



Central
North
South
SVI

SBST322 - Energy Analysis and Auditing

Document Type: District Master Course Outline

Proposal Type: New Course

Requester(s): David Krull Lauren Hadley

College: South

Origination Approved: 02/27/2014 - 1:46 PM

BASIC INFORMATION

Requester(s): David Krull

Lauren Hadley

College: South Seattle Community College

Division/Dept: Professional Technical

Dean: Holly Moore

COURSE INFORMATION

Proposed Course Number:

Prefix: **SBST**

Number: **322**

Request a new Prefix

This will be a common course

Full Title: Energy Analysis and Auditing

Abbreviated Title: Energy Analysis/Auditing

Catalog Course Description:

Teaches energy auditing and analysis skills of commercial buildings.

Course Length: 11 Weeks

Request an Exception

Course Prerequisite(s):

Student must be enrolled in the BAS Sustainable Building Science Technology program or have instructor permission and have taken or are currently enrolled in the Building Science and Building Components and Systems courses.

Topical Outline:

1. Overview of auditing buildings (3)
2. Calculating heat flow (1)
3. Researching component values (R, U, SHGC, etc.) (1)
4. Identification and auditing of lighting types (2)
5. Measuring and calculating lighting values (1)
6. Methods and tools for auditing envelope, lighting and equipment (2)
7. Researching equipment efficiencies (1)
8. Calculating and measuring equipment energy use (2)
9. Pump efficiency—understanding pump system optimization (2)
10. Motor efficiency—understanding motor efficiencies and optimization (2)
11. Fans, noise and ductwork—an overview (1)
12. Auditing comfort—interviews, surface temperatures, air movement, noise (2)
13. Practical problems in calculating energy use of a building and systems (2)

- 14. Presentation by expert auditor (2)
- 15. Audit campus building during class (2)
- 16. Report findings and review in class—include comfort as a finding (2)
- 17. How to calculate building baseload and savings with improvements (2)
- 18. Review project building audit and calcs in class (3)

COURSE CODING

Funding Source: 1.....State
Institutional Intent: 21.....Vocational Preparatory

This Course is a requirement for the following program(s):
 (No Programs Selected)

My Course Proposal is a requirement for a program not on this list
 Program Title/Description/Notes:
 BAS Sustainable Building Science Technology program

Will this course transfer to a 4-year university? **No**

Is this course designed for Limited English Proficiency? **No**

Is this course designed for Academic Disadvantaged? **No**

Does this course have a Workplace Training component? **Yes**

CIP Code: 03.0198 Request Specific CIP Code
EPC Code: 177 Request Specific EPC Code

Credits:
Will this course be offered as Variable Credit? **No**

List Course Contact Hours	
Lecture (11 Contact Hours : 1 Credit)	33
Lab (22 Contact Hours : 1 Credit)	0
Clinical Work (33 Contact Hours : 1 Credit)	0
Other (55 Contact Hours : 1 Credit)	0
 Total Contact Hours	 33
Total Credits	3

COLLEGE SUPPLEMENTAL

Proposed Quarter of Implementation: Fall 2014 Request Provisional Exception

Class Capacity: 25

Modes of Delivery: (Check all that apply)

- Fully On Campus
- Fully Online
- Hybrid
- Other Explanation:

Class Schedule Description:

Teaches energy auditing and analysis skills of commercial buildings.

Student Learning Outcomes:

Communication

Read and listen actively to learn and communicate

Speak and write effectively for academic, and career purposes

Computation

Use arithmetic and other basic mathematical operations as required by program of study

Apply quantitative skills for academic, and career purposes

Critical Thinking and Problem-Solving

Think critically in evaluating information, solving problems, and making decisions

Technology

Select and use appropriate technological tools for academic, and career tasks

Personal Responsibility

Uphold the highest standard of academic honesty and integrity

Respect the rights of others in the classroom, online and in all other school activities

Attend class regularly, complete assignments on time and effectively participate in classroom and online discussions, group work and other class-related projects and activities

Abide by appropriate safety rules in laboratories, shops and classroom

Information Literacy

Independently access, evaluate and select information from a variety of appropriate sources

Have knowledge about legal and ethical issues related to the use of information

Use information effectively and ethically for a specific purpose

Program Outcomes:

1. Systems – understand operations and systems unique to sustainable buildings.
2. Analysis – analyze, define and validate systems.
3. Communications – utilize effective communication techniques to facilitate all aspects of sustainable building management.
4. Critical thinking – identify, analyze and solve problems.
5. Technical – measure, diagnose and understand building system interactions.
6. Operations and maintenance – understand and analyze building profiles and identify opportunities for improving performance.
7. Planning and design – calculate, develop and understand codes and standards for construction of sustainable energy efficient buildings.
8. Construction – understand components that drive the process of construction.
9. Building science – demonstrate working knowledge of building science and relationships across disciplines.
10. Financial skills – calculate building baseload and savings with improvements.
11. Computer skills – demonstrate ability to use commonly available instruments and interpret findings in audits and reports.
12. Social value, ethics and need – create and maintain a professional environment based on values and ethics.
13. Data management – use computer programs used in building industries and quality assurance to make fact based decisions.

Course Outcomes / Objectives:

At the end of the course the student will:

1. Understand and have experience in auditing commercial buildings, lighting and conditioning systems.
2. Understand and have experience in analyzing building heat loss and gain, lighting output, and heating and air conditioning air and hydronic flows and capacities.

Explain the student demand for the course and potential enrollment:

Course required for BAS Sustainable Building Science Technology program. All students will be enrolling in the course as a cohort. Course to be offered one time per academic year.

Explain why this course is being created:

- Employer demand
- Student demand
- Options for place-bound students

The SBST BAS degree program will address a critical gap in the current education system that has developed as this industry has evolved over the past five to 10 years. Traditional engineering, construction and architectural studies focus on the design of new buildings, rather than the complex and sophisticated systems that enable newly designed and retrofitted buildings to function. Individuals previously trained as facility managers do not have the level of expertise or systems knowledge to support these highly technical operations. Therefore, businesses are hiring engineers and spending months and even years retraining them to work in this capacity. Frequently these individuals do not want this type of work and leave when other more suitable opportunities present themselves. Individuals who choose to pursue a degree in the field of Sustainable Building Science Technology will not only have the specialized skills they need; they will be more stable employees.

This is to certify that the above criteria have all been met and all statements are accurate to the best of my knowledge.

Faculty involved in originating this program:

David Krull

Print Name

David Krull

Signature

1/1/0001

Date

Lauren Hadley

Print Name

Lauren Hadley

Signature

1/1/0001

Date

Dean:

Holly Moore

Print Name

Holly Moore

Signature

11/25/2013

Date

Results of SSCC Curriculum Coordinating Council Findings

Participating Faculty Response and Remarks

- Recommended for approval
- Not recommended for approval
- This course has not yet reached Committee Review

Chairman, Curriculum Coordinating Council:

Print Name

Signature

Date

Vice President for Instruction:

Gary L Oertli

Print Name

Gary L Oertli

Signature

2/27/2014

Date