GEORGIA PIEDMONT TECHNICAL COLLEGE
INDUSTRIAL & TRANSPORTATION TECHNOLOGIES

Building Automation Systems Program

BUAS 1010 Building Automation Systems Fundamentals

9/9/2014

Course Documentation

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Catalog description

Building Automation Systems (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 physical point types, required skills, types of BAS systems, and general BAS architecture.

Class hours

Lecture Hours: 24

Laboratory Hours: 7

Units

Semester Credit Hours: 2

Entry skills needed

- Basic electrical skills (this course is usually taken in conjunction with introductory electrical course)
- Basic computer skills
- College-level reading and writing skills
- College-level math skills

Syllabus

See Appendix A for sample syllabus, course schedule, and policies. For lesson topics to include in course, see Exit Skills.

Student learning outcomes

The exit skills listed in the next section support these outcomes:

History of BAS Industry

Develop an understanding of how the BAS industry has evolved over time.

Scope of BAS Industry

Understand the breadth and depth of the BAS industry and the various career pathways one might pursue within it.

Major Commercial Building Systems

Gain an appreciation of the types of major systems in a building such as mechanical, plumbing, electrical, security, life safety, and others.

Contracting Basics

Understand what functions a BAS contractor performs on a project and the major phases of a typical BAS project.

BAS Manufacturers, Contractors, Service Companies, and Suppliers

Understand how the BAS industry is organized and segmented into manufacturers, distributors, suppliers, local contractors, branch offices, and others.

Skill Sets for BAS Installers, Technicians, and Salespeople

Gain an appreciation of the various entry-points into the BAS industry and the required skills sets of each.

Overview of BAS Inputs & Outputs

Learn the commonly-encountered BAS input and output point types.

Overview of Types of BAS Control Systems

Understand how controllers and devices are organized into various levels of a generalized controls pyramid.

General BAS Architecture

Learn to interpret BAS network architecture diagrams.

Trends in the BAS Industry

Identify trends in the BAS industry such as the move to open platforms and integration of various products.

Exit skills

Course content to achieve outcomes listed above:

History of BAS Industry

1. Recall major developments in the BAS industry over the last several decades.

2. Give examples of major technological advances which have impacted the BAS industry over the last 25 years.

3. Predict how emerging technologies and the information age will impact the BAS industry over the next decade.

Scope of BAS Industry

1. Identify at least 5 career paths one might pursue in BAS.

2. Compare and contrast the BAS and HVACR industries.

3. Compare and contrast the BAS and IT industries.

4. Construct a short paragraph which fully describes the BAS industry to a hypothetical high-school student looking for a promising career.

Major Commercial Building Systems

1. State the major building systems and their respective functions within a building.

2. Identify major building systems on a blueprint.

3. Predict how a BAS system might connect with and control the various building systems.

Contracting Basics

1. Discuss the hierarchy of contractors from the BAS contractor up through the mechanical and general contractors and on to the engineers, architects, and owners; describe the relative functions of each.

2. Construct a flow diagram depicting how a change order flows from the BAS contractor up through the engineer and architect.

3. Compare and contrast the relative merits of bid/spec contracting with that of design/build contracting.

4. Argue how a design/build contract might present advantages to an owner over a typical bid/spec contract.

BAS Manufacturers, Contractors, Service Companies, and Suppliers

1. Cite 10 leading BAS original equipment manufacturers (OEM) in the United States and briefly describe the products they manufacture.

2. Cite several large BAS service companies and how they position themselves within the market.

3. Cite several leading BAS wholesalers and describe what types of products can be sourced from them.

4. Construct a graphic diagram which depicts visually how various types of products in the BAS industry find their way to customers.

Skill Sets for BAS Installers, Technicians, and Salespeople

1. Propose a list of skills necessary to gain entry-level employment as a BAS installation technician.

2. Propose a list of skills necessary to gain entry-level employment as a BAS service technician.

3. Propose a list of skills necessary to gain entry-level employment as a BAS salesperson.

4. Make a listing of all the entry points you can think of to work for a BAS company.

5. Develop a list of skills which you feel are your strongest assets and how you might leverage those to gain entry-level employment within the BAS industry.

6. Decide which career path in BAS best matches your own unique skill sets.

7. Describe the term soft skills and rank their importance in relation to other BAS entry-level skills.

8. Interview a human resources representative of an approved local BAS contracting firm regarding the skills sets they look for in a potential BAS entry-level employee.

9. Write a report and present it to the class which includes a selected career pathway, how personal skills support the pathway, the relative importance of specific skills supportive of that pathway, and what the BAS company interview revealed.

Overview of BAS Inputs and Outputs

1. Draw a diagram of a thermistor input.

2. Draw a diagram of a 4-20 milliamp input.

3. Draw a diagram of a dry contact input.

4. Draw a diagram of a 1-5 volt DC input.

5. Draw diagrams of a digital relay and a solid state switch.

6. Draw a diagram of a 0-10 volt DC output.

7. Draw a diagram of a 4-20 milliamp output.

8. Observe an instructor wiring an example of each type of standard input and output on a terminal strip representing a controller.

9. Construct a circuit of each type of standard input and output for instructor review on a terminal strip which represents a controller.

Overview of Types of BAS Control Systems

1. Define the term building automation and describe what types of systems can be used to control buildings like electric, pneumatic and digital controls.

2. Construct a table which compares and contrasts the advantages and disadvantages of pneumatic, electric and digital building control systems.

3. List as many components and devices as possible under electric controls, pneumatic controls, and direct digital controls.

4. Conduct a cost / benefit analysis of each type of the three major categories of control systems (pneumatic, electric, direct digital).

General BAS Architecture

1. Define and describe the purpose of a BAS architecture diagram.

2. Describe what can be learned from a BAS architecture diagram.

3. Describe the 3-layer control system pyramid and how this provides a means to categorize BAS system devices and software regardless of the manufacturer.

4. Define the terminology used to describe communication levels in BAS architecture diagrams.

5. Construct a hypothetical BAS system architectural diagram given a list of written features.

Trends in the BAS Industry

1. Cite several trends in the BAS industry.

2. Compare and contrast various communication protocols prevalent in the BAS industry.

3. Predict how non-proprietary communication protocols and integration will affect the BAS industry over the next decade.

Course materials

Principal text

No text is required for this course.

Lecture materials and handouts

This course is strictly an overview course and makes significant use of online resources.

DDC Online (Intro. to digital control systems, Input/Output tutorials): www.ddc-online.org

Purdue Owl writing & style resources: https://owl.english.purdue.edu

Presentation tools by Prezi: www.prezi.com

Manufacturer's websites for student research & review

Alerton: www.alerton.com

American Automatrix: www.aamatrix.com

Automated Logic Controls: www.automatedlogic.com

Can2Go: www.can2go.com

Carrier: www.commercial.carrier.com

Delta Controls: www.deltacontrols.com

Distech Controls: www.distech-controls.com

Circon Controls: www.circon.com

Honeywell: www.honeywell.com

Johnson Controls: www.johnsoncontrols.com

KMC: www.kmccontrols.com

Novar: www.novar.com

Reliable Controls: www.reliablecontrols.com

Schneider: www.tac-global.com

Siemens: www.us.sbt.siemens.com/bau/products

Trane: www.trane.com

Other reference materials

None required

Software needed

None required

Lab setup and materials

Terminal strips, 18 gauge wire, basic control peripherals to include thermistors, electromechanical relays, solid-state relays, loop-powered transmitters, transducers (All used for basic wiring of inputs / outputs)

Equipment & instruments required

Wire strippers, control screwdrivers

Samples of weekly assignments

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.

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 you're 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 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.

Project

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 whom, 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 will 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.

• 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, which 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.

Assessment

Methods

- Discussion board activity (each week in Angel learning management system)
- Classroom participation & attendance
- Writing assignments (4) – All use models provided by the Purdue OWL Writing Resources online.
- Quizzes (6) – Delivered through Angel learning management system & due by Sunday night of each respective week
- Course exams (2 incl. mid-term & final exams) – Delivered through Angel learning management system & due by Sunday night of each respective week
- Student team presentations (1 at term end, using Prezi) – Presenting their project findings
- Course Project (1 assigned at mid-term) – Turned in prior to student team presentations at the end of the term

Sample test questions

From final exam:

1. Select standard, commonly found types of outputs found in the building automation industry. You may select more than one.
   - ☐ 4-20 milliamp
   - ☐ 0-40 volts DC
   - ☐ 0/24 volts DC
   - ☐ 0-10 volts DC

2. Please describe the term 'soft skills' and explain their importance in the building automation industry.

3. Please select the BAS conglomerate companies from the following list:
   - ☐ Delta Controls
   - ☐ Honeywell
   - ☐ Distech Controls
   - ☐ Siemens

Adaptability to on-line format

Much of this course content can be delivered online with links to soft skills videos, manufacturer's presentations, tutorials, wholesaler websites, and others.

Appendix A – Sample syllabus

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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List 10 leading BAS contractor supply companies in the U.S.
Construct a diagram depicting the relationships between BAS manufacturers, contractors, serivce companies, suppliers, and customers for service, equipment, and support
Enumerate the basic skills required for an entry-level BAS installer
Enumerate the skills required for an entry-level BAS technician
Enumerate the skills required for an entry-level BAS sales representative
Judge which career path (BAS installer, technician, salesperson) might be the best match to your own, personal skill set
Draw a diagram depicting a thermistor input
Draw a diagram depicting a 4-20 ma input
Draw a diagram depicting a dry contact input
Draw a diagram depicting a 1-5 VDC input
Draw a diagram depicting a digital output
Draw a diagram depicting an analog 0-10 VDC output
Draw a diagram depicting a 4-20 ma output
Construct an operating example of all standard input and output circuits
Describe the 3 prevalent types of commercial BAS systems
Summarize the benefits of a pneumatic control system
Explain the differences betweeen an electric and digital control system
Categorize various control devices as belonging to a pneumatic, electric, or digital control system
Compare and contrast the benefits and drawbacks of pneumatic, electric, and digital control systems
Define BAS terminology used to indicate communication levels in a typical BAS system
Discuss how BAS architectural diagrams are typically presented on marketing materials
Construct a hypothetical BAS system architectural diagram given a written set of features
Cite 3 trends in the BAS industry
Compare and contrast the protocols LonWorks, BACnet, and Niagara AX
Rank the following interoperability standards from greatest impact on the BAS industry over the last 5 years to the smallest impact; LonWorks, BACnet, Niagara AX

☐TEXTBOOK TITLE (required)
None Required

☐OTHER TEXTBOOK INFORMATION
N/A

☐ADDITIONAL RESOURCES
Throughout the semester, additional resources may be used. They may include the Internet, newspapers, and professional publications.

☐EVALUATION
Discussion Board Activity......10%
Classroom Participation.........10%
Homework Assignments.........20%
Weekly Quizzes…...................10%
Course Assessments..............20%
Written Final......................15%
Course Project…..................15%

☐SCHEDULE
5/21 - Review Syllabus
        Begin online work

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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

GRADING
It is the responsibility of the student to maintain a record of all grades. All final grades will be recorded as letter grades based on GPTC's grading system: **A=90-100, B=80-89, C=70-79, D=60-69, F=below 60**

STUDENT RESPONSIBILITIES
The student is expected to complete all assigned readings in a timely manner so he/she can fully participate in discussions and activities. Students are expected to maintain a record of their grades in the course. The student is expected to participate in discussions or discussion boards and meet deadlines.

CLASS POLICIES
Class policies concerning work ethics, plagiarism, and other academic issues may be found on GPTC's student handbook web page.

CHEATING / PLAGIARISM POLICY
Cheating includes any attempt to defraud, deceive, or mislead the instructor in arriving at an honest grade assessment. Plagiarism involves presenting the ideas or work of another person as being one's own. Violations of cheating may result in a lowered grade on a portion of the course or a grade of "F" in the course. A grade assigned to a student because of an alleged cheating or plagiarism violation may be appealed by the student through the appeals process. A student found to have violated the cheating/plagiarism policy more than one time, in addition to having a grade or grades lowered, may be referred to the appropriate administrator for further sanctions.

ATTENDANCE& WITHDRAWALS
Attendance
Students enrolled in college programs are preparing themselves for direct entry into gainful employment. Employers state that the main characteristic sought in potential employees is dependability and punctuality. Therefore, the importance of student attendance is emphasized at Georgia Piedmont Technical College, and all students are expected to be present and prompt for all class sessions. Absent or present, students are responsible for all assigned work in each class. Missing more than ten percent (10%) of class time in a lecture setting can adversely affect the student's success in a course due to the missed opportunity of information from and interaction with faculty and classmates. Also, missing assignments as a result of tardiness or absences will have a detrimental effect on a student's final grade. Due to the varied demands of individual programs, some classes may have specific attendance requirements.

Student – Initiated Withdrawal
If it becomes necessary to withdraw from a course, the student must confer with the instructor, Students must complete and return a Withdrawal Form in-person to the Registrar's Office or online. Go to
www.dekalbtech.edu →Student Services →Registrar →Withdrawal →Withdrawal For m.
The withdrawal form must be completed and returned/submitted to the Registrar's Office. The day the competed form is received by the Registrar's Office is the official date of withdrawal. Students who do not formally withdraw from a class(es) are liable for all tuition, fees, and associated expenses.

A student-initiated withdrawal through the Registrar's Office by the mid-point of a course will receive a grade of "W". A student who withdraws him/herself after the mid=point and before the final week of classes will receive a "W" if passing or a "WF" if failing. A student cannot withdraw him/herself from a course during the final week of the term.

Faculty-Initiated Withdrawals
Faculty will withdraw a student from a course if the student fails to meet either the *"No Show"* or the "*Participation (10% Rule)"* requirements as outlined below. Faculty must report these students in order to comply with Federal Financial Aid regulations and ensure students receive the financial aid to which they are entitled.

"No Shows"
Any student whose name appears on the Banner Web class roster who has not participated in class activities during the first seven (7) days of the term will be reported as a "no show" through the electronic No Show Program. Once reported as a "no show," the student will be removed from the faculty's Banner Web class roster and unable to participate in class for the remainder of the term. To avoid being reported as a no show, students must participate during the first week as follows:
1. Lecture Class: Students must participate in at least one class meeting during the first seven (7) days of the term.
2. Online Class: Students must log into the DTC official Learning Management System (currently ANGEL) at least twice during the first seven (7) days of the term. Participation is recorded when the student clicks on the link into the specific class.
3. Hybrid Class: Students must log into the DTC official Learning Management System (currently ANGEL) at least twice or participate in at least one class meeting during the first seven (7) days of the term.

Participation (10% Rule)
Faculty will withdraw a student at the course mid-point and assign a "W" for the student's final grade if the student meets one of the following criteria which demonstrates a lack of interest in participating for the remainder of the term:

1. Lecture Class: A student misses ten percent (10%) of in-class meetings. A student's tardiness is included in this percentage; two instances of arriving late or leaving early will equate to missing one in-class meeting.
2. Hybrid or Online Classes: A student fails to log into class and/or does not submit work for a consecutive two-week period.

No faculty will withdraw students after the course mid-point. A student must formally contact the Registrar's Office to initiate a withdrawal after the mid-point; otherwise, he or she will receive the grade earned by the end of the term.

MISSION STATEMENT
Georgia Piedmont Technical College, a unit of the Technical College System of Georgia, promotes a student-centered environment for lifelong learning and development, encompassing academic and technical education for employment in a global community.

COMMUNICATION
At the end of the semester, the student is expected to complete a faculty evaluation for this course.

A student is to only use their GPTC email when communication with GPTC faculty and staff. Emails sent to the instructor should include the following information in the subject line: the course, the students' full name, 900 number, and the purpose of the email.

HOPE INFORMATION
There are numerous changes to HOPE that will affect every student. For complete details and to view all hours counted, please visit the Georgia Student Finance website at www.gsfc.org. Students can log on to this website by using their social security number and date of birth or contact the Financial Aid office.

TECHNICAL SUPPORT
Technical support for On-line courses is available at (404) 297-9522. On-line course support is provided by Michelle Murphy or Sandra Clapper. The email address for technical support is dekalbonline@dekalbtech.edu.

Technical support for BannerWeb, GPTC e-mail, and computer labs is available @ (404) 297-9522 ext. 5399 or by e-mail at techsupport@dekalbtech.edu.

SPECIAL SERVICES (ADA ACCOMMODATIONS/504)
Students with disabilities who believe they may need accommodations in this class are encouraged to contact the Special Services Office at 404/297-9522, ext. 1155 for an appointment. Please contact Special Services as soon as possible to better ensure accommodations are implemented in a timely manner.

TITLE IX – CLERY ACT

- As set forth in our student catalog Georgia Piedmont Technical College does not discriminate on the basis of race, color, creed, national or ethnic origin, gender, religion, disability, age, political affiliation or belief, veteran status, or citizenship status (except in those special circumstances permitted or mandated by law.
- Title IX Coordinator, Dr. Debra Gordon, Dean of Academic Support, Georgia Piedmont Technical College, Building A, Room 103, 495 North Indian Creek Drive, Clarkston, Georgia 30021, Phone: (404) 297-9522 x 1176. Grievance procedures providing for resolution of alleged student discrimination under these Acts may be obtained from the Title IX Coordinator at the Clarkston Campus.
- Georgia Piedmont Technical College is committed to assisting all members of the GPTC community in providing for their own safety and security. The annual security safety compliance document is available on the GPTC website.

    The website contains information regarding campus safety and security including topics such as: crime prevention, vehicle registration, physical security, safety suggestions, reporting procedures, drug and alcohol policies, crime statistics – *Clery Report* and sexual assault incidents. The *Clery Report* contains information about crime statistics for the three previous calendar years concerning reported crimes that occurred on campus; in certain off-campus buildings or property owned or controlled by GPTC; and on public property within, or immediately adjacent to and accessible from campus. This information is required by law and is provided by the Georgia Piedmont Technical College Police Department.

WORK ETHICS

Work ethics is an integral component of programs offered at GPTC. Work ethics traits include: productivity, teamwork, character, attendance, leadership, organization, communication, respect, self-esteem, and appearance.

NON-DISCRIMINATION

It is the policy of Georgia Piedmont Technical College not to discriminate on the basis of race, color, religion, sex, national origin, age, academic or economic disadvantage or disability.

OFFICE ETIQUETTE

Many instructors share an office or suite with other instructors. Please do not interrupt other instructors when visiting a shared office. Office hours for instructors are posted on their doors. Students are encouraged to make an appointment whenever possible.

LAB& CLASSROOM PROCEDURES
The following are not allowed in the classroom/lab: food, drinks, and headsets. Cell phones will be set to mute and there will be not texting. The student may not use computer labs for sending personal e-mails or for downloading any software program not already established on the main menu screen by Georgia Piedmont Technical College. Computers are to be used only for academic purposes.

The student will keep a neat workstation by placing all book bags and other items not needed for class underneath workstations and out of aisles. Chairs are to be pushed underneath workstations at the end of each class session and equipment returned to its original position. All trash should be discarded. Students should report unsafe or damaged equipment to the instructor. Lab hours are posted in each computer lab.

SAFETY& EMERGENCIES
Safety, emergency, and evacuation procedures are posted in each classroom.

TECHNICAL COLLEGE SYSTEM OF GEORGIA GUARANTEE
The Technical College System of Georgia offers the following guarantee to business and industry partners: "If one of our graduates was educated under a standard program, and his/her employer agrees the employee is deficient in one or more competencies as defined by the standards, the technical college will retrain that employee at no instructional cost to the employee or employer."

BEST Center Curricula, Resources & Recordings

Academic Programs

Georgia Piedmont Technical College - Building Automation Systems
Milwaukee Area Technical College - Sustainable Facilities Operations
Laney College - Commercial HVAC Systems
City College San Francisco - Commercial Building Energy Analysis & Audits

Professional Development Materials, Presentations & Videos
National Institutes
Building Automation Systems Instructor Workshops
Webinars (e.g., BEST Talks)

Faculty Profile Videos
Reports & Case Studies
Marketing Resources

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