NORTH CAROLINA COMMUNITY COLLEGE SYSTEM
Dr. R. Scott Ralls, President

April 21, 2009

MEMORANDUM

TO: Presidents
Chief Academic Officers

FROM: Delores A. Parker
Senior Vice President
Chief Academic Officer

SUBJECT: State Board Action on April 17, 2009
New Curriculum Standard and Courses

On April 17, 2009, the State Board of Community Colleges approved new courses and a new curriculum standard for the following program:

Sustainability Technologies (A40370)

The new curriculum standard and courses are attached for your convenience. You may view all curriculum standards and curriculum courses by visiting the following website:

http://www.nccommunitycolleges.edu/Programs/index.html

If you have any questions concerning these State Board action items, please contact Dr. Judith C. Mann at 919-807-7108 or mannj@nccommunitycolleges.edu.

DAP/JF/swj
Attachments
c: Dr. Judith C. Mann
Dr. John Pettitt
Ms. Jennifer Frazelle
Ms. Tracy McPherson
Program Coordinators

CC09-009
Email

Sustainability Technologies

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*
SST 110 Intro to Sustainability 3 0 3
Prerequisites: None
Corequisites: None

This course introduces sustainability issues and individual contributions toward environmental sustainability. Topics include management processes needed to maximize renewable/non-renewable energy resources, economics of sustainability, and reduction of environmental impacts. Upon completion, students should be able to discuss sustainability practices and demonstrate an understanding of their effectiveness and impacts.

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*
SST 120 Energy Use Analysis 2 2 3
Prerequisites: None
Corequisites: None

This course introduces the principles of analyzing energy use, energy auditing tools and techniques, conservation techniques, and calculating energy savings. Topics include building system control theory, calibrating digital controls, energy loss calculations, and applicable conservation techniques. Upon completion, students should be able to demonstrate an understanding of energy use, audits, and controls in the analysis of energy consumption.

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*
SST 130 Modeling Renewable Energy 2 2 3
Prerequisites: None
Corequisites: None

This course introduces software and other technologies used for modeling renewable energy systems. Topics include renewable energy modeling software applications, data analysis, renewable energy sources, and cost of renewable energy systems. Upon completion, students should be able to use appropriate technology to model the effectiveness of renewable energy systems.

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*
SST 140 Green Building Concepts 1 3 2
Prerequisites: None
Corequisites: None

This course introduces green building design, LEED® (Leadership in Energy and Environmental Design) and comparable certifications, and their significance in modern building construction. Topics include LEED certification or similar rating systems, energy efficiency, indoor environmental quality, and sustainable building materials. Upon completion, students should be able to incorporate ecological awareness and sustainable principles within the context of design and construction.

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*
SST 210 Issues in Sustainability 3 0 3
Prerequisites: SST 110
Corequisites: None

This course introduces the long-term impacts and difficulties of applying sustainability concepts in an organization, business, or society. Topics include the application of sustainable technologies and the analysis of affordability, efficiencies, recycling, and small and large-scale design. Upon completion, students should be able to recognize the possible limitations of sustainable technologies and be prepared to reconcile such conflicts.

	Class	Lab	Credit

*Effective Term –Fall 2009 [2009*03] – SBCC 04/17/09*

SST 250 Sustain Capstone Project	1	6	3

Prerequisites: SST 110
Corequisites: None

This course introduces an integrated team approach to a sustainability topic of interest to students, faculty, or professional community. Topics include problem identification, proposal preparation, conceptual design, and an effective project work schedule. Upon completion, students should be able to integrate the many facets of a topic based on environmental sustainability into a completed project.

CURRICULUM STANDARD

Effective Term
Fall 2009
*[2009*03]*

Curriculum Program Title: **Sustainability Technologies** Code: **A40370**

Concentration: **(not applicable)**

Curriculum Description

The Sustainability Technologies curriculum is designed to prepare individuals for employment in environmental, construction, alternative energy, manufacturing, or related industries, where key emphasis is placed on energy production and waste reduction along with sustainable technologies.

Course work may include alternative energy, environmental engineering technology, sustainable manufacturing, and green building technology. Additional topics may include sustainability, energy management, waste reduction, renewable energy, site assessment, and environmental responsibility.

Graduates should qualify for positions within the alternative energy, construction, environmental, and/or manufacturing industries. Employment opportunities exist in both the government and private industry sectors where graduates may function as manufacturing technicians, sustainability consultants, environmental technicians, or green building supervisors.

*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204(3)]

I. General Education. Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II. Major Hours. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. Other Required Hours. A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

**Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.*

Major Hours

[ref. 23 NCAC 02E.0204(3)]

A. Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Sustainability Technologies A40370

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE *A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree.*	**21-24 SHC**	**12 SHC**	
Required Courses:			
ENV 110 Environmental Science 3 SHC			
SST 110 Intro to Sustainability 3 SHC			
SST 120 Energy Use Analysis 3 SHC			
SST 210 Issues in Sustainability 3 SHC			
Required Subject Areas: Select one subject area:			
Alternative Energy. Select 9 SHC:			
ALT 120 Renewable Energy Tech 3 SHC			
ALT 220 Photovoltaic Sys Tech 3 SHC *or*			
ALT 240 Wind and Hydro Power Sys 3 SHC			
SST 130 Modeling Renewable Energy 3 SHC			
Environmental Engineering Technology. Select 10-12 SHC:			
CIV 110 Statics/Strength of Mater 4 SHC *or*			
MEC 250 Statics & Strength of Mat 5 SHC			
CIV 111 Soils and Foundations 3 SHC *or*			
CIV 115 Geotechnical Engineering 4 SHC			
CIV 211 Hydraulics and Hydrology 3 SHC			
Sustainable Manufacturing. Select 9 SHC:			
ISC 120 Industrial Ecology 3 SHC			
ISC 220 Lean Manufacturing 3 SHC			
MEC 155 Env Benign Manufacturing 3 SHC			
Green Building. Select 12 SHC:			
ARC 111 Intro to Arch Technology 3 SHC			
CMT 210 Prof Construction Superv 3 SHC			
ARC 210 Intro to Sustain Design 2 SHC *or*			
SST 140 Green Building Concepts 2 SHC			
SRV 110 Surveying I 4 SHC *or*			
SRV 112 Landscape Arch Surveying 4 SHC			

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Sustainability Technologies A40370 (Continued)			
B. CONCENTRATION *(Not applicable)*	**NA**	**NA**	**NA**
C. OTHER MAJOR HOURS *To be selected from the following prefixes* AHR, ALT, ARC, ATR, BIO, BPR, BUS, CHM, CIS, CIV, CMT, COE, CSC, CST, DBA, DFT, EGR, EHS, ELC, ENV, EPP, FMW, FOR, GEL, GEO, GIS, HOR, ISC, LAR, MAC, MEC, PHS, PLU, PME, PMT, SRV, SST, and WAT			