SAMPLE PROJECT ASSIGNMENTS AND EXERCISES

National Science Foundation
Advanced Technological Education
B.E.S.T. Center Winter Workshop 2013

SAMPLE PROJECT & EXERCISES

Courses	Project
BUAS 1010(2): BAS Fundamentals	Visit BAS partner / Prezi present.
BUAS 1020(3): BAS Electrical Concepts I	Basic circuit wiring
BUAS 1030(3): BAS Electrical Concepts II	Wire basic I/O to controllers
BUAS 1040(3): BAS Devices	Device selection & presentation
BUAS 1050(3): BAS Network Architecture	Run & terminate network types
BUAS 1060(3): BAS Advanced Elec. Concepts	RLC filter & demo w/oscilloscope
BUAS 2010(3): BAS Comm. HVAC/R & Ctrls	PI loop tune project
BUAS 2020(3): BAS Logic & Programming	Assorted programming projects
BUAS 2030(4): BAS Design & Installation	BAS system design & install
BUAS 2040(5): BAS Integration	System database creation
BUAS 2050(5): BAS Internship	On-the job training
Building Technologies Club / ASHRAE	Plan industry events / compete

GEORGIA PIEDMONT TECHNICAL COLLEGE

Georgia Piedmont Technical College
BUILDING AUTOMATION SYSTEMS FUNDAMENTALS
COURSE BUAS 1010 CRN 52506 SEMESTER SUMMER 2012
OUTLINE, SYLLABUS, & ORIENTATION INFORMATION

☐FACULTY INFO

Mr. Brian Lovell
Clarkston Campus Office: C-13 Email: lovellb@gptc.edu Phone: 404-297-9522 Ext.: 1265
Office Hours: By Appointment Only

Division Chair :Ms. Natalie Kostas
Clarkston Campus Office: Industrial Dept. Email: kostasn@gptc.edu Phone: 404-297-9522 Ext.: 1216

☐CLASS TIMES

Mondays: 5:30 pm - 6:45 pm

☐CREDIT HOURS & PREREQUISITES

The federal definition of a semester credit hour is one hour of classroom instruction and two hours out of class student work each week.
2 / Advisor Approval

☐INTRODUCTION & COURSE DESCRIPTION

BAS Fundamentals provides an overview of the BAS industry in general. Topics include history, BAS manufacturers & contractors, industry scope & trends, careers in BAS, overview of point types, required skills, types of BAS systems, and general BAS architecture. .

☐COURSE COMPETENCIES

History of BAS industry / Scope of BAS industry / Major commercial building systems / Contracting basics / BAS Manufacturers, contractors, service companies, and suppliers / Skill sets required for BAS installers, technicians, and salespeople, Basic BAS inputs & outputs / Types of BAS control systems / General BAS architecture / Trends in BAS industry

☐STUDENT LEARNING OUTCOMES

Recal major developments of the BAS industry over the last 100 years
Give examples of major technological advances which have impacted the BAS industry over the last 25 years
Predict how emerging technologies and the information age will impact the BAS industry over the next decade
Identify 5 career paths a BAS professional might follow
Discuss the types of systems which are considered to be within the domain of building automation systems
Compare the BAS industry with the IT industry
Cite the major building sysetms found in commercial facilities
Recognize major building systems as shown on a blueprint
Contrast a 24-hour period energy consumption graph of a well-managed building with that of a poorly-managed building
Discuss the heirarch of contractors from the BAS contractor through the architectural firm on a typical bid & spec job
Construct a flow diagram depicting how a change order flows from a BAS contracting firm through the engineer and architect to the owner and then back down to the BAS contractor
Compare and contrast the relative merits of bid/spec contracting of a new building vs. design/build contracting of a new building
Argue why design build contracting is better from an owner's perspective to bid & spec
Argue why bid & spec contracting is better from an owner's perspective than design build contracting
Name 10 leading BAS original equipment manufacturers (OEMs) in the United States
List 10 leading BAS service companies in the U.S.

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5/28 - Memorial Day Holiday - No Class

6/4 - Introduction / History of BAS Industry / Careers in BAS
Writing Assignment # 1 - Due 6/10 NLT 11:55 pm
Quiz 1 - Due Sunday, 6/10 NLT 11:55pm (History of BAS / Careers in BAS)

6/11 - BAS Companies (Local / National)
Quiz 2 - Due Sunday, 6/17 NLT 11:55pm (BAS Companies)

6/18 - Guest Speaker 1
Guest Speaker 1 Writing Assignment - Due 6/24 NLT 11:55 pm

6/25 - Required Skills for BAS Professionals / BAS Industry Trends
Writing Assignment # 2 - Due 7/1 NLT 11:55 pm
Quiz 3 - Due Sunday, 7/1 NLT 11:55pm (Required Skills for BAS Professionals / BAS Industry Trends)

7/2 - Soft Skills Lectures I & II
Mid-term Assessment - Due Sunday, 7/8 NLT 11:55 pm (All material covered through 7/2)

7/9 - Guest Speaker 2
Course Project Assigned
Guest Speaker 2 Writing Assignment - Due 7/15 NLT 11:55 pm

7/16 - Overview of Point Types I
Quiz 4 - Due Sunday, 7/22 NLT 11:55 pm (BAS Point Types I)

7/23 - Overview of Point Types II
Quiz 5 - Due Sunday, 7/29 NLT 11:55 pm (BAS Point Types II)

7/30 - BAS System Architecture
Quiz 6 - Due Sunday, 8/5 NLT 11:55pm (BAS System Architecture)

8/6 - Project Presentations

8/8 - Final Assessment Due 8/8 NLT 11:55 pm (Cumulative)

COLLEGE POLICIES

Reaffirmation – *QEP: iRead…iClick…I'm Ready… Enhancing Reading Comprehension and Digital Literacy*

Georgia Piedmont Technical College (GPTC) is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). One component of the process of reaffirmation is the identification and implementation of a Quality Enhancement Plan (QEP) designed to improve student learning or the environment in which student learning takes place. The Office of Quality Enhancement conducted surveys and focus groups, the

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SAMPLE PROJECT & EXERCISES

BUAS 1010 – BAS Fundamentals
Assignment # 1

Using the Purdue Online Writing Lab at http://owl.english.purdue.edu/owl/ read about writing memos under the submenus "Subject Specific Writing" and then "Professional, Technical Writing," construct a memo which includes sections about the history of the building automation systems industry, at least three career pathways within the industry, and what career pathway you would like to follow in the industry.

Use the dropbox in Angel to submit your assignment in word document format.

***Note:** We will be making use of the Purdue Online Writing Lab throughout this course. Some quiz questions will come from sections which are referenced in the course.

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SAMPLE PROJECT & EXERCISES

BUAS 1010 – BAS Fundamentals
Assignment # 2 – Finding a Career with a BAS Company

Using the Purdue Online Writing Lab at http://owl.english.purdue.edu/owl/ read about writing memos under the submenus "Subject Specific Writing" and then "Professional, Technical Writing," construct a memo which includes the following items;

- A BAS company you might be interested in working for and why
- Describe some interesting facts about the company you wish to work for
- Describe the types of products you'll be working with in your chosen company
- A specific job you'd like to do with that company
- The skill set required to acquire the job your interested in
- How you plan to work toward your goal of employment with your chosen company and how you will prepare yourself both inside and outside of DeKalb Tech / GPTC
- List any opportunities for internships / co-ops / or on-the-job training that your chosen company offers

Use the dropbox in Angel to submit your assignment in word document format.

***Note:** We will be making use of the Purdue Online Writing Lab throughout this course. Some quiz questions will come from sections which are referenced in the course.

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SAMPLE PROJECT & EXERCISES

BUAS 1010 – BAS Fundamentals
Course Project Assignment – Regional BAS Contracting Companies

Please select one of the following local companies to research and then follow the directions below;

- Convergint
- McKenney's
- Stromquist
- Siemens
- Automated Logic of GA
- Johnson Controls
- Waypoint Systems
- Frazier Service Company
- GA Trane

You will be working in groups of 3 students. You will need to assign someone to contact the chosen company, let them know you're a student at Georgia Piedmont Technical College, and request a brief interview with someone there. You need to let them know that this is an assignment for school and if they have any questions or would like to confirm the assignment, they can contact me, Mr. Lovell, at lovellb@gptc.edu. You should have as many paragraphs as necessary to fully answer the questions that follow. Using the Purdue Online Writing Lab at http://owl.english.purdue.edu/owl/ read about writing memos under the submenus "Subject Specific Writing" and then "Professional, Technical Writing," construct a memo which includes the following items;

- Description of the company you've chosen.
- When was the company established, by who, and what is their core focus
- What controls product do they represent (Possibly more than one)
- What classifications of jobs do they have in their controls division (Automation specialist / Field technician / controls engineer / controls salesperson, etc?)
- Do they handle jobs totally in-house, or do they sub-contract controls installations?
- Do they strictly do controls, or do they have other divisions of the company? If so, what are they?
- What do they see as the top 3 challenges controls contractors face over the next 5 years
- Do they anticipate hiring new technicians within the next 6 months? Within the next year?
- When you have determined what controls products they use, you need to go the manufacturer's website and identify and list the controllers at the application-specific level, the automation level, and the management level.
- You should be able to describe how many inputs and outputs controllers have at the ASC and automation levels, and what types they are

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SAMPLE PROJECT & EXERCISES

- You should also find out what the system architecture is and be able to discuss and explain the system architecture. (It's okay to use a manufacturer's diagram, as long as you can explain it and handle questions about it and properly cite the reference)

There is a presentation component to this assignment as well as follows;

- For this assignment, you will be using Prezi software to do the presentation as a group which will be 10 minutes in length, including questions. Prezi is a free presentation software package and is available to create on-line presentations at www.Prezi.com.

You will have a separate written and presentation drop-box for this assignment which will be due on the same day.

There should be a division of labor among your group as follows;

- Interviewer / Company data collector
- Written portion of assignment person
- Presentation portion of assignment person who also presents for the group
- Editor (Person who checks for proper English grammar / format / reviews presentation for accuracy and proper citing)
- Question and Answer session person

SAMPLE PROJECT & EXERCISES – BUAS 2030

Submittal Package Project Instructions

Please review the submittal package sample that was uploaded to provide you an example of what's expected in this assignment.

The specifications for the project are to be found under the Course Materials tab.

The specifications are for a variable air volume (VAV) system replacement for DeKalb Technical College. You will find the drawing and points listing under the Course Materials tab as well.

I have already selected the BAS devices for you and uploaded a file called "BAS Device Selection for Project" under the Course Materials tab. It is your responsibility to take the Kele product selections part numbers and go to the Kele website at www.Kele.com and put them in a search. When the product comes up, it will come up with four or five tabs. One of the tabs will have the name "Related Documents." You should click on this tab and then click on "catalog page" at the bottom of the next screen that comes up. This will provide you with a cut sheet, or engineering sheet, which details the product and provides a wiring diagram.

You should use this wiring diagram for your detail drawings and connect lines in your MS Visio drawing to the input or output terminals to which the devices will terminate on. Remember that input and output don't matter, but you should keep up with what inputs and outputs are used on the Delta panel so you don't duplicate points.

The total number of the inputs and outputs on this VAV system are much less than the number of points available on the Delta panel itself so there shouldn't be a problem having enough hardware points to cover all the devices. You'll also notice that there are a number of software points as well, but these don't need to be shown in the submittal package. We are only showing detail wiring of the hardware points. Consult the example submittal that is on Angel under "Course Materials" for an example of how detail wiring is shown. You will definitely need to look at the examples shown for fan-proving current switch location and starter wiring for fan start/stop details, among others.

Most of the work for this project is already done for you, but you will need to create the stencils and detail drawings and construct your submittal packages, print them out, and bind them in a presentation binder so they appear like the sample submittal I provided you with. I will accept only hard copy submissions for you course project. No electronic submissions will be graded.

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	Hardware Points				Software Points							
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**	**Kele Product**	**Quantity**
Supply Air Static Pressure	×							×	×	×	T30-030-C	1
Supply Air Humidity	×							×		×	ACI/RH2-D-AN	1
Prefilter Differential Pressure	×							×			T30-002-C	1
Mixed Air Temp	×							×		×	BA-10K3-D8-JB	1
Return Air Carbon Dioxide PPM	×							×		×	GMD20	1
Return Air Humidity	×							×		×	ACI/RH2-D-AN	1
Return Air Temp	×							×		×	ACI/RH2-D-AN	Combo w/ RA Humidity
Supply Air Temp	×							×		×	ACI/RH2-D-AN	Combo w/ SA Humidity
Supply Fan VFD Speed		×						×		×	F1-F-4V-005-B-3-ET	1
Preheating Steam Valve		×						×		×	V5011N1057-KAS-44-M	1
Cooling Valve		×						×		×	V5013N1063-KAS-44-M	1
Heating Valve		×						×		×	V5013N1063-KAS-44-M	1
Mixed Air Dampers		×						×		×	CD50OBOX-24X30 / Actuators: AF24-SR	3 / 3
Humidifier		×						×		×	Provided by others / Show on/off control detail only	
Freezestat			×					×	×	×	Provided by others/ Show NC contact in series with smoke detector NC contact and high static shutdown switch to shut down fan motor	
High Static Shutdown			×					×	×	×	AFS-460-DSS	1
Return Air Smoke			×					×	×	×	SL-2000-N-	1

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Detector											STN-5.0	
Supply Air Smoke Detector			×					×	×	×	SL-2000-N-STN-5.0	1
Supply Fan VFD Fault			×						×	×	Read from VFD fault output	
Supply Fan Status			×					×		×	A/ASCS-L	1
Return Fan Status			×					×		×	A/ASCS-L	1
Supply Fan Start/Stop				×				×		×	RIBU1C (Relay in a box with 1 SPDT contact)	1
Return Fan Start/Stop				×				×		×	RIBU1C	1
Humidifier Enable				×						×	RIBU1C	1
Supply Air Static Pressure Setpoint					×			×		×		
Preheating Mixed Air Temp Setpoint					×			×		×		
Supply Air Temp Setpoint					×			×		×		
Economizer Mixed Air Temp Setpoint					×			×		×		
Dehumidification Setpoint					×			×		×		
Humidifier Setpoint					×					×		
Emergency Shutdown						×		×	×	×		
High Supply Air Static Pressure									×			
Low Supply Air Static Pressure									×			
Supply Fan Failure									×			
Supply Fan in Hand									×			
Supply Fan Runtime Exceeded									×			
Return Fan Failure									×			
Return Fan in Hand									×			
Return Fan Runtime Exceeded									×			
High Supply Air Temp									×			
Low Supply Air Temp									×			
High Supply Air Humidity									×			
Low Supply Air Humidity									×			
Prefilter Change Required									×	×		

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High Mixed Air Temp									×			
Low Mixed Air Temp									×			
High Return Air Carbon Dioxide Concentration									×			
High Return Air Humidity									×			
Low Return Air Humidity									×			
High Return Air Temp									×			
Low Return Air Temp									×			
High Supply Air Temp									×			
Low Supply Air Temp									×			
Totals	**8**	**6**	**7**	**3**	**6**	**1**	**0**	**28**	**29**	**31**		

Total Hardware (24) **Total Software (64)**

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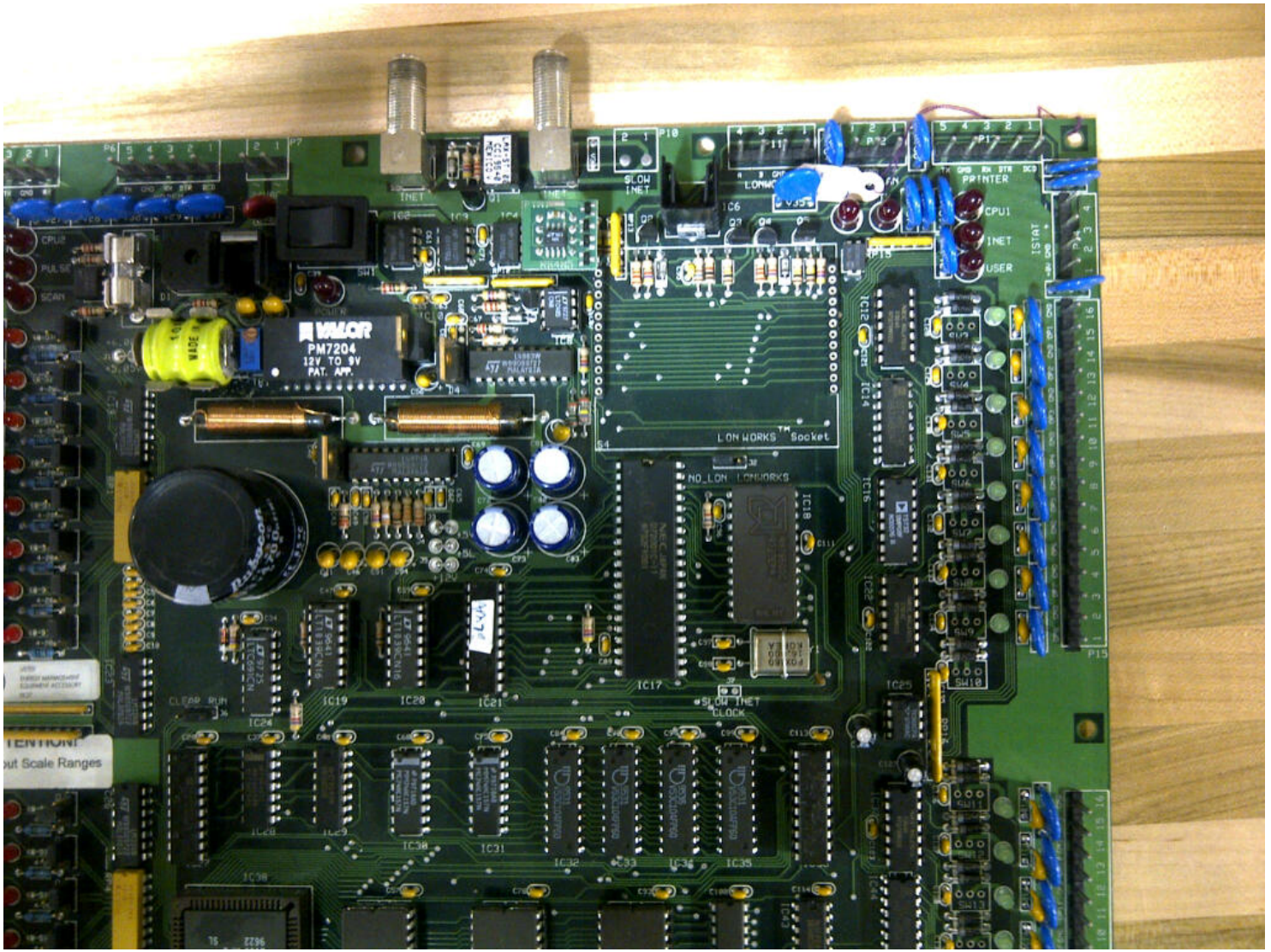

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PROJECT & EXERCISES – BUAS 1030

PROJECT & EXERCISES – BUAS 1050

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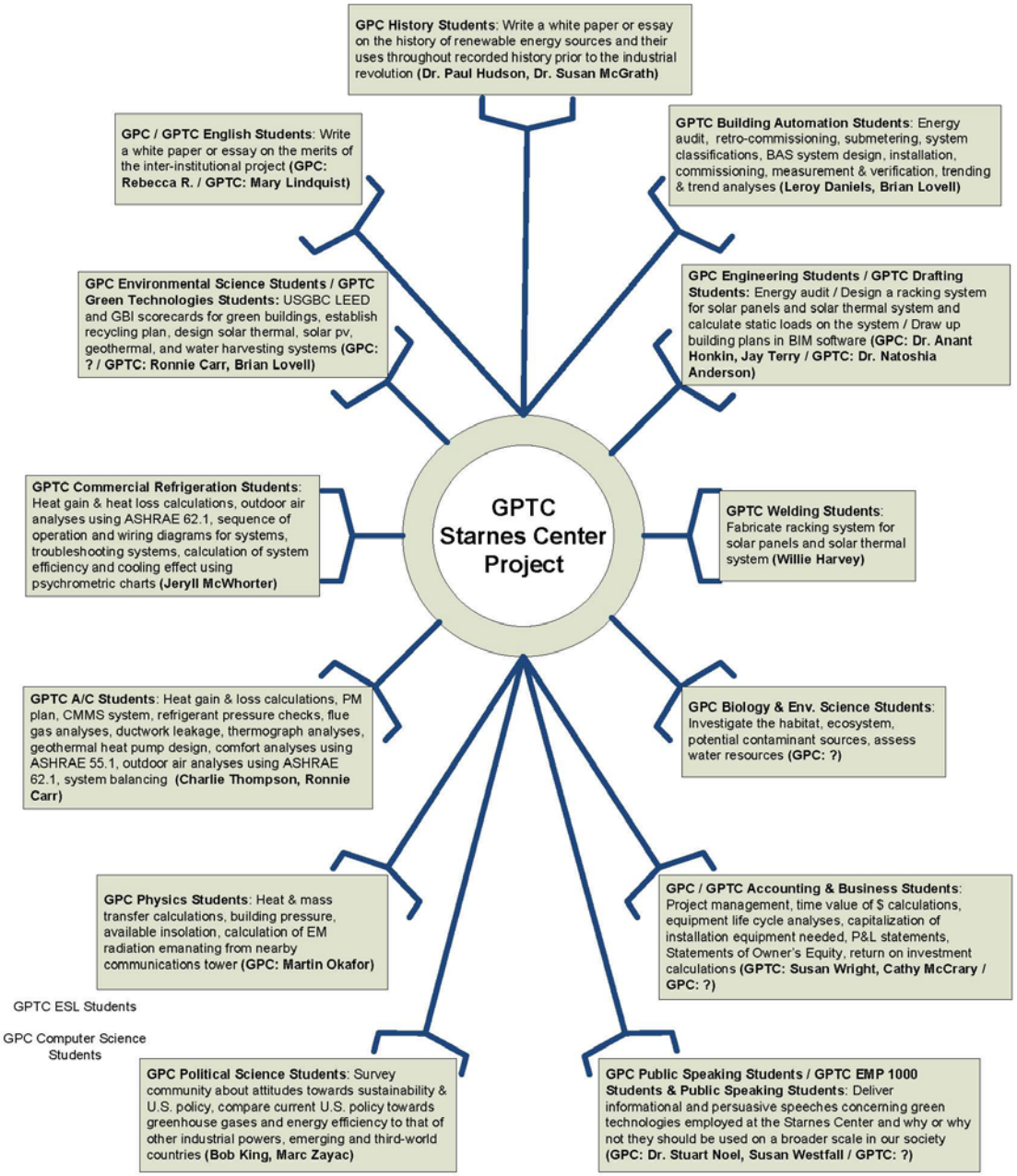
PROJECT & EXERCISES – BUAS 1060

Proposed Student Populations and Learning Outcomes for Involvement in the GPTC Starnes Center Retrofit Project



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Programs Involved in Project

GPTC

Accounting Students: Organize a new company which is taking advantage of an emerging market niche for energy auditing and control systems contracting. Complete a market analysis, establish a business plan, and set up a chart of accounts with the Starnes Center as the first project. (BL will provide the student with necessary information and assist in answering questions about the industry and providing materials sourcing information, labor information, etc. for the project)

Air-Conditioning & Commercial Refrigeration Students: Take an inventory of the existing mechanical equipment at the Starnes Center. Make a thorough investigation of airflow, environmental conditions, interviews of on-site staff, piping practices, electrical practices, system efficiency, temperature differentials across heat exchangers, ambient conditions. Participate in an energy audit of the facility and make a presentation about the findings. (BL will serve as the customer and will coordinate the site visits -- The air-conditioning students will be working as a mechanical sub-contractor to the automation and company being established by the accouting students)

Building Automation Students: Draw the proposed facility in M.S. Visio, assess the existing structure and opportunities for automation. Develop a points list for the facility, develop shop drawings and a submittal package for the project. Participate in an energy audit for the facility and work with accounting students to establish pricing for the project, create a short sales presentation, and calculate payback periods.

Drafting Students: Drafting students will use a building information management (BIM) software package to digitally re-create the building's physical structure to include details on composite walls, mechanical systems, piping, ductwork, electrical systems, major loads, usage groups, and occupancy patterns. The students will present this work at the end of the semester. (Students will act as a subcontractor to the automation and engineering firm being established by the accounting students under the supervision of BL)

Sustainable Technologies Students: Sustainable technologies students will investigate the possibility of attaining a LEED certification for the Starnes Center. Students will be given a budget and will determine whether or not a LEED certification is possible.

Programs Involved in Project

GPC

Computer Science: Create a program in Java which incorporates ambient temperatures, humidity, solar radiation, wind speed, and precipitation to electrical energy consumption and natural gas consumption. Find the single variable which impacts respective utility consumption most closely. Obtain empirical data from trend log information of variables from building automation systems students. Make a presentation of the findings.

Engineering: Present students with the problem of improving the efficiency of the Starnes Center building. The Starnes Center operates very inefficiently, and energy conservation measures (ECMs) need to be proposed which have less than a 10-year payback period and should be presented in ascending order from lowest cost to highest cost. Examples could be increasing the amount of insulation, or making the roof more reflective, shading south-facing windows, or changing schedules of equipment, or adding renewable energy to the facility. (BL will act as the customer and the students will develop a presentation from their findings.)

Physics Students: Assess how energy moves through the Starnes Center. How is heat and mass transferred across the boundary layers of the building. Propose ways in which better control could be exerted over this transfer. (Develop presentation)

Political Science Students: Survey the surrounding community as to their attitudes towards sustainable practices. Compare prevailing attitudes to that of student populations involved in the Starnes Center Project. Compare and contrast findings to current U.S. policy and that of other developed and developing countries. (Make a presentation as to their findings)

GPTC Starnes Center Project Spring Semester, 2012

Sun., Jan 8	Mon., Jan 9	Tue., Jan 10	Wed., Jan 11	Thu., Jan 12	Fri., Jan 13	Sat., Jan 14
	Classes Begin					
Sun., Jan 15	Mon., Jan 16	Tue., Jan 17	Wed., Jan 18	Thu., Jan 19	Fri., Jan 20	Sat., Jan 21
	MLK Jr. Holiday					
Sun., Jan 22	Mon., Jan 23	Tue., Jan 24	Wed., Jan 25	Thu., Jan 26	Fri., Jan 27	Sat., Jan 28
Sun., Jan 29	Mon., Jan 30	Tue., Jan 31	Wed., Feb. 1	Thu., Feb. 2	Fri., Feb. 3	Sat., Feb. 4]
Sun., Feb. 5	Mon., Feb. 6	Tue., Feb. 7	Wed., Feb. 8	Thu., Feb. 9	Fri., Feb. 10	Sat., Feb. 11
Sun., Feb. 12	Mon., Feb. 13	Tue., Feb. 14	Wed., Feb. 15	Thu., Feb. 16	Fri., Feb. 17	Sat., Feb. 18
Sun., Feb. 19	Mon., Feb. 20	Tue., Feb. 21	Wed., Feb. 22	Thu., Feb. 23	Fri., Feb. 24	Sat., Feb. 25
Sun., Feb. 26	Mon., Feb. 27	Tue., Feb. 28	Wed., Feb. 29	Thu., Mar. 1	Fri., Mar. 2	Sat., Mar. 3
Sun., Mar. 4	Mon., Mar. 5	Tue., Mar. 6	Wed., Mar. 7	Thu., Mar. 8	Fri., Mar. 9	Sat., Mar. 10
Sun., Mar. 11	Mon., Mar. 12	Tue., Mar. 13	Wed., Mar. 14	Thu., Mar. 15	Fri., Mar. 16	Sat., Mar. 17
Sun., Mar. 18	Mon., Mar. 19	Tue., Mar. 20	Wed., Mar. 21	Thu., Mar. 22	Fri., Mar. 23	Sat., Mar. 24
Sun., Mar. 25	Mon., Mar. 26	Tue., Mar. 27	Wed., Mar. 28	Thu., Mar. 29	Fri., Mar. 30	Sat., Mar. 31
Sun., Apr. 1	Mon., Apr. 2	Tue., Apr. 3	Wed., Apr. 4	Thu., Apr. 5	Fri., Apr. 6	Sat., Apr. 7
Sun., Apr. 8	Mon., Apr. 9	Tue., Apr. 10	Wed., Apr. 11	Thu., Apr. 12	Fri., Apr. 13	Sat., Apr. 14
Sun., Apr. 15	Mon., Apr. 16	Tue., Apr. 17	Wed., Apr. 18 M/W Classes End	Thu., Apr. 19 T/TH Classes End	Fri., Apr. 20	Sat., Apr. 21 WkEnd Classes End
Sun., Apr. 22	Mon., Apr. 23	Tue., Apr. 24 T/TH Final Exams	Wed., Apr. 25 M/W Final Exams	Thu., Apr. 26	Fri., Apr. 27	Sat., Apr. 28 Final Exams - WkEnd

- Phase 1: Faculty Team Meeting / Final Definitions of Objectives / Develop Assessment Tools / Secure I.R.B. Approval / Set Recurrent Meeting Times
- Phase 2: Pre-Assess Participants (Students / Faculty / Customer / Industry) / Introduce Project to Students On-Site After Pre-Assessments
- Phase 3: Cognitive Development (Deliver Classes on Energy Auditing, Equest, BIM, Prezi, Small Business Development, Engineering Design Process)
- Phase 4: Assign Project Teams & Begin Respective Work Under Instructor Supervision
- Phase 5: Project Teams Work on Developing Presentations
- Phase 6: Project Teams Present Their Work at the GPTC Conference Center (Present to Faculty, Industry, Public - Assessed by Industry)
- Phase 7: Post-Assessments of Students, Faculty, Customer, Industry, and Focus Groups / Faculty Meeting Following Assessments (Debriefing)
- Faculty Team Meeting: Video-Conference

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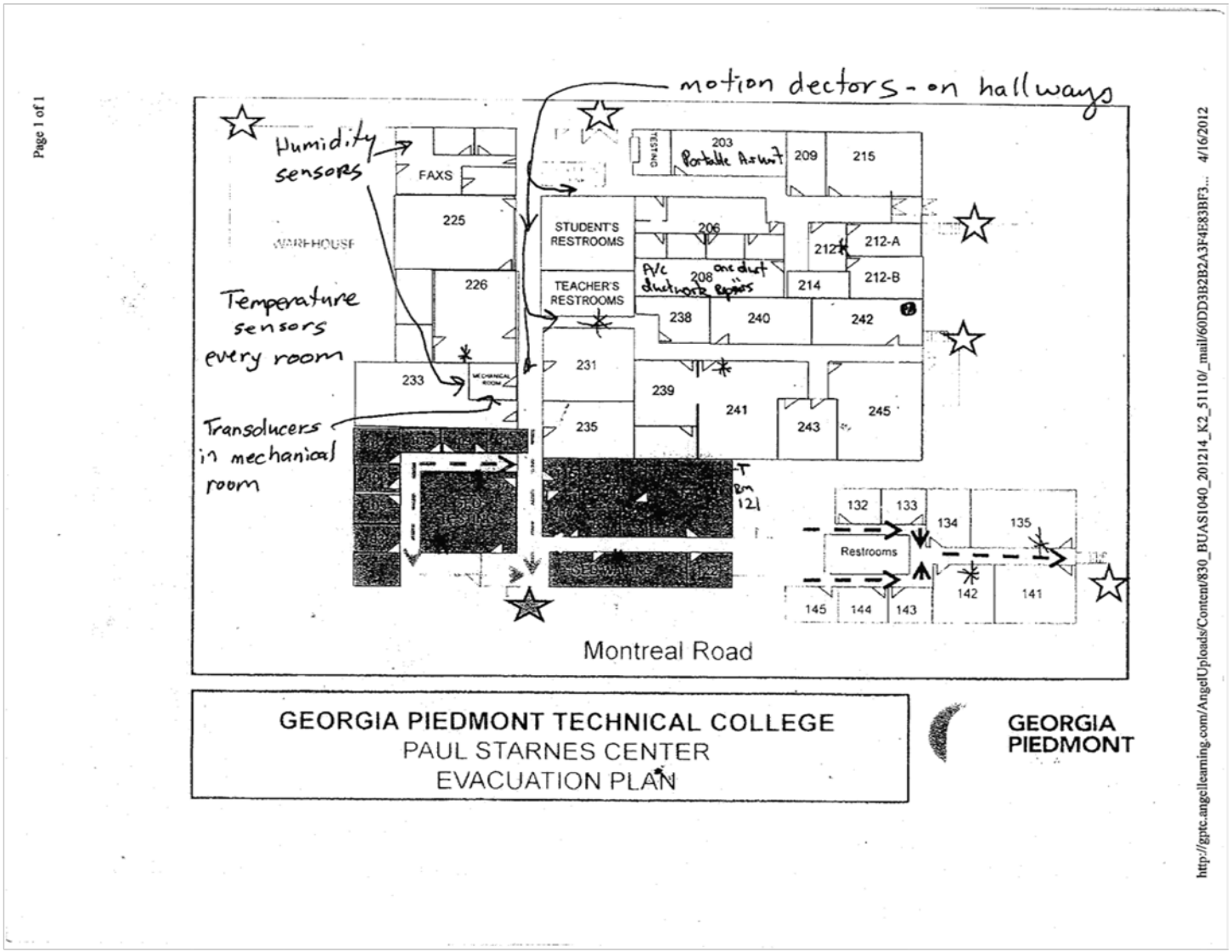

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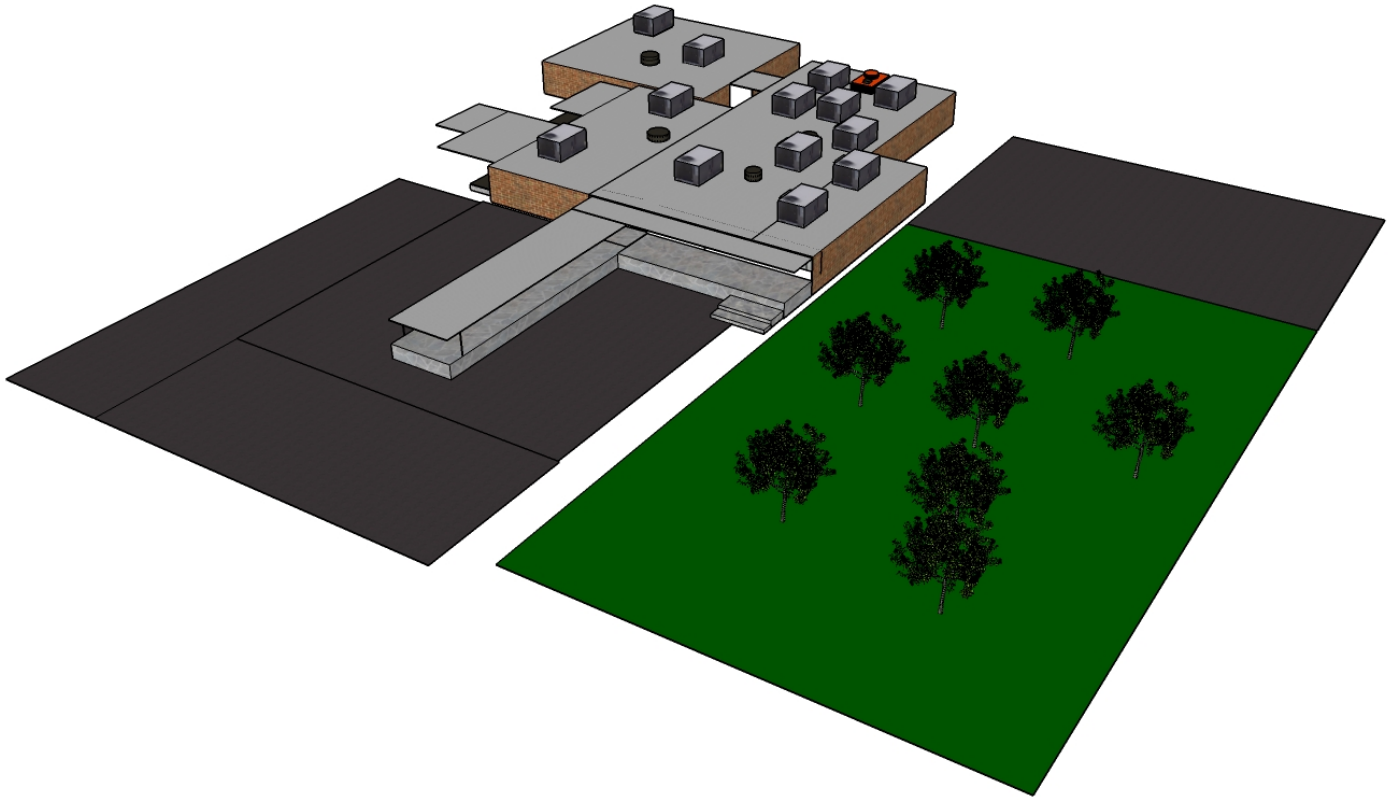

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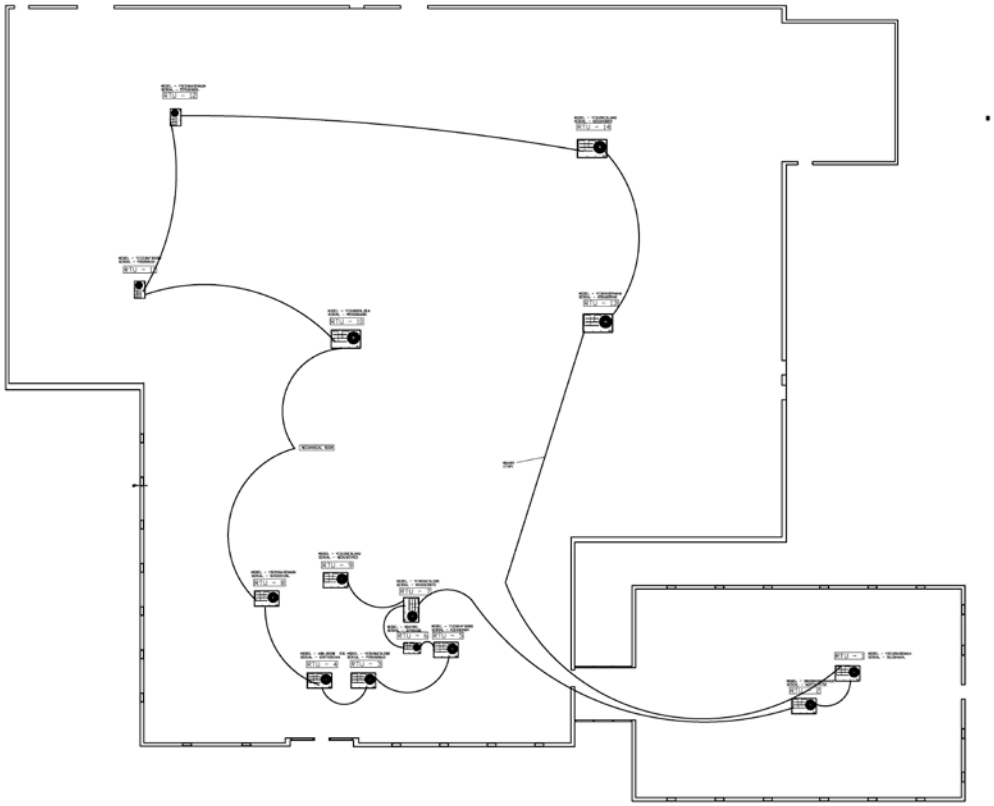

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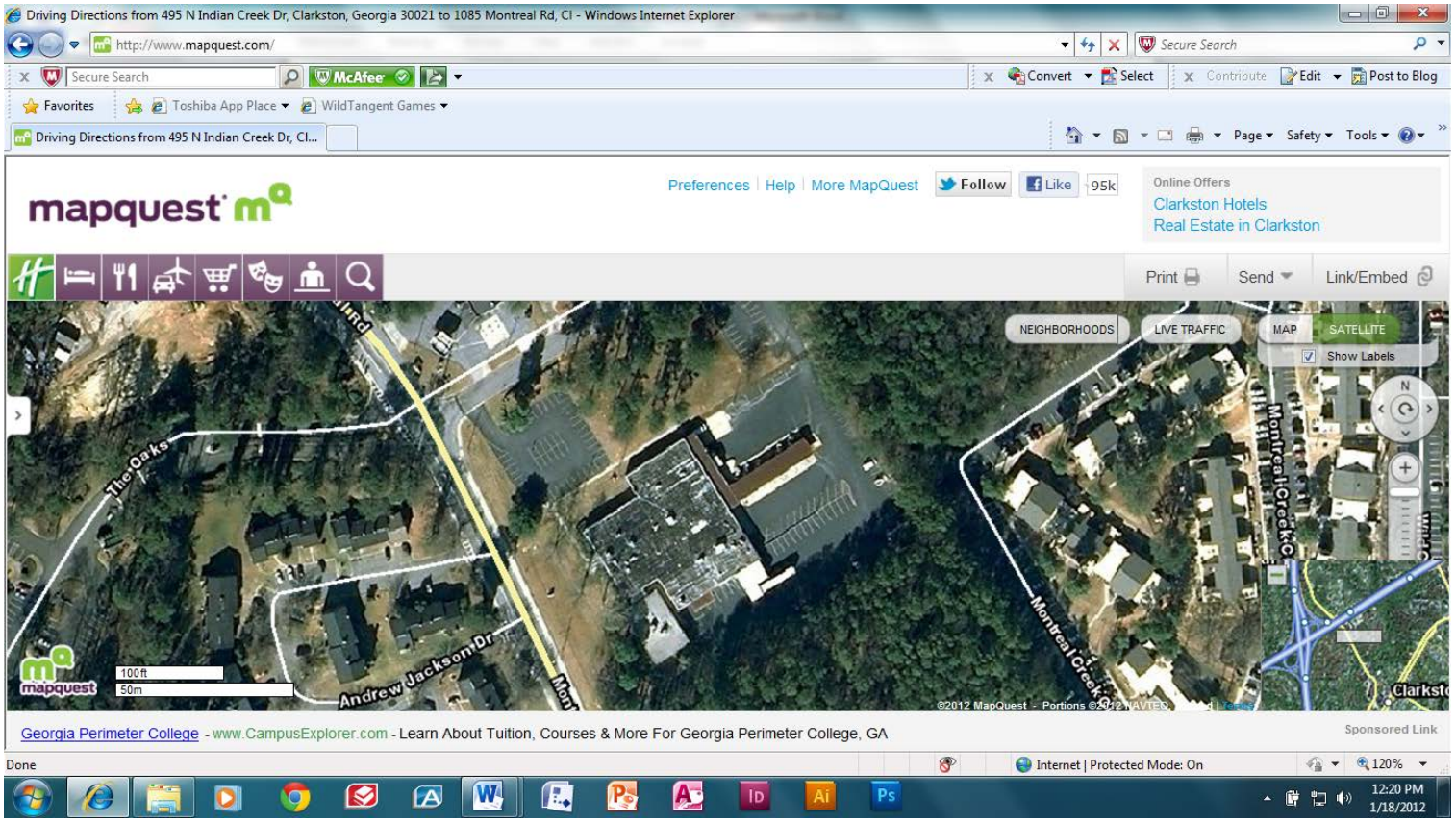
Driving Directions from 495 N Indian Creek Dr, Clarkston, Georgia 30021 to 1085 Montreal Rd, Cl - Windows Internet Explorer
http://www.mapquest.com/
Secure Search
Favorites
Toshiba App Place
WildTangent Games
Driving Directions from 495 N Indian Creek Dr, Cl...
Page
Safety
Tools
mapquest
Preferences
Help
More MapQuest
Follow
Like
95k
Online Offers
Clarkston Hotels
Real Estate in Clarkston
Print
Send
Link/Embed
NEIGHBORHOODS
LIVE TRAFFIC
MAP
SATELLITE
Show Labels
The Oaks
Andrew Jackson Dr
Montreal Creek
100 ft
50m
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Georgia Perimeter College - www.CampusExplorer.com - Learn About Tuition, Courses & More For Georgia Perimeter College, GA
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TRANE


Camera #1


Camera #1 View


Camera #2


Camera #2 View

WATTSTOPPER OCCUPANCY SENSOR

CI-24

DESCRIPTION

The **CI-24** is a ceiling-mount passive infrared occupancy sensor specifically designed to interface with Building Automation Systems through an internal isolated relay. A user-adjustable time delay (30 seconds to 30 minutes) on deactivation may be programmed through DIP switches to prevent unnecessary cycling. The **CI-24** includes a built-in override switch. Two levels of sensitivity are also selectable through DIP switches. The four-level patented Fresnel lens allows the **CI-24** to cover up to 1200 ft2 (111.48 m2).

CI-24

FEATURES

- ***Advanced PIR technology***
- ***Adjustable time delay***
- ***Adjustable sensitivity***
- ***Contains isolated relay for use with BAS and other control systems***
- ***Patented Fresnel lens***
- ***360° coverage up to 1200 ft2 (11.48m2)***
- ***Red LED indicates occupancy detection***
- ***Five-year warranty***
- ***Manual override switch***

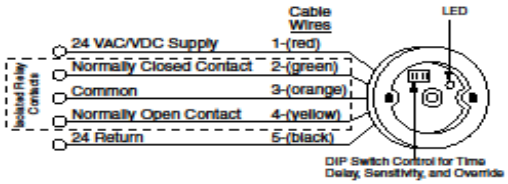
OPERATION

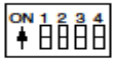
Powered by 24 VAC/VDC, the **Model CI-24** uses advanced PIR technology to detect occupancy. Detection occurs when the unit senses the difference between infrared emissions from a human body and the background space. When occupancy is detected, the **Model CI-24** transfers an SPDT contact set. The contacts return to their normal state after a user-selectable time delay once the space is unoccupied.

SPECIFICATIONS

Supply Voltage	24 VAC/ VDC± 10% 37 mA
Contact Rating	1A @ 24 VAC/ VDC, 1/2A @ 120 VAC
Coverage Pattern	360 degrees up to 1200 ft2 (111.48m2)
Time Delay Adjust	Digital (DIP switch setting) for 30 seconds, 10 minutes, 20 minutes, or 30 minutes
Operating Temperature	32° to 98°F (0° to 36°C)
Mounting	2.75" to 3" hole in ceiling
Color	White
Dimensions	3.3" dia x 2.2" deep (8.5 x 5.6 cm), protrudes approximately 0.4 from ceiling surface
Approvals	cUL listed UL Listed, File E101196
Weight	1.0 lb (0.46 kg)

WIRING





DIP SWITCH #	1	2	3	4
TIME DELAYS				
30 sec	X	X		
10 min.	X	O		
20 min.	O	X		
30 min.	O	O		
SENSITIVITY				
Minimum			O	
Maximum			X	
OVERRIDE				
Normal				O
Override				X

X=on O=off

Note: Exceeding voltage rating may damage sensor.

ORDERING INFORMATION

MODEL	DESCRIPTION
CI-24	Ceiling-mount occupancy sensor with SPDT isolated contact

ZONE THERMOSTAT AND FCU THERMOSTAT

VT7200, VT7300 SERIES

DESCRIPTION

VT7200 Zone thermostats are digital-display, heating/cooling, with outputs for two-position, floating, and proportional terminal unit control. They are ideal for baseboard heat, unit heaters, radiant panels, reheat, or VAV box (pressure-dependent) control. **VT7300 Series Fan Coil Unit (FCU)** thermostats are digital-display, heating / cooling, with outputs for two-position, floating, or proportional control. In addition, they include multispeed fan relays for high, medium, and low fan speed control. Both thermostats offer remote temperature sensor and remote digital inputs configured for night setback, filter alarm, motion sensor, door/window switch, or service indication.

VT7305C5031
FCU Thermostat

VT7200C5031
Zone Thermostat

FEATURES

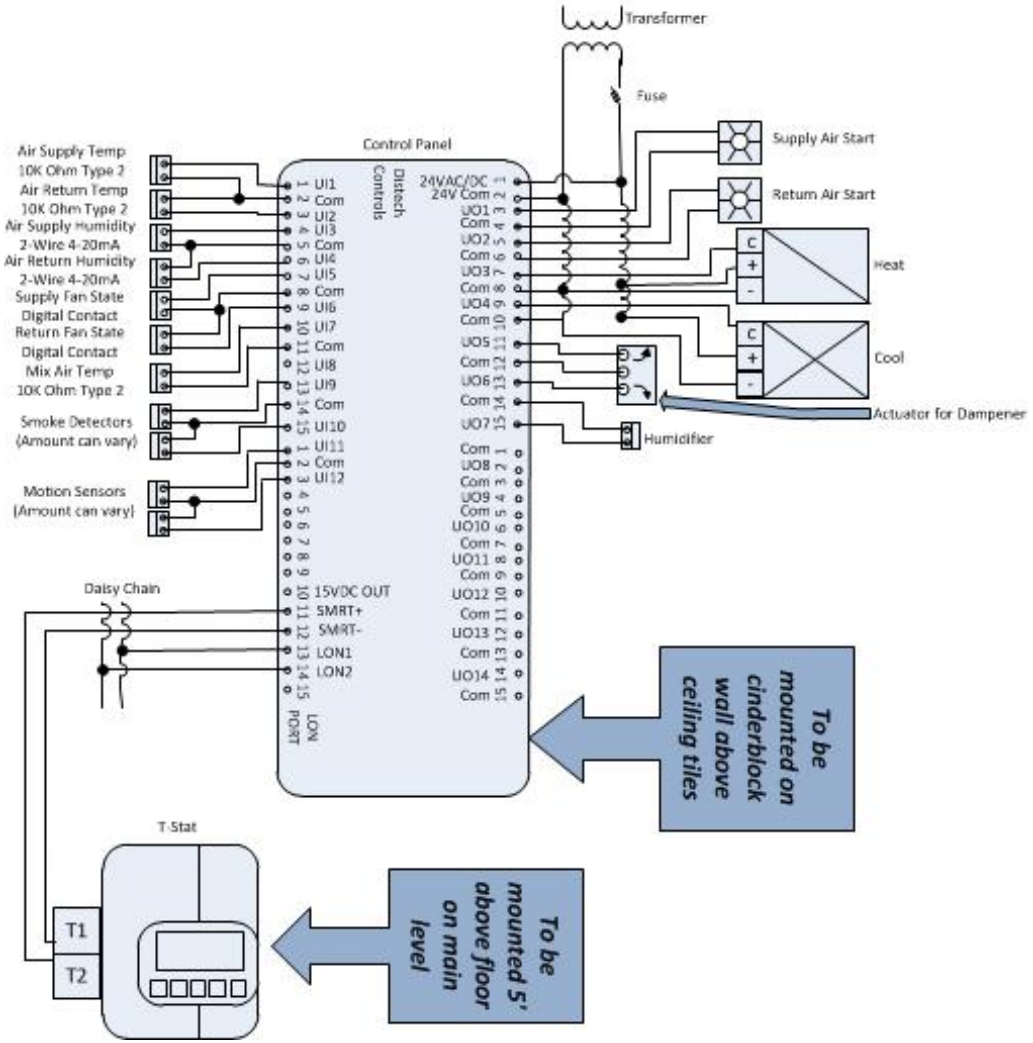
- *Zone or FCU control models*
- *Two-position, floating, or proportional models*
- *Remote room sensor option*
- *Adjustable deadband*
- *Setpoint range limits (heating and cooling)*
- *Three configurable inputs for any of: night setback, setback override, motion sensor, door or window switch, filter alarm, service advisory, heat/cool changeover*
- *°F/°C (configurable)*
- *Display offset*
- *Adjustable temporary occupied time*
- *Heat, cool, and reheat time base outputs are configurable*
- *Direct or reverse acting (proportional models)*
- *Keypad lockout functions*
- *Dehumidification control models*
- *Three-speed fan control (FCU model)*
- *Selectable system control (FCU model)*

SPECIFICATIONS

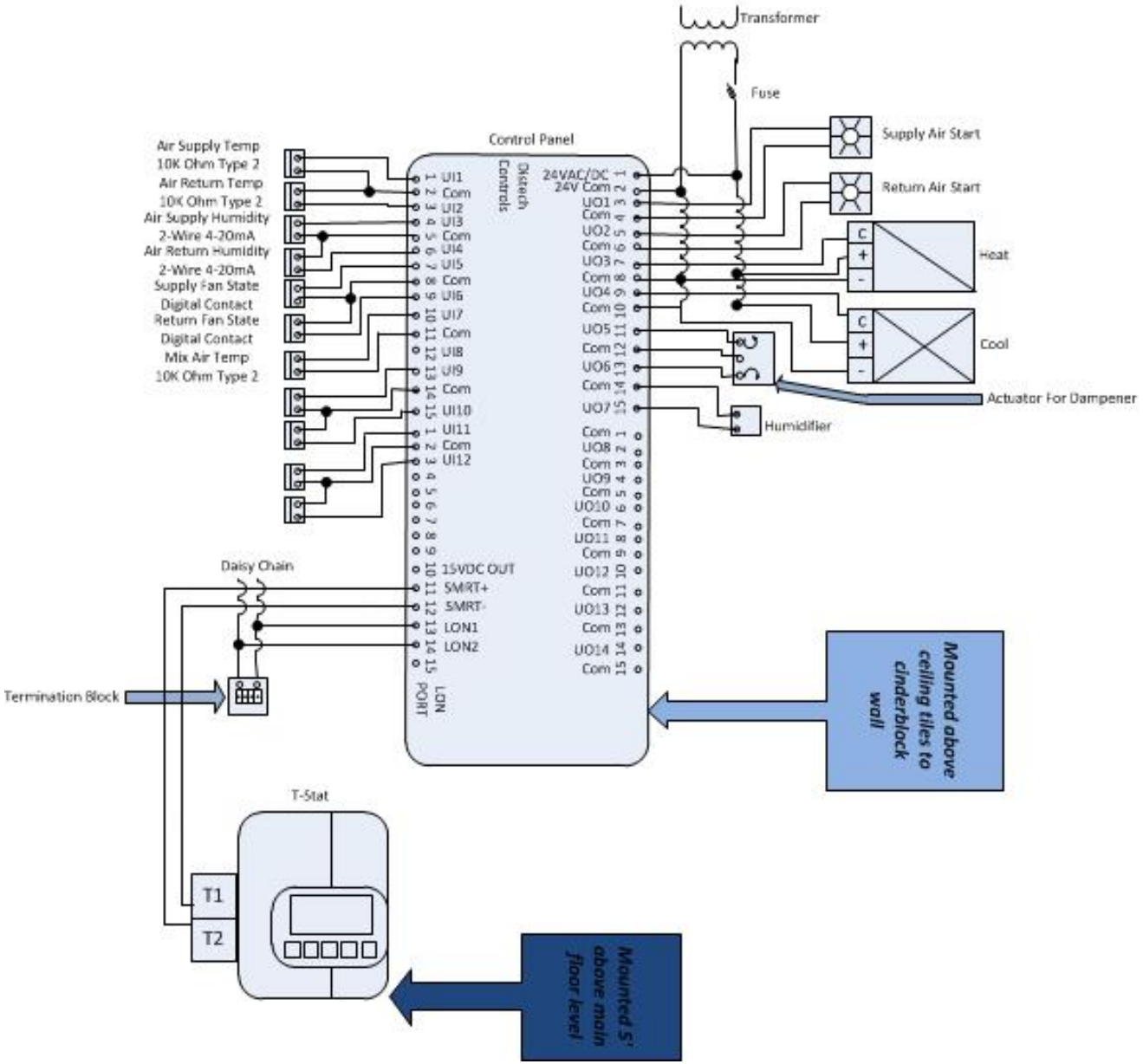
Supply Voltage	19-30 VAC, 50/60 Hz
Supply Current	2 VA
Display	Two-line backlit LCD, ±0.2°F (0.1°C)
Control Accuracy	Temperature, ±0.9°F (±0.5°C)
VT7355C5011, VT7355F5011	Dehumidification, ±5% RH from 20 to 80%
Thermostat Type	Zone (VT7200) or FCU (VT7300)
Cover Controls	
Zone Models	Up/down/override buttons Heat/Cool "on" LEDs
FCU Models	Up/down/°C-or-°F/fan/mode buttons Fan/Heat/Cool "on" LEDs
Control Outputs	See terminal designation table
VT7200C5031	5 triacs (H/C, 2-position or floating)
VT7200F5031	1 triac, 2 analog outputs (H/C proportional 0 to 10 VDC)
VT73(05,55)C5031	3 relays (fan), 5 triacs (H/C, 2-position or floating control)
VT73(05, 55)F5031	3 relays (fan), 1 triac, 2 analog outputs (H/C proportional 0 to 10 VDC)
Triacs and Relays	30 VAC, 1A, 3A inrush
Analog Outputs	0-10 VDC, 2 k minimum impedance, direct or reverse acting
Auxiliary Inputs	2 digital inputs, 1 universal input, 1 remote sensor
Configurable As	Service/status reminders Door/window/motion sensor switch Filter alarm Central night setback clock Remote occupied override switch Heat/Cool changeover, contact or sensor
Digital Inputs	Dry contact
Universal Input	Dry contact or 10 k Type 2 Model 24 thermistor
Remote Sensor	Thermistor, 10 k Type 2 Model 24
Control Type	Proportional plus integral (PI)
Proportional Band	Heating and cooling, 2°F (1.1°C)
Floating Time Base	Adjustable, 0.5 to 9 minutes
Cycles Per Hour	Adjustable 3 to 8
Override Timer	0 to 24 hours, 1-hour increments, pushbutton reset
Sensor Offset	Adjustable ±5°F (±2.5°C), ±15% RH (humidity models)
Deadband Setpoint	Adjustable 2° to 5°F (1° to 2.5°C) Adjusted depending on heating or cooling mode, heating and cooling setpoints are changed simultaneously with respect to the deadband
Cooling Limits	54° to 100°F (12° to 37.7°C)
Heating Limits	40° to 90°F (4.5° to 32°C)
Keypad Lockout	Selectable system/fan/unoccupied
System Setting	O=off, H=heating, C=cooling, A=automatic changeover
FCU Models	O/C, O/H, O/A/H/C, H/O/C
Fan Setting	L=low, M=medium, H=high, A=auto
FCU Models	L/M/H, L/H, L/M/H/A, L/H/A, On/A
Enclosure	UL FR1, flame retardant plastic
Mounting	Standard vertical, 2" x 4" box
Wiring	18 AWG maximum, 22 AWG recommended
Color	White
Operating Temperature	32° to 122°F (-30° to 50°C)
Operating Humidity	0–95% RH (non-condensing)
Dimensions	4.94"H x 3.38"W x 1.13"D (12.5 x 8.6 x 2.9 cm)
Weight	0.75 lb (0.34 kg)
Approvals	UL File #E234137, cUL, CE
RoHS Statement	Yes
Warranty	1 year

Control Panels (1 through 13)

Wiring Schematic and Mounting of Panels



Distech Control Panel 14



SAMPLE PROJECT & EXERCISES
Student Reflection

Andrew Brown, Group Coordinator for the Starnes Center Project

My Summary;

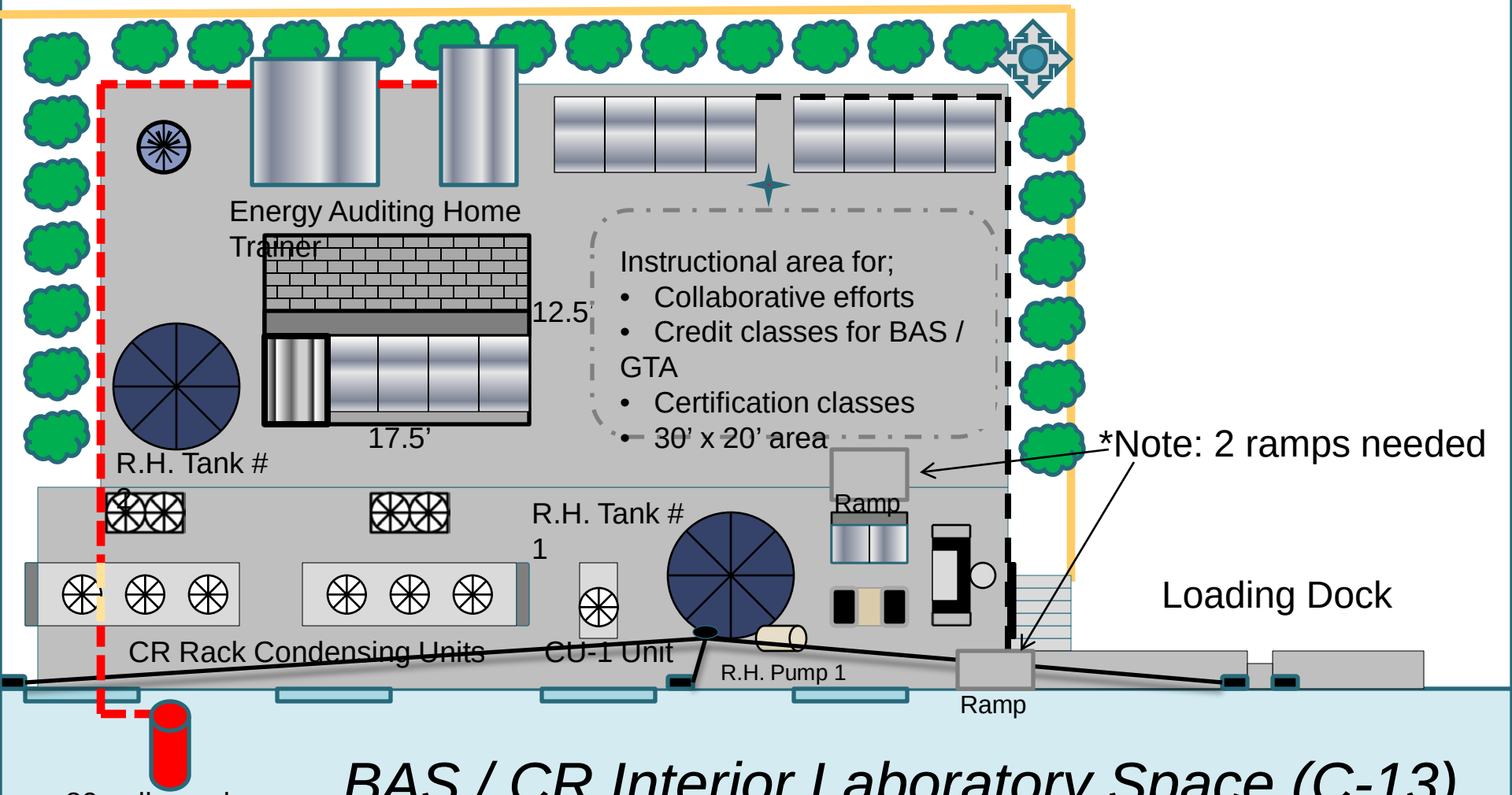
In talking with the four groups I coordinated, I got the sense that a lot had been learned from their time at the Starnes Center. Group members each took on different roles as the collaborated with me and each other to tie this whole project into one proposal. Using pre-existing conditions, measurements and drawings they were able to assess what would be needed to provide a better comfort area for the tenants of the building. They were able to see how a project begins, how its proposal is laid out, how communication networks are set up and how the wiring of each controller would determine its overall effectiveness in the system. They were able to connect with one another while working together to come up with useful methods that would soon be used in a real world setup. The feedback I got from the project was all positive and something that I feel most of the students will continue to build upon.

GEORGIA PIEDMONT TECHNICAL COLLEGE

PROJECT & EXERCISES – BTC CLUB

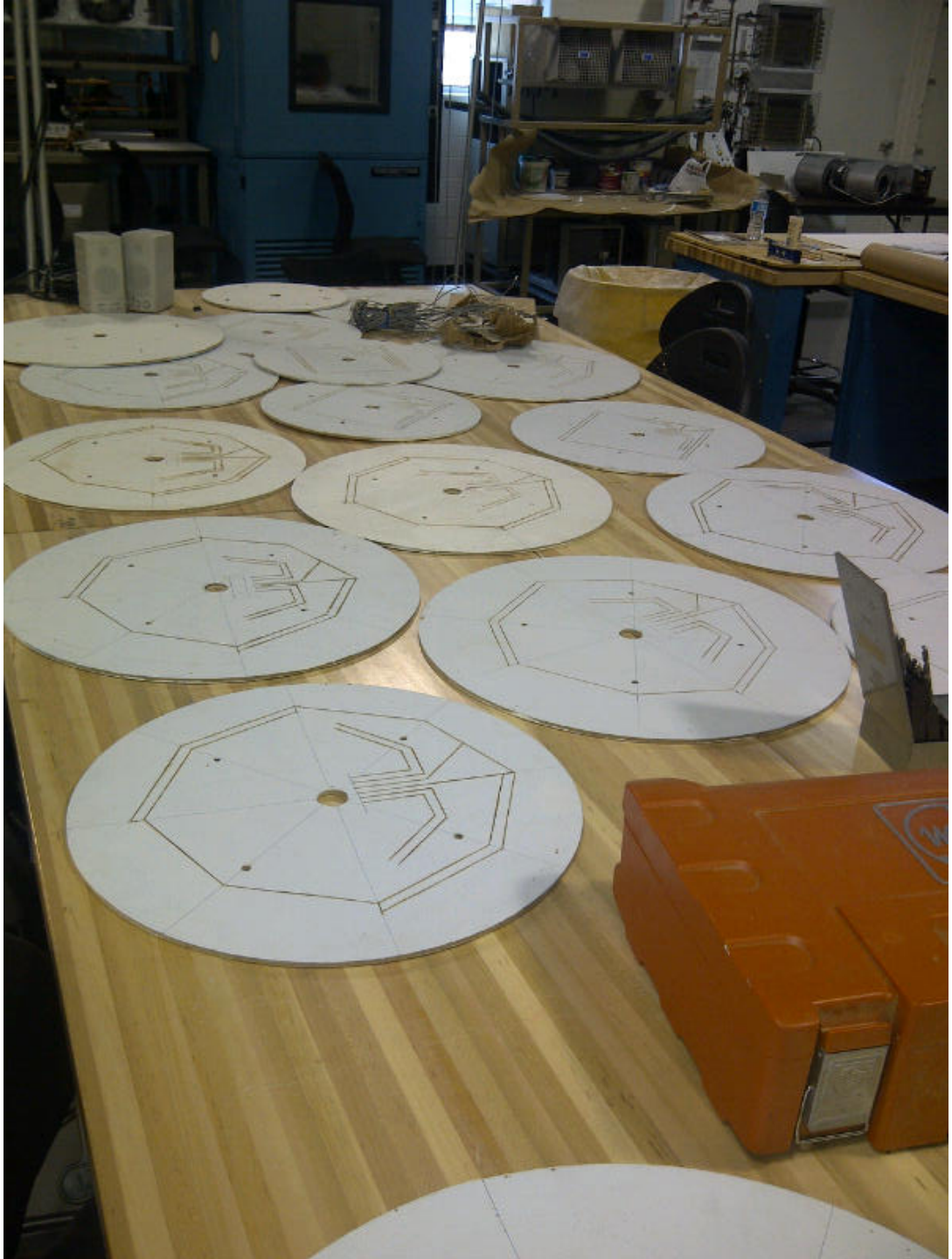
Future Pad & New Equipment

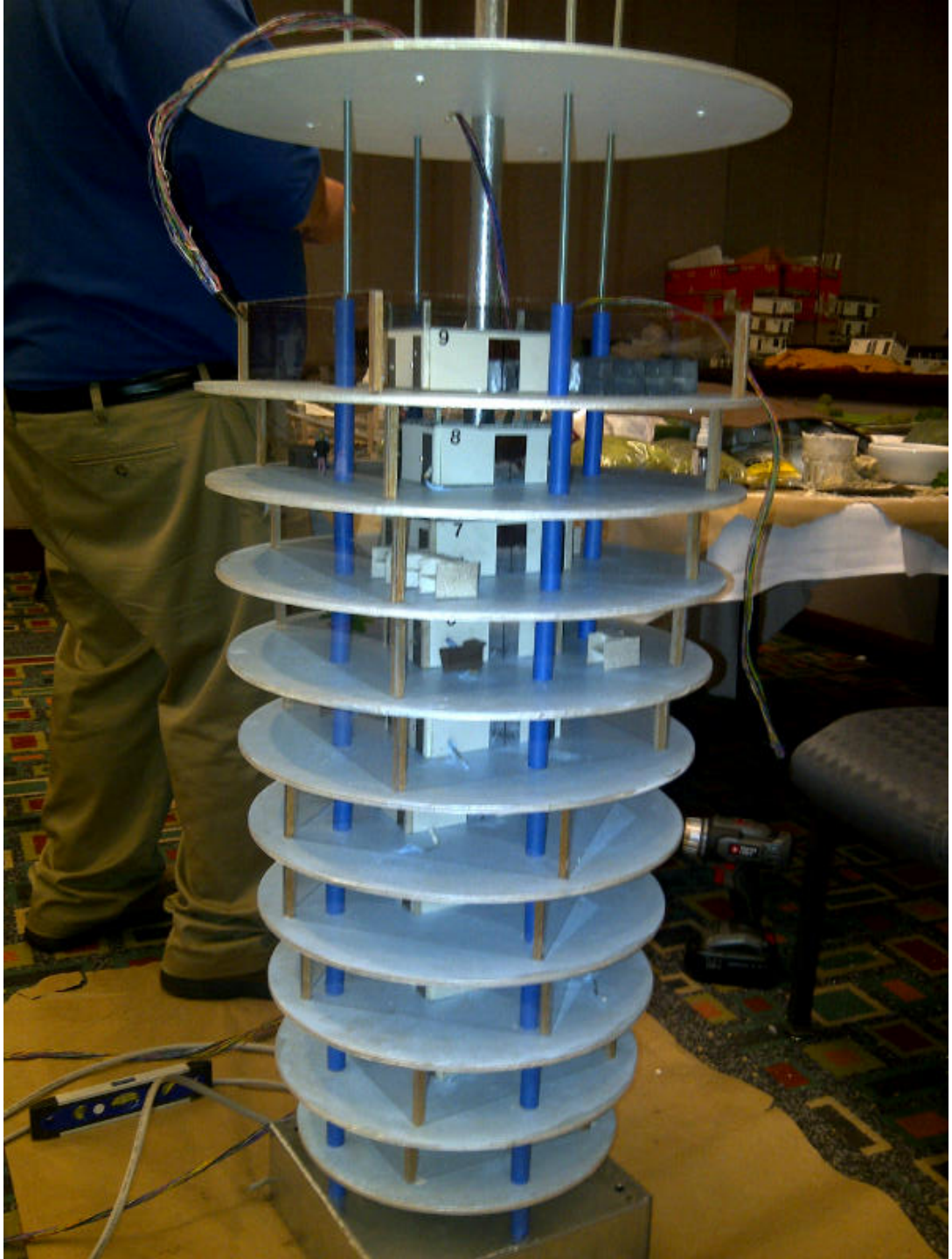
*Note: Green space surrounds pad and is irrigated by rainwater harvesting system over



BAS / CR Interior Laboratory Space (C-13)


Tucco
770-938-4208
TEREX
152
Vulcan





Joint Lecture Series

Sponsored by;

Georgia Perimeter College

Computing & Engineering Club
Building Technologies Club

Retro-Commissioning of Building Systems

GPC / DTC Joint Lecture Series

Whether through neglect or normal wear and tear, over time all building systems begin to operate less efficiently. The commissioning process applied retro-actively to existing buildings can result in substantial energy savings and improved occupant comfort.

Guest Speaker;

Mr. John McFarland
P.E., CCP, CEM, LEED-AP

Presented by:	Mr. John McFarland, P.E., CCP, CEM, LEED-AP
Hosted by:	DeKalb Technical College
Date:	Thursday, October 28, 2010
Place:	DeKalb Technical College Clarkston Campus Conference Center 495 N. Indian Creek Drive Clarkston, GA 30021-239
Time:	6:00 - 7:30pm
Cost:	No charge

John McFarland is the Director of Operations at Working Buildings, a total building commissioning and sustainability consulting firm. John has over 17 years of experience and has served as the commissioning authority on over 80 projects. John is an active member of ASHRAE serving at the national level on the Standard 62.1 committee and recently served as the President of the Atlanta ASHRAE Chapter. John earned his M.S. in Mechanical Engineering from Georiga Tech and holds an MBA from Georgia State University.

RSVP Today!

Confirm your attendance today by
Calling: Mr. Brian Lovell
404-297-9522 ext. 1265
or email: lovellb@dekalbtech.edu

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