	Start “E” load cal.	ASHRAE Applications C53
18		Building Controls – electrical systems	Economizer problem	CS – 11 & VISTA
19	Week 10	Sound and Vibration Concerns	LEED topic for paper	USGBC website
20**		Fire and Smoke Concerns	Boiler problem	CS -12 & VISTA
21	Week 11	Seismic and Wind Concerns	“E” panel layout	NEC
22		Small versus Large MEP systems	doas problem	doas.psu.edu
23	Week 12	Examination Two	Air quality problem	
24		MEP System Analysis- Loads and Codes (L&C) by building type - retail		doe2 energy model
25	Week 13	Heat Pumps L&C – places of assembly	NEC problems	UNEC
26		Radiant Heat L&C – hotels, motels, etc	NEC problems	UNEC
27	Week 14	Humidification L&C – health care facilities		
28		Heat Pipes, Desiccants L&C – computer facilities		
29	Week 15	Life Cycle Costs L&C – museums, libraries		
30				

Catalog Description:

Study of building M&E system loads and applicable codes. Emphasis on how they affect the construction project. Topic will include air conditioning, heating, plumbing, fire protection, electrical power, electrical lighting and building control systems. The analysis of current construction drawings will be integrated into each topic.

Course Outcomes:

By the end of the course the student should be able to:

1. quantify building MEP loads (heat, cooling, water, & electrical)
2. quantify how MEP building systems loads influence building design and construction
3. find applicable standards and codes
4. list why building loads and codes differ with building use
5. complete a doe2 energy model

Specific Requirements for the Course: Paper – The paper will include explanation of how the energy, electrical, water, sewage and HVAC loads were calculated for the assigned building. The doe2 energy model must be included. Minimum of 10.0 pages of core text, word processed (specifications: 12 point Times New Roman font, single spaced, margins L=1.5” R=1.0” top and bottom 1.0”). At least 4 pages more of tables or graphs. Title page with course number and name, your name and date submitted. Include research references and any attachments at end.

Final examination: Refer to the university schedule for date

Additional Notes:

NOTE 1

The course description and course schedule handouts provide the general framework for the course. However, the instructor reserves the right to make any modifications or changes to the course, depending on the class progress, or on any special circumstance that may arise during the semester.

NOTE 2

There will be no curve for the final grade, only straight averages. The minimum cutoff for an A is 89.5% and above; for a B is 79.5% and above; for a C is 69.5% and above; and for a D is 59.5% and above. Anything below 59.5% is considered an F. The instructor reserves the right to lower these cutoff values depending on specific circumstances surrounding the overall performance of the class.

NOTE 3

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the counselor working with disabilities at (678) 915-7226 as soon as possible to better ensure that such accommodations are implemented in a timely fashion.

NOTE 4

It is assumed that by this time in the student's matriculation, he/she is well-versed with what constitutes plagiarism. Proper citation of references is required for this and all your coursework in the CNST program. Failure to comply with this requirement may result in disciplinary action.