



NORTH CAROLINA COMMUNITY COLLEGE SYSTEM
H. Martin Lancaster, President

January 8, 2002

MEMORANDUM

TO: State Board Members
Presidents
Chief Academic Officers
Student Development Administrators

FROM: Delores A. Parker, Vice President
Academic and Student Services

SUBJECT: Teleconference on the Proposed Associate of Engineering Degree

You previously received an invitation to participate in a regional teleconference that will be held on January 11, 2002, from 1 pm until 3 pm. The discussion will center on the issues raised by some of our colleges concerning the proposed Associate in Engineering degree. These issues and responses have been attached for your review prior to the teleconference. Also attached is the proposed Associate in Engineering standard and the history of the background of the current program at Lenoir Community College.

As a reminder, teleconference rooms have been scheduled for the following locations:

NC Community College System Office - Raleigh, NC
Forsyth Technical Community College - Winston-Salem, NC
Martin Community College - Williamston, NC
Western Piedmont Community College - Morganton, NC

If you have questions or comments, please contact Mike Pittman, Director for Program Services at (919) 733-7051, extension 401 or e-mail at pittmanm@ncccs.cc.nc.us.

DAP/jf

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AN EQUAL OPPORTUNITY EMPLOYER

Proposed Engineering Standard

This template has been developed by university and community college faculty as a blueprint for guiding community colleges in developing programs for students who intend to major in Engineering. Students who successfully complete this course of study and who meet the requirements for admission to the university may be eligible to apply for admission to the major with junior standing.

All community colleges will not offer all pre-major programs and course selections may vary. Check college catalogs for course and program offerings.

Students entering this program must demonstrate competency in or complete the prerequisites required for MAT 271, Calculus I.

General Education Core (45 SHC)* Forty-five semester hours of credit in general education core courses are required as outlined on the NCCCS Curriculum Standards for Associate in Science degree programs. The general education core includes study in the areas of humanities and fine arts, social and behavioral sciences, natural sciences and mathematics, and English composition.

English Composition (6 SHC) *Two English composition courses are required.*

- C English 111, Expository Writing, is required as the first composition course.
- C One of the following is required to satisfy the second English composition requirement:
 - ENG 112 Argument-Based Research (3 SHC) *or*
 - ENG 113 Literature-Based Research (3 SHC)
 - (ENG 113 is recommended to satisfy this requirement.)

Humanities/Fine Arts (6 SHC)

Select two courses from the following discipline areas: art, drama, dance, foreign languages, interdisciplinary humanities, literature, music, philosophy and religion.

Social/Behavioral Sciences (6 SHC)

- C One of the following courses is required (3 SHC):
 - ECO 251 Principles of Microeconomics (3 SHC) *or*
 - ECO 252 Principles of Macroeconomics (3 SHC)

- C Select one additional course from the following discipline areas: anthropology, economics, geography, history, political science, psychology and sociology.

Natural Sciences/Mathematics (27 SHC)

Natural Sciences (12 SHC):

Required Courses:

- CHM 151 General Chemistry (4 SHC)
- PHY 251 General Physics I (4 SHC)
- PHY 252 General Physics II (4 SHC)

Mathematics (15 SHC):

C Required Courses:

- | | | |
|---------|---------------------|--|
| MAT 271 | Calculus I (4 SHC) | MAT 273 Calculus III (4 SHC) |
| MAT 272 | Calculus II (4 SHC) | MAT 285 Differential Equations (3 SHC) |

Other Required Hours (19-20 SHC)* Colleges may include courses in health, physical education, college orientation, and/or study skills as other required hours. Work experience up to 1 SHC may be included for career exploration.

***Select 8 - 12 hours from the following Engineering courses:

EGR ***

EGR ***

EGR ***

EGR ***

EGR ***

One of the following courses is required (3 SHC):

CSC 134 C++ Programming (3 SHC) or

CSC 136 FORTRAN Programming (3 SHC)

4-8 additional hours of approved college transfer courses.

Total Semester Hours Credit (SHC) in Program: 64-65

- * **Students must meet the receiving university's foreign language and/or health and physical education requirements, if applicable, prior to or after transfer to the senior institution.**
- ** **3 SHC in Speech/Communication may be substituted for 3 SHC in Humanities/Fine Arts. Speech/Communication may not substitute for the literature requirement.**
- *** ***Common Course Library engineering courses that are in the process of being developed.***

Application to a University

Admission application deadlines vary; students must meet the deadline for the university to which they plan to transfer. Upon successful completion of the degree, students who meet the requirements outlined in this curriculum for Engineering will be eligible to be considered for admission as juniors to the universities offering the baccalaureate degree: NCA&T, NCSU, UNC-C.

Admission to the Major

Grade point average requirements vary and admission is competitive across the several programs in Engineering. In choosing courses to meet both general education core requirements and other required hours, students should seek advice based on the program and track into which they desire to transfer.

**Proposed Associate of Engineering
College Feedback
12/18/01**

On November 2, 2001, a copy of the proposed Associate in Engineering curriculum standard and background information was distributed to the President of each community college by

Dr. Delores A. Parker. The information was accompanied by a letter requesting that any comments, concerns or questions be sent to her by November 15, 2001. The following is a summary of the responses received from:

Asheville-Buncombe TCC
Beaufort County CC
Catawba Valley CC
Central Piedmont CC
Craven CC
Davidson County CC
Haywood CC

Nash CC
Rowan-Cabarrus CC
Sandhills CC
Wayne CC
Western Piedmont CC
Wilkes CC

Advantages/Need

Providing a viable and realistically attainable program for community college students to pursue engineering degrees has been sorely needed since the semester system transition.

This type of program would provide us with an additional marketing tool to generate interest among high school students, if further discussion resolves the issues.

The "concept" is endorsed if all alternatives with the existing AS degree are exhausted before initiating another degree credential.

SACS Issues

SACS mandates that all courses and programs offered by an institution be under the control of the faculty of that institution (section 4.9). Wouldn't NCSU controlling the curricula for the engineering courses be a SACS concern?

Work is in progress to develop additional Common Course Library (CCL) engineering courses. At this time, we cannot guarantee that these courses will be accepted for the list of approved college transfer courses, but we are hopeful that inclusion of credentialing/accreditation verification will insure acceptance by the UNC system.

Won't reducing the humanities/fine arts hours violate SACS requirements?

SACS requires that the basic core of general education include at least one course from the humanities/fine arts area (4.2.2). The revised AE standard proposal requires the student to select two humanities courses.

Standard Format

Shouldn't all community colleges with the engineering program be involved in the development of this standard/proposal?

A formal collaborative process is not in place for the development of a new credential to the System, however, Dr. Delores A. Parker, Vice President of Academic and Student Services, presented information concerning the AE to the Presidents Association on October 25th. On November 2, 2001, all Presidents received a copy of the proposed AE standard and information for their input, ideas and suggestions. A teleconference is being planned for January 11, 2002. All of the colleges have been invited and are encouraged to participate.

What are the required pre-major Engineering courses that are proposed to be taught by university faculty?

Work is in progress to develop additional Common Course Library (CCL) engineering courses. At this time, we cannot guarantee that these courses will be accepted for the list of approved college transfer courses, but we are hopeful that inclusion of credentialing/accreditation verification will insure acceptance by the UNC system.

What are the prerequisites to the required, university Engineering courses?

The prerequisites will have to be developed as part of the new CCL courses in development.

How Will This Work?

Will community colleges have the option of teaching the Engineering courses themselves?

Yes, this option would be available if the proposed courses are accepted as part of the CCL and the college transfer list.

Who would receive the program FTEs?

This would depend on which institution offers the courses.

Who would be responsible for advising students?

The local community college would be the primary advisor.

Is there a guarantee that each community college could receive approval for this degree?

If the college has the appropriate facilities and the credentialed faculty, there should be no problem in receiving approval to offer this degree.

How would students register and pay tuition?

In the current effort between Lenoir and NCSU, students are enrolled at NCSU for specific courses. If new engineering courses are approved for addition to the CCL and the Comprehensive Articulation Agreement (CAA), students could be registered and pay tuition at their community college.

Would courses be scheduled in such a way that it would be feasible for students taking a full load be able to schedule both their community college courses and the university engineering courses?

The additional flexibility of the engineering courses in the CCL and the increased utilization of on-line courses would enhance scheduling options for the student.

Would it be feasible to offer two or three non-laboratory engineering courses via NC Information Highway or over the Internet so that students at community colleges could realistically attain the prerequisites and take these courses in the spring of their second year at the community college?

Every effort is being made to provide courses via Internet.

Will the courses taken at one of the three engineering schools be accepted at other engineering schools?

Yes

How will the AE affect articulation agreements that already exist for the AAS engineering programs?

Since the AE would be a college transfer degree and the AAS is a technical degree, there should be limited effect.

How will the UNC system provide the scheduling for their courses and will there be any negotiation or control by the local community college?

As various colleges receive approval for the AE, it would be difficult to coordinate individualized scheduling. However, every effort would be made to incorporate the needs of the students.

Full-time Student Status

Students do not have to be enrolled full-time to receive Pell (one of the advantages given for AE establishment). The "home" institution reports classes taken at multiple institutions so that the student can be designated as full-time for Pell.

This statement is accurate.

If the students continue to pay university tuition for the courses taught by universities, how can the students be counted as full-time at Lenoir?

The creation of additional engineering CCL courses and creation of the AE would enhance the full-time status for community college students.

Existing Associate in Science/Pre-Engineering Degree

How will the AE impact the existing pre-engineering program that many of our colleges offer?

Each community college may not be able to provide credentialed faculty or resources to offer the AE program to their students. They may, however, be able to offer the existing AS/Engineering, which would still be accepted by the University System.

How many more credentials will be added to our existing credentials? Won't the creation of an AE start a trend of special requests for Associate in Nursing, Business, Education etc...

Each credential would have to be analyzed on a case-by-case basis.

Does the approval of this credential with the universities teaching our engineering courses, send a message that our faculty isn't good enough? Will this start a trend of universities coming into the community college system to teach the courses they don't want to accept from us?

If additional engineering courses are approved for use in the CCL and college transfer list, this will not be an issue.

Exclusivity of the Program

Other colleges may be able to apply for the degree, but the reality is that the program may only be offered through colleges that will have instructors from the universities on campus to teach pre-major engineering courses.

If additional engineering courses are approved for use in the CCL and college transfer list, this will not be an issue.

Does the AE improve the transferability of our college transfer students or would it just benefit the transfer of students from Lenoir CC?

The AE would be of benefit to any community college that has the appropriate facilities/resources to offer the degree.

Suggested Options

Continue this engineering program through a bilateral agreement.

There is increased benefit to our system by providing a statewide standard.

If necessary, have the State Board approve exceptions in the structure (fewer hours in the general education core, more pre-major hours) of the pre-engineering degree to avoid creation of a new credential and re-write of the administrative code.

The structure of the proposed AE varies too much from the current AS to incorporate. Either method would involve the revision of the administrative code

Add the courses taught by NCSU through distance education to the Common Course Library and allow those colleges offering the pre-engineering program to create an option for this program. This option would: avoid the creation of a new credential, require a minor revision to the Administrative Code to allow more hours in the existing AS/pre-engineering, allow colleges currently approved for the Pre-engineering to be automatically approved for the option, allow students enrolled in the expanded program to be eligible for financial aid since the university level courses would transfer to the community colleges as approved CCL courses, preserve SACS requirements, meet students needs at more than one college immediately.

Every effort is being made to add engineering courses to the CCL. The proposed AE standard varies from the structure of the AS/pre-engineering.

Why not negotiate for a true 2 + 2 program and develop it together statewide (NCCCS and UNC) with core requirements and electives agreed upon statewide through both systems?

This is considered a true 2 + 2 program.

Include future planning efforts for sophomore-level engineering courses to be made available via distance learning.

Every effort will be made to encourage course availability through distance learning.

Proposed Associate of Engineering Degree

Background:

In the 1996-1997 academic year, NCSU received funding from the legislature to fund establishing the first two years of the engineering programs at three of the 16 UNC campuses, the purpose being to provide more convenient access of these curricula across the state for potential students. The sites selected were UNC-Asheville, UNC-Wilmington, and ECU. ECU chose not to be a part of this program and LCC was selected to be the site in the east for the 2+2 Engineering Program. In this program at all three sites the students take the same courses that students take at NCSU, NCA&T and UNCC. The engineering courses during the first two years are delivered to each of the three sites by distance from one of the originating schools in the second year of the program. This program is a partnership of the three engineering schools and the three satellite sites listed above. The program is funded out of NCSU and provides an engineering site director at each of the three schools and other support staff as needed based on the size of the program. Students in this program transfer to any of the three UNC engineering schools they choose to go to with virtually a seamless transfer.

Questions submitted to Lenoir CC from System Office Staff prior to meeting with Transfer Advisory Committee on August 23, 2001:

What are the advantages of this degree? Students are taking courses that will go directly towards their degree, thus creating virtually a seamless transfer. Students on financial aid, VA, and those students participating in athletics can count as credit the courses taught by distance from the engineering schools toward meeting their full-time student requirement at the local community college.

Why can't the objectives of this program be met through bilateral agreements with the engineering institutions? While this is a possibility, students cannot receive credit towards full-time status for those courses taken at the engineering schools and therefore will be penalized. Also they would not receive a degree from the community college and therefore not be counted in our performance.

What are the disadvantages of this degree? None identified

What are the barriers and challenges to developing this degree? Does not fit the current administrative code based on the statements of 12 hours in SSC and Humanities. Reference: 23 NCAC 2E.0204(b)

Explain more about the two engineering tracks. While the goal is to provide a true 2+2 program for all engineering disciplines, the reality is that there may be some course in some disciplines that may not be offered at the three satellite sites. To cover as broad a base as possible for all students, the 2+2 engineering course offerings are those that will meet the majority of the needs in all disciplines. The course tracks that meet most of the needs are those found in the mechanical/civil and the electrical/electronic track.

Why can't the current pre-engineering standard be used? In addition to the reasons stated above; penalty to students for VA and financial aid, and the fact that the current 12 shc in humanities and social/behavioral science may more than meet the requirements of these programs at the colleges of engineering.

Response Prepared by: Randy Parker, Lenoir Community College, October 3, 2001