



College of Engineering

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Date: 12 October 2010

To: Randy Smith
Vice Provost, Office of Academic Affairs

From: Ed McCann 
Secretary, College of Engineering Committee on Academy Affairs (CCAA)


Subject: Semester Conversion Proposals for the MS, and PhD degrees in Food, Agricultural, and Biological Engineering

Attached is a letter from Sudhir Sastry, Department Chair of Food, Agricultural, and Biological Engineering, as well as semester conversion proposals for their MS, and PhD degree programs in Food, Agricultural, and Biological Engineering.

These proposals were reviewed by a subcommittee of CCAA. After reviewing the proposals and having some changes made to them the subcommittee recommended to the full committee that they be approved. After a discussion, CCAA unanimously approved the proposals on the 11th of October 2010 and requested that I forward the proposals to you for consideration by CAA. If you have any questions concerning these proposals please let me know.



The Department of Food, Agricultural,
and Biological Engineering
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To: The Office of Academic Affairs (OAA)
From: Sudhir Sastry, Professor and Interim Chair 
Date: July 16, 2010
Re: Department of Food, Agricultural, and Biological Engineering (FABE)
Semester Proposals for Engineering programs

On behalf of the faculty of the Department of Food, Agricultural, and Biological Engineering, I am pleased to submit these semester conversion proposals for our programs that reside academically within the College of Engineering. The department currently administers seven programs; all are being converted to semesters. These include:

- Three undergraduate programs:
 - BS in Food, Agricultural, and Biological Engineering (currently having three formally approved specializations and 12 registrar-designated SIS sub-plans)
 - BS in Construction Systems Management (CSM)
 - Major in Agricultural Systems Management (leading to a BS in Agriculture)
- Two minor programs:
 - Agricultural Systems Management (ASM)
 - Landscape Construction
- Two graduate programs:
 - MS in Food, Agricultural, and Biological Engineering
 - PhD in Food, Agricultural, and Biological Engineering
- One combined program: BS / MS in Food, Agricultural, and Biological Engineering

The department administratively resides in the College of Food, Agricultural, and Environmental Sciences (FAES) with adjunct status in the College of Engineering. Those programs that academically reside within the College of Engineering (BS, MS and PhD in FABE) are part of the university's first wave of planning (to be submitted to OAA in Spring 2010). The programs that reside within the College of Food, Agricultural, and Environmental Sciences (BS in CSM, ASM major, ASM minor, Landscape Construction minor) are part of the university's third wave of planning (to be submitted to OAA in Autumn 2010). Several new programs within the College of Engineering may be proposed at a later date. These include an ecological engineering graduate interdisciplinary specialization and a Masters in International Ecological Engineering. This letter accompanies and introduces proposals for conversion of the existing FABE programs offered through the College of Engineering.

These curricula were developed with thoughtful input from faculty, teaching staff, students, and our departmental industry advisory committees. The FABE faculty was represented on the College of Engineering's Q2S initial 4-person steering committee, which was established in February 2009 to plan and organize the college's semester conversion in anticipation of the University Senate's official vote to convert in June 2009. That group met regularly and was expanded to include representatives from each of the College of Engineering's departments in June 2009.

Over the 2009 summer, a faculty member and a graduate teaching assistant from our department performed a benchmark analysis of curricula. They researched the undergraduate curricula at peer semester institutions (32 biological and/or food engineering programs, 15 agricultural engineering programs, 22 agricultural systems management programs, and 44 construction management programs).

The department's faculty and staff engaged in an all-day retreat on Sept. 18, 2009, to review our "State of the Union" for academic affairs, discuss our current programs' objectives and student learning outcomes, consider the benchmark data, and introduce quarter-to-semester transition issues and planning processes. Following the department's all-day retreat on Sept. 18, 2009, a subcommittee of three faculty members (Drs. Lichtensteiger, Kaletunc, and Christy) was formed to begin the proposal drafting process. A department-wide Carmen site was developed as a way to keep communication open and transparent to all. A series of weekly small working group meetings were convened throughout the 2009-2010 academic year to develop revised program objectives and outcomes and to generate the curricula drafts.

The College of Engineering began holding weekly Q2S Task Force meetings in September 2009. This group engaged in extended conversations with representatives from math, physics, and chemistry to develop memoranda of understanding because decisions made in those units had large ramifications on all engineering curricular decisions. The College of Food, Agricultural, and Environmental Sciences began holding bi-weekly Q2S Implementation Committee meetings in November 2009. Both committees provided opportunities for each department's point persons to present their progress and to work together in subcommittees on topics of mutual interest such as general education, global experience, shared core curricula, graduate education, student services, outcomes assessment, and capstone experience / capstone engineering design.

Three first drafts of the BS in FABE semester curricula were discussed at the department faculty meeting on November 20, 2009. This served to energize other faculty who had delegated the task to the subcommittee, and precipitated much wider involvement in developing second drafts of the program curricula. There was also strong support for generating a fourth formal specialization (ecological engineering) in the BS in FABE program. The departmental Q2S subcommittee was expanded to a subcommittee of four (adding Dr. Jay Martin) and continued to hold weekly meetings which were open to all faculty and instructors; typically two to five attended. Because not everyone was able to make these meetings, subcommittee members began meeting individually with other faculty members and staff instructors to get their input and buy-in.

Final recommendations from the subcommittee on the BS in FABE program objectives, outcomes, four-specialization program structure, and associated curricula were discussed and passed unanimously at the department's regular monthly faculty meeting on Friday, April 9, 2010 (results: 14 faculty present out of 18 total, 13 for, 0 against, 1 abstention by chair). Curricula for the MS and PhD programs, as presented in this proposal, were approved at the May 7, 2010 faculty meeting (results: 16 faculty present out of 18 total, 15 for, 0 against, 1 abstention by chair).

Student input was gathered through one-on-one conversations between department subcommittee members and their advisees, during 2010 senior exit interviews, and by holding two meetings with junior and senior undergraduates on May 26, 2010 where the BS in FABE proposal was shared and discussed. On that day Dr. Lichtensteiger met with 48 students enrolled in FABENG 525, and Dr. Christy met with 20 students enrolled in FABENG 645. The students were strongly supportive of the increased differentiation between the four specializations, and several advocated heavily for moving toward having four separate degree programs instead of specializations. The selection of specialization-specific science courses was viewed very favorably. There was enthusiastic support for the proposal to teach fluids, thermodynamics, and heat transfer in the department featuring food, agricultural, biological, and ecological applications. The current method of having students take these courses among various offerings from Civil Engineering (for fluids), Mechanical Engineering (for fluids, thermodynamics, and heat transfer), and Chemical Engineering (for fluids, thermodynamics, mass transport, and heat transfer)

was viewed by the students as less than ideal, given the variety of prerequisite knowledge needed for success in each course depending on which department offered the content plus the relative lack of FABE-appropriate application examples. Other comments and suggestions were made on computer programming requirements, internships, junior pre-capstone design, industry involvement, potential May-term offerings, and departmental minors.

The department's Industry and Professional Advisory Group (IPAG) are regularly consulted about program objectives and outcomes and has twice reviewed the proposed semester curricula. At their November 19, 2009 meeting, preliminary materials about the semester conversion were presented. At that meeting it was requested that IPAG create a scorecard for their members to evaluate senior capstone design projects, providing direct assessment by industry representatives of student achievement of program learning outcomes. IPAG member Steve Helmrich suggested a proposal and final project evaluation to gauge progress and for students to submit executive summaries prior to their formal presentations. This feedback process was first implemented at the next IPAG meeting on May 18, 2010. In addition, the faculty-approved versions of revised objectives, outcomes, and the semester program proposal for the four BS in FABE specializations were also shared with IPAG on May 18, 2010. Some minor changes were suggested, but overall the group was very supportive of the proposed new curriculum and related program goals.

Given the widespread support by industry, students, faculty, and staff, I heartily recommend that this proposal for semester-based BS, MS, and PhD programs in FABE be approved.

Food, Agricultural, and Biological Engineering Master's Degree Program Proposal (MS in FABE)

GENERAL PROGRAM INFORMATION

Fiscal Unit / Academic Organization: D1123: Food, Agricultural, and Biological Engineering

Administering College / Academic Group: Engineering

Co-administering College / Academic Group: Food, Agricultural, and Environmental Sciences

Semester conversion designation: Converted with minimal changes to curricular requirements

Program / Plan name: Food, Agricultural & Biological Engineering

Type of Program / Plan: Graduate degree program

Program / Plan SIS code abbreviation: FABE-MS

Degree Title: Master of Science

Specializations / Sub-plan names: none

PROGRAM REQUIREMENTS

Program learning goals: not required at this time for graduate programs

List of Semester Courses:

(Students can choose from either column—both add up to the required 30 hours.)

Required for MS program	Course Number	Cr-Hrs	Cr-Hrs
Research methods in FABE	FABE 7210	3	3
Seminar (each semester enrolled, unless course conflict)	FABE 7250	4	2
Thesis research	FABE 7999	10	10
Technical Electives			
Technical Elective Hours (At least 2 FABE Graduate courses offered by Dept. of FABE)		8	6
Technical Elective Hours (Graduate courses in any department)		5	9
Total Technical Hours		13	15
		30	30
TOTAL HOURS			

Program Rationale:

One of the strengths of our Masters program is the flexibility it allows. Students, in consultation with their graduate advisor, define an individualized plan for up to half (15 hours) of the total credit hours. This will not change under semesters. The research methods class and seminar are being retained. An additional requirement has been added that at least 6 hours or 2 courses of the technical elective courses must be taken within the department to strengthen the student’s ties with their home department.

Advising sheets: not required for graduate programs

Curricular map: not required at this time for graduate programs

CREDIT HOUR EXPLANATION

Program credit hour requirements	A.) Number of credit hours in current program <i>(Quarter credit hours, assumes full enrollment in seminar)</i>	B.) Calculated result for 2/3rds of current quarter credit hours <i>(On-line version will multiply the value in column A by 0.667 and round to the nearest tenth)</i>	C.) Number of credit hours required for proposed program <i>(Semester credit hours)</i>	D.) Change in credit hours <i>(Absolute value of difference between columns B and C)</i>
Total credit hours required for completion of program	45	30.0	30	0.0
Required credit hours offered by the unit	21	14.0	18 to 20	4.0 to 6.0
Required credit hours offered outside of the unit	0	0	0	0
Technical electives <i>(may be taken in or outside the unit):</i>	24	16.0	10 to 12	4.0 to 6.0

Rationale for the changes in credit hours

The MS in FABE proposes increases in credit hours within the department due to the additional requirement that at least one of the technical electives (3 credit hours) be taken within the department. Although most students took several FABE courses as technical electives, it was never a stated requirement previously. Also there was a relative increase in credit hours for the FABE research methods course which was converted from a 3 credit hour quarters-based course (FABE 801) to a 3-credit hour semesters-based course (FABE 7210).

TRANSITION POLICY

We, the faculty and staff of Department of Food, Agricultural, and Biological Engineering, pledge that our graduate students' progress toward graduation will not be delayed by the conversion to semesters. Every course taken under quarters that would have counted toward their graduate degree will count as 2/3 of a semester credit hour toward the requirements for graduation under semesters. Additional advising support will be provided by graduate faculty advisors who will work with their students to ensure that they can complete the remaining requirements for their degrees from the summer of 2012 until graduation in such a way that meets each student's needs and does not delay graduation compared to what would have been the case had OSU remained on quarters.

– *Sudhir Sastry, Professor and Interim Chair*

ASSESSMENT CONVERSION and PLAN

Not required for graduate programs

Food, Agricultural, and Biological Engineering Doctoral Degree Program Proposal (PhD in FABE)

GENERAL PROGRAM INFORMATION

Fiscal Unit / Academic Organization: D1123: Food, Agricultural, and Biological Engineering

Administering College / Academic Group: Engineering

Co-administering College / Academic Group: Food, Agricultural, and Environmental Sciences

Semester conversion designation: Converted with minimal changes to curricular requirements

Program / Plan name: Food, Agricultural & Biological Engineering

Type of Program / Plan: Graduate degree program

Program / Plan SIS code abbreviation: FABE-Ph.D.

Degree Title: Doctor of Philosophy

Specializations / Sub-plan names: none

PROGRAM REQUIREMENTS

Program learning goals: not required at this time for graduate programs

List of Semester Courses:

(Students can choose from either column—both add up to the required 30 hours.)

Required for PhD program	Course Number	Cr-Hrs	Cr-Hrs
Research methods in FABE	FABE 7210	3	3
Seminar (each semester enrolled, unless course conflict)	FABE 7250	4	8
Dissertation research	FABE 8999	30	30
Technical Electives			
Technical Elective Hours (At least 3 courses in FABE Graduate)		9	12
Technical Elective Hours (Graduate courses in any department)		34	27
Total Technical Electives		43	39
TOTAL HOURS		30	30

Program Rationale:

One of the strengths of our Doctoral program is the flexibility it allows. Students, in consultation with their graduate advisor, define an individualized plan for approximately half of the total credit hours. This will not change under semesters. The research methods class and seminar are being retained. An additional requirement has been added that at least 9 hours or 3 courses of the technical elective courses

must be taken within the department to strengthen the student's ties with their home department. Previously this requirement was for 6 credit hours within the department.

The FABE Graduate Handbook, when updated, will include the following: "A minimum of 80 graduate credit hours is required beyond the B.S. degree of which 60 hours are for courses, not including FABE 999. Only 30 hours are allowed for the M.S. degree, unless the degree was received from OSU and the student's Advisory Committee approves additional hours. Course credit hours should normally be divided among (1) Food, Agricultural & Biological Engineering courses (including 999 and 850), (2) basic science courses, and (3) courses that are specific to the student's area of specialization."

Advising sheets: not required for graduate programs

Curricular map: not required at this time for graduate programs

CREDIT HOUR EXPLANATION

Program credit hour requirements	A.) Number of credit hours in current program <i>(Quarter credit hours, assumes full enrollment in seminar)</i>	B.) Calculated result for 2/3rds of current quarter credit hours <i>(On-line version will multiply the value in column A by 0.667 and round to the nearest tenth)</i>	C.) Number of credit hours required for proposed program <i>(Semester credit hours)</i>	D.) Change in credit hours <i>(Absolute value of difference between columns B and C)</i>
Total credit hours required for completion of program	120	80.0	80	0.0
Required credit hours offered by the unit	50	33.3	37 to 41	3.7 to 7.7
Required credit hours offered outside of the unit	0	0	0	0
Technical electives <i>(may be taken in or outside the unit):</i>	70	46.7	39 to 43	3.7 to 7.7

Rationale for the changes in credit hours

The PhD in FABE proposes increases in credit hours within the department due to the additional requirement that at least two of the technical electives (6 credit hours) be taken within the

department. Previously only one of these courses was required to be from FABE. Also there was a relative increase in credit hours for the FABE research methods course which was converted from a 3 credit hour quarters-based course (FABE 801) to a 3-credit hour semesters-based course (FABE 7210).

TRANSITION POLICY

We, the faculty and staff of Department of Food, Agricultural, and Biological Engineering, pledge that our graduate students' progress toward graduation will not be delayed by the conversion to semesters. Every course taken under quarters that would have counted toward their graduate degree will count as 2/3 of a semester credit hour toward the requirements for graduation under semesters. Additional advising support will be provided by graduate faculty advisors who will work with their students to ensure that they can complete the remaining requirements for their degrees from the summer of 2012 until graduation in such a way that meets each student's needs and does not delay graduation compared to what would have been the case had OSU remained on quarters.

– *Sudhir Sastry, Professor and Interim Chair*

ASSESSMENT CONVERSION and PLAN

Not required for graduate programs