SUSTN-102
Course

MILWAUKEE AREA TECHNICAL COLLEGE
TECHNICAL AND APPLIED SCIENCES (MATC/T&AS)

Sustainable Facilities Operations Program

SUSTN-102 Reporting Sustainable Systems Performance

National Science Foundation - National Center for Building Technician Education

Center for Energy Conservation & Advanced Manufacturing
ECAM
Milwaukee Area Technical College

BEST
Building Efficiency for a Sustainable Tomorrow

NSF

2014-05-18

Course Documentation

This material is based upon work supported by the National Science Foundation under Grant Number (DUE 1204930).

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Technical and Applied Sciences Department
6665 South Howell Avenue
Oak Creek, WI 53154
Phone 414.571.4570

Table of Contents

Catalog description

This is an accelerated course. Designing building, maintaining and operating sustainable (green) buildings requires basic measurement and reporting skills. This course emphasizes basic performance parameters of buildings and teaches the basic computer skills (spreadsheets, word processing, Power Point, and use of Blackboard) to be successful in future sustainability courses and in the sustainable building field. Basics of water, energy, material, and waste related to buildings are discussed. Basics of how a building operates and some tools used to assist with optimizing sustainable performance are discussed.

Class hours

24 hours of lecture and 24 hours of self-directed research.

Self-directed research is part of each homework assignment, see sample in Appendix C.

Units

3 Credits

Entry skills needed

The following are required for admission to the course:

- A high school diploma or GED
- Demonstration of proficiency in basic skills through a course placement assessment

In addition, the potential for success in the program will be enhanced if students have:

- Work experience
- A strong interest in sustainability and facilities management
- Critical thinking and problem-solving skills
- And have organizational skills.

Syllabus

See Appendix A for sample syllabus with course schedule and policies.

Student learning outcomes

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

Basic Utility Information and Benchmarking

Student will be able to understand and work with basic facility utility data to calculate benchmarks using spreadsheets.

Reporting Skills

Student will be able to utilize data from multiple sources, including PDF files, spreadsheets, and from the internet, to develop a written report in a word processing document.

Presenting Skills

Student will present information generated during the course in various software packages and from the internet in a presentation software package (Power Point) in front of the class on the last scheduled meeting date.

Exit skills

Course content to achieve student learning outcomes:

Student will be able to use BlackBoard to:

- Take tests
- Track grades
- Upload files
- Submit homework
- Send emails to others from within BlackBoard

Student will describe basic concepts of metering and billing information by:

- Using utility billing information to enter into and manipulate data in spreadsheets.
- Reading utility meters and reporting on the results in class.
- Using simple measurement devices such as a plug load meter to take measurements and report back to the class.

Student uses spreadsheet software to:

- Enter utility data
- Develop tables for analysis and reporting
- Conduct calculations directly in cells and using built in functions
- Calculate benchmarks on utility data
- Graph data for analysis and reporting

Student organizes electronic information by:

- Demonstrating how to set up directories on the computer
- Naming files used for the class with a proper format / technique that makes files easy to locate and determine what it is for

Student generates PDF files from other software:

- Using spreadsheet, word document and other software packages, and from the internet.
- Uses the PDF to copy information into other files such as word documents.
- Knows where and how to download free software to allow for printing to PDF's.

Student uses word processing software to generate and write reports:

- Understanding document and report formatting
- For inserting pictures, graphs and tables
- That contain headers and footers designed for that specific report

Student gives a presentation to the class at the end of the course using presentation software and an overhead projector:

- Generating their own presentation slide show that meets basic requirements
- Informs / entertains the class during a 5-10 minute period.

Course materials

Principal text

None required

Lecture materials and handouts

Refer to Appendix B for an example

- Presentations (PowerPoint):
    - Residential Meter Reading Overview
    - Utility Bill Residential Example
    - Benchmarking

Other reference materials

Embedded in weekly assignments

Software required

Access to computer with:

- Microsoft Office Programs (Word, Excel, PowerPoint, etc.).
- Adobe Reader (for pdfs). Price: Free. Source: www.adobe.com.
- Access to computer with internet access. (i.e. Internet Explorer, Mozilla Firefox, Safari, etc.).

Lab setup and materials

Classroom must be set up with computers (one per student) or allow students to bring their own laptops into class.

Equipment & instruments required

None required.

Assessment

Methods

- **Reviews:** These are "tests" taken in Blackboard that are simply going over material for that week. Students refer to Blackboard for details.

- **Homework:** Students refer to Blackboard for details.

- **Class Participation:** There are activities, such as computer tasks. If you are not in class when that item is submitted, there is no making it up.

- **Reports:** There is a report required for this course. Submittal of a report topic roughly 3 weeks ahead of time and submittal of an outline one week ahead of time is required. Students refer to Blackboard for details.

- **Presentations:** Each student is required to present their report in class. Use of power point is required. Length of presentation varies depending on the size of the class, but it is typically about 5 minutes with time for questions afterwards. Students refer to Blackboard for details

Sample test questions

There are two quizzes given during this course.

Refer to Appendix D for a full example

1. To view your grade for a particular assignment you would go where in Blackboard?

a. MISCELLANEOUS ta b
b. My Grades tab
c. Syllabus tab
d. 50% Homework tab

2. What is your log in name for Blackboard?

a. Your student ID
b. Your last name
c. A name you make up
d. You have to change every 120 days

3. Where can you find web sites, equations, and spreadsheets of interest in Blackboard for this class?

a. MISCELLANEOUS tab
b. Lecture tab
c. Syllabus tab
d. Tools tab

4. Under what tab are the announcements for this class?

a. Home
b. MISCELLANEOUS
c. (50%) Homework
d. Tools

Sample of weekly assignments

There are weekly assignments (seven in all) given in this course.

Refer to Appendix C for An example

Project

None required.

Adaptability to on-line format

This course can be delivered on-line due to its lecture format. It would not be desirable since the intent is to assist in teaching students how to use the computer as well as introduce building operations and sustainability concepts

Currently the entire course is in BlackBoard online but taught in lecture / discussion format. Tests are online. All homework is available online.

Appendix A – Sample syllabus

MILWAUKEE AREA TECHNICAL COLLEGE
Course Syllabus

Fall, 2013

Course: *Energy Auditing*		**Credits:** *3, Accelerated*
Subject Abbreviation: SUSTN	**Course Number:** 102	**Section Number:** 500A
Class Meets*: Mondays,5:45 PM to 8:40 PM in room #E116*		
Instructor: *Korinne Haeffel*		
Office: *E108*	**Office Hours:** *Before class, Tuesdays ~4:30 PM to 5:45 PM in room E114B or rm E108*	
Phone number:		**E-mail:***haeffelk@matc.edu*

Course Description*:* This is an accelerated course. Designing building, maintaining and operating sustainable (green) buildings requires basic measurement and reporting skills. This course emphasizes basic performance parameters of buildings and teaches the basic computer skills (spreadsheets, word processing, Power Point, and use of Blackboard are required) to be successful in future sustainability courses and in the sustainable building field. Basics of water, energy, material, and waste related to buildings will be discussed. Basics of how a building operates and some tools used to assist with optimizing sustainable performance will be discussed.

Prerequisites: *None*

ADA Statement:
If you have a disability that impacts your classroom performance and wish to request an accommodation, contact the Office of Student Accommodations (414)297-6838. They may require documentation regarding your disability to enable them to comply with your request. Admission of a disability is voluntary and will be handled in a confidential manner. MATC does not discriminate against individuals with disabilities and fully complies with the Americans with Disabilities Act.

To ensure your academic success in this program, you are strongly encouraged to provide your instructor with a copy of the Instructor Notification Form from the Office of Student Accommodations. This should be done at the beginning of the semester.

Textbook(s): *NONE*

Attendance Policy: **Miss first two classes and you are automatically withdrawn from the class!**
Attendance will be taken on a daily basis. Students are expected to attend class regularly and *to arrive on time*. It is the student's responsibility to discuss absences with the instructor and follow up with an email. No email, no consideration for an excused absence. When an absence occurs, the student is responsible for making up the work. Work can be found in Blackboard. As a general rule, no exceptions for not meeting due dates are given for being absent. If there is an exception, it has to be detailed in a response from the instructor to your email explaining the absence. Miss 3 classes and you will be withdrawn from the course.

Tests/Assignments Make-up Policy:
It is the responsibility of the student to keep track of work and grades. In Blackboard, the "MyGrades" tab can be very helpful to check on completed work and view your grades. Ignorance of not knowing an item was due is not an excuse.

Any late work will have 5% taken off for each day it is late. For instance, a review done the morning of class will be considered one day late. Five percent will be taken off the score. So, if a score of 13 points out of 15 is awarded for that review, then 13/15= .867 or 86.7%. Five percent will be taken off, or 87%-5% = 81.7% for a final score.

Any item over two weeks late is not accepted and the student will receive a zero for that grade.

There can be extenuating circumstances but these have to be discussed and agreed upon in writing by both parties at the time the work is due, not after the two week period.

For Course Schedule see:
http://www.google.com/calendar/embed?src=gmatc.matc.edu_s823863cijtm0kogs4t5b77490%40group.calendar.google.com&ctz=America/Chicago
It is best if you are logged into your Google Email and Calendar so that you can see details for the day.

Assessment Activities: note: assessment activities are subject to change as the semester progresses.

- **Reviews:** *These are "tests" taken in Blackboard that are simply going over material for that week. Refer to Blackboard for details.*
- **Homework:** *Refer to Blackboard for details.*
- **Class Participation:** *There are activities, such as computer tasks. If you are not in class when that item is submitted, there is no making it up.*
- **Reports:** *There is a report required for this course. Submittal of a report topic roughly 3 weeks ahead of time and submittal of an outline one week ahead of time is required. Refer to Blackboard for details.*
- **Presentations:** *Each student is required to present their report in class. Use of power point is required. Length of presentation varies depending on the size of the class, but it is typically about 5 minutes with time for questions afterwards. Refer to Blackboard for details.*

Grading Standards: note: grading standards are subject to change as the semester progresses.

- **10% Reviews:** *Each Review is typically weighted the same. Five Reviews in a semester anticipated.*
- **45% Homework:** *Each may be weighted differently.*
- **15% Class Participation:** *There will be various activities each day in class. If you are not there, late or leave early there is no opportunity to make it up since most of it requires you to see equipment at ECAM. See Blackboard for more details.*
- **20% Reports**
- **10% Presentations**

*Refer to Blackboard for **UPDATED** details.*

Grading scale is as follows:

A - 4.00	Superior	for grades between 94% and 100%
A- 3.75		for grades between 90% and less than 94%
B+ 3.25	Above Average	for grades between 87% and less than 90%
B - 3.00		for grades between 84% and less than 87%
B- 2.75		for grades between 80% and less than 84%
C+ 2.25	Average	for grades between 77% and less than 80%
C - 2.00		for grades between 74% and less than 77%
C- 1.75		for grades between 70% and less than 74%
D+ 1.25	Below Average	for grades between 67% and less than 70%
D - 1.00		for grades between 64% and less than 67%
D- 0.75		for grades between 60% and less than 64%
U - 0.00	Unsatisfactory/Failing	for grades less than 60%

Instructor Support: Students are encouraged to contact the instructor before or after class, and during office hours, if they have questions or problems related to the class. It is suggested that students contact the instructor immediately in order to avoid falling behind in class. Please do not wait until the end of the semester to discuss issues that should have been resolved much earlier.

Academic Support Services: In addition to obtaining course-related assistance from the instructor, students may obtain assistance from the Academic Support Centers located at the Milwaukee, North, South, and West campuses. These centers are open to all MATC students. Services include, but are not limited to, assistance in computer applications, course assignments, Internet use, math, science, social studies, study skills, and writing. Please call the Academic Support Center at your campus for more information.

Instructor Recommended Withdrawals: You may be dropped for absenteeism when:

1. You are absent three consecutive classes.
2. Your attendance is sporadic (e.g., you miss three class periods), and you are unable to make up the instruction missed.
3. You fail to meet attendance requirements of licensing agencies.
4. You pose a safety hazard to yourself or others because of missed instruction critical to safe class or lab performance.
5. You are unable to make up instruction missed in a lab/shop class.

Dropping or Changing Courses: Students who are considering dropping the course should first discuss this with their instructor, counselor, or faculty advisor before dropping. They may be able to recommend an alternative course of action. Please be aware that dropping a course could result in a student being placed on warning or suspension at the end of the semester. Also, please be aware that dropping a course does not mean you will be refunded.

Students who wish to drop a course may voluntarily withdraw from the course up to two weeks before the last day of the semester. Course Change forms are available in the Registration office at the Milwaukee Campus or in Student Services at the regional campuses.

A student who does not report for the final examination and does not formally withdraw nor arrange for an incomplete grade, will be given a U grade for the course.

Incompletes: A grade of Incomplete may be granted, at the discretion of the instructor, in cases where the student has completed at least 75% of the course with a C or better at the time the Incomplete is requested. Students must complete the missing work within one semester or else the Incomplete grade will revert to a U.

Student Complaint Procedure: MATC has established a formal system to assist students in resolving academic problems and course-related issues. In order for a complaint to be valid, the following steps must be followed in order:
Step 1: Meet with the instructor to discuss any questions related to the course (e.g., requirements or assignments) or if you are experiencing academic problems. If the issue is unresolved after meeting with the instructor,
Step 2: Meet with the associate dean of the department. If the issue is unresolved after meeting with the associate dean,
Step 3: Meet with the dean of the department. If the issue is unresolved after meeting with the dean,
Step 4: Go to the Office of Student Life for assistance.

Retention Alert: MATC is interested in the success of all of its students. Retention Alert is a tool that instructors, along with the counseling and advising department, use to help improve student success. There are three areas of Retention Alert: financial, personal/confidential, and retention. Retention Alert is designed to identify students who may be at risk of academic difficulty or failure as early as possible. Throughout the semester, an instructor may create Retention Alerts or referrals for some of their students. After a referral is made, the student will be contacted by someone by phone or email to discuss resources or set up an appointment to meet in person. The Retention staff follows up with the student and the student's instructor to facilitate support efforts. Prevention and intervention are key with students so timing and resources are important. With Retention Alert, hopefully students can get the help they need, when they need it.

OTHER IMPORTANT INFORMATION:

No texting; No ear buds or other head phone set up.

Please refer to the links in Blackboard under the "Syllabus" tab. Those links are:

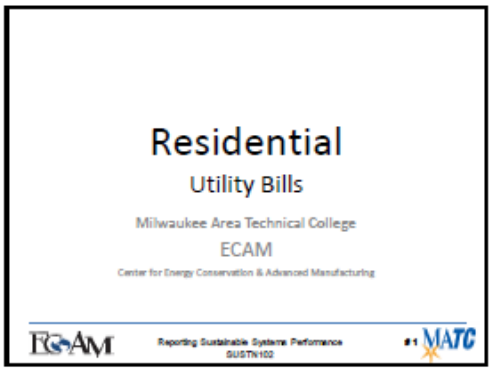
- Student Code of Conduct
- Student Accommodation Services
- Student Handbook

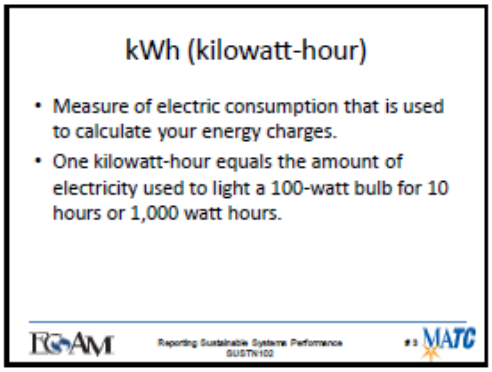
Course Schedule
On the following pages the lecture schedule is given. Please note that these are approximate and tentative dates. Every effort will be made to keep as closely to the schedule as possible. However, regular attendance will ensure that you are aware of any adjustments that may become necessary.

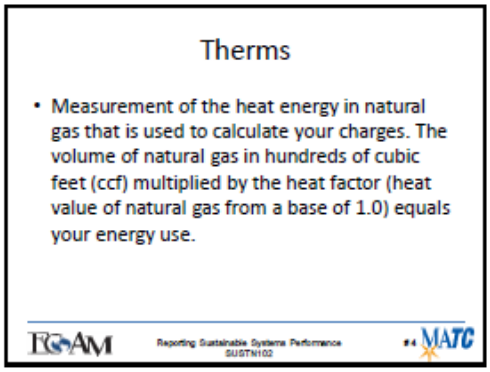
WEEK	DATE	LECTURE
1)	09/10/2012	Course Introduction Understanding Blackboard Setting-up VDI Picking up a Kill-A-Watt meter from the Library
2)	09/17/2012	Documenting References Sustainability in the News Using the Internet Generating PDFs
3)	09/24/2012	Reading Utility Meters Understanding Utility Bills
4)	10/01/2012	Benchmarks for Sustainability Using a Spreadsheet to Perform Calculations
5)	10/08/2012	Word Processing Basics for Reporting Tables and Graphs in a Spreadsheet
6)	10/15/2012	Using Power Point Developing a Report File Outline
7)	10/22/2012	Writing a Report Using all the software skills developed during the course Presentations
8)	10/29/2012	Presentations (continued)

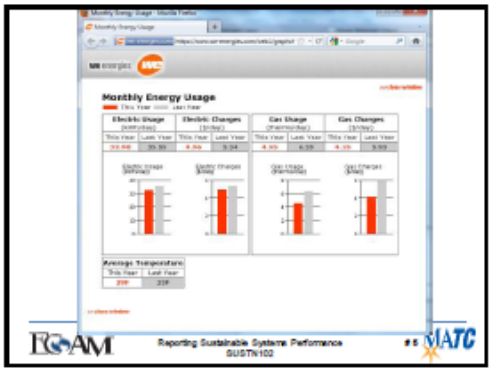
*Lecture topics and items due on any particular day may vary. Refer to Blackboard and in class information for up-to-date schedule

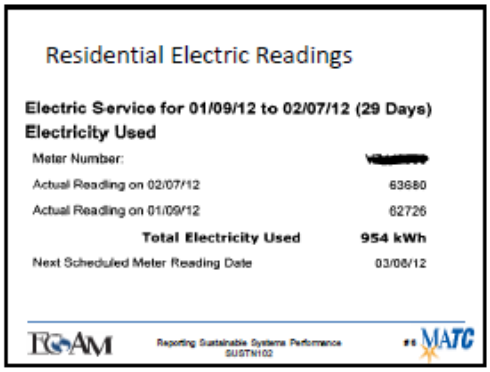
Appendix B – Sample Power Point

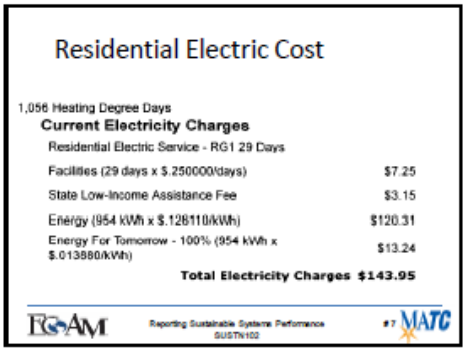


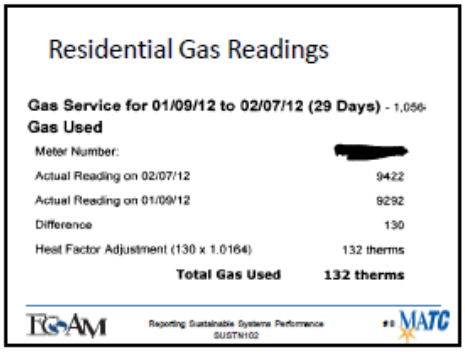


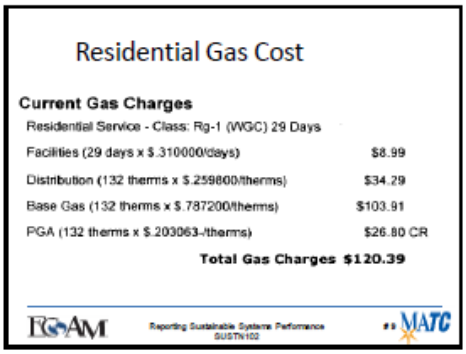







Residential Electric Cost
1,056 Heating Degree Days
Current Electricity Charges
Residential Electric Service - RG1 29 Days
Facilities (29 days x $.250000/days) $7.25
State Low-Income Assistance Fee $3.15
Energy (954 kWh x $.126110/kWh) $120.31
Energy For Tomorrow - 100% (954 kWh x $.013880/kWh) $13.24
Total Electricity Charges $143.95
RGAM
Reporting Sustainable Systems Performance
SUSTN102
#7
MATC


Residential Gas Readings
Gas Service for 01/09/12 to 02/07/12 (29 Days) - 1,056
Gas Used
Meter Number: [redacted]
Actual Reading on 02/07/12 9422
Actual Reading on 01/09/12 9292
Difference 130
Heat Factor Adjustment (130 x 1.0164) 132 therms
Total Gas Used 132 therms
RGAM
Reporting Sustainable Systems Performance
SUSTN102
#8
MATC


Residential Gas Cost
Current Gas Charges
Residential Service - Class: Rg-1 (WGC) 29 Days
Facilities (29 days x $.310000/days) $8.99
Distribution (132 therms x $.259800/therms) $34.29
Base Gas (132 therms x $.787200/therms) $103.91
PGA (132 therms x $.203063-/therms) $26.80 CR
Total Gas Charges $120.39
RGAM
Reporting Sustainable Systems Performance
SUSTN102
#9
MATC

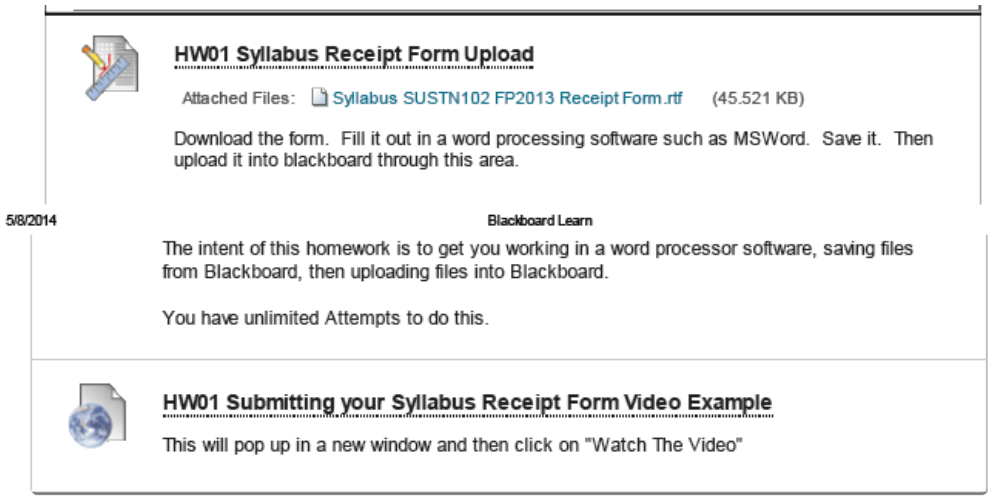
Appendix C – Sample Homework

For this course homework is provided in BlackBoard every week.

Below is the example of what Week 01 homework is.

The course is set up to introduce students to sustainability concepts while learning how to use the computer to collect information, analyze and report.

This assignment is getting the students to use various aspects (taking a test, downloading and submitting files, viewing video online) BlackBoard, the online course software that MATC uses while introducing them to a simple tool they have to check out from the school library and performing a simple administrative task (syllabus receipt form) for the class.



Syllabus Receipt Form

Reporting Sustainable Systems Performance

SUSTN102

SP2012 (09/10/2012-10/29/2012) 5:45PM-8:40PM: Room E116 Instructor: Ted Wilinski

Enter Info along this edge

Student Name (Last, First) ..... type here
MATC Student ID No. ..... type here
Student Email ..... type here
Student Mailing Address ..... type here
City ..... type here
State / Zip Code ..... type here
Preferred Telephone Number ..... type here
Alternate Phone Number ..... type here

By submitting this form electronically in BlackBoard, I acknowledge that I have received the course syllabus from my instructor. The course instructor has reviewed and informed me of all course requirements including attendance and grading.

Appendix D – Sample Quiz

This course is the introductory course for SUSTN. Many students come into the program without much experience with software and are not familiar with online systems for teaching like Blackboard. This quiz is to help them remember things discussed in class relative to BlackBoard.

102 Blackboard Quiz

MULTIPLE CHOICE

1. To view your grade for a particular assignment you would go where in Blackboard?
   a. MISCELLANEOUS tab
   b. My Grades tab
   c. Syllabus tab
   d. 50% Homework tab

   ANS: B When looking for your grades always go to the My Grades tab. It shows your grades, gives you access to grading rubrics, plus allows you to see "test" questions and results.

2. What is your log in name for Blackboard?
   a. Your student ID
   b. Your last name
   c. A name you make up
   d. You have to change every 120 days

   ANS: A

3. Where can you find web sites, equations, and spreadsheets of interest in Blackboard for this class?
   a. MISCELLANEOUS tab
   b. Lecture tab
   c. Syllabus tab
   d. Tools tab

   ANS: A

4. Under what tab are the announcements for this class?
   a. Home
   b. MISCELLANEOUS
   c. (50%) Homework
   d. Tools

   ANS: A

5. Where do you submit late work in Blackboard?
   a. You don't, you give a hard copy to the instructor
   b. In the Homework tab
   c. In the late work tab
   d. No late work is accepted

   ANS: C

MULTIPLE RESPONSE

1. Where in Blackboard can you find how the class grade is determined?
   a. in the syllabus
   b. in the Competencies tab
   c. on the Home page tab
   d. by looking at the tabs on the left side of the page - The percentage dictates the weighing factors.

   ANS: A, D

YES/NO

1. Will you be uploading files into blackboard for this and all SUSTN courses?

   ANS: Y

ESSAY

1. Which homeworks have a rubric already established?

   ANS:
   You can tell by looking at the My Grades section.

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

BEST
Building Efficiency for a Sustainable Tomorrow

NSF National Science Foundation