ACADEMIC COUNCIL
AGENDA
Monday, February 3, 2014
CNS 200
3:30 – 5:00 PM

1. Presidential courtesy

2. Report from the Secretary of the General Faculty

3. Report from the Executive Secretary
   a. Approval of minutes of AC meetings
      i. Minutes of Meeting on December 2, 2013 (attached)
      ii. Minutes of 12/2/13 meeting reconvened on December 9, 2013 (attached)
      iii. Minutes of 12/2/13 meeting reconvened on December 12, 2013 (attached)
      iv. Minutes of meeting on January 15, 2014 (attached)
      v. Minutes of meeting on January 27, 2014 (attached)
   b. Correspondence
   c. Oral Reports

4. Council Subcommittee Reports (One report expected - 4.e)
   a. Subcommittee on broader academic freedom language for governance documents (AC 2/27/12)
   b. Subcommittee to consider proposing IDEA form for administrators (AC 4/4/11)
   c. Subcommittee on grievance procedures (AC 5/8/13)
   d. Subcommittee on maternity leave policy (AC 5/8/13)
   e. Subcommittee to review hiring procedures (AC 4/29/13) - attachments
   f. Subcommittee on time codes (AC 5/8/13)
   g. Subcommittee on Mission Statement re non-tenure track faculty (AC 9/9/13)
   h. Subcommittee to consider Faculty Handbook committee on non-tenure track faculty (AC 9/9/13)

5. Petitions for immediate hearing

6. Old Business

7. New business
   a. Recommendation from FDEC on adopting the IDEA short form (attachment)
   b. Proposal for Five Year BS/MS program in Mechanical Engineering (attachments)
   c. Proposal for a Bachelor of Science Degree program in Bioengineering (attachments)
   d. Committee on Conference with the Board of Trustees – report from December meeting
   e. Discussion of AC three-year Review of Merit Appeals Policy (due fall 2013; Pending Item F)

• Lists of Attachments, Pending, and Ongoing Items are on page 2
List of Attachments:
For item 3.a.i. Minutes of 12/2/2013 meeting (pages 3-5)
For item 3.a.ii. Minutes of 12/2 reconvened on 12/9/2013 (pages 6-8)
For item 3.a.iii. Minutes of 12/2 reconvened on 12/12/2013 (pages 9-11)
For item 3.a.iv. Minutes of 1/15/2014 meeting (pages 12-14)
For item 3.a.v. Minutes of 1/27/2014 meeting (page 15)
For item 4.e. Memo from the Subcommittee dated 12/6/13 re Guidelines for Faculty and Academic Staff Recruitment (page 16); Guidelines for Faculty Recruitment document with changes shown (pages 17-24); Guidelines for Faculty Recruitment document with changes incorporated (pages 25-31).
For item 7.a. Recommendation from FDEC with FDEC minutes dated 1/15/2014 (pages 32-36)
For item 7.b. Proposal for a Five Year BS/MS program in Mechanical Engineering (pages 37-59); SOE Curriculum Committee minutes 2/26/13 (pages 60-61); UCC minutes 3/5/2103 (pages 62-63); EPC minutes 12/14/2013 (pages 64-67).
For item 7.c. Proposal for a Bachelor of Science degree in Bioengineering (pages 68-81); Minutes SOE Undergraduate Curriculum Committee 11/4/2013 (page 82); UCC minutes 12/3/2013 (pages 83-87); EPC draft minutes 12/14/13 (pages 88-91); Letter from Prof. Geoff Church dated 1/9/2014 (page 92).

Pending Items:
A. Faculty Data Committee (AC 12/3/07).
B. MFA in Creative Writing, Five-Year-Review due in 12/2012 (AC 12/3/07).
C. Re-evaluation of offering both paper and online options for IDEA forms, spring 2014 (AC 5/14/12)
D. Re-evaluation of continued use of "yellow sheet" quantitative evaluations, spring 2014 (AC 5/14/12)
E. AC revisits the accessibility of teaching evaluation data, Due spring 2012. (AC 4/19/10)
F. AC three year review of Merit Appeals Policy, fall 2013. (AC 11/1/10)
G. AC three year review of Intellectual Properties Policy, spring 2014. (AC 3/7/11)
H. MPA, five year review in 2017-2018 (AC 9/10/12)

Ongoing Items:
1. Report by SVPAA to AC each semester to inform the council of any approved exceptions to the Athletic Department’s policy of not scheduling athletic events that conflict with final exams.
2. Report from the Committee on Conference with the Board of Trustees after each meeting with board members. At the end of each academic year, discuss items for the Conference Committee to put on the agenda for their meetings with members of the board the following year.
3. Standing Calendar Review Subcommittee: A subcommittee of two people will be elected by the AC each September from its elected membership. The subcommittee’s charge is to review all Fairfield academic calendars before their publication and make any necessary recommendations for changes to the Academic Council and the Senior Vice President for Academic Affairs.
Minutes of Meeting

Attendance:

Faculty: Professors Joe Dennin, David Downie, Bob Epstein, Don Greenberg, Shannon Harding, James He, Chris Huntley, Ginny Kelly, Wendy Kohli, Alison Kris, Nikki Lee-Wingate, Irene Mulvey (AC Executive Secretary), Martin Nguyen, Elizabeth Petrino, Shawn Rafalski (AC Chair), Susan Rakowitz (Secretary of the General Faculty), L. Kraig Steffen, John Thiel

Administrators: Deans Bruce Berdanier, Lyn Babington, Robbin Crabtree, SVPAA Paul Fitzgerald, S.J.

Regrets: Interim Dean Faith-Anne Dohm

Guest Presenters: President von Arx, S.J., Executive VP Kevin Lawlor

Chair Rafalski called the meeting to order at 4:41

1. Presidential Courtesy.
President Von Arx addressed the Council with regard for his plans to institute a refresh of the strategic plan last done in 2004. President von Arx turned the meeting over to Executive Vice President Lawlor to outline the rationale and time line for the refresh of the strategic plan. EVP Lawlor indicated that fundamental changes are taking place in higher education and that it is critical for Fairfield to be ahead of these changes. Fairfield must plan for the changes and be able to implement the necessary activities that will keep Fairfield a healthy institution for the next fifty years. Failure to plan and be able to make the necessary changes in a timely fashion will mean, EVP Lawlor indicated, that Fairfield will reach a situation where draconian decisions would have to be made in order for the University to survive. EVP Lawlor then proceeded to outline the steps and rationale for the plan. See appendix 1. Page one of the draft document outlines some of the major problems facing higher education. Page two outlines the increasingly competitive market Fairfield will face in the future. We have more schools in the Northeast than there will be students seeking entrance to college. Page five of the plan indicates the timeline for the study. It will begin in December, 2013 and be completed by March, 2015. Pages six through ten discuss the number and types of committees, suggestions for their mission, and how they would operate. The final two pages discusses the “out of the box” thinking needed to make this review productive and what the administration considers the “must have’s” to come from the review. EVP Lawlor indicated the worst outcome for the review would be to recommend the status quo. EVP Lawlor pointed out that this review would include all segments of the University community

At this point EVP Lawlor and President von Arx invited questions from the Council.
Professor Mulvey: Will the Academic Council choose the faculty members for the committees? President von Arx answered he would appoint the faculty members but would take into consideration nominations from the faculty.

Professor Mulvey: Why not use the current committee structure to form your committees? President Von Arx: I will do that as much as possible but there are areas of study that do not match our committee structure.

Professor Petrino: How can we make sure that all faculty members will have the opportunity to contribute to the dialogue? EVP Lawlor: It is our intention to have maximum contributions from everywhere, and it will be up to each committee to devise how they intend to reach out.

Professor Kohli: How were the committees conceptualized, for example, why is part-time learning and community outreach in the same committee? EVP Lawlor: We looked for areas of synergy, so, since must people doing part-time learning would be from the community we thought that made for a good fit.

SVPAA Fitzgerald stated that all normal university business, including academic program development and shared governance structures, will proceed during the review.

Professor Dennin: I notice that the steering committee has four administrators and four deans, but deans are administrators. EVP Lawlor: There is a need for both deans and divisional administrators to be represented. President von Arx: It is very important to have deans on board for this review and that we empower the deans as well as the vice presidents.

Professor Epstein: What will constitute a team? EVP Lawlor: We anticipate that each team will be 10 to 12 and that the faculty will be a majority on each team.

This ended the questioning, and President von Arx and EVP Lawlor left the room.

**MOTION** [Rakowitz/Dennin] to reorder the agenda and go directly to item 7.a. Committee on Conference with the Board of Trustees. 
**MOTION PASSED. (vote?)**

Professor Mulvey and Professor Kohli are members of the Committee on Conference with the Board of Trustees and reported for the Committee as the Chair, Professor Marti LoMonaco teaches at this time. Prof. Mulvey outlined the committees agenda for its meeting with the Board and that they would focus on discussion of the university mission. The outline for the discussion that had been drawn up by the faculty on the Committee on Conference and forwarded to the Board is in the packet for this meeting. Council members looked over the document and there were no questions or discussion.
MOTION [Mulvey/Epstein] that a discussion of “Fairfield 2020, Building a Sustainable Future, Strategic Plan Refresh” discussed by EVP Lawlor be placed on the agenda of this meeting.
MOTION PASSED. (vote?)

MOTION [Greenberg/Rakowitz] to recess this meeting and reconvene on Monday, December 9, 2013 at 4:30 in the Diffley Board Room.
MOTION PASSED. (vote?)

Meeting recessed at 5:30

Submitted,
Don Greenberg
Academic Council Meeting Minutes (Draft)  
Monday, December 9, 2013  
Reconvened from Monday, December 2, 2013

**Present:** Professors Joe Dennin, David Downie, Bob Epstein, Shannon Harding, James He, Chris Huntley, Ginny Kelly, Wendy Kohli, Alison Kris, Nikki Lee-Wingate, Irene Mulvey (Executive Secretary), Martin Nguyen, Elizabeth Petrino, Shawn Rafalski (Chair), Susan Rakowitz (General Faculty Secretary), L. Kraig Steffen, John Thiel, Don Greenberg

**Administrators:** SVPAA Paul Fitzgerald, Deans Lynn Babington, Bruce Berdanier, Robbin Crabtree, Don Gibson

**Regrets:** Dean Faith-Anne Dohm

Chair Shawn Rafalski called the meeting to order at 4:30 p.m.

3. Report from the Executive Secretary – Irene Mulvey

   a. Approval of minutes of AC meeting on Nov. 4, 2013

      **MOTION (Paul Fitzgerald/Don Greenberg) to approve the minutes**

      **MOTION PASSED:** 14-0-2

   b. Correspondence – None

   c. Oral reports

   Irene Mulvey noted that, as decided at the last meeting, a new agenda item will be added after 7(c) as: 7(d) Discussion on the Strategic Plan Refresh

4. Council Subcommittee Reports

   g. Subcommittee on Mission Statement for non-tenure track faculty (AC 9/9/13)

      Irene Mulvey – The Mission Statement for non-tenure track faculty subcommittee was formed with the membership as follows:

      Laura Marciano  
      Rosemary Danaher  
      Steve Bayne  
      Gayle Bogel  
      Kathy Nantz  
      Yohuru Williams  
      Rosemarie Gorman  
      Christine Earls  
      Faith Hunt  
      Paul Fitzgerald  
      Terry Quell

   h. Subcommittee to consider Faculty Handbook committee on non-tenure track faculty (AC 9/9/13)
Irene Mulvey – Subcommittee to consider Faculty Handbook committee on non-tenure track faculty was formed with the membership as follows:

- Sonya Huber
- Cliff Price
- Irene Mulvey
- Liz Hohl
- Margo Ramlal-Nankoe
- Paul Fitzgerald
- Christine McGowan

5. Petitions for immediate hearing - None

6. Old Business – None

7. New business

b. Minor in Behavioral Neuroscience

Shannon Harding briefly explained the objectives of the minor and answered questions related to the proposed minor:

The purpose of this minor is to meet the needs of non-psychology majors who are interested in Behavioral Neuroscience. It is not required to have a major in Biology or Chemistry.

**MOTION (John Thiel/David Downie): To approve the proposed Minor in Behavioral Neuroscience by the Psychology Department**

Paul Fitzgerald: Speaking in favor of the motion since the proposed minor is resource neutral and has no big effect on enrollment.

**MOTION PASSED: 16-0-1**

c. Report from AC Standing Committee on academic calendar

Shannon Harding and Nikki Lee-Wingate – In their report dated December 9, 2013, the suggested changes by the subcommittee were endorsed by SVPAA Paul Fitzgerald and accepted by the Registrar Robert Russo on December 4, 2013, effective for the Academic Calendar 2014-2015.

**Summary of Main Changes**

1. Consistent number of class days for each day of the week
2. Sufficient time between the end of Fall semester and the beginning of the Spring semester
3. Reading days
4. Longer time between the Spring Break and Easter Recess
5. Designating Tuesday after Columbus Day as a university holiday, instead of Academic Monday
Irene Mulvey – This is an excellent report to have the list of problems and suggestions regarding the calendar.

Shawn Rafalski – On behalf of the Academic Council, thanks to the subcommittee, Shannon Harding and Nikki Lee-Wingate.

d. Discussion on the Strategic Plan Refresh

The following concerns were expressed about the Strategic Plan Refresh:

• It seems to be a new strategic plan, not a Strategic Plan “refresh”
• It does not seem to include staff members in the process
• It has to be much clearer in the plan, in terms of “Academic” vs. “overall”
• Potential list of teams should not be so predetermined. The steering team should determine the teams and the scope of the teams
• Communication with the faculty is not in line with the faculty expectations since faculty participation is essential to the success of the strategic plan
• Steering team is the key

**MOTION (Irene Mulvey/Alison Kris) to have the AC Executive Committee issue a call for volunteers from the Council to draft a statement responding to the Strategic Plan Refresh presentation made by Executive VP Kevin Lawlor at the AC meeting on 12/2/2013**

Paul Fitzgerald – Speaking in favor of the motion. In the meantime, Deans are developing their own school-based strategic plans.

**MOTION PASSED: 14-0-0**

**MOTION (Irene Mulvey/Paul Fitzgerald) to recess and to reconvene on Thursday 12/18/13 at 1:30 pm in CNS 200 to discuss the AC response to the Strategic Plan Refresh presentation, drafted by the volunteers.**

**MOTION PASSED unanimously**

Respectfully submitted by:
James He
Present: Professors Joe Dennin, Bob Epstein, Don Greenberg, Shannon Harding, Chris Huntley, Ginny Kelly, Irene Mulvey (AC Executive Secretary), Elizabeth Petrino, Shawn Rafalski (AC Chair), Susan Rakowitz (Secretary of the General Faculty), L. Kraig Steffen, and John Thiel. Administrators: Deans Bruce Berdanier and Lynn Babington; SVPAA Paul Fitzgerald SJ.

Regrets: Professors David Downie, Alison Kris, Wendy Kohli, and Martin Nguyen; Dean Robbin Crabtree.

Chair Rafalski called the meeting to order at 1:33pm.

The December 9, 2013 meeting of the Academic Council reconvened to discuss one agenda item.


An Academic Council subcommittee was charged to draft a response to EVP Lawlor’s Strategic Plan Presentation to the Council on 12/2/2013. Prof. Mulvey circulated a memo from the subcommittee addressing two specific items: (1) the Steering Committee and (2) the Potential List of Teams (with a suggestion that the Steering Committee work to refine these). Prof. Mulvey opened the discussion, suggesting that this memo be sent to President von Arx and EVP Lawlor.

SVPAA Fitzgerald mentioned that he was unable to make the subcommittee meeting, but he expressed his support of the memo with minor grammatical changes. He also suggested that the composition of the Steering Committee should mimic the structure of recent search committees for Provost and Deans (i.e. 7 administrators and 7 faculty). He proposed that the Academic Council should elect a pool of representatives from which the President would select; rather than electing the members outright. For example, electing a pool of 8 faculty from which the President would appoint 7.

Prof Mulvey stated that the drafting committee had envisioned a different composition, with 5 deans, 5 administrators, and 6 faculty. In addition, Prof. Mulvey spoke to the role of elected vs. appointed faculty members, saying that she would not be comfortable suggesting that the representatives are not elected by the Council, because the representatives would only be legitimate if we elected them. She expressed concern that this would set an unfortunate precedent.

Professor Thiel and Prof. Rakowitz spoke in favor of electing the faculty representatives, and having the President appoint them to the Steering Committee.

Dean Babington expressed concern that this plan should include more than just academic endeavors; and that we should be mindful of including administrators from different areas to be part of the process. Likewise, Prof. Huntley spoke about the importance of having the right voices at the table to be a part of the conversation.

MOTION: that AC approves the document and authorizes the Executive Committee to send it to any individuals within the university community that the Executive committee thinks are appropriate.

(Greenberg/Lee-Wingate)

An revision to the document was suggested:
MOTION to revise the document as follows: To replace “As is mandated by the Faculty Handbook for search committees for certain senior academic administrators, the Council should be responsible for arranging faculty membership on the Steering Committee.” With “In order for the faculty to be legitimately represented, the Council should elect their representatives.”
(Mulvey/Rakowitz)
MOTION to revise the document PASSED: 14-0-0.

The conversation returned to the discussion of the original motion.

Prof. Greenberg spoke in support of the memo in principle, stating that we want to assert the faculty’s position and ensure that faculty represents the majority.

Prof. Epstein spoke in support of having a large amount of faculty representation, and expressed concern that while many members of the community should have a voice, they may have difficulty standing up to the administration. He expressed hope that staff members would feel free to disagree or be able to question and challenge the administration when the need arises.

SVPAA Fitzgerald stated that so far every meeting with EVP Lawlor suggests that this will be an inclusive process, and that the Steering Committee will be a coordinating committee that will direct teams of talented people from across the university. He said that we should not be focusing on the Steering Committee, but rather on changes to the list of teams; combining some of the initiatives and ensuring that the language is consistent with Fairfield’s language.

Based on this discussion, a second amendment was proposed:

MOTION TO revise the document: To delete the word “academic” in “4 senior academic administrators” in paragraph 5.
(Mulvey/Fitzgerald)
MOTION to revise the document PASSED: 14-0-0

Prof. Epstein asked for clarification about the new composition of the Steering Committee. Prof. Rafalski explained that in addition to 6 faculty, 4-5 deans, and 4-5 administrators, the committee will include 2 students and 2 alumni.

Another (third) amendment was proposed to clarify the members of the Steering Committee.

MOTION TO revise the document: After the dash in the first sentence in the second to last paragraph, put “athletics, advancement, student affairs, marketing and communication, finance, human resources, etc.,” in place of “athletics, advancement, student services, administration”.
(Fitzgerald/Mulvey)
MOTION to revise the document PASSED: 14-0-0

Prof. Epstein expressed some confusion about the role of students and alumni; for example, in theory, alumni could be faculty members. However, he also stated that the document was moving in a direction that we could support.

Prof. Lee-Wingate questioned whether the Steering Committee would coordinate things or if it would provide order and oversight in how things are done. SVPAA responded by saying that the Academic Council should have some input into the teams and topics as well, because many of the potential teams listed for the Strategic Plan include academics. Prof. Mulvey agreed.

Prof. Thiel stated that the memo makes a strong statement that the first job of Steering Committee is to articulate the goals for Fairfield. He also agreed that the academic division should have a say in the Steering Committee goals and expressed hope that the Academic Council will play an advisory role.
Prof Steffen questioned whether we should rewrite the response in light of new information about the Steering Committee composition presented earlier in the morning. Prof. Rakowitz suggested that the current response was appropriate. Prof. Greenberg also spoke in support of the memo, stating that with the time constraints, the amended document captures the will of the faculty very well.

Prof. He added that the tone should be clear about our views.

After much discussion, the Council returned to the motion to approve the document.

**MOTION: that AC approves the document (as revised) and authorizes the Executive Committee to send it to any individuals within the university community that the Executive committee thinks are appropriate.**

(Greenberg/Lee-Wingate)

**MOTION PASSED: 14-0-0**

**MOTION** to adjourn (Rakowitz/Mulvey) approved unanimously at 2:10pm.

Respectfully submitted,
Shannon Harding
In attendance:

Faculty: Professors Joe Dennin, Don Greenberg, Shannon Harding, James He, Chris Huntley, Ginny Kelly, Alison Kris, Nikki Lee-Wingate, Irene Mulvey (AC Executive Secretary), Elizabeth Petrino, Shawn Rafalski (AC Chair), Susan Rakowitz (General Faculty Secretary), L. Kraig Steffen, Stephanie Storms, John Thiel, Jo Yarrington

Administrators: Senior VP Paul Fitzgerald, S.J., Deans Bruce Berdanier, Robbin Crabtree, Don Gibson

Regrets: Professor Martin Nguyen, Deans Lynn Babington, Faith-Anne Dohm

The meeting was called to order by the Chair, Prof. Shawn Rafalski, at 3:17 PM. The agenda had been prepared by the Executive Committee and was distributed.

1. Approval of the agenda

   **MOTION [Yarrington/Harding] to approve the agenda**
   **MOTION PASSED unanimously.**

2. Select nominees for Strategic Plan Steering Committee

   The Council was reminded that the plan is for the Steering Committee to be composed of 5 Vice Presidents (EVP and SVPAA will co-chair), the 5 academic Deans, 7 faculty members, 2 students and 2 alumni. The President asked the Council to provide a list of nominees from which he would appoint the 7 faculty members.

   Faculty Secretary, Prof. Susan Rakowitz, organized the Council to deal with a few preliminary matters.

   A faculty member temporarily serving as an Associate Dean has been nominated. Typically, the Council does not consider administrators eligible for faculty slots on a committee. This individual is serving as Associate Dean until the end of the year; the Steering Committee is expected to take about 14 months to carry out its work.

   **MOTION [Kelly/Fitzgerald] that the individual serving as Associate Dean remain on the ballot.**
   **MOTION PASSED** 8 in favor, 5 opposed, 2 abstentions. (8-5-2)
Next, the Council took up the matter of how many nominees should be sent to the President; the President asked for more than 7 names. After a brief discussion, and in a spirit of compromise, the following motion was passed.

**MOTION [Thiel/Dennin] that the Council send 8 names to the President**  
**MOTION PASSED**  
14 in favor, none opposed, 1 abstaining (14-0-1)

**MOTION [Mulvey/Rakowitz] that the Council follow its standard procedure – that one must receive a majority of votes to be elected and that individuals with low support are removed from the following ballot.**  
**MOTION PASSED unanimously (14-0-0)**

Ballots were distributed containing the names of the 18 nominees/volunteers. On the first ballot Professors Kubasik, Lakeland, Mulvey, Pearson, Preli, Rafalski, and Scheraga received a majority and were elected.

On a second ballot, with 6 names, no one received a majority. On a third ballot, with 2 names, Prof. Nikki Lee-Wingate received a majority and was elected. The Executive Secretary will send the names of the 8 nominees to the President.

3. Discuss open faculty slot on GSEAP Dean Search Committee

AC Executive Secretary, Prof. Irene Mulvey, explained that an individual on the GSEAP Dean Search Committee has asked to be replaced on the Search Committee to avoid the appearance of a conflict of interest since she was related to one of the finalists. Senior VP Fitzgerald explained the time frame of the search going forward – that 6-7 finalists were having skype interviews at the end of next week; 3 would be brought to campus early next month.

The Council considered the question of whether or not to fill the vacancy.

**MOTION [Kelly/Fitzgerald] that the Council not replace the member stepping down from the Search Committee.**

Prof. Kelly: There would be a lot of catch up for someone joining so late in the process.  
Prof. Dennin: The replacement would only need to look at 7 resumes.  
Senior VP Fitzgerald: We are 4/5 of the way through the process and the committee has come together nicely.  
Prof. Yarrington: Faculty have vetted the process all the way through; would not hurt to come in at this point.  
Prof. Thiel: Who are the non-faculty members serving on the Search Committee?  
Answer: SVPAA Fitzgerald, Mary Frances Malone, David Sapp, Christine Seigel, Bruce Berdanier, Hope Ogletree, Theresa Tillinger.

**MOTION FAILED**  
2 in favor, 13 against, none abstaining (2-13-0)
MOTION [Mulvey/Second] that the AC elect a replacement for the open faculty slot on the GSEAP Dean Search Committee by having the Faculty Secretary issue a call for volunteers/nominations and then conduct the election by email.
MOTION PASSED 14 in favor, 1 opposed, none abstaining (14-1-0)

The call for volunteers should make clear that volunteers must be available for skype interviews all day January 24 and 25.

4. Discuss open faculty slot on Senior VP for Academic Affairs Search Committee

Prof. Mulvey explained that with this Search Committee continuing into spring semester, a faculty member had asked to be replaced.

MOTION [Mulvey/Greenberg] that the AC elect a replacement for the open faculty slot on the SVPAA Search Committee by having the Faculty Secretary issue a call for volunteers/nominations and then conduct the election by email.
MOTION PASSED 14 in favor, none opposed, 1 abstaining (14-0-1)

A MOTION to adjourn was made, seconded and PASSED without objection at 3:51 PM.

Respectfully submitted,
Irene Mulvey
AC Executive Secretary
Academic Council
Minutes of Meeting
January 27, 2014

Attendance: Professors Joe Dennin, Don Greenberg, Shannon Harding, James He, Chris Huntley, Ginny Kelly, Alison Kris, Irene Mulvey (AC Executive Secretary), Martin Nguyen, Elizabeth Petrino, Shawn Rafalski (AC Chair), Susan Rakowitz (General Faculty Secretary), Kraig Steffen, John Thiel, Jo Yarrington. Dean Don Gibson.
Proxy for Prof. David Downie was held by Prof. John Thiel

The meeting was called to order by AC Chair, Prof. Shawn Rafalski, at 3:30 PM.

MOTION [Steffen/Kris] to approve the agenda as distributed.
MOTION APPROVED. 11 in favor, 1 opposed, none abstaining (11-1-0)

MOTION [Mulvey/Steffen] that the AC allow votes by proxy at this meeting.
MOTION APPROVED unanimously.

The Executive Secretary and the General Faculty Secretary explained where we are in the process – that there is one more faculty slot on the Strategic Planning Steering Committee and President von Arx, who is appointing members to the Steering Committee, would like the AC to nominate at least one faculty member for the slot.

A motion was made to send the President three names, but there was no second.

MOTION [Rakowitz/Greenberg] that the AC send the President one name

Following brief discussion with members speaking for and against the motion,

MOTION [Thiel/Second] amend the motion by replacing “one name” with “two names”.
MOTION PASSED. 10 in favor, 3 opposed, none abstaining (10-3-0).

MOTION (as amended) that the AC send the President two names.
MOTION PASSED, 11 in favor, 2 opposed, none abstaining (11-2-0)

Ballots were distributed that contained all the names remaining from the last ballot and two names that had come in since the first vote. Council followed its usual procedure that no one would be elected without majority support.

On the first ballot, Professor Yohuru Williams was elected. On a second (run-off) ballot, Professor Amalia Rusu was elected. The Executive Secretary was instructed to send these results to President von Arx, indicating that the Council’s first choice for the slot was Prof. Williams.

A MOTION to adjourn was made, seconded and PASSED WITHOUT OBJECTION at 3:47 PM.

Respectfully submitted,
Irene Mulvey
AC Executive Secretary
Memo: 12/6/13  
To: Academic Council  
From: Matt Coleman and Paul Lakeland  
Re: Guidelines for Faculty and Academic Staff Recruitment

We have reviewed the document prepared by SVPAA Fitzgerald. We attach here both the original document with our suggested edits visible in track changes, and a clean copy of the document as it would look if our suggestions were simply accepted. Most of our suggestions are simply editorial or the removal of redundancies and duplications. In addition we offer the following general suggestions.

1. We strongly believe that the document should address only the guidelines for faculty recruitment and that a separate document should consider academic staff. The Fitzgerald draft only refers to academic staff in a couple of places and for the most part is written as if it concerns only faculty recruitment. The two processes are distinct and two separate documents seem to us to be called for, in the interests of clarity.

2. In the discussion of Jesuit candidates, we believe that a clearer distinction needs to be made between so-called “enhancement” positions, where the hires are at least temporarily additional to the department’s membership, and the presence of Jesuit candidates in a regular open search to fill a departmental vacancy.

3. We have suggested modifications to the language on the role of the Dean in the hiring process and the expectations of new hires relative to the mission of the institution, to provide what we believe to be greater clarity and to conform more closely to actual practice.

4. We are not sure that the notion of a “courtesy appointment” is relevant to Fairfield, or at least we believe that what the term means should be spelled out further in the document.

5. We query the necessity for the Clery Disclosure to be included in the position announcement. We do not believe that this is normal procedure in most searches elsewhere, or that it has been customary to include it in Fairfield position announcements.

6. We have tried to clear up some discrepancies in the original text over the precise relationship among the position description, the search plan and the authorization to hire.

Respectfully submitted,

Matt Coleman  
Paul Lakeland
Guidelines for Faculty and Academic Staff Recruitment

The hiring of the people who work faculty at Fairfield University is one of the most important activities that we, as academics, perform. In our and, in the academic division particularly, the hiring and evaluation of faculty and staff is central to building a strong and vibrant university. Therefore, the process of conducting a search, of building a pool of applicants that reflects the diversity and richness of our profession, of bringing candidates to campus for interviews, of judging the appropriate match with Fairfield, and of negotiating with our preferred candidate are all matters of the utmost seriousness to us. As we seek faculty members who will enhance our educational mission, we also must treat each candidate with respect and consideration.

While the basic responsibility for conducting a search and recommending the appropriate persons to fill vacancies resides with the faculty and staff of the department or area in which the vacancy exists, and it is expected that Deans will provide a significant leadership, oversight and judgment role in this process. In addition, there exists an overriding priority to conduct searches in conformity with the University’s equal opportunity employment policy consistent with our desire to enhance the diversity of our faculty and staff. Also, a strong effort to locate and hire Jesuit candidates, where available, is an appropriate part of all searches in this division.

In order to conduct searches effectively, please note the following guidelines and procedures. Our intention is to conduct All faculty searches in accord with the policy on appointment in the Faculty Handbook (II.A.1) and in conformity with the governance documents of the college and the schools. These present guidelines represent an elaboration of those policy statements.

As with all important academic matters that involve the peer review of colleagues’ professional accomplishments, strict confidentiality according to the norms of the academy is to be maintained before, during and after the completion of the search.

Starting the Process

- For all faculty searches, every attempt will be made to build a diverse pool of qualified candidates from the national market in a discipline. Searches for contract staff should also be conducted in as wide a geographic area as possible, although there may be times when a regional search is more appropriate. The choice of a regional market must be approved, in advance, by the Senior Vice President upon recommendation of the appropriate Dean. A position description shall be developed which should state the title or rank of the position, the duties to be performed, and any experience or minimal qualifications required of all candidates.

- The conceptualization and description of the position, done prepared by the department or program as a whole, must take into account several factors: the enactment of the university’s mission, the disciplinary needs of the department or program, school or campus wide initiatives, interdisciplinary collaborations with other departments and programs, the further integration of the Core, and the diversification of our faculty. Not every new and the enactment of the University mission. New faculty member will do
members are not necessarily expected to contribute to all of these things areas, but care should be taken that they will contribute significantly to at least one of them. All shall take seriously the need to contribute to the university’s Jesuit mission and identity in some significant way.

- When a vacancy exists, the Chair/Coordinator, Director or Dean initiates the search by justifying the position to the SVP Senior Vice President for Academic Affairs and getting an approval of the position description. This is captured on the Authorization to Hire form, which requires the accord of the Chief Financial Officer and the President.

- Once the search is approved, the Dean and relevant faculty members work collaboratively to establish a recruitment plan and a search committee to be appointed by the Dean. The Search Committee should never be so small that all the views and perspectives in the unit are not represented nor so large as to be unwieldy. It is normally expected that the Dean, Chair or Director, or Chair will head the Search Committee, although the Chair may delegate this responsibility to a senior member of the department upon consultation with the Dean or SVPAA.

- It is also normal procedure for at least one faculty member of the search committee to be from outside the department or program conducting the search. The Dean of the school or college will coordinate the appointment of the external member. In the case of a joint hire by more than one department or program, the composition of the committee should be proportionate to the percentage shares of the joint appointment. In the case of a courtesy appointment, a member of the courtesy department should occupy the external chair on the search committee. The outside member shall have all rights and privileges of the other members, including being present for consideration of all applicants and having full voting rights on all policy, procedure and selection decisions and recommendations. The outside member should represent some significant potential interdisciplinary cooperation inherent in the new position.

Developing a pool of candidates:

- Once the Authorization to Hire has been signed by all parties and the Search Committee has been formed, the head of the search committee will submit to the office of the Senior Vice President (directly, if the head is a Dean, or through the Dean, if the head is a department chair) the following items:

  The recruitment plan should describe the composition of the Search Committee, a budget for the search, a calendar of the expected progress of the search, including the closing date for applications and the expected date for completion of the search, a list of the places where the search will be advertised or publicized, the professional meeting used for screening potential candidates, any special efforts being made to bring minorities, women, Jesuits, Veterans or disabled persons into the pool of candidates and, finally, plans for notifying candidates of receipt of complete application dossiers, progress of the search and the final results of the search. In general, all applicants should receive written or electronic notification that their applications have
been received, whether any necessary items are lacking, and notification when they are no longer under consideration, even if the search is not final. Finalists should receive written notification of the results of the search.

The position announcement. This is a copy of all public statements about the position (newspaper, the Chronicle for Higher Ed, and discipline specific journal advertisements, on-line placements, e-bulletin boards, announcements sent to the graduate schools, etc.). The position announcement must be approved by both the Dean and the SVPAA before placement so as to capitalize on potential interdisciplinary collaboration and to advance strategic academic priorities. **Every search must include at least one hard copy print announcement of the open position in an appropriate trade publication.**

The position description and the job ad must be carefully thought through, for they must contain all the essential duties of the new faculty member. A candidate evaluation rubric shall be generated to score the applications, and said rubric shall be based on the specific hiring criteria as listed in the job description/position announcement.

To save money for ads in external venues, departments may use an abbreviated job ad. Abbreviated job ads may simply list the name of the university, the department, the disciplinary area of the vacancy, a reference to the URL of the university website where the full job ad may be viewed, and a notation that we are an AA/EO employer.

All full job ads must:

1. **Specify** clear academic qualifications for the position and specific hiring criteria;

2. **List** a final deadline for applications, or state that **the search will continue until the position has been filled**;

3. **State that** Fairfield is a Catholic Jesuit university;

4. **Steer** the applicant towards the university URL where **Include** the ad is posted and following **EEO/AA wording for ads:**

   “Fairfield University is an Equal Opportunity / Affirmative Action employer, committed to excellence through diversity, and, in this spirit, particularly welcomes applications from women, persons of color, veterans, Jesuits and members of historically underrepresented groups. The University will provide reasonable accommodations to all qualified individuals with a disability.”

5. **The full position description on the University website should include:**

   “Also in accordance with the Federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act language can be found, the University annually collects and makes publicly available information about campus crimes and other reportable incidents.”
http://www.fairfield.edu/media/fairfielduniversitywebsite/documents/student/ps_cle
ery_crime_report.pdf

Since As all search committees should evaluate candidates using the same basic criteria, the same materials should be asked of all candidates in the position advertisements (other materials may be asked only of semi-finalists or finalists, and may). These should include the following materials, listed in job advertisements: (i) cover letter; (ii) curriculum vitae; (iii) graduate transcripts; (iv) and (iii) three letters of recommendation from qualified reviewers; (iv) and may also include (i) graduate transcripts, (ii) sample syllabi of courses taught if available, (iii) teaching evaluations if available, (iv) a personal statement covering teaching philosophy, research plan, and experience of-, or interest in-, working with people of diverse cultures and identities, and (v) at least one example of representative scholarship, e.g. published article or book chapter, dissertation chapter, video or audio recording of an artistic performance, etc. Electronic submission of materials and a paperless review process in a secure online environment is an option for all searches application materials should be encouraged.

- The Senior Vice President shall be shown a position description and potential Once the search plan in advance of approving an Authorization to Hire.

- Once there is agreement on the above matters, and position announcement have been approved by the SVPAA, his/her office of the Senior Vice President will work with the Dean and the headchair of the Search committee to activate the search plan. All announcements, newspaper, and journal advertisements should be placed through the Office of the Academic Vice President SVPAA well in advance of the desired deadline dates, and it is expected that all copy will be submitted via an email attachment to Laura Martin. Notices for professional conferences and on-line journals may be placed directly by the head of the search committee Search Committee with the approval of the SVPAA. Frequency of placements will be determined by the SVPAA in consultation with the Dean and Chairhead of the search committee Search Committee.

- When The head of the Search Committee is organized, the head of the committee should schedule a time for a representative from the Office of Human Resources and the Dean (or his/her designee) to brief the committee on recruitment, hiring and selection procedures, including a rehearsal of what are appropriate and what are inappropriate questions, all in accord with the requirements of the University’s equal employment opportunity policy.

Selecting final candidates

- Every ethical opportunity should be taken to get as much information as possible about candidates before inviting a select few to campus for interviews. All faculty searches should, wherever possible, include the screening of potential candidates at an appropriate professional meeting, and this opportunity should be included in the search plan. The recruitment budget of the SVPAA will fund two faculty members for the purpose of conducting interviews. In cases where interviews occur at research conferences, departments may wish to fund additional faculty members.
• If a professional meeting does not take place until the late winter or spring, telephone or teleconference interviews should be employed. When narrowing the pool to the final few candidates, designated members of the search committee should call references and find out as much as possible about each candidate. No one should be invited to campus as a finalist without submitted letters of reference and/or telephone reference calls, with written notes shared by the faculty member(s) conducting the telephone interview.

• The Search Committee works with the dean to select the two or three finalists they wish to invite to campus for an interview. At this point, the equal opportunity compliance report must be completed with the requisite information and appended to the folders of all individuals who were deemed qualified for the position, whether they were selected for interview or not, if they had been identified as women or minority candidates. This package of materials should be sent to the Dean by departmental or area search committees or to the SVPAA by search committees headed by Deans or Directors. To avoid delays, chairs should alert the Dean and coordinate this process to allow for speedy review. The Dean or the SVPAA will review the documentation for compliance with the University’s equal opportunity policies.

• Under normal circumstances, the number of candidates invited for an interview should be limited to at most three people. Additions above that number require SVPAA approval.

• In contacting candidates to arrange a campus interview, the head of the Search Committee should be careful not to discuss salary issues beyond our institutional commitment to pay at the 95th percentile. Any questions that come up regarding salaries should be referred to the Dean. Candidates should be sent as much information about the position, the department, and the University as possible in advance of their visit. Deans should work with the chair of the search committee to develop the appropriate materials.

Conducting the campus interview

• Departments must accept as finalists the candidates identified by the search committee and may not substitute their judgment for the judgment of the search committee. Once the search committee has identified three candidates for a campus visit, the process of submitting recommendations to the Dean normally shifts to the full department, area, or school. Any change from this policy should be clearly agreed upon in advance between the department and the Dean. Some departments, particularly larger ones, may wish to empower the search committee or some subset of the department that includes the search committee, to continue to take a leading role in the interview and selection of prioritized recommendations. In no case should faculty members who have not participated in the search and have not met all the final candidates be allowed to vote in the selection of prioritized recommendations to the Dean. Substitution of video taped interviews or presentations must be approved by the Dean.

• Interviews for faculty positions should normally encompass about a day and a half. Besides an extended interview with the Search Committee, candidates should be scheduled for interviews with department members who are not on the Search Committee, a group of student majors and/or minors (if possible), perhaps faculty
members from other departments who might work with the individual, and the Dean. Forty-five minutes should be scheduled for the SVPAA to interview each candidate. Other interviews as appropriate could include library, CAE, or Advancement research and grant support staff. Everyone meeting the candidate should have a copy of the candidate’s schedule, and resume, and application letter. The Dean may request additional information from the candidate and circulate this in advance as well. The candidate should have a copy of his or her schedule with names and job titles of all interviewers well in advance of the campus visit. Various appropriate scoring rubrics, based upon the essential job features as described in the position description, should be made available to all the various groups and individuals who will be evaluating the candidates.

• Candidates for faculty positions should be asked to give a presentation of their research to a meeting of faculty (and, if apt appropriate, students), and to conduct a scheduled or mock class during their visit. Because of the centrality of effective teaching to our mission, some vehicle for observing and evaluating the candidates in this area must be part of each campus visit. Students must be given an opportunity to give feedback to the search committee through a written questionnaire or rubric. Student feedback must should be part of the justification of the department in making a hiring recommendation to the Dean and SVPAA.

• Given the housing situation in this area, some attempt should be made to acquaint candidates with the realities and possibilities of living accommodations here during their visit. The Office of Human Resources can be helpful in assisting in this regard. Also, during the candidate’s interview with the Dean, there should be a brief discussion of interest, availability, fringe benefits and salary expectations to ensure once again that everyone has a mutual understanding about the position. Wherever possible, candidates should receive a campus tour and a tour of the local area.

• **All finalist candidates should be given the opportunity to meet with the staff of the office of Human Resources in order to discuss benefits and any other appropriate issues.**

• All finalist candidates should be given the opportunity to spend at least 30 minutes with the staff of the Office of Human Resources to discuss benefits, possible needs for reasonable accommodations, etc.

• Interviews for staff positions should normally encompass the better part of a day, but without the expectation that the candidate will spend the night in Fairfield. Again, besides the Search Committee, the candidate should be interviewed by the range of people with whom he/she would be working. Depending on the position, it would be wise to include some faculty members and a Dean (or, if relevant, two) in the interview schedule.

• In arranging an interview trip, the person responsible for the search should explain to the candidate that reasonable travel, lodging and meal expenses will be reimbursed to the candidate. The person responsible for the search must contact the Office of the SVPAA
when a candidate is staying overnight, and said office will inform the chair of the search about room availability and make appropriate reservations.

• The entertainment of candidates can be an important part of the interview process. The head of the search committee can pick up a voucher from the SVPAA’s office for lunch in the Faculty Dining Area. Charges for all other meals should be processed through the standard University expense reconciliation procedure. The SVPAA’s Office will insert the recruitment budget number. All meals with candidates should be considered part of the interview process; they are both social and business occasions. Since conversation with the candidate is the prime purpose of the meal, a maximum of three Fairfield employees should accompany the candidate. A modest local dining venue is most appropriate. It is recommended that these opportunities to interact more informally with job candidates should be shared across the faculty.

Selecting the final candidate

• When all the interviews have been conducted, the Search Committee or department should obtain and share opinions from all people who met formally with the candidate. These judgments, as captured on the scoring rubrics or in narrative statements, shall be considered by all department members who by right are involved in the decision concerning whom to recommend to hire. Following appropriate discussion, the search committee or department should recommend, in writing, a rank ordering of the acceptable candidates, and a list of the unacceptable candidates, with a brief statement evaluating the strengths and weaknesses of each. These statements should include a judgment as to the role the candidates may make to the Jesuit mission of the University, as expressed in the Faculty Handbook, and in the University’s strategic planning documents. Chairs should make their recommendations to the Dean, and Deans and Directors should make their recommendations to the SVPAA.

• If the Dean does not agree with the recommendations, or if the SVPAA disagrees with the Department, Area, Director or Dean’s recommendation, all parties will work together collegially to attempt a resolution. Only the SVPAA is empowered to extend an offer of employment. In the rare case where unresolved differences remain on faculty appointments, the procedure listed in the Faculty Handbook in II.A.1.a(4) shall apply. If none of the candidates are acceptable to the Search Committee, the members should discuss with the Dean and/or the SVPAA the options of extending, canceling and restarting the search.

• Once there is agreement on the candidate to whom we wish to make a job offer, the responsibility for communicating an offer to the candidate rests solely with the Dean. Deans are also responsible for notifying the Office of Human Resources that a candidate has signed a written offer of employment so that its staff may complete the necessary documentation for employment.
• Exceptions to any of these guidelines by individual schools or departments are welcomed when they are seen to enhance the procedure and enable us to achieve more effectively our fundamental objective, which is to bring to Fairfield University the best, the most intellectually vibrant, the most engaged and apt, and the most diverse faculty and staff that we can find who will enhance and further our Jesuit mission. Such variations must be approved in advance by the Dean and SVPAA.

Thank you for your efforts and your cooperation in these important matters.

Paul J. Fitzgerald, S.J.
Senior Vice President for Academic Affairs
October 10, 2012
September 12, 2011
Guidelines for Faculty Recruitment

The hiring of faculty at Fairfield University is one of the most important activities that we, as academics, perform and, in the academic division particularly, is central to building a strong and vibrant university. Therefore, the process of conducting a search, of building a pool of applicants that reflects the diversity and richness of our profession, of bringing candidates to campus for interviews, of judging the appropriate match with Fairfield, and of negotiating with our preferred candidate are all matters of the utmost seriousness to us. As we seek faculty members who will enhance our educational mission, we also must treat each candidate with respect and consideration.

While the basic responsibility for conducting a search and recommending the appropriate persons to fill vacancies resides with the faculty of the department or area in which the vacancy exists, it is expected that Deans will play a significant role in this process. In addition, there exists an overriding priority to conduct searches in conformity with the University’s equal opportunity employment policy consistent with our desire to enhance the diversity of our faculty and staff. Also, a strong effort to locate and hire Jesuit candidates, where available, is an appropriate part of all searches in this division.

In order to conduct searches effectively, please note the following guidelines and procedures. All faculty searches should be conducted in accord with the policy on appointment in the Faculty Handbook (II.A.1) and in conformity with the governance documents of the college and the schools. These guidelines represent an elaboration of those policy statements.

Starting the Process

• For all faculty searches, every attempt will be made to build a diverse pool of qualified candidates from the national market in a discipline. A position description shall be developed which should state the title or rank of the position, the duties to be performed, and any experience or minimal qualifications required of all candidates.

• The conceptualization and description of the position, prepared by the department or program as a whole, must take into account several factors: the disciplinary needs of the department or program, interdisciplinary collaborations with other departments and programs, the further integration of the Core, the diversification of our faculty and the enactment of the University mission. New faculty members are not necessarily expected to contribute to all of these areas, but care should be taken that they will contribute significantly to at least one of them. All shall take seriously the need to contribute to the university’s Jesuit mission and identity.

• When a vacancy exists, the Chair Director or Dean initiates the search by justifying the position to the Senior Vice President for Academic Affairs and getting an approval of the position description. This is captured on the Authorization to Hire form, which requires the accord of the President and the Chief Financial Officer.

• Once the search is approved, the Dean and relevant faculty members work collaboratively to establish a search committee to be appointed by the Dean. The Search
Committee should never be so small that all the views and perspectives in the unit are not represented nor so large as to be unwieldy. It is normally expected that the Dean, Chair or Director will head the Search Committee, although the Chair may delegate this responsibility to a senior member of the department upon consultation with the Dean or SVPAA.

- It is also normal procedure for at least one faculty member of the Search Committee to be from outside the department or program conducting the search. The Dean of the school or college will coordinate the appointment of the external member. In the case of a joint hire by more than one department or program, the composition of the committee should be proportionate to the percentage shares of the joint appointment. In the case of a courtesy appointment, a member of the courtesy department should occupy the external chair on the search committee. The outside member shall have all rights and privileges of the other members, including being present for consideration of all applicants and having full voting rights on all policy, procedure and selection decisions and recommendations. In many cases, the outside member will represent some significant potential interdisciplinary cooperation inherent in the new position.

Developing a pool of candidates:

- Once the Authorization to Hire has been signed by all parties and the Search Committee has been formed, the head of the Search Committee will submit to the office of the SVPAA (directly, if the head is a Dean, or through the Dean, if the head is a department chair) the following items:

  The search plan. This plan should describe the composition of the Search Committee, a budget for the search, a calendar of the expected progress of the search, including the closing date for applications and the expected date for completion of the search, a list of the places where the search will be advertised or publicized, the professional meeting used for screening potential candidates, any special efforts being made to bring minorities, women, Jesuits, veterans or disabled persons into the pool of candidates and, finally, plans for notifying candidates of receipt of complete application dossiers, progress of the search and the final results of the search. In general, all applicants should receive written or electronic notification that their applications have been received, whether any necessary items are lacking, and notification when they are no longer under consideration, even if the search is not final. Finalists should receive written notification of the results of the search.

  The position announcement. This is a copy of all public statements about the position (newspaper, the Chronicle for Higher Ed, and discipline specific journal advertisements, on-line placements, e-bulletin boards, announcements sent to the graduate schools, etc.). Every search must include at least one hard copy print announcement of the open position in an appropriate trade publication.

  The position description and the job ad must contain all the essential duties of the new faculty member. A candidate evaluation rubric shall be generated to score the applications, and said rubric shall be based on the specific hiring criteria as listed in the job description/position announcement.
To save money for ads in external venues, departments may use an abbreviated job ad. Abbreviated job ads may simply list the name of the university, the department, the disciplinary area of the vacancy, a reference to the URL of the university website where the full job ad may be viewed, and a notation that we are an AA/EO employer.

All full job ads must:

1. Specify clear academic qualifications for the position and specific hiring criteria;

2. List a final deadline for applications, or state that the search will continue until the position has been filled;

3. State that Fairfield is a Catholic Jesuit university;

4. Include the following EEO/AA wording for ads:

   “Fairfield University is an Equal Opportunity / Affirmative Action employer, committed to excellence through diversity, and, in this spirit, particularly welcomes applications from women, persons of color, veterans, Jesuits and members of historically underrepresented groups. The University will provide reasonable accommodations to all qualified individuals with a disability.”

5. The full position description on the University website should include:

   “Also, in accordance with the Federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, the University annually collects and makes publicly available information about campus crimes and other reportable incidents.”


As all search committees should evaluate candidates using the same basic criteria, the same materials should be asked of all candidates in the position advertisements (other materials may be asked only of semi-finalists or finalists). These should include: (i) cover letter; (ii) curriculum vitae; and (iii) three letters of recommendation from qualified reviewers; and may also include (i) graduate transcripts, (ii) sample syllabi of courses taught if available, (iii) teaching evaluations, (iv) a personal statement covering teaching philosophy, research plan, and experience of, or interest in, working with people of diverse cultures and identities, and (v) an example of representative scholarship, e.g. published article or book chapter, dissertation chapter, video or audio recording of an artistic performance, etc. Electronic submission of application materials should be encouraged.

- Once the search plan and position announcement have been approved by the SVPAA, his/her office will work with the Dean and the chair of the search committee to activate the search plan. All announcements, newspaper, and journal advertisements should be placed through the Office of the SVPAA well in advance of the desired deadline dates, and it is expected that all copy will be submitted via an email attachment to Laura Martin.
Notices for professional conferences and on-line journals may be placed directly by the head of the Search Committee with the approval of the SVPAA. Frequency of placements will be determined by the SVPAA in consultation with the Dean and head of the Search Committee.

- The head of the Search Committee should schedule a time for a representative from the Office of Human Resources and the Dean (or his/her designee) to brief the committee on recruitment, hiring and selection procedures, including a rehearsal of what are appropriate and what are inappropriate questions, all in accord with the requirements of the University’s equal employment opportunity policy.

Selecting final candidates

- Every ethical opportunity should be taken to get as much information as possible about candidates before inviting a select few to campus for interviews. All faculty searches should, wherever possible, include the screening of potential candidates at an appropriate professional meeting, and this opportunity should be included in the search plan. The recruitment budget of the SVPAA will fund two faculty members for the purpose of conducting interviews. In cases where interviews occur at research conferences, departments may wish to fund additional faculty members.

- If a professional meeting does not take place until the late winter or spring, telephone or teleconference interviews should be employed. When narrowing the pool to the final few candidates, designated members of the search committee should call references and find out as much as possible about each candidate. No one should be invited to campus as a finalist without submitted letters of reference and/or telephone reference calls, with written notes shared by the faculty member(s) conducting the telephone interview.

- The Search Committee works with the dean to select the two or three finalists they wish to invite to campus for an interview. At this point, the equal opportunity compliance report must be completed with the requisite information and appended to the folders of all individuals who were deemed qualified for the position, whether they were selected for interview or not, if they had been identified as women or minority candidates. This package of materials should be sent to the Dean by departmental or area search committees or to the SVPAA by search committees headed by Deans or Directors. To avoid delays, chairs should alert the Dean and coordinate this process to allow for speedy review. The Dean or the SVPAA will review the documentation for compliance with the University’s equal opportunity policies.

- Under normal circumstances, the number of candidates invited for an interview should be limited to at most three people. Additions above that number require SVPAA approval.

- In contacting candidates to arrange a campus interview, the head of the Search Committee should be careful not to discuss salary issues beyond our institutional commitment to pay at the 95th percentile. Any questions that come up regarding salaries should be referred to the Dean. Candidates should be sent as much information about the
position, the department, and the University as possible in advance of their visit. Deans should work with the chair of the search committee to develop the appropriate materials.

**Conducting the campus interview**

- Departments must accept as finalists the candidates identified by the search committee and may not substitute their judgment for the judgment of the search committee. Once the search committee has identified three candidates for a campus visit, the process of submitting recommendations to the Dean normally shifts to the full department, area, or school. Any change from this policy should be clearly agreed upon in advance between the department and the Dean. Some departments, particularly larger ones, may wish to empower the search committee or some subset of the department that includes the search committee, to continue to take a leading role in the interview and selection of prioritized recommendations. In no case should faculty members who have not participated in the search and have not met all the final candidates be allowed to vote in the selection of prioritized recommendations to the Dean. Substitution of video taped interviews or presentations must be approved by the Dean.

- Interviews for faculty positions should normally encompass about a day and a half. In addition to an extended interview with the Search Committee, candidates should be scheduled for interviews with department members who are not on the Search Committee, a group of student majors and/or minors (if possible), perhaps faculty members from other departments who might work with the individual, and the Dean. Forty-five minutes should be scheduled for the SVPAA to interview each candidate. Other interviews as appropriate could include library, CAE, or research and grant support staff. Everyone meeting the candidate should have a copy of the candidate’s schedule and resume. The candidate should have a copy of his or her schedule with names and job titles of all interviewers well in advance of the campus visit. Various appropriate scoring rubrics, based upon the essential job features as described in the position description, should be made available to all the various groups and individuals who will be evaluating the candidates.

- Candidates for faculty positions should be asked to give a presentation of their research to a meeting of faculty (and, if appropriate, students), and to conduct a scheduled or mock class during their visit. Because of the centrality of effective teaching to our mission, some vehicle for observing and evaluating the candidates in this area must be part of each campus visit. Students must be given an opportunity to give feedback to the search committee through a written questionnaire or rubric. Student feedback should be part of the justification of the department in making a hiring recommendation to the Dean and SVPAA.

- Given the housing situation in this area, some attempt should be made to acquaint candidates with the realities and possibilities of living accommodations here during their visit. The Office of Human Resources can be helpful in assisting in this regard. Also, during the candidate’s interview with the Dean, there should be a brief discussion of interest, availability, fringe benefits and salary expectations to ensure once again that everyone has a mutual understanding about the position. Wherever possible, candidates should receive a campus tour and a tour of the local area.
• All finalist candidates should be given the opportunity to meet with the staff of the office of Human Resources in order to discuss benefits and any other appropriate issues.

• All finalist candidates should be given the opportunity to spend at least 30 minutes with the staff of the Office of Human Resources to discuss benefits, possible needs for reasonable accommodations, etc.

• In arranging an interview trip, the person responsible for the search should explain to the candidate that reasonable travel, lodging and meal expenses will be reimbursed to the candidate. The person responsible for the search must contact the Office of the SVPAA when a candidate is staying overnight, and said office will inform the chair of the search about room availability and make appropriate reservations.

• The entertainment of candidates can be an important part of the interview process. The head of the search committee can pick up a voucher from the SVPAA’s office for lunch in the Faculty Dining Area. Charges for all other meals should be processed through the standard University expense reconciliation procedure. The SVPAA’s Office will insert the recruitment budget number. All meals with candidates should be considered part of the interview process; they are both social and business occasions. As conversation with the candidate is the prime purpose of the meal, a maximum of three Fairfield employees should accompany the candidate. A modest local dining venue is most appropriate. It is recommended that these opportunities to interact more informally with candidates be shared across the faculty.

Selecting the final candidate

• When all the interviews have been conducted, the Search Committee or department should obtain and share opinions from all people who met formally with the candidate. These judgments, as captured on the scoring rubrics or in narrative statements, shall be considered by all department members who by right are involved in the decision concerning whom to recommend to hire. Following appropriate discussion, the search committee or department should recommend, in writing, a rank ordering of the acceptable candidates, and a list of the unacceptable candidates, with a brief statement evaluating the strengths and weaknesses of each. These statements should include a judgment as to the role the candidates may make to the Jesuit mission of the University, as expressed in the Faculty Handbook, and in the University’s strategic planning documents. Chairs should make their recommendations to the Dean, and Deans and Directors should make their recommendations to the SVPAA.

• If the Dean does not agree with the recommendations, or if the SVPAA disagrees with the Department, Area, Director or Dean’s recommendation, all parties will work together collegially to attempt a resolution. Only the SVPAA is empowered to extend an offer of employment. In the rare case where unresolved differences remain on faculty appointments, the procedure listed in the Faculty Handbook in II.A.1.a(4) shall apply. If none of the candidates are acceptable to the Search Committee, the members should
discuss with the Dean and/or the SVPAA the options of extending, canceling and restarting the search.

- Once there is agreement on the candidate to whom we wish to make a job offer, the responsibility for communicating an offer to the candidate rests solely with the Dean. Once an offer has been accepted, the Dean shall communicate details of the offer to the SVPAA, who will send the formal offer letter to the candidate. Once a signed copy is received by the SVPAA, his/her office will inform the Office of Human Resources that a candidate has signed a written offer of employment so that its staff may complete the necessary documentation for employment.

- Exceptions to any of these guidelines by individual schools or departments are welcomed when they are seen to enhance the procedure and enable us to achieve more effectively our fundamental objective, which is to bring to Fairfield University the best, the most intellectually vibrant, the most engaged and apt, and the most diverse faculty that we can find who will enhance and further our Jesuit mission. Such variations must be approved in advance by the Dean and SVPAA.

Thank you for your efforts and your cooperation in these important matters.

Paul J. Fitzgerald S.J.
Senior Vice President for Academic Affairs
September 12, 2011
FDEC’s Recommendation for Adopting the IDEA Short Form
1/15/2014

Recommendation
The Faculty Development and Evaluation Committee recommends:

That the IDEA short form be adopted as an option for end-of-semester student course
evaluations, and that the following defaults be used in the event that a faculty member
does not specifically choose either the “short” or “long” form during the online IDEA
evaluation registration process.

• Tenured, full Professors will default to the short form
• Junior faculty (Instructors, Assistants & Associates) will default to the long form
• Adjuncts will default to the short form

Rationale
The rationale for this recommendation is two-fold: (1) Adoption of the short form will
provide faculty with the option of selecting an evaluation instrument that may be more
appropriate than the long form for particular faculty or particular courses; (2) Adoption
of the short form should reduce the amount of time students spend completing end-of-
semester evaluations, thus reducing student evaluation fatigue.

(1) Provision of an evaluation instrument better suited for the evaluation needs/goals of
particular faculty and/or particular courses: The IDEA long form provides both
summative and formative student evaluation data to guide pedagogical
improvement and professional growth. But, the formative component may
not be necessary or appropriate to administer for all courses. In particular, the
long form may not be necessary for instructors with a long record of teaching
excellence, or for long-running “tried and true” courses that have not
undergone significant changes in the current semester. Additionally, the long
form is not appropriate in course contexts where the teaching methods
contained in the long form diagnostic instrument do not fit as well (e.g.,
clinical classes, practicums, labs).

(2) Reduction of student evaluation fatigue: The Office of the Senior Vice President
for Academic Affairs has expressed a concern with student evaluation fatigue
resulting from students having to complete a large number of lengthy
evaluation forms at the end of the semester. The primary concern here is that
such evaluation fatigue may result in students not taking the evaluations
seriously and thus in providing data that may not be useful or informative for
evaluative purposes. Adoption of the short form should allow for a reduction
in the time students spend completing evaluations, thus reducing evaluation
fatigue.
If this recommendation is accepted, the IDEA Evaluation Registration Website will be modified to include the option of “short” vs. “long” form. Options for online vs. paper and FUSA opt-in vs. opt-out will remain intact. Individual faculty members will always have the option of choosing either the “short” or the “long” form. Because the long form will always be an option for instructors, instructors will always have the ability to choose the long form to gather formative student feedback on a new course, new teaching method, or other significant change in a course, or to provide periodic formative feedback to complement more regularly-gathered summative feedback. Where possible, faculty members may wish to consult with their Department Chairs/Deans to determine which evaluation form is most appropriate in their unique situation.
Excerpted Minutes from FDEC Meetings where Amendment was Discussed

11/18/13 Meeting

Members present: Mike Andreychik, Deborah Edelman, Cinthia Gannett, Valeria Martinez, Eileen O’Shea, David Winn

Guests: Suzanna Klaf, Tracy Immerso, Bill Taylor (SoE)

Regrets: Christine Siegel

Suzanna: Has attended two Conferences with IDEA recently and presented highlights of her discussions with IDEA representatives about the differences between the short and long forms.

Functions Differ: Long form is both formative and summative.

Short form is exclusively summative and may be more appropriate for some classes where long form objectives don’t necessarily fit (e.g., labs)

Suzanna also noted that whatever decisions are made about the short vs. long form, it is critical going forward for faculty need to be in conversation about how/ why we use the IDEA Forms, when the short vs. long form may be appropriate, etc.

Tracy: The SVPAA’s Office has noticed a problem with students not taking the evaluation process seriously. The shorter form may help with this by alleviating some of the “evaluation fatigue” that can stem from having to complete lots of forms at the end of the semester.

Mike: But what do we mean when we say students aren’t providing “good” evaluation data? How do we know what a “good” student evaluation is? It’s hard to know whether or not a short form will solve whatever problem we’re seeing if we’re not sure of exactly what the problem is.

Mike and Others: FUSA leaders seem to care about these data, so it’s a problem for FUSA as well if students don’t take the process seriously.

What about a much more sustained and substantive discussion at New Student Orientation? Continued in FYE?

Does IDEA have any literature on encouraging student engagement with the evaluation process? Can they create resources?

David: More senior faculty seemed to like the older forms better, but younger faculty seem to like the fact that they are customizeable.

Suzanna and Others There are larger issues here about the broader culture surrounding evaluation.

Bill: School of Engineering had two sets of forms, which was very confusing.

Mike: These are all important issues, but for the purposes of this specific proposal, we need to deal first with the issue of whether or not we feel that faculty should be provided with the option of using the short form.
Many: The short form certainly seems appropriate in certain cases, so it seems sensible to at least offer it as an option.

Mike: We also need to deal with the issue of defaults. If we adopt the short form, what will be the default options? Which faculty will default to short and which to long?

Many: For untenured faculty – they need more formative data.
For full professors?
For adjuncts? Short form?

Mike: Although the proposal from the SVPAA’s office asks for adjunct and full professors to default to the short form I’d be in favor of having everyone default to the long form. Everyone still has the option of selecting the short form, and I worry about sending a message that some people need formative feedback whereas others don’t. Since we know lots of faculty don’t select options at all, I’d be more worried about people who want the long form information not getting it because they failed to select that option than about people who don’t want the long form getting too much information because they didn’t select the right option.

Tracy: But remember that everyone will still have the option of defaulting to the long form with the current proposal.

Many: Can you adjust the criteria for who defaults to which form when? For example, adjuncts will default to the short form, but not when they’re teaching a new class that, presumably, they’d want formative feedback about.

Tracy: Yes, but it is time consuming and might be tricky in some cases.

Carol Ann: I’m not sure that I agree with the idea of full professors and adjuncts defaulting to the short form either. Can’t we adopt the short form, but make the default the long form for everyone?

Many: What is opt in? Opt out? How might we use these options for the form selection, online vs. paper selection, FUSA questions?

Tracy and Others: Most faculty also default—so they may not be taking the process seriously.

Suzanna, Carol Ann, and Others: Faculty also need a clearer sense of the whole system.

David: Faculty strategize: gaming the system. Some faculty stay in the classroom, pass the forms out and sit with students as they complete the forms.
System is wrong: often students are just chatting and just typing stuff in. Students talk about the teacher and the course together, while they are taking the evaluations. Sometimes students who are negative can persuade others, just by their utterances to dwell more on negative aspects.

Many: Can any of these problems be addressed by completing the forms online? What other strategies can we consider?

Mike and Others: Do students really do a better job on the evaluations if they’re shorter?

Eileen and Others: Do we really use the evaluation data to rehire faculty (adjuncts) or not?
Many: Many students feel that their comments are not useful. It is up to the individual faculty member to make it clear how functional these responses are.

Cinthia: What about the electronic “like” “not like” culture? Do students use these evaluations simply to make summary judgments?

Many: There is a serious issue of ownership surrounding these data. Because individual faculty own their data, programs and departments can’t access any of the real data without permission? This really needs to be revisited across the institution.

David: Could we do an experiment where we assign some sections of classes to complete the short form and some the long form and compare the data?

Tracy: From a logistics standpoint that would be very difficult.

Mike: That sounds like a study that would require IRB approval, especially since you’re taking away the option of providing feedback to students who might otherwise want to do so.

David: Could faculty try out both forms or modes for themselves if they have multiple sections of the same course? Would you really get commensurate data?

Many: If you introduce short forms will everyone make effective use of them? Will they just use because they are short?

Mike: These are all important issues that we will revisit, but should we move forward on this particular proposal?

Valeria and Others: Let’s move forward.

Mike: It sounds like we have two versions of this proposal to vote on. In both cases, we are voting to accept adoption of the short form. In the first case we are voting to accept the default schedule as written by the SVPAA’s office. In the second case, we are voting to accept a default schedule where all faculty default to the long form. Do I have that correctly?

All: Yes.

Mike: We are now voting on the SVPAA’s language: Adoption of the short form with a default system where untenured and tenured associate professors default to the long form and full professors and adjuncts default to the long form.

Vote: 5 in favor/2 opposed. Option 1 passes. FDEC recommends adoption of the short form with the default schedule proposed by the SVPAA’s office.
SCHOOL OF ENGINEERING

Dual-Degree Program
Master of Science Degree
In
Mechanical Engineering

January 17, 2014 (Rev 5)
INTRODUCTION
We propose that the School of Engineering (SOE) create a new degree structure in Mechanical Engineering (ME), a dual-degree 5-year BS-MS course of study, by combining the curricula for the BS degree and the Master of Science degree in this discipline, both now being offered in the SOE. This new initiative responds to changes in the economic climate, and the constantly evolving needs for innovation in engineering design and development, across all technological and economic sectors. An ME graduate has knowledge that is acutely needed in contemporary society. Graduates of the program will be awarded a BS in Mechanical Engineering with an MS in Mechanical Engineering. The undergraduate degree, BSME, will maintain its ABET accreditation. This proposal was originally planned to be part of the earlier package submitted by the Computer and Electrical Department, School of Engineering. As a result some of the background materials have been duplicated.

1. Overview and Summary
Graduate engineering education is now a key to innovation and creativity in technology, and central to the national economy, social welfare, security, and management. There is a dramatic change in the role of, and increased emphasis on, master's level engineering education. The gateway to Master's degree programs is a rigorous undergraduate education. Under these circumstances, new pathways to advanced degrees in science and engineering have been established in some schools. For example, MIT now has a 5-year program that provides students with a dual BS/MS degree in engineering. This change reduces the time to a master's degree by one or more years. In this spirit we propose the 5-year dual-degree program resulting in a BS degree in Mechanical Engineering and an MS degree in the discipline Mechanical Engineering. The new program will embrace the educational objectives of the traditional undergraduate program, meeting the Fairfield University core course requirements, as well as those of the graduate program. It will also emphasize experiential learning in terms of industrial internships, and graduate courses that guide students through a process of design and innovation at the level of a professional engineer. Graduates of the program will have mastered the knowledge and tools they need to create the next generation of Mechanical Engineering solutions to technological and societal problems. The proposed program is in accord with the mission and strategic plan of the School of Engineering, SOE, to create skilled engineers with a well-developed cultural orientation, an understanding of economic values, and a sense of ethical and social responsibility.

2. Need and Opportunity
The proposed program is supported by the SOE to leverage its available resources so as to create an accelerated learning environment for undergraduate students. Education is a means toward increasing human capital leading to improved productivity and endogenous substantial and sustainable economic growth. Even in these tighter economic times, new engineering bachelor’s degree graduates earn some of the highest starting salaries and unemployment has not hit the profession as hard as others: in 2009 the Bureau of Labor Statistics indicates that 6.9 percent of engineers were unemployed versus 9.3 percent of all workers. The 2010 median salary for entry level Mechanical Engineers is $78,200 (2010. Source: http://www.bls.gov/oco/ocos027.htm#projections_data. While salaries have been going up, the number of MS engineering degrees has declined. The number of master’s degrees awarded in engineering dropped 1.7% in 2007, following a 6.4% decrease in 2006. A total of 37,803 engineering master’s degrees were awarded in engineering in 2006, down from 38,451 in 2006 and the record high of 41,087 in 2005. Source: Engineering & Technology Degrees, 2007, a report from the Engineering Workforce Commission (EWC).
Figure 1. Mechanical Engineering is the Most Popular Engineering Degree

Figure 1 shows that Mechanical Engineering, ME, is, nationwide, the most popular engineering degree. The availability of a large population of ME students ensures the success of a 5yr BS-MS/ME program and makes this discipline an attractive program.

Figure 2 shows that Mechanical Engineering is one of the top three master’s degree disciplines in the country [www.asee.org/colleges]. According to the Census Bureau’s Population Estimates Program, Connecticut ranks 3rd in the country (behind New York and Massachusetts), with 13.6% of its population in the 25-34 age group having a graduate or professional degree. In addition, MS degree recipients reached a new all-time high of 43,023 in the academic year ending in 2010. This was the third consecutive year of growth after a dip from 2006 to 2008. Thus, the MS degree is highly sought after.

Figure 2. Engineering MS degree recipients reached a new all-time high of 43,023 during 2010 with master’s enrollment reaching 103,335 during fall 2011. Mechanical Engineering is one of the top three populations.

The industrial and business environment in southern Connecticut is extremely favorable to jobs for graduates and internships for students in the Mechanical Engineering programs at Fairfield University. Sixty of the State's one hundred largest industrial and service companies are within 30 miles of the Fairfield campus, from Greenwich to New Haven and from Fairfield to Ridgefield and Shelton. This list includes Sikorsky-United Technologies, Covidien, ASML, Gardner Denver Nash, Pitney Bowes, Hubbell Inc., Ashcroft, BIC Corporation, RBC/Heim Bearing, Hologic, Emhart technologies, The Siemon Company, Eaton Aerospace Corporation, Omega Engineering and many others. The SOE Advisory Board and the SOE alumni provide
additional means for cementing the School's relations with the technology and business environment. The proposed program will make deeper the pool of expert talent to satisfy the needs of social and economic institutions in the State.

A growing fraction of the student population in the ME Master's program consists of international students who are attracted to the Fairfield program over others in neighboring institutions, but are gearing up to return to their country of origin following their Master's degree and a year of practical training. This appears to be the general trend throughout the country. Should it continue, it is likely to leave the US with a short supply of talent in graduate level Mechanical Engineering, and a reduced competitiveness, at a time when skills and talent are most needed in the face of galloping globalization.

### Masters Degrees By Residency, 2010

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td>Domestic</td>
<td>57.0%</td>
<td>57.9%</td>
<td>54.0%</td>
<td>54.5%</td>
<td>57.4%</td>
<td>60.2%</td>
<td>61.3%</td>
<td>58.3%</td>
<td>55.9%</td>
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<tr>
<td>Foreign National</td>
<td>43.0%</td>
<td>42.1%</td>
<td>46.0%</td>
<td>45.5%</td>
<td>42.6%</td>
<td>39.8%</td>
<td>38.7%</td>
<td>41.7%</td>
<td>44.1%</td>
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</table>

*Figure 3. MS Engineering Degrees by Residency*


The ASEE report shows that the number of degrees awarded to foreign nationals is a significant, indicating a trend toward a drain of the very innovation and engineering entrepreneurship this country needs, at a time when it needs it most (during a time of precarious economic recovery).

The 5 year BS-MS program mitigates this trend by bringing into the discipline, talented students at the crucial first step in their college career, and assisting them to attain professional status in a timely manner.

Table I, below, shows the number of graduates from the separate undergraduate and graduate programs in the last 6 years. The proposed program will bring a better balance between the two segments of college education in Mechanical Engineering at Fairfield University. The data shows that the available BSME population will be able to feed the MSME program and enhance the graduate enrollment. In addition, the 5 Yr BS-MS/ME program will make our educational discipline a more attractive program to the new prospective high school students and thus providing the potential for higher undergraduate enrollment.
The first year that the MSME program had graduates was 2006. Providing a path to an MS degree should enable a smoother transition into the graduate program and encourage undergraduates to seek a graduate degree.

3. Rationale. Reasons for the program

In the face of the on-going international movement toward globalization that has changed the way industry and technology work, academic institutions will need to identify the best way to prepare their students for work in this environment. This question is most crucial in the case of engineering and the more applied of the sciences. It is reiterated that one answer might be a new degree structure like the 5-year program proposed here.

Given the fact that there is a need for educated Mechanical Engineering with advanced degree to solve complex problems across all sectors of technology is increasing, the SOE has a responsibility to assist in the education of experts in this discipline. The proposed program will enable students to enter graduate studies in ME in a timely manner in order to achieve positions of responsibility in their companies early in their career.

The School of Engineering has the responsibility to illustrate and articulate to students the societal need for mechanical and systems design and development in support of the processes that shape daily life. Hence the School must use its resources creatively to provide effective access to knowledge in this engineering discipline.

There is a further factor that favors the 5-year approach to the BS-MS degree. Increasingly, engineering organizations and practitioners are saying that the body of knowledge necessary to practice engineering is beyond the traditional four-year Bachelor's degree program. Furthermore, momentum is building toward requiring education beyond the BS degree in order to become a Professional Engineer. At a time when technical complexity has increased, the fifth year in engineering education to produce a graduate who can perform at the Professional Engineer level might be justified. For comparison purposes, medicine, law, pharmacy, architecture and occupational therapy, all require more formal education than engineering does at the level of the present four-year BS curriculum.

4. Objectives. What does the program seek to accomplish?

The 5-year dual degree BS-MS/ME program enables its graduates to practice in the ME profession one year sooner than students that take the normal path. The MS degree program educates and assists its students to become accomplished professionals in their discipline in the first few years of their career, following graduation from Fairfield University. For this purpose students in the program will acquire the knowledge and skills to:

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>BSME</th>
<th>MSME</th>
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<tbody>
<tr>
<td>2006-07</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2007-08</td>
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<tr>
<td>2012-13</td>
<td>17</td>
<td>3</td>
</tr>
</tbody>
</table>

Table I. BS and MS Mechanical Engineering Graduates for the academic years 2006-2012
• Analyze, design, verify, validate, implement and maintain scientific and technical systems,

• Appropriately apply math and science fundamentals relevant to Mechanical Engineering and supporting disciplines to complex systems, and

• Be able to work in depth in one or more significant application domains.

The SOE wishes to provide an alternative avenue to interested students who wish to achieve personal and professional growth and success in a more time-effective manner, the program demands rigor and manifested intellectual discipline. The students admitted to the program will have a cumulative GPA of 3.0 or higher, and a GPA in the Mechanical Engineering programs of 3.2 or higher, in their junior year when they declare their intention to follow the 5-year track. Those students will be able to round out their knowledge through a senior-year curriculum enriched with graduate level courses, and experience an even more rigorous fifth year of advanced studies.

Finally, the proposed 5-year program is in accord with the mission of the School of Engineering and, by extension, with the mission of Fairfield University as a comprehensive Jesuit institution that values intellectual rigor and service to faith and justice on the part of all its students. As a point of reference, the SOE mission statement included in most of its publications is as follows: The mission of the School of Engineering is to maintain the highest level of institutional integrity and remain committed to the Ignatian ideals of education, namely intellectual rigor, service to others and service to faith, with the promotion of justice for all.

In pursuit of this mission, the School of Engineering will commit its resources to the nurturing of the intellectual capital and skills of students across disciplines. The School will act to assemble and maintain the material resources needed to support a robust working and learning environment. The School's graduates will have mastered theoretical and practical knowledge of engineering skills, and will have acquired additional competencies in communication, critical judgment, social responsibility and a sense of economic, environmental, and ethical values. These men and women will be prepared to shape the future. They will practice the engineering disciplines and allied activities in many areas of human endeavor, including industry/manufacturing, business, government service and education, or continue with postgraduate studies. Finally, the School will maintain a continuous engagement with the community it aims to serve, and strengthen its commitment to the promotion of excellence in engineering education by serving the manpower and professional needs of industry and business. The SOE provides options to Connecticut engineers for lifelong education and renewal of skills. The SOE serves all its constituencies with integrity, clarity of purpose and professionalism. Toward that end the SOE has adopted the following students learning and pedagogy tenets:

• We make a close relationship between the students and the SOE the top priority.

• Faculty are involved with programmatic, curricular, and pedagogical change;

• Faculty grow professionally through publication and conference attendance.

• Faculty keep close ties to industry

• Faculty are dedicated to active learning
The proposed program is in full accord with the objectives articulated in the SOE mission statement.

5. Impact
The proposed program will not replace any existing one; the program will not drain students or resources from existing programs. On the contrary, it will impact beneficially the number of undergraduates who choose Mechanical Engineering as a course of study, and as a professional career, and will leverage effectively the resources that are already present in the School of Engineering. It will be a more focused program overall, with the fifth year providing ample opportunity for a deeper understanding of the nuts and bolts of the discipline, as well as intensive research and development in the framework of Capstone Project courses.

6. Program Detail

6.a. Benchmarking 5-year degree BS-MS/ME programs:
It is always instructive to benchmark a new program against similar or equivalent programs in other institutions. Some of the program descriptions have been directly taken from the college websites. The benchmark is divided into two categories of Northeast and National Colleges:

Northeast Colleges:

State of Connecticut:

• University of New Haven - The 4+1 combined BS/MS Mechanical Engineering degree program is available to qualified Mechanical Engineering upper-level students. Two graduate-level courses (ME 602-Mechanical Engineering Analysis and ME 604-Numerical Techniques) taken during the senior year count toward both the BS and MS degrees in Mechanical Engineering. During the fifth year, students complete the MSME degree by taking nine more ME graduate-level courses.

To qualify, students must apply for admission no later than two semesters prior to the anticipated fulfillment of the BSME degree requirements, have a cumulative GPA of at least 3.0 at the time of application to the 4+1 program (upon completion of 90 credits toward the BSME degree), and submit one letter of recommendation by a Mechanical Engineering faculty member. A minimum grade of B- is required in each of the two overlapping graduate courses for them to apply to both programs.

http://catalog.newhaven.edu/preview_entity.php?catoid=1&ent_oid=1395

State of Massachusetts:

• Northeastern - They have a program with an inner relation with their popular co-op period where students get to work in the industry.

http://www.coe.neu.edu/coe/undergraduate/BS-MS_Programs.html

• Worcester Polytechnic - WPI offers the five year program, ending with a BS in one of the traditional engineering disciplines (e.g. mechanical, electrical, civil, chemical engineering) and a master's degree in only fire protection engineering.

• University of Massachusetts, Amherst - The Mechanical and Industrial Engineering Department offers students the opportunity to earn both a Bachelors and Masters of Science Degree over a five-year period. The plan reduces the expected time for earning a degree by beginning graduate-level studies as early as year four. The student can take
advantage of the flexibility offered by the new course-work MS option that requires 30 graduate level credits (i.e. 10 additional courses). No thesis is required.

The heart of the plan is a fifth year where students take “four and four”: four graduate classes each semester. The other six credits, either two classes or a six-credit independent study, can come from a variety of sources. These can be transferred from another institution, taken during the summer, or even taken prior to the student’s entry into the MS program.

Instead of the traditional plan, where students only begin graduate studies after completing all BS requirements, students can make full use of any space in their undergraduate schedules by enrolling in graduate classes. This plan is particularly well-suited to students who may have entered the BS program with Advanced Placement (AP) credits, and thus have room in their schedule for extra classes prior to finishing their BS degree. If a student has space in their schedule for any reason, they can start taking graduate classes. Classes offered over the summer, or on-line, can also count.

http://mie.umass.edu/sites/default/files/mie/FiveYearPlanV4.pdf

State of New York

• **Columbia University** - The Department of Mechanical Engineering is offering a new Integrated BS/MS degree beginning in the fall 2010 semester. This new program is open to a select group of Columbia juniors, and makes possible the earning of both a BS and an MS degree simultaneously. The program offers the following advantages:

  - optimal matching of graduate courses with their corresponding undergraduate prerequisites;
  - greater ability to plan ahead so that the MS requirements do not have to be squeezed into two or three semesters
  - increased depth and breadth since graduate courses can be taken earlier in the program;
  - opportunity to do research for credit during the summer after senior year (subject to approval of a faculty member willing to supervise the work);
  - up to six points of 4000-level technical electives from the BS requirements may count toward the fulfillment of the point requirements of the MS degree;
  - simplified application process (no GRE or TOEFL for qualified students)


• **Stony Brook** - Students apply in their junior year. It allows students to apply three graduate courses in their undergraduate years and count them towards both the undergraduate and the graduate degrees. The application process is less cumbersome than the M.S. admission process, which requires filling out a much longer application form and taking GRE exams. The students take up to three graduate courses as their undergraduate technical electives. These three graduate courses or 9 credits will also be counted towards their Master's degree. Of these three courses, two may be taken as an undergraduate and the third must be taken during the year when the student matriculates as a graduate student.

http://me.eng.sunysb.edu/index.php?option=com_content&view=article&id=64:5-year-bsms-program&catid=39&Itemid=92

• **Rochester Institute of Technology** - The program offers outstanding students an opportunity to earn both a bachelor's and a master's degree within approximately five years of entry to the BS program. The BS/MS program has a strong research-oriented focus, and is primarily directed toward students planning on completing a doctoral degree. All students
enrolled in the BS/MS program are required to complete a graduate thesis and conduct scholarly research.

State of Rhode Island

- University of Rhode Island - The individual BS and MS pieces of the combination 5 yr program are identical to the existing individual degrees. The program is designed for full-time study, and thus contains only the thesis option. http://mcise.uri.edu/dept/grad/5_year_BS-MS_MCE.pdf

State of New Jersey

- Rutgers University - Rutgers undergraduates who have a GPA of 3.2 or higher and have completed (or are completing) their sixth semester are eligible to apply to the B.S.-M.S./B.S.-M.Eng. program. Students usually apply during their sixth semester or before their seventh semester. Students must have completed 96 credits of coursework at the end of their sixth semester of undergraduate study. The GRE requirement is waived but students should fill out the application form and submit it to the Graduate Office with two letters of recommendation and a personal statement. Students must have at the time of their application a 3.2 GPA and they must maintain a 3.2 GPA throughout their senior year.

In addition, some of local colleges within close proximity to Fairfield University that do NOT offer 5 Yr BS-MS/ME program have been identified: CT: Yale University, University of Hartford, University of Connecticut, Trinity College, NY: City University of New York, Manhattan College, MA: Boston College, NJ: New Jersey Institute of Technology. The proposed 5 yr BS-MS/ME program provides better leverage for Fairfield University to attract and recruit high school students.

National Colleges:

- Drexel University - The College of Engineering offers its students the opportunity of pursuing a combined BS/MS degree to be completed in a period of five years. Features of this program are:

  Students maintain all financial aid and loan packages during the five-year period. Students enjoy the benefits and rewards of Drexel's co-op experience. Students can gain research experience by working with research faculty. Tuition during the five years is maintained at the undergraduate rate. Typical salaries for students with MS degrees are about 25% higher than those with BS degrees.

- Villanova - Any full-time student with a minimum GPA of 3.25 has the option of pursuing a Five-Year BS/MS Program that allows the students to obtain a dual Bachelor/Master degree in a five-year time period. All Five-Year BS/MS Program students will automatically be considered for tuition fellowships for the fifth year. A limited number of fellowships are available. Fellowship decisions will be made during the spring semester of the senior year. A student accepted into the Five-Year BS/MS Program is expected to finish the program without any interruption.
• **University of Maryland** - The combined Bachelor's/Master's Degree (B.S./M.S.) Program is available only to current University of Maryland undergraduate students. The minimum requirements for acceptance into the Combined B.S./M.S. program are:
  - At least a 3.70 G.P.A.
  - No more than 30 credits of ENME courses remaining for B.S.
  - No more than 6 credits of CORE requirements remaining for B.S.
  - At least 3 letters of recommendation
  - An essay or statement of purpose

• **Georgia Tech** - The Woodruff School offers a BS/MS program for those students who demonstrate an interest in and ability for additional education beyond the BS degree. The program fosters intense interaction among students and faculty and includes mentoring and undergraduate research. Careful advising and course planning will enable students to begin graduate coursework in their fourth year of study. Woodruff School students with a GPA of 3.5 or higher are eligible to apply for the program after completion of 30 semester credit hours at Georgia Tech, but before the completion of seventy-five semester credit hours, including transfer and advanced placement credits. There is a thesis and non-thesis option.

• **Ohio State University** - The College of Engineering offers a number of combined BS/MS programs for undergraduate students with outstanding academic records to encourage the best students to pursue advanced degrees. This allows well-qualified undergraduates to start graduate study before completing their BS degree. Enrolling in a combined BS/MS program can shorten the total time to get both a BS degree and a MS degree. By enrolling in a combined BS/MS program, students are eligible to count up to 12 semester credit-hours (depending on the program) of courses taken as a graduate student toward your BS degree -- even as these credit-hours also count toward your MS degree.

• **Brigham Young University** - The purpose of the program is to afford greater flexibility in scheduling coursework; however, the course load is the same as if the BS and MS were earned separately. The BS degree will be conferred simultaneously with the MS degree. Students wishing to pursue this path need to speak with the graduate advisor during their Junior year to allow adequate time for meeting the requirements and deadlines for applying to the MS program. Admission to graduate school for the MS degree must occur before taking the final two semesters of combined BS/MS coursework in order to be able to pay two semesters of full-time graduate tuition.

• **University of Minnesota** - The B.M.E./M.S. program offers Mechanical and Industrial engineering majors several benefits: a streamlined admissions process from the undergraduate to the graduate program; graduate student status granted in the senior year; eligibility for teaching and research assistantships; and, flexibility in fulfilling required courses for both degrees simultaneously in the last two years of study. The program makes it possible for students to earn a Bachelor's degree in Mechanical Engineering and a Master's degree in Mechanical or Industrial Engineering in five years.
• **Florida A&M** - The BS-MS program is a combined undergraduate-graduate program. This program is designed for five years of full time study. It provides students with a unique opportunity to combine advanced undergraduate and graduate studies in Mechanical Engineering with practical, real-world, product-oriented experience in the engineering of mechanical systems. The BS-MS program is designed for admission from within the College of Engineering student body. Well-qualified students, who are expected to have a GPA of 3.2 or better in engineering studies, are invited to apply for the program during the spring semester of their third year in the College.

• **Marquette University** - Students with qualifying grade point averages (3.5/4.0) in the undergraduate Mechanical Engineering program at Marquette University may apply for admission to the five-year program during their junior year. Students must submit an application to the graduate school, indicate their interest in the five year program, and meet all other admission criteria as stated in the following Application Requirements section. (GRE test scores must be submitted before the start of the fifth year.) Students may take master's level courses in their senior undergraduate year. These graduate courses double-count toward the undergraduate and graduate degrees. The remaining courses are taken during the student's fifth year.

• **University of Colorado at Boulder** - Students can plan to pursue either a Plan I M.S. (includes a Master's thesis) or a Plan II M.S. degree (coursework only). A significant benefit in terms of cost and time for the student is that up to six credit hours of graduate-level coursework can also apply to the B. S. degree. Typically students accomplish this by taking graduate level classes as technical electives during their senior year. They can also engage in research in the senior year. Students can thus gain significant project and advanced course experience in a specialized area such as bioengineering, MEMS, environmental engineering, materials processing, etc.

• **Washington University in St. Louis** - This program provides students with an opportunity to plan a coordinated five-year program of studies leading to both the BS and MS degrees and is a total of 150 units and normally takes five years to complete. However, interested students capable of carrying heavier loads or utilizing one or two summers for academic work may complete the program in less than five years. The program is open to students who earn at least a B average during their sophomore and junior years. Students who wish to enter the program should apply during the second semester of their junior year. Approval of the department chairman and the dean are required.

• **Texas Tech** - Students in this program follow the existing undergraduate curriculum for the first seven semesters. In the final undergraduate semester two graduate courses are taken in place of ME electives. The student receives a BS degree at this point. One additional year of study, including one summer leads to a MS degree.

• **UC BERKLEY** - This program is for Berkeley ME Undergraduates that allows them to broaden their education experiences at Berkeley. In contrast to the existing Berkeley
Mechanical Engineering M.S. program, it is a course-based program. Students in the 5 year B.S./M.S. program are also able to take some courses in professional disciplines such as business or public policy.

6.b. The 5-year program at Fairfield University-Academics

Several elements of the programs presented above will be adopted for the 5-year program. In general terms, the education will include:

• Mathematics as a formal basis for the discipline.

• Principles, which constitute the lasting concepts that, underlie the discipline.

• Practices that include specialized skills, patterns and techniques.

• Applications of both principles and practices.

• Tools that must be state-of-the-art; e.g., MatLab, SolidWorks, CATIA, LabView, ANSYS, FLUENT, etc.

6.b.I. Changing from Undergraduate to Graduate Status

Students may request a change of status from the undergraduate to the undergraduate/graduate combined plan of study at any point after the following conditions are met:

• Completed approximately 100 credits towards the BS in Mechanical Engineering. (i.e. prior to the senior level)

• Completed all required Junior-level (300-level) math and ME courses specified in the undergraduate catalog.

• Students will have successfully completed 8 courses in Mechanical Engineering with a GPA of 3.2, and plan to enroll in at least two graduate courses in the ME MS program during the senior year.

• Have an overall GPA of 3.0 or higher.

Students are also required to submit two letters of recommendation, one of which must be from their faculty advisor.

The educational goals and content of the graduate studies under this program are essentially the same as in the ME Master's Degree Program, but the curriculum is arranged differently in order to allow completion of the requirements for two degrees in five years. Students follow the standard undergraduate curriculum for the first three years, and then complete the BS degree requirements during their fourth year while taking graduate courses. During the fifth year the students take an additional eight courses to complete their MS degree. In addition, they may participate in internships during their third, fourth and/or fifth years. Students will be awarded the BS degrees and MS degrees when the requirements in Table II are satisfied. The Accreditation Board for Engineering and Technology, ABET, requires that students complete a Senior Design project, as part of the BS degree curriculum.
6.b.II. Educational Goals of the Curriculum
The proposed program will provide students with the knowledge and skills to innovate and lead in their discipline in the framework of research and development in academic institutions, research institutions, service organizations and a wide variety of science, technology or business domains. These outcomes will be achieved through carefully chosen knowledge that students will gain by virtue of expert curriculum design, instruction, inquiry and professional development that will make each student an agent of positive change. For this purpose the program curriculum will guide the students to become proficient in the following domains:

- **Fundamentals**: Students will develop their creative intellectual potential by undergoing a thorough grounding in the fundamentals of science, mathematics, and engineering, and, further, develop their ability to formulate and analyze problems and synthesize well-designed solutions based on this knowledge and their critical judgment.

- **Depth and Breadth**: Students will develop breadth and depth in disparate areas of Mechanical Engineering and their ability to apply this knowledge to problem solving and designing, building, testing, and validating of mechanical related systems.

- **Flexibility**: Students will study in a flexible environment which allows each one the opportunity to pursue individual interests and academic strengths through electives, projects, and internships, and to thereby become accustomed to a sense of flexibility in thinking as they pursue their career.

- **Teamwork**: Students will be able to work successfully in diverse multi-disciplinary teams with individuals whose expertise spans other engineering disciplines and in an internship environment with non-engineering disciplines, such as social sciences and business.

- **Strategic and Ethical Thinking**: Students will develop the ability to think in a sophisticated and ethical manner about technology and their careers, and be encouraged to always question their objectives and be engaged in lifelong learning. Asdasda

- **Systems Building**: Students will develop an appreciation for the environment in which engineering is practiced, and will learn to define problems and formulate solutions from a systems perspective.

- **Leadership**: Students will be encouraged to develop the capacity to lead and become professionals who will evaluate how and why Mechanical Engineering is practiced and to pursue careers that will help fulfill societal needs.

6.b.III. Curriculum Components
The five-year curriculum for the proposed program is shown on Table II. ABET requires a year of math and science, and our students will get a minor in mathematics. The 6-credit Senior Design Project I and II, in the 4th year have been joined with graduate courses. The graduate level courses in year 5 include room for the optional thesis, equivalent to 6 credit hours. This BS-MS program consists of 158 credit hours over the five-year span.
All the courses listed in Table II are presently in existence. No new courses need be developed at this point. Syllabi for the courses listed in Table II are available upon request. The course descriptions are included in Appendix A.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Fall</th>
<th>Credit</th>
<th>Spring</th>
<th>Credit</th>
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<tbody>
<tr>
<td>MA 145 - Calculus I</td>
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<td></td>
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<tr>
<td>PS 15 - Physics I</td>
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<td>PS 16 - Physics II</td>
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<td>PS 15L - Physics I Lab</td>
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<td>PS 16L - Physics II Lab</td>
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<tr>
<td>PH 101 - Introduction To Philosophy</td>
<td>3</td>
<td>CD 211 - Eng. Graphics I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EN 11 - Texts &amp; Contexts I</td>
<td>3</td>
<td>EN 12 - Texts &amp; Contexts II</td>
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<tr>
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<td><strong>Total</strong></td>
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<th>Year 2</th>
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<tbody>
<tr>
<td>MA 245 - Calculus III</td>
<td>4</td>
<td>MA 321 Ordinary Differential Equations</td>
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<tr>
<td>ME 201 - Eng. Statics</td>
<td>3</td>
<td>ME 203 - Kinematics &amp; Dynamics</td>
</tr>
<tr>
<td>ME 206L - Mechanics Lab</td>
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<td>VPA – Art History Elective</td>
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<tr>
<td>CH 111 – General Chemistry I</td>
<td>3</td>
<td>ME 308 - Strength of Materials</td>
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<td>CH 111L – General Chemistry I Lab</td>
<td>1</td>
<td>ME 307L - Dynamics Systems Lab</td>
</tr>
<tr>
<td>EC 11 - Introduction to Microelectronics</td>
<td>3</td>
<td>RS 101 - Exploring Religion</td>
</tr>
<tr>
<td>MF 207 - Materials Science</td>
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<tr>
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<tbody>
<tr>
<td>ME 241 - Principles of Thermodynamics</td>
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<td>ME 342 - Applications of Thermodynamics</td>
</tr>
<tr>
<td>EE 213 - Intro to Electric Circuits</td>
<td>3</td>
<td>ME 347 - Fluid Mechanics</td>
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<td>EE 213L - Electric Circuits Lab</td>
<td>1</td>
<td>ME 348L - Thermal &amp; Fluids Lab</td>
</tr>
<tr>
<td>ME 311 - Machine Design</td>
<td>3</td>
<td>ME 318 - Finite Element Analysis</td>
</tr>
<tr>
<td>HI 10 - Origins of The Modern World</td>
<td>3</td>
<td>HI - History Elective</td>
</tr>
<tr>
<td>PH - Philosophy Elective</td>
<td>3</td>
<td>RS - Religious Studies Elective</td>
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<tr>
<td>EG 390 - Senior Design Project I</td>
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<td>EG 391 - Senior Design Project II</td>
</tr>
<tr>
<td>ME 349 - Heat Transfer</td>
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<td>AE 287 - Engineering Ethics</td>
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<tr>
<td>ME 350L - Energy Transfer Lab</td>
<td>1</td>
<td>SS - Social Science Elective</td>
</tr>
<tr>
<td>MC 290 - Eng. System Dynamics</td>
<td>3</td>
<td>EN 100-199 - English Core Literature</td>
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<tr>
<td>GE - General Elective</td>
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<td>GE - General Elective</td>
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<tr>
<td><strong>Grad Major Elective</strong></td>
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<th>Year 5</th>
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<tr>
<td>Grad Required – ME425 Engineering Applications of Numerical Analysis</td>
<td>3</td>
<td>Grad Required – MC400 Feedback Control Systems</td>
</tr>
<tr>
<td>Grad Required – ME451 Energy Conversion</td>
<td>3</td>
<td>Grad Required – SW407 Introduction to Programming</td>
</tr>
<tr>
<td>Grad Required – ME470 Applications of Finite Element Analysis</td>
<td>3</td>
<td><strong>Grad Major Elective</strong></td>
</tr>
<tr>
<td>Grad Major Elective</td>
<td>3</td>
<td>Grad Major Elective</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

| Overall Total: | 158 Credits |

*Table II. The 5-Year ME MS Program with Mechanical Engineering BS*
6.b.IV. Learning Goals and Required Courses

The courses that provide the knowledge and skills and tools that students need to achieve the program objectives are discussed below.

The students will take the following set of five required courses (shown in Table II as “Grad Required”) : ME425 - Engineering Applications of Numerical Analysis, MC400 - Feedback Control System, ME 451- Energy Conversion, ME470 – Applications of Finite Element Analysis, and a graduate level computer language SW407- Introduction to Programming.

The remaining five courses (shown in Table 1 as “Grad Major Elective”) will be selected from the following mechanical engineering graduate elective courses with an option of taking no more than two courses outside ME department from other engineering disciplines:

- **Thermal Systems Electives:** ME450 - Gas Dynamics, ME452 - Heat and Mass Transfer, ME453 – Turbomachinery, ME428 - Computational Fluid Dynamics – These courses cover the broad areas of energy and turbomachinery, fluid dynamics and heat transfer. It includes study of conduction, convection, radiation, compressible and heated flows, combustion, and laminar and turbulent flows. Applications in design and analysis, processes and devices, fuel cells, heat pipes, gas turbines and renewable energy are considered.

- **Mechanical Systems Electives:** ME410 - Vibration Analysis, ME411-Advanced Kinematics, ME412 - Advanced Dynamics, ME427 - Applications of Fracture Mechanics in Engineering Design, ME444 - Mechanics of Composite Material, ME472 – Applications of Theory of Elasticity – These courses cover the broad areas of mechanical and dynamic systems. More specifically, the focus includes, but is not limited to, the dynamic behavior of mechanisms, machines, engineering materials and mechanical systems, and vibration analysis and machine dynamics. Research methods include a blend of techniques involving mathematics and computer simulation.

7. Administrative Structure and Governance

The program will be administered by the chair of the Mechanical Engineering department, Dr. Shahrokh Etemad, with oversight by the Dean of Engineering, and the Dean's Council. It will be further assisted by a curriculum advisory group of faculty and industry representatives. Dr. Shahrokh Etemad will be responsible for the day-to-day administration of the program, long-term planning, and internal and external relations, and will report to the Dean. The Advisory Board of the School of Engineering will also have a hand in assisting the program to maintain communications and interactions with industry for the placement of interns and for prized collaborations in the framework of the Capstone Project courses. The current composition of the SOE Advisory Board is shown in Appendix B.

8. Resources. Resources available and resources needed.

The academic resources needed for the proposed dual-degree five-year program are all available in the SOE, in view of the fact that both the traditional 4-year undergraduate program and the ME Master's program have been operational for some time. The proposed program is a modification to the existing programs. This modification will leverage the courses and computer and hardware assets already at the disposal of the Mechanical Engineering program in the SOE. Existing laboratories listed in Appendix C support all experimental aspects of the program.

8.a. Faculty

The faculty who will teach Mechanical Engineering courses are:

Clement Anekwe, Lecturer, Mechanical Engineering
Ph.D., West Virginia University

George V. Bauer, Lecturer, Mechanical Engineering
M.S., Rensselaer Polytechnique Institute

Yew-Tsung Chen, Lecturer, Mechanical Engineering
Ph.D., University of Minnesota

Kosovka Cupic, Lecturer, Mechanical Engineering
M.S. Fairfield University

Cristian Craciun, Lecturer, Mechanical Engineering
M.S., Fairfield University

William Dornfeld, Lecturer, Mechanical Engineering
Ph.D., University of Wisconsin-Madison

Shahrokh Etemad, Associate Professor, Mechanical Engineering
Ph.D., University of Washington

Joseph P. McFadden Sr., Lecturer, Mechanical Engineering
M.S. Bridgeport University

Shanon Reckinger, Assistant Professor, Mechanical Engineering
Ph.D., University of Colorado, Boulder

Steve Roux, Lecturer, Mechanical Engineering
M.S., Rensselaer Polytechnic Institute

Don Schaer, Lecturer, Mechanical Engineering
M.S., Central Connecticut State University
Robert M. Wojna, Lecturer, Mechanical Engineering
M.S. Fairfield University

Michael P. Zabinski, Professor, Engineering and Applied Science
Ph.D., Yale University

These faculty members are sufficient to cover all areas of the ME curriculum. No other resources are requested for the implementation of the proposed five-year program.

8.b. Laboratories
The School of Engineering has assembled the resources required for the successful implementation of the 5 yr BS-MS/ME program. Furthermore, funding for future equipment replacement to keep pace with advancing technology, and for further programmatic development, is now available. Hence, satisfying the demands of the proposed program will have no adverse impact on other programs. Dedicated laboratories in SOE are under the supervision of the Director of Laboratories, Dr. Paul Botosani. He is assisted by part time lab assistants. All laboratories are equipped with leading-
edge equipments and experimental set ups. The ME laboratory courses use the equipment listed in Appendix C. They are all presently available, and, as indicated already, provisions have been made for their replacement in the future, as needs arise.

The SOE classrooms have video projectors with networked computers. The extensive computer resources required for the program to handle some of high memory/ intensive computations for tools such as ANSYS, FLUENT, CATIA, etc. are all available.

In conclusion, the needed resources for the successful implementation of the 5 yr BS-MS/ME program, as detailed in this proposal, have all been assembled. The School of Engineering has as its overarching objective to create an effective learning environment for 5 yr BS-MS/ME, and all its other programs. It will spare no effort to achieve this objective.

8.c. The SOE Administration

A part-time network administrator provides IT support to the School and centrally administers computer packages. SOE has six dedicated computer laboratories and seven engineering laboratories assigned to different engineering tasks (mechanical, materials, manufacturing, control systems, robotics, automation as well as electrical and electronics).

9. Projections for the Future

The quality and efficacy of the proposed 5-year course of study will be subject to the same Assessment and Continuous Quality Improvement Process (ACQIP) in effect in the SOE since 1997. ACQIP is the protocol that allows continuous evaluation of the degree of achievement of program learning goals and program objectives across all academic programs in the SOE.

With all the resources currently on hand, there is no additional expense that need be added to the SOE budget, and no budget for the program modification need be provided at this point.
Appendix A
Master of Science in Mechanical Engineering, MSME

Graduate Course Description: MSME Course Descriptions

**MC 400 Feedback and Control Systems**
This course emphasizes analysis and synthesis of closed loop control systems using both classical and state-space approaches with an emphasis on electro-mechanical systems. The mathematical requirements include the Laplace transform methods of solving differential equations, matrix algebra and basic complex variables. The discussion of classical control system design includes the modeling of dynamic systems, block diagram representation, time and frequency domain methods, transient and steady state response, stability criteria, controller action [Proportional (P), proportional and integral (PI), Proportional, integral and derivative (PID) and pseudo-derivatives feedback], root locus methods, the methods of Nyquist and Bode and dynamics compensation techniques. The discussion of state-space methods includes formulation and solution (analytical and computer-based) of the state equations and pole-placement design. The course integrates the use of computer-aided analysis and design tools (MATLAB) so as to ensure relevance to the design of real world controlled electro-mechanical systems using case studies and applications to electrical and mechanical systems. Includes lab (hardware based) exercises. **Students select a related technical topic, identify a scientific paper to review and give a class presentation.**
Prerequisites: MA 321 and ME 203 (see undergraduate catalog), or equivalent. Three credits

**ME 410 Vibration Analysis**
This course covers fundamental laws of mechanics, free and forced vibration of discrete single and multi-degree of freedom systems, periodic and harmonic motion, viscous damping, and measures of energy dissipation. Modal analysis for linear systems, computational methods in vibration analysis, natural frequencies and mode shapes, analytical dynamics and Lagrange’s equation, longitudinal, torsional, and flexural vibration of continuous elastic systems (strings, rods, beams) are discussed. Students learn energy methods, approximate methods for distributed parameter systems, and dynamic response by direct numerical integration methods. **Students select a related research topic, identify a technical paper to review and give a class presentation.**
(Prerequisites: ME 203, MC 290, or equivalent) Three credits

**ME 411 Advanced Kinematics**
Topics in advanced kinematics include introduction to basic concepts and definitions related to kinematics, commonly used links and joints, kinematic analysis of mechanisms, introduction to robotic mechanisms, homogeneous transformations, Euler angles, Denavit-Hartenberg representation of forward kinematics of robots, inverse kinematics solution of robots, degeneracy and dexterity, and differential motion and velocity relations including the Jacobian matrix. Industrial applications of kinematics will also be covered and the course will include a laboratory or project component. This course includes a detailed analysis and report of the laboratory project. (Prerequisite: ME 203, or equivalent) Three credits.

**ME 412 Advanced Dynamics**
The topics in the area of Dynamics include degrees of freedom, generalized coordinates, constraints, principle of virtual work and D’Alembert’s principle. Energy and momentum, frames of reference, orbital motion, Lagrange’s equation, moments and products of inertia, and dynamics of rigid bodies are also discussed, as well as variational principles: stationary value of a function, Hamilton’s principle, principle of least action, Hamilton’s equation, and phase space. **Students select a related research topic, identify a technical paper to review and give a class presentation.** (Prerequisites: ME 203, or equivalent) Three credits.

**ME 425 Engineering Applications of Numerical Methods**
This course provides students with the theoretical basis to proceed in future studies. Topics include root-finding, interpolation, linear algebraic systems, numerical integration, numerical solution of ordinary and partial differential equations, modeling, simulation, initial boundary value problems, and two point boundary value problems. (Prerequisite: SW 408 or equivalent demonstrated programming language skills) Three credits.
ME 427 Applications of Fracture Mechanics in Engineering Design
This course covers fracture mechanics concepts for design, materials selection, and failure analysis. The fundamental principles of fracture parameters and criteria, stress field at the tip of a crack, fracture toughness, thickness effect, plastic zone concept, and crack growth under cyclic loading and aggressive environment will be presented. Emphasis will be placed on the practical applications of fracture mechanics by incorporation of design problems and laboratory demonstrations in the course. Students select a related research topic, identify a technical paper to review and give a class presentation. (Prerequisite: the equivalent of ME 308 or ME 311, or equivalent.) Three credits

ME 428 Computational Fluid Dynamics
Introduction to computational methods used for the solutions of advanced fluid dynamics problems. Emphasis on concepts in finite difference methods as applied to various ordinary and partial differential model Equations in fluid mechanics, fundamentals of spatial discretization, numerical integration, and numerical liner algebra. A focus on the engineering and scientific computing environment. Other topics may include waves, advanced numerical methods (like spectral, finite element, finite volume), non-uniform grids, turbulence modeling, and methods complex boundary conditions. Students select a related research topic, identify a technical paper to review and give a class presentation. (Prerequisite ME 347 or equivalent) Three

ME 444 Mechanics of Composite Material
This course covers structural advantages of composite materials over conventional materials. High strength-to-weight ratios, analysis of fiber-reinforced, laminated and particle materials, 3-D anisotropic constitutive relations. Classical; lamination theory and boundary conditions for composite beams, plates and shells. Boundary value problems and solutions for static loads, buckling and vibrations. Higher order theories incorporating shearing deformation and layer wise theories. Inter laminar stresses and edge effects. Response of composite structures to static and dynamic loads. Study of thermal and environmental effects and failure criteria. Students select a related research topic, identify a technical paper to review and give a class presentation. (Prerequisite: MF 207) Three credits

ME 450 Gas Dynamics
This course reviews fundamental concepts and equations of fluid dynamics. One dimensional compressible flow solutions with and without friction are covered. Equations of conservation of mass, rate of strain tensor, Navier-Stokes equations, mechanical and thermal energy equations with derivations are discussed. Equations are presented in Cartesian and orthogonal curvilinear coordinate systems. Boundary layer theory is covered. Students will discuss laminar and turbulent viscous flow solutions, including boundary layers, Couette, & Poiseuille flows. In addition to analytical closed form solutions, an introduction to computational methods is presented. Students select a related research topic, identify a technical paper to review and give a class presentation. (Prerequisite: ME 347, or equivalent) Three credits

ME 451 Energy Conversion
This course covers the major topics in energy conversion, including fuels used in energy conversion; solar energy; gas turbine engines and applications; internal combustion engines; heat pumps; classic and novel power and refrigeration cycles; system analysis; system economics; and environmental considerations. The course includes computer simulation of power plant performance to optimize energy conversion efficiency. Students are required to conduct an independent research on one of the new and emerging energy sources, write a research report and make a class presentation on their research. (Prerequisite: ME 349) Three credits

ME 452 Heat and Mass Transfer
This course covers the basic concepts of conduction, convection, and radiation heat transfer. Boiling and condensation; design and performance of selected thermal systems (including heat exchangers); laminar and turbulent flows as related to forced and free convection are all studied. Mathematical modeling of engineering systems using modern analytical and computational solution methods are also covered. Students select a related technical topic, identify a scientific paper to
review and give a class presentation. (Prerequisite: ME 349 or equivalent) Three credits

ME 453 Turbomachinery
Theory and fundamentals of modern turbomachinery for aerospace (helicopter, aircraft) and power generation (marine, industrial) applications. Brayton engine cycle analysis and performance improvement are examined. Applications of the principles of fluid mechanics and thermodynamics to the design of turbines and compressors are discussed; also, component analysis and velocity diagram for axial compressors, centrifugal compressors and axial turbines. Discussion of combustion and environmental emissions is included. Students select a related technical topic, identify a scientific paper to review and give a class presentation. (Prerequisite: ME 347 or equivalent) Three credits

ME 470 Applications of Finite Element Analysis
This course examines applications of finite element analysis in modern engineering including structural analysis, fluid flow, heat transfer, and dynamics. Finite element formulations covering 2, and 3 dimensional elements as well as energy methods are developed. Students develop techniques for application of finite element method in structural design, dynamic system response, fluid and thermal analyses. Application of methodology to fluid flow is presented. Students solve example and design problems manually and using modern finite-element analysis software, ANSYS and FLUENT. Students will prepare analysis for a multi-discipline design problem utilizing theory and software while demonstrating achievement of real world design goals. (Prerequisites: ME 318 or equivalent) Three credits

ME 472 – Applications of Theory of Elasticity
This course covers theory of elasticity (stress, strain, and generalized Hook’s law), strain energy methods (Castigiliano’s theorem), thin shells of revolution (equilibrium equations, pressure vessels), thin plates (rectangular and circular plates, moment-curvature relations), beams of elastic foundations and buckling. Students select a related technical topic, identify a scientific paper to review and give a class presentation. (Prerequisites: ME 308 or equivalent) Three credits

ME 495 Independent Study
A well-planned program of individual study under the supervision of the faculty member. Three credits

ME 496 Special Projects
An in depth study of selected topics of particular interest to the student and instructor. Three credits

ME 550, ME 551 Thesis I, II
The master’s thesis is intended to be a test of the student’s ability to formulate a problem, solve it, and communicate the results. The thesis is supervised on an individual basis by a faculty member. A thesis involves the ability to gather information, examine it critically, think creatively, organize effectively, and write convincingly; it is a project that permits the student to demonstrate skills that are basic to both academic and work in industry. The student must also submit a paper for possible inclusion in a refereed journal appropriate to the topic. Three credits each.

SW407 – Introduction to Computer Programming
This course is a study of object oriented software component design. This course introduces object oriented programming and its use in problem solving with abstract data types such as lists, linked lists, stacks, queues, graphs, and trees. This course serves as one of the bridge courses to the MSSE program. Three credits.

Bridge Courses
Required to complete one's preparation for the master's program is strong aptitude in the area of Strength of material, Thermodynamics and Fluid dynamics. Students with deficiencies in those areas should confer with the Program Director to create a course of study. (See undergraduate catalog or visit the SOE website for a description.)
Appendix B
ADVISORY BOARD

Joseph M. Carbone
President & CEO,
Workplace, Inc. Bridgeport, Conn

Gerald V. Cavallo
President,
James Ippolito & Co Bridgeport, Conn.

Anthony N. Fischetti
Director, Engr/Exec. Program Manager
Northrop Grumman Corp Norwalk, Conn.

Dr. Michael J. Hartnett
President & CEO
RBC Bearings Oxford, Conn.

Joseph Ianniello
Bridgeport, Conn.

Paul M. Kelley
Corporate Vice President
Alinabal, Inc. Milford, Conn.

John LaViola
Vice President Engineering
Hologic Inc. Danbury, Conn.

Mark F. Miller
Vice President, Research & Engineering
Sikorsky Aircraft Stratford, Conn.

Patrick F. O’Keefe
VP Engineering & Mfg
O’Keefe Controls Co Monroe, Conn.

Timothy K. O’Neil
VP, Program Management
ASML, Inc. New Milford, Conn.

Jeffrey M. Post
Managing Partner
Trillian Capital Management LLC Shelton, Conn.

Manny Ratafia
CEO
Ratafia Ventures Woodbridge, Conn

Richard J. Reed
Vice President, Engr & Project Excellence
United Illuminating Co, Shelton, Conn

Dr. Mitchell D. Smooke
Strathcona Professor of Mechanical Engineering
Yale University New Haven, Conn.

Robert Sobolewski
President
ebm-papst Inc. Farmington, Conn
# Appendix C

## List of Equipment used for 5 Yr BS-MS/ME

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>MANUFACTURER</th>
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MINUTES
Dean’s Council of Chairs
February 26, 2013
3:30-5:00 pm
MCA 207

Present: Jack Beal, Paul Botosani, Doug Lyon, Bill Taylor, Wook-Sung Yoo, Shah Etemad and Harvey Hoffman
Guest: Jay Rozgonyi

1. Jay Rozgonyi from Computer and Network Services (CNS) met with the Council
   a. The University has hired a Chief Information Officer leading to a complete reorganization
   b. Jay will lead the new division of Academic Computing
   c. The potential impacts and benefits for the SOE was discussed

2. The minutes of the January 29, 2013 meeting of the Council and CURRICULUM COMMITTEE were read and approved unanimously as amend

3. Announcements
   a. Dean Beal announced that our contract with CISCO Systems has been renewed
   b. Also, our institutional membership in ASEE has been renewed
   c. Jack encouraged Chairs to submit their summer course schedules ASAP
   d. On March 13, SOE AB member Manny Ratafia will present a workshop: “Creating and Building a Technology-Based Company”
      i. 4:00 to 8:00 pm at Alumni House
      ii. A panel of entrepreneurs will share their experiences in building companies from technical projects
      iii. Followed by Q&A and discussion
      iv. Dean Beal will also give a brief overview of the Fairfield University School of Engineering
      v. Free to Fairfield faculty
      vi. Dr. Hadjimichael, former Dean of Engineering, has been nominated to the Connecticut Academy of Science: Congratulations Vagos!

4. Planning/preparation for ABET report
   a. ACQIP document – DONE
   b. Syllabi – SPRING SEMESTER; submitted and compiled
   c. Surveys – STATUS; in process
   d. Documentation—needs to be started
   e. Assessment—Bill is compiling the results: samples for Mechanical Engineering were distributed
5. CURRICULUM COMMITTEE: 5-year, dual-degree ME proposal
   a. The final draft of the proposed program had been distributed previously to all Curriculum Committee members
   b. After a brief discussion it was moved and seconded that the proposal go forward through University committees
   c. The motion passed by unanimous vote

6. CURRICULUM COMMITTEE: Engineering Economics proposal
   a. A updated syllabus for EC270 was distributed and discussed by the Committee
   b. The Committee unanimously approved a motion to support the creation of this course of considerable interest to Engineering students

7. Laboratory Planning Committee Report--Paul Botosani gave the Council a summary of discussions and recommendations stemming from the last Laboratory Planning Committee meeting

8. Alumni Night, March 26, 2013
   a. Shah is working with Career Planning to make this a successful event
   b. Key alumni should be invited
   c. Current students will be encouraged to attend

9. EG Seminar, Wednesday 4:30 – 5:50 PM time slot
   a. This time slot should be reserved for important meetings with students
   b. The Engineering Student Society can meet at this time
   c. Other courses should not be scheduled for this slot

The meeting was adjourned at 5:30
UCC Meeting Minutes EXCERPT
March 5, 2013
3:30 PM Library Conference Room

Attending:
Professors Mousumi Bose Godbole, Doug Peduti, Bruce Bradford, Shah Etemad, Tommy Xie, Johanna Garvey, Jerelyn Johnson, Scott Lacy, Kathy Nantz, Rajasree Rajamma, Shanon Reckinger, Vin Rosivach

Giovanni Ruffini (Chair), Deans: Lynn Babington, Aaron Perkus, Jack Beal

5. d. Mechanical Engineering 5-Year BS/MS

Jack Beal presented. This is the second 5-year degree program we have brought to this committee. Graduates with a 4-year BS degree are less-competitive than those with a MS. We are trying to compress the BS and MS that normally takes 6 years, into 5 years, whereby students will start to take the graduate level courses in their senior year. Hearing from advisory board members that our graduates increasingly need more skills in global engineering programs. Local organizations, intern-supporting companies and employers are also telling us this. This 5-yr program is modeled on existing 5-yr software engineering program – we simply changed SW courses to ME courses. The SW program has been approved by the state and their accrediting agency, and has been successful. Does not expect it to be a huge program. Probably 6 or so.

Etemad: Will explain further. In ME, we have the undergraduate population and hopefully it will be more successful. The need is because 5-yr programs are trending in our field. Our graduates will be more knowledgeable, more talented when they enter the market, which will in turn bring Fairfield University more credibility. Also, during the open house, many students are asking if we have 5-yr programs. This will be a good recruitment tool, to compete with our competitors.

Nantz: Have you done any surveys of existing students? How many of those would be interested in moving forward?

Shah: We have not officially done any. Anecdotally, we do get several questions. We haven’t performed an official survey yet.

Nantz: Will you maintain the free-standing 2-yr program? How will those two populations mix?

Reckinger: They are already mixed, because undergraduates already take graduate courses. They don’t mix well, but they are already doing it.

Nantz: How are you going to work with that mix of undergraduates and professionals coming back to further their education? Will you run separate courses? (answer was no)

Beal: One problem is age difference – always a difficult mix to handle.

Perkus: I speak in favor of the program. One question: agreements with community colleges – how will this work? For example, an associates degree student can come in and be stewarded through the program?

Etemad: Yes.

• Motion to approve this proposal: Perkus/Bradford
Perkus: I strongly support this, it is where market is going.
Babington: I also speak in favor of the motion. It is a great proposal and you did a nice job of addressing your geographic competitors.

Rosivach: I want to focus on curricular issues: there is a significant number of courses taught by lecturers. What percentage of courses taken will be taught by full-time faculty? Can you give a guess on that?
Beal: Certainly the first 2 yrs. of the program will be taught by full-time, engineering faculty, but after that we have to use more and more lecturers. We put professionals in to these more specific courses where they draw upon their expertise in the field.

- Motion carries, 13-0-0.
EPC Minutes
12/14/13
Draft
Excerpts: Proposal for BS in Bioengineering and Proposal for M.S. in Mechanical Engineering

Members Present: Peter Bayers; Angela Biselli; Robbin Crabtree; Paul Fitzgerald; Cinthia Gannett; Cathy Giapponi; Olivia Harriott; Nancy Manister; Qin Zhang

Regrets: Lynn Babington, Diana Mager, Evelyn Bilias Lolis

Agenda Item 2
Proposal for BS in Bioengineering
(Guests Dean Bruce Berdanier and Professor Bill Taylor)

Guest Dean Bruce Berdanier from the SOE explained that as we look at our programs at the University and how we are organized and the fundamental needs of society, there is a thin relationship between engineering and the biosciences. He explained that this is a major field where Fairfield University has the ability to do something right now given the University’s resources.

Professor Taylor remarked that this program is very timely. He pointed out that a clinician at St. Vincent’s hospital just called the SOE to ask for help from students to put together a proposal for funding for a clinical opportunity. He explained that the main feature of the proposal for a BS in Bioengineering is that it satisfies the main requirements of ABET. Engineering students need a minimum of 32 basic science and math credits and 48 credits in engineering topic courses. Creating a curriculum is a balancing act between meeting University core and the other requirements. The SOE realized that with a judicious use of curriculum—even in conjunction with a pre-med program—students could be prepared for the MCAT Exam.

Dean Crabtree pointed out that most students take a “gap-year” to take needed courses and prepare for MCAT.

Professor Giapponi remarked that she thinks this fits well with the new Health Science initiative. She asked what kind of pressure would be put on CAS departments, specifically Physics, Chemistry and Biology.

Professor Taylor answered that there will be natural pressure on relevant departments. As it is, there are 15 credits in engineering, 8 credit hours of physics and 8 credit hours of chemistry.

Professor Giapponi asked how many additional students would be added? The answer was that a total of 10 at the university per year.

Professor Harriott asked if this number was based on enrollment in other schools.
Professor Taylor explained that this is an increasingly popular major country-wide: approximately 30,000 students nationwide. Families that visit Fairfield University are always asking whether or not Fairfield has this type of program.

Professor Biselli remarked that she has been asking for a tenure track line in biophysics—if a tenure line is created, biophysics courses might be added as an elective for the program.

SVPAA Fitzgerald asked if this is the year when the parameters of the MCAT exam changes, which Professor Harriott affirmed.

Professor Giapponi thanked Dean Berdanier and Professor Taylor for attending the meeting.

**Motion: The EPC endorses the proposal for a bioengineering major.**
Gannett/Giapponi

Professor Harriott noted that there is only one biology course required and is unclear about the rationale for this.

SVPAA Fitzgerald remarked that the biology course may provide the skeletal, while the chemistry courses focus on cellular dimensions.

Professor Harriott remarked that she would think the program would need more biology courses. Professor Giapponi agreed.

Professor Manister commented that she thinks the program would need more Anatomy and Physiology courses.

Dean Crabtree commented that she likes the rationale for the program. She commented that our natural science resources are already at capacity, particularly in biology and chemistry. We need to make sure that if these students materialize that we have resources. She too was curious about the lack of required biology courses.

Professor Harriott commented that she would like to know more about courses, particularly the medical courses.

Professor Biselli expressed that only top-tier students could partake in this program given the rigor.

SVPAA Fitzgerald said that given the rigor, students would have to take courses over the summer to complete the program in a timely manner.

Professor Crabtree commented that a challenge for the University is to ensure that these students have a meaningful core experience.

Professor Bayers expressed concern that the program will have the proper faculty resources given the stress on existing departments.
Professor Crabtree commented that we must be sure to have adequate resources, particularly full-time faculty, for this program to move forward.

The Motion Passed: 9-0-0

Agenda Item 3
Proposal for Dual Degree/M.S. in Mechanical Engineering

Guest: Professor Shahrokh Etemad

Professor Etemad explained that competitor engineering schools all have a 5 year degree in Mechanical Engineering. He then explained how the original proposal has been modified to address the previous concerns by EPC.

Concerns identified by EPC in April 2013:

1. The curriculum plan needs clarification and differentiation between electives and required courses.

2. There needs to be differentiation between pure undergraduate students and graduate students who are sitting in the same classroom in a cross-listed course, through assignments, or outputs that distinguish the two.

With respect to the distinction between electives and required courses, Professor Etemad indicated that this is addressed in the revised proposal for the dual-degree program. Courses in the proposal are now clearly identified as Grad Required and Grad Major Elective in Table II of the proposal and they are also clearly identified in section 6.b.IV of the document.

With respect to concerns related to cross-listing courses, Professor Giapponi asked if the 400 level courses are graduate courses and whether or not undergraduates can take these courses.

Professor Etemad explained that courses at the undergraduate and graduate level—even if they share undergraduate and graduate students—had to be differentiated between undergraduate and graduate levels to address NEASC requirements.

Professor Gannett asked if this meant that graduate students in the course would have additional assignments.

Professor Etemad affirmed that this would be the case and reiterated that the difference in a given course between undergrad and graduate expectations must be clear according to NEASC, which includes different numbering and a different course description, even if undergraduate and graduate students share the course. [Note: The additional assignments for cross-listed courses are identified in Appendix A of the proposal.]
Professor Giapponi asked about the timing of admittance to program.

Professor Etemad explained that undergraduate students apply during their junior year, or right at the beginning of their senior year. He also pointed out that 4 year undergraduate program remains the same in terms of its curricular sequence and requirements.

Professor Giapponi thanked Professor Etemad for coming to the meeting.

**Motion:** The EPC approves the Dual Degree Master of Science degree in Mechanical Engineering.
Bayers/Harriott

Motion Passed: 7-0-0

**Motion to adjourn the meeting.**
Bayers/Gannett

Motion Passed 7-0-0.

Draft minutes respectfully submitted,

Peter L. Bayers
INTRODUCTION
We propose that the School of Engineering (SOE) create a new degree in Bioengineering (BE) by using already existing courses for Mechanical, Electrical and Computer Engineering BS degrees as well as courses in Biology and Chemistry. This initiative responds to trends in engineering education in the United States as well as to anecdotal demands of prospective students and their families. Graduates from the proposed Bioengineering program should be well-posed for employment in the extensive medical device industry in Connecticut and also well-prepared for graduate studies in Bioengineering and Biomedical Engineering. Additionally, our proposed Bioengineering program features a pre-medicine option.

Overview and Summary
We have seen increased demand for Bioengineering/Biomedical Engineering (with a pre-medicine option) among prospective students and their families and there is mounting evidence of increased need for biomedical engineering training. The School of Engineering has sufficient resources already in place to begin a BS degree program in Bioengineering to accommodate at least ten additional students in the new major. No additional courses, no additional faculty, no additional administrators and no new engineering laboratory facilities are required.

Need and Opportunity
The Engineering Accreditation Commission of ABET accredits Bioengineering/Biomedical Engineering programs. The lead professional society is the Biomedical Engineering Society with the cooperation of the following professional societies: the American Ceramic Society, the American Institute of Chemical Engineers, the American Society of Agricultural and Biological Engineers, the American Society of Mechanical Engineers and the Institute of Electrical and Electronics Engineers.
Currently, incoming students wishing to earn a BS in Bioengineering/Biomedical Engineering can matriculate in our 3/2 Engineering Program earning a BA degree from Fairfield University and a BS from one of our partner institutions (parentheses show the first year of ABET accreditation):
- Columbia University NY (2005)
However, there are other alternatives for prospective students. Many of our peer institutions in CT, DC, NY, NJ, MA, MD, PA and RI already offer a BS degree in Bioengineering/Biomedical Engineering. These are listed here (parentheses show the first year of ABET accreditation):

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<th>Institution</th>
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<td>Stevens Institute of Technology</td>
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</tr>
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<tr>
<td>Brown University</td>
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<tr>
<td>Bucknell University</td>
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<td>SUNY Binghamton</td>
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<td>(2006)</td>
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<td>The College of New Jersey</td>
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<td>Union College</td>
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<td>(2011)</td>
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<tr>
<td>University of Rochester</td>
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<td>(2002)</td>
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<tr>
<td>Western New England College</td>
<td>MA</td>
<td>(2004)</td>
</tr>
<tr>
<td>Worcester Polytechnic Institute</td>
<td>MA</td>
<td>(2001)</td>
</tr>
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</table>

One could reasonably question whether or not the explosive growth in the number of ABET accredited Bioengineering/Biomedical Engineering programs in our region is matched with a concomitant increase in student enrollment. If we assume that regional enrollments track nationwide enrollments, then the answer is a definite “yes”. Figure 1, following, shows enrollment survey data provided by the American Society for Engineering Education (ASEE) for the years 2003-2012 provided by Fairfield University and other member institutions. Also included in the figure are the total Biomedical/Bioengineering BS degrees produced each year.
Biomedical/Bioengineering Enrollment & BS Degree Trends

Figure 1 ASEE survey data for total Bioengineering/Biomedical Engineering enrollments (red stripes) and total number of BS degrees (solid blue) produced each year from 2003 through 2012.
It should be noted that Bioengineering/Biomedical Engineering degree production was only about 5% of the total engineering degree production in 2012. Figure 2, below, shows the overall distribution of engineering degrees in the United States in the last year that data are available (2012).

**Figure 2**  Distribution of BS degrees awarded in the United States in 2011-2012 as reported in the ASEE publication “Engineering by the Numbers” by Brian L. Yoder, PhD. For more information, visit the ASEE Web site at [www.asee.org/colleges](http://www.asee.org/colleges).
Women in Bioengineering

When considering the popularity of the variety of engineering, it is illuminating to look at the choices made by female engineering students who comprise only 18.9% of the engineering bachelor degree awarded in 2011-2012. Women claimed 39.2% of the Bachelor of Science degrees in Bioengineering/Biomedical Engineering. Evident in Figure 3, their percentages were similarly high for Biological & Agricultural Engineering, Environmental Engineering and Chemical Engineering.

**Percentage of Bachelor’s Degrees Awarded to Women by Discipline: 18.9% of Total**

![Percentage of Bachelor’s Degrees Awarded to Women by Discipline: 18.9% of Total](image)

Currently, women comprise 17.6% of fulltime undergraduate students in the School of Engineering. However, we anticipate that nearly one-half of the students who choose the Bioengineering major will be female, thus moving SOE closer to a 30/70 gender ratio within five years. These new students can benefit from the Women in Science, Technology, Engineering and Mathematics (WiSTEM) living and learning community housed in Gonzaga Hall. WiSTEM provides the benefits of living in an intentional community where tutoring, peer mentoring, faculty access and many other opportunities are available to help students succeed and build the sense of community with their peers. They will also be able to participate in in-hall programs about internships and research opportunities.

Figure 3  
ASEE survey data showing women preferentially claiming degrees oriented toward biology, chemistry, medicine and environmental science.
Employment Opportunities


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00-0000 Total, All Occupations</td>
<td>143,068.1</td>
<td>163,537.1</td>
<td>20,468.9</td>
<td>$33,840</td>
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<td>39-9021 Personal Care Aides</td>
<td>861.0</td>
<td>1,468.0</td>
<td>607.0</td>
<td>19,640</td>
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<tr>
<td>31-1011 Home Health Aides</td>
<td>1,017.7</td>
<td>1,723.9</td>
<td>706.3</td>
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<td>17-2031 Biomedical Engineers</td>
<td>15.7</td>
<td>25.4</td>
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<td>81,540</td>
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<td>47-3011 Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters</td>
<td>29.4</td>
<td>47.0</td>
<td>17.6</td>
<td>27,780</td>
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<td>47-3012 Helpers--Carpenters</td>
<td>46.5</td>
<td>72.4</td>
<td>25.9</td>
<td>25,760</td>
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<td>29-2056 Veterinary Technologists and Technicians</td>
<td>80.2</td>
<td>121.9</td>
<td>41.7</td>
<td>29,710</td>
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<td>47-2171 Reinforcing Iron and Rebar Workers</td>
<td>19.1</td>
<td>28.4</td>
<td>9.3</td>
<td>38,430</td>
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<td>31-2021 Physical Therapist Assistants</td>
<td>67.4</td>
<td>98.2</td>
<td>30.8</td>
<td>49,690</td>
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<tr>
<td>47-3015 Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters</td>
<td>57.9</td>
<td>84.2</td>
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<td>26,740</td>
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<tr>
<td>13-1121 Meeting, Convention, and Event Planners</td>
<td>71.6</td>
<td>102.9</td>
<td>31.3</td>
<td>45,260</td>
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<tr>
<td>29-2032 Diagnostic Medical Sonographers</td>
<td>53.7</td>
<td>77.1</td>
<td>23.4</td>
<td>64,380</td>
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<td>31-2011 Occupational Therapy Assistants</td>
<td>28.5</td>
<td>40.8</td>
<td>12.3</td>
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<td>31-2022 Physical Therapist Aides</td>
<td>47.0</td>
<td>67.3</td>
<td>20.3</td>
<td>23,680</td>
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<tr>
<td>47-2121 Glaziers</td>
<td>41.9</td>
<td>59.6</td>
<td>17.7</td>
<td>36,640</td>
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<tr>
<td>27-3091 Interpreters and Translators</td>
<td>58.4</td>
<td>83.1</td>
<td>24.6</td>
<td>43,300</td>
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<tr>
<td>43-6013 Medical Secretaries</td>
<td>508.7</td>
<td>718.9</td>
<td>210.2</td>
<td>30,530</td>
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<tr>
<td>13-1161 Market Research Analysts and Marketing Specialists</td>
<td>282.7</td>
<td>399.3</td>
<td>116.6</td>
<td>60,570</td>
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<td>21-1013 Marriage and Family Therapists</td>
<td>36.0</td>
<td>50.8</td>
<td>14.8</td>
<td>45,720</td>
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<td>47-2021 Brickmasons and Blockmasons</td>
<td>89.2</td>
<td>125.3</td>
<td>36.1</td>
<td>46,930</td>
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<tr>
<td>29-1123 Physical Therapists</td>
<td>196.6</td>
<td>276.0</td>
<td>77.4</td>
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</tr>
<tr>
<td>29-2021 Dental Hygienists</td>
<td>181.8</td>
<td>250.3</td>
<td>68.5</td>
<td>68,250</td>
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<td>49-3091 Bicycle Repairers</td>
<td>9.9</td>
<td>13.6</td>
<td>3.7</td>
<td>23,660</td>
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<tr>
<td>29-1181 Audiologists</td>
<td>13.0</td>
<td>17.8</td>
<td>4.8</td>
<td>66,660</td>
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<tr>
<td>21-1091 Health Educators</td>
<td>63.4</td>
<td>86.6</td>
<td>23.2</td>
<td>45,830</td>
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<tr>
<td>47-2022 Stonemasons</td>
<td>15.6</td>
<td>21.4</td>
<td>5.7</td>
<td>37,180</td>
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<td>13-1051 Cost Estimators</td>
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<td>252.9</td>
<td>67.5</td>
<td>57,860</td>
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<tr>
<td>19-1042 Medical Scientists, Except Epidemiologists</td>
<td>100.0</td>
<td>136.5</td>
<td>36.4</td>
<td>76,700</td>
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<tr>
<td>21-1014 Mental Health Counselors</td>
<td>120.3</td>
<td>163.9</td>
<td>43.6</td>
<td>38,150</td>
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<td>47-2072 Pile-Driven Operators</td>
<td>4.1</td>
<td>5.6</td>
<td>1.5</td>
<td>47,860</td>
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<tr>
<td>29-1131 Veterinarians</td>
<td>61.4</td>
<td>83.4</td>
<td>22.0</td>
<td>82,040</td>
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</table>

A recent article on CNNMoney, published November 12, 2013 “Best Jobs in America” lists its top 100 careers: Biomedical Engineer heads the list with median pay: $87,000, top pay: $134,000, ten-year job growth: 61.7%, total jobs: 15,700. The following is an accompanying article by Kate Ashford:

**What they do all day?** The MRI, the pacemaker, artificial joints – biomedical engineers have helped make them the wonders they are today. BMEs, as they're called, work to design, create and improve medical devices such as prosthetics, artificial organs, and bioengineered skin.

**How to get the job?** BMEs typically have a bachelor's or master's in biomedical engineering, and may have an MBA, law degree, or M.D. as well. Employers value team players who can communicate complex ideas well; being research-oriented is another plus.

**What's great? What's not?** For those with a technical aptitude, it's an opportunity to make the world a better place. Every day, there's the potential to create something groundbreaking. But nine-to-fivers need not apply -- the hours can be long since exciting research doesn't tend to fit the 40-hour work week.


**Rationale**

With the skyrocketing demand for healthcare workers and professionals, including Bioengineers and Biomedical Engineers, Fairfield University is in a good position to become a key player in Connecticut’s medical device industry. The School of Engineering has been working for many years with this industry and its organized presence in Connecticut, the Biomedical Engineering Alliance & Consortium (BEACON). The SOE faculty has collaborated with BEACON members and our students have completed successful summer internships.

**Objectives**

The Bioengineering program will accomplish two critical educational objectives: (1) some of its graduates will be well-prepared for medical school or graduate school in Connecticut or elsewhere in the Northeast Region; (2) other graduates will be well-prepared for productive careers in the medical device, bioengineering or pharmaceutical industries. These objectives are in accord with the SOE mission.

**Mission**

The Mission of the School of Engineering is to maintain the highest level of institutional integrity and remain committed to the Ignatian ideals of education, namely intellectual rigor, service to others and service to faith, with the promotion of justice for all.

In pursuit of this mission, the School of Engineering will commit its resources to the nurturing of the intellectual capital and skills of students across disciplines. The school will act to assemble and maintain the material resources needed to support a robust working and learning environment. The School's graduates will have mastered theoretical and practical knowledge of engineering skills, and will have acquired additional competencies in communication, critical judgment, social responsibility and a sense of economic, environmental and ethical values. These men and women will be prepared to shape the future. They will practice the engineering disciplines and allied activities in many areas of human endeavor, including industry/manufacturing, business, government service and education, or continue with
postgraduate studies. Finally, the School will maintain a continuous engagement with the community it aims to serve, and strengthen its commitment to the promotion of excellence in engineering education by serving the manpower and professional needs of industry and business. The SOE provides options to Connecticut engineers for lifelong education and renewal of skills. The SOE serves all its constituencies with integrity, clarity of purpose and professionalism. Toward that end the SOE has adopted the following students learning and pedagogy tenets:

- We make a close relationship between the students and the SOE the top priority.
- Faculty is involved with programmatic, curricular, and pedagogical change;
- Faculty grows professionally through publication and conference attendance.
- Faculty keeps close ties to industry
- Faculty is dedicated to active learning

Service Learning with Clinical Experience

In the past, many senior design projects have had a medical orientation: “helmet impact sensor,” “bone densitometer,” “orthopedic glove,” “baby monitor,” “surgical hand tool,” “bone morcellator” and “heart rate monitor.” In January 2014, BEACON plans to submit a proposal to UIL to expand its “link process” to the greater Bridgeport region by providing funding for collaborative senior design projects managed by clinicians at Bridgeport Hospital and involving interdisciplinary teams of Fairfield engineering students. We expect that the clinical setting of these new projects will add a key context to service learning opportunities for our students. This year, the project “bone densitometer” won funding from the CT Space Grant Consortium and won first place in the Business Plan Competition cosponsored by the School of Engineering and the Dolan School of Business.

Impact

It is expected that ten new students will enter Fairfield University as freshmen with a declared major in Bioengineering and half of these will be women students. The new major provides a natural synergy with existing Chemistry, Biology and Nursing programs at Fairfield University. However, no new courses are required and no new laboratory facilities are needed. Indeed, the effect will be to bolster enrollments in existing courses. As these students progress through the Bioengineering program, they will form alliances with fellow engineering students majoring in other disciplines and by the time that they are seniors, it is expected that they will become key players on interdisciplinary design project teams. As an aside, we note that a high percentage of senior design projects in the past have been biomedical in nature.
Bioengineering Program Details

The basic Bioengineering curriculum is shown in Table 2 with the courses divided into three roughly equal categories: Basic Science & Math Courses, Engineering Topics and Other Courses. The table shows the recommendations for a pre-medicine curriculum: Organic Chemistry II and General Biology II (for general electives) and General Sociology and General Psychology (for social science electives).

The Bioengineering curriculum must be accreditable by ABET, so there are mandatory minima for the number of Basic Science & Math credits (32) and Engineering Topics (48). The specific ABET program criteria for Bioengineering are as follows:

- The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program. The program must prepare graduates to have: an understanding of biology and physiology, and the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology; the curriculum must prepare graduates with the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems.

Table 2, below, shows the structure of the proposed Bioengineering curriculum. The ABET minimum for Engineering Topics is met with a total of 48 credit hours and the minimum for Basic Science and Math is exceeded with 39 credit hours. The category “other” includes the university core; Basic Sciences and Math courses satisfy all Area I core requirements. The Bioengineering program total of 132 credit hours is consistent with existing engineering programs at Fairfield University: 132-134 credit hours (UConn and UHa are both 128 credits).

The proposed Plan of Study for Bioengineering is presented in Table 3 based on the availability of existing courses. All courses listed in the Plan of Study are existing regularly-scheduled courses. No new courses are required; however, the Bioengineering curriculum will require students in this new major to take two Chemistry courses (Inorganic Chemistry II plus lab and Organic Chemistry I plus lab) beyond that required for other engineering majors. Thus, there will be increased pressure on instructional laboratory space in the Chemistry Department. There will also be some increased demand for instructional laboratory space in the Biology Department.

Judging by the inquiries of families investigating Fairfield University and the high reputation of Fairfield University for its ability to prepare students for the health professions, we expect that some Bioengineering students may elect the optional pre-medicine track. Under this option, students are advised to take additional Chemistry and Biology courses for their general electives, to take Psychology and Sociology courses for their Social Science Electives and to take an additional course (Biochemistry I plus lab) in preparation for entrance into medical school. The pre-medicine option for Bioengineering, presented in Table 4, requires 138 credit hours. Bioengineering students interested in the pre-medicine option will be encouraged to meet with the Health Professions Advisor, Dr. Geoffrey Church, during their first semester of study.
### Table 2. Bioengineering Curriculum

#### Basic Science & Math Courses

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<td>BI 170</td>
<td>General Biology I</td>
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<tr>
<td>BI 171</td>
<td>General Biology II*</td>
<td>4</td>
</tr>
<tr>
<td>CH 111</td>
<td>General Chemistry I +Lab</td>
<td>4</td>
</tr>
<tr>
<td>CH 112</td>
<td>General Chemistry II +Lab</td>
<td>4</td>
</tr>
<tr>
<td>CH 211</td>
<td>Organic Chem I +Lab</td>
<td>4</td>
</tr>
<tr>
<td>CH 212</td>
<td>Organic Chem II +Lab*</td>
<td>4</td>
</tr>
<tr>
<td>PS 15</td>
<td>General Physics I +Lab</td>
<td>4</td>
</tr>
<tr>
<td>PS 16</td>
<td>General Physics II +Lab</td>
<td>4</td>
</tr>
<tr>
<td>MA 145</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MA 146</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MA 245</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MA 321</td>
<td>Ordinary Diff Equations</td>
<td>3</td>
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<tr>
<td></td>
<td>* General Electives (pre-med)</td>
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#### Engineering Topics

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<td>CD 211</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>CR 245</td>
<td>Digital Design I +Lab</td>
<td>4</td>
</tr>
<tr>
<td>CR 331</td>
<td>Biomedical Signal Proc.</td>
<td>3</td>
</tr>
<tr>
<td>CR 332</td>
<td>Biomedical Imaging</td>
<td>3</td>
</tr>
<tr>
<td>CR 333</td>
<td>Biomedical Visualization</td>
<td>3</td>
</tr>
<tr>
<td>EE 213</td>
<td>Intro. Electric Circuits +Lab</td>
<td>4</td>
</tr>
<tr>
<td>EG 145</td>
<td>Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EG 31</td>
<td>Fundamentals of Engineering</td>
<td>3</td>
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<tr>
<td>EG 390</td>
<td>Senior Project I</td>
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<tr>
<td>EG 391</td>
<td>Senior Project II</td>
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<td>ME 201</td>
<td>Engineering Statics</td>
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<td>ME 206L</td>
<td>Mechanics Lab**</td>
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<td>MF 207</td>
<td>Materials Science**</td>
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<tr>
<td>SW 131</td>
<td>Fundamentals of Programming</td>
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<tr>
<td></td>
<td>**or EE 231 Electronics +Lab</td>
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#### Other Courses

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<td>Engineering Ethics</td>
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<td>AH EL</td>
<td>Art History Elective</td>
<td>3</td>
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<tr>
<td>EN 11</td>
<td>Texts and Contexts I</td>
<td>3</td>
</tr>
<tr>
<td>EN 12</td>
<td>Texts and Contexts II</td>
<td>3</td>
</tr>
<tr>
<td>EN EL</td>
<td>English elective</td>
<td>3</td>
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<tr>
<td>HI 10</td>
<td>Origins of Modern World</td>
<td>3</td>
</tr>
<tr>
<td>HI EL</td>
<td>History Elective</td>
<td>3</td>
</tr>
<tr>
<td>PH 101</td>
<td>Intro to Philosophy</td>
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<tr>
<td>PH EL</td>
<td>Philosophy Elective</td>
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</tr>
<tr>
<td>PY 101</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>RS 101</td>
<td>Intro Religious Studies</td>
<td>3</td>
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<tr>
<td>RS EL</td>
<td>Religious Studies Elective</td>
<td>3</td>
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<tr>
<td>SO 11</td>
<td>General Sociology</td>
<td>3</td>
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|             | 39 credits |
|             | Total credits for BS: 132 |
|             | Total (with pre-med option): 134 credits |
Table 3. Bioengineering Proposed Plan of Study

<table>
<thead>
<tr>
<th>Year; Semester</th>
<th>Course (Department, Number, Title)</th>
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<tr>
<td></td>
<td>Total Credits</td>
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<tr>
<td>First Year</td>
<td>CH 111 General Chemistry I</td>
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<tr>
<td>Fall</td>
<td>CH 111L General Chemistry Lab I</td>
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<tr>
<td>18</td>
<td>EG 31 Fundamentals of Engineering</td>
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<td>RS EL Religious Studies Elective</td>
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<td>EN EL English elective</td>
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<td></td>
<td>PH EL Philosophy Elective</td>
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<tr>
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<td>AE 287 Engineering Ethics</td>
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<td>Spring</td>
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Total: 132

* BI 170 or BI 171
** or EE 231 Electronics +Lab
Table 4. Bioengineering Proposed Plan of Study (pre-medicine option)

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<th>Year; Semester</th>
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<th>Credits</th>
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<tr>
<td>18</td>
<td>EG 31 Fundamentals of Engineering</td>
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<td>MA 145 Calculus I</td>
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<td>SW 131 Fund. Programming</td>
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<td>MF 207 Materials Science†</td>
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<td></td>
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<td>RS 101 Intro Religious Studies</td>
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<td>EG EL Engineering Elective</td>
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</table>

Total: 138

* or EE 231 Electronics +Lab
Educational Goals of the Bioengineering Curriculum
Upon graduation, bioengineers will have (a) an ability to apply knowledge of mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (d) an ability to function on multidisciplinary teams (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (i) a recognition of the need for, and an ability to engage in life-long learning (j) a knowledge of contemporary issues (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Administrative Structure and Governance
The program will be administered by the Associate Dean, Bill Taylor (PhD, Biomedical Engineering, University of California, Davis), with oversight by the Dean of Engineering and the SOE Curriculum Committee. It will be further assisted by a curriculum advisory group of faculty and industrial members of the Biomedical Engineering Alliance & Consortium (BEACON). Dr. Taylor will be responsible for the day-to-day administration of the program, long-term planning, and internal and external relations, and will report to the Dean. The Advisory Board of the School of Engineering will also have a hand in assisting the program to maintain communications and interactions with industry for the placement of interns.

Resources Available and Resources Needed
Faculty members of the School of Engineering are sufficient to cover all areas of the Bioengineering curriculum. However, there may be some enrollment pressure placed on required Chemistry and Biology courses. No additional resources are needed nor anticipated. The following, Table 5, shows SOE faculty expertise in several bioengineering domains.

Table 5. School of Engineering Faculty Expertise in Bioengineering

<table>
<thead>
<tr>
<th>Biomedical/Bioengineering Domain</th>
<th>Beal</th>
<th>Etemad</th>
<th>Lyon</th>
<th>Taylor</th>
<th>Yoo</th>
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<tr>
<td>Biomechanics</td>
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<td>X</td>
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<tr>
<td>Biomedical Instrumentation</td>
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<td>X</td>
<td></td>
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<td>Biosensors</td>
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<td>Biotechnology</td>
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<td>Clinical Engineering</td>
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<td>Medical/Bioinformatics</td>
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<td>Medical Imaging</td>
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<td>Physiological Modeling</td>
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<tr>
<td>Prosthetic Devices &amp; Artificial Organs</td>
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Summary
Fairfield University with its School of Engineering is well situated to provide a new undergraduate major in bioengineering beginning as soon as the fall 2014 semester. The bioengineering curriculum has been designed to meet the requirements of the Engineering
Accreditation Commission of ABET and to offer an option for those students who wish to prepare for medical school. Others will have a clear track to graduate education in bioengineering and/or employment in the healthcare and medical device industry. All courses in the proposed bioengineering curriculum already exist within the four ABET accredited engineering programs: mechanical, electrical, computer and software engineering. Also, the proposed program is expected to greatly improve the gender balance of the engineering student body.
MINUTES
SOE Undergraduate Curriculum Committee
November 4, 2013
1:00-1:50 pm
BNW 167A

Present: Shah Etemad (Mechanical Engineering Chair), Doug Lyon (Computer Engineering Chair—by proxy), Jeff Denenberg (Electrical Engineering Chair) and Bill Taylor (Associate Dean)
Absent: Wook-Sung Yoo (Software Engineering Chair)

10. Dr Taylor called the meeting of the SOE undergraduate curriculum committee to order and presented some background data on undergraduate engineering enrollment trends provided by the American Society for Engineering Education (ASEE). In 2012, the Bioengineering/Biomedical Engineering undergraduate enrollment was 26,620 students of a total of 547,414 for all engineering disciplines (4.9%). The Bioengineering students were 39.8% female (when all disciplines are considered, this drops to 23.1%).

11. The Committee considered the proposed Bioengineering curriculum after Dr Taylor noted that the curriculum is bases solely on existing courses and that the proposed curriculum shares 33 courses with both Mechanical Engineering and Electrical Engineering (including University core courses) and shares 34 courses with Computer Engineering (85% similarity). Taylor also noted that the Bioengineering curriculum as proposed shares 55% of the Biology curriculum and that an optional pre-medical track would also be available to Bioengineering students by the judicious selection of General Electives and Social Science Elective courses.

12. Dr Etemad suggested that besides the option of the Bioengineering student taking either Mechanics or Electronics, the new course in Mechatronics Applications (MC396) would be an acceptable alternative.

13. A motion to approve the proposed Bioengineering curriculum passed unanimously both by all those present and by proxy vote.

The meeting was adjourned at 1:50 pm
Minutes from UCC meeting December 3, 2013

Present:  Aaron Perkus, Rajasree Rajamma, Anita Fernandez, Michael Pagano, Johanna Garvey, Terry-Ann Jones, Shah Etemed, John Miecznikowski, Vincent Rosivach, Chris Staecker, Kathy Nantz, Hope Agresta, Sally Gerard, Glenn Sauer, Lynn Babington, Bruce Berdanier, Ahmed Ebrahimm, Gerry Campbell (recording secretary), Bill Taylor (Invited Guest)
Absent:  Doug Peduti, S.J., Paul Fitzgerald, S.J.

3:30 Nantz (Committee Chair) called the meeting to order.

(1) Approval of Minutes from November 5 meeting:
- Motion to approve (Rosivach moved, Miecznikowki seconded)
- Vote to approve minutes was unanimous

(2) World Diversity Course Approval for NS 330:
- Motion to approve (Rosivach moved, Sauer seconded)
- Rosivach:
  I gather this is a resubmission of a proposal that was reworked and then approved by the World Diversity Committee.
- Gerard:
  True, the proposal was reworked in response to feedback on an earlier version.
- Nantz:
  Criteria for World Diversity include X percent from non-western authors, which can be difficult to achieve. This is something we should keep on our radar for the future.
- Vote to approve was unanimous.

(3) Subcommittee Report on Goals and Objectives for the two Undergraduate Diversity Core Requirements:
- Rosivach:
  The issue being addressed is that there are no goals and objectives for diversity requirements. Unlike the components of the core, which are associated with academic departments, nobody has responsibility for the diversity requirements. UCC took on this responsibility, and our subcommittee formulated the proposed goals and objectives based on verbiage from the Catalog. We propose that UCC accept the statement.
- Nantz:
  I am not sure why the subcommittee wanted the statement to be so brief.
- Perkus:
  We wanted something that a course instructor could place in a syllabus and have assignments fit the general statement. For purposes of assessment and communication with students, the statement would be a big enough umbrella to fit for a variety of courses.
- Staecker:
  I chaired the World Diversity Committee last year, and we prepared a statement of learning outcomes – was this considered?
- Rosivach:
  We had inputs on US Diversity.
- Staecker:
  It doesn’t look like inputs from the World Diversity Committee were considered.
- Perkus:
  Those were not considered.
- Staecker:
  I can send those over to you.
- Nantz:
  Any other questions? Do we want to put this motion forward?
- Rosivach:
  In fairness to the World Diversity Committee, we should wait until we consider what they have provided.
- Nantz:
  Do we want to provide feedback? Should we table it?
- Motion to table (Rosivach moved, Jones seconded). Motion carried.
- Rosivach:
  Something that came up working on this: it is in the Journal of Record that a study abroad experience has the potential to be counted for World Diversity, but we need criteria and an approval process, which UCC should take up.

(4) Bioengineering BS Degree Proposal:
- Taylor:
  We put together the proposed bioengineering curriculum based on existing courses from all areas of engineering plus courses in chemistry and biology to come up with a program that is ABET accreditable. We realized we could have a premed option if students in the program choose their electives in a certain way and probably add a biochemistry course.
  The program does not require additional resources in engineering, but adding Inorganic Chemistry II could put some pressure on the Chemistry Department, and there may be some pressure on Biology with BI 170 or 171. We can just fit the program in with 132 credit-hours. It seems like the time is right for this program, with a lot of activities in the state, including employment opportunities.
- Nantz:
  Questions?
- Fernandez:
  How many students are interested?
- Taylor:
  We anticipate 10 per year, and about half will be female.
- Miecznikowski:
  Have you discussed with Dean Crabtree and Senior VP Fitzgerald the additional resources needed in Chemistry and Biology, considering constraints on the capacity of science labs?
- Taylor:
  We support the proposal that lab space needs to be increased.
- Berdanier:
  This has been discussed in Deans’ Council – we realize this is a need.
- Miecznikowski:
  Have you talked with Geoff Church about organic chemistry? I believe it is two courses for premeds.
- Taylor:
  Yes, we have had discussions with him and we are aware.
- Miecznikowski:
  I shared this program proposal with others in Chemistry. [an email from Aaron Van Dyke was read, which mentioned concerns related to resources and questions on the curriculum, especially pertaining to apparent limitations on upper-level courses specific to bioengineering].
- Taylor:
  I agree with the facilities resources issue. The proposed curriculum does include upper-level bioengineering courses that already exist.
- Berdanier:
  The criticism regarding upper-level courses is one that applies across undergraduate engineering programs – it is valid, but typical for programs across the country.
- Rosivach:
  I would like to remind everyone that CL115 and 116 can be used for the core history requirement.
  How realistic is the premed option? Will it prepare students for MCATs? I would have like to see a letter from the premed advisor supporting this proposal.
- Taylor:
  I can request that.
  The program includes all courses recommended on the premed website. Other courses in social sciences were included based on discussion with Geoffrey Church.
- Sauer:
  I am on the premed committee, and this proposed program does meet the criteria.
- Taylor:
  In the past, engineering students interested in pursuing this have taken advantage of the post-baccalaureate certificate.
- Perkus:
  I applaud the proposal’s consideration of labor statistics and gender equity. I encourage that resource issues related to Chemistry and Biology be included.
- Babington:
  I think this program is a great example of integrative health sciences, and I think this is a strong proposal. With any of these programs, we need to look at impact on courses in the College. At the deans’ level, we are looking at this. For the Chemistry Department, we are well-aware of it.
- Taylor:
  We have a lot of students doing internships in the bioengineering area. This program will add science to it.
- Sauer:
  On the resource issue, I spoke with the Biology chair. If it is 5-7 students per year we can absorb it, if it is 10-20 students, we will need to add resources. Biochemistry could be an issue with 10 students per year -- right now, the lab is full. Resource issues need to be adequately addressed.
- Miecznikowski:
In Chemistry, we have talked about adding lab space. For safety reasons, we need to be concerned about where and how students handle chemicals. We have talked about additional space for labs in Bannow.
- Berdanier:
  The deans discussed this and we are planning for it.
- Nantz:
  I have two questions:
  1) Will this new program cannibalize students from existing programs?
  2) How would you lay this program out in a portfolio of related programs – where does this program fit in and how?
- Berdanier:
  We worked on our strategic plan and looked at major challenges and how we cover topics. We have good coverage in most areas, but not currently in bioengineering. About 20% of our students are undecided – this program will give them another option that has connections with biology and chemistry. Undecided and new students will move towards it, so we do not expect existing programs to be cannibalized.
- Taylor:
  Students will need to decide early if they want to pursue this program because of the timing of its course requirements.
- Babington:
  If you are a student interested in premed or health sciences, but you don’t really know which program you want, you typically leave options open and take the same set of courses early on.
- Nantz:
  Other questions?
- Miecznikowski:
  It should be noted that Inorganic Chemistry has been changed to General Chemistry.
- Nantz:
  Excused Bill Taylor so that the proposal could be further considered by the UCC.
- Etemad:
  In terms of support from outside, they have talked with people at UConn in their bioengineering program, and Geoff Church has been consulted.
- Rosivach:
  I move that UCC endorse this proposal and send it up the line for approvals.
- Gerard:
  Second.
- Miecznikowski:
  Will resource allocations for chemistry labs be included in the proposal?
- Nantz:
  The issue will be included in our minutes. Our charge is to debate the proposal as it stands, but we recognize that resource issues are important.
- Rosivach:
   I sense the concern, but resource issues are for the EPC. The curriculum impact I see is the potential to disadvantage courses for students who would normally take them. I think it is appropriate to express reservations and ask for commitments in writing regarding extra resources, but I don’t think we should hold up the proposal.
- Gerard:
   Engineering appears to be open to inputs. Can they add materials to the proposal as it proceeds up?
- Rosivach:
   Yes, we can recommend additional materials related to resources.
- Berdanier:
   We have amended the proposal before based on inputs from others, and we are open to further suggestions.
- Rosivach:
   I would like to say a nice thing about the proposal – it provides engineers with what they need to talk with physio people.
- Sauer:
   One of my initial concerns was only one biology course, but based on my research of other programs, this is not unusual. Interested students could take additional biology courses. The impact is greater on Chemistry, and it is vital to have those resource issues resolved in a documented way.
- Miecznikowski:
   Was anatomy and physiology ever considered for the program?
- Berdanier:
   I do not remember that in the discussions.
- Nantz:
   I could support the proposal if I could be sure students were getting good advising. In the past, it has been difficult when multiple departments are involved.
- Berdanier:
   Advising will be done in Engineering. Bill Taylor’s expertise is bioengineering. I am comfortable that we will have good advising set up for the students.
- Nantz:
   I was thinking about the entire premed / health sciences spectrum across the schools.
- Etemad:
   At a higher level, perhaps the premed advising group could lay out the options. Some students know from day one which program they want, but others could use the paths laid out, perhaps with a brochure.
- Nantz:
   Called for a vote.
- Proposal was approved unanimously.

Meeting adjourned at 4:25 p.m.

Respectfully submitted, Gerry Campbell
Excerpts: Proposal for BS in Bioengineering and Proposal for M.S. in Mechanical Engineering

Members Present: Peter Bayers; Angela Biselli; Robbin Crabtree; Paul Fitzgerald; Cinthia Gannett; Cathy Giapponi; Olivia Harriott; Nancy Manister; Qin Zhang

Regrets: Lynn Babington, Diana Mager, Evelyn Bilias Lolis

Agenda Item 2
Proposal for BS in Bioengineering
(Guests Dean Bruce Berdanier and Professor Bill Taylor)

Guest Dean Bruce Berdanier from the SOE explained that as we look at our programs at the University and how we are organized and the fundamental needs of society, there is a thin relationship between engineering and the biosciences. He explained that this is a major field where Fairfield University has the ability to do something right now given the University’s resources.

Professor Taylor remarked that this program is very timely. He pointed out that a clinician at St. Vincent’s hospital just called the SOE to ask for help from students to put together a proposal for funding for a clinical opportunity. He explained that the main feature of the proposal for a BS in Bioengineering is that it satisfies the main requirements of ABET. Engineering students need a minimum of 32 basic science and math credits and 48 credits in engineering topic courses. Creating a curriculum is a balancing act between meeting University core and the other requirements. The SOE realized that with a judicious use of curriculum—even in conjunction with a pre-med program—students could be prepared for the MCAT Exam.

Dean Crabtree pointed out that most students take a “gap-year” to take needed courses and prepare for MCAT.

Professor Giapponi remarked that she thinks this fits well with the new Health Science initiative. She asked what kind of pressure would be put on CAS departments, specifically Physics, Chemistry and Biology.

Professor Taylor answered that there will be natural pressure on relevant departments. As it is, there are 15 credits in engineering, 8 credit hours of physics and 8 credit hours of chemistry.

Professor Giapponi asked how many additional students would be added? The answer was that a total of 10 at the university per year.

Professor Harriott asked if this number was based on enrollment in other schools.
Professor Taylor explained that this is an increasingly popular major country-wide: approximately 30,000 students nationwide. Families that visit Fairfield University are always asking whether or not Fairfield has this type of program.

Professor Biselli remarked that she has been asking for a tenure track line in biophysics—if a tenure line is created, biophysics courses might be added as an elective for the program.

SVPPA Fitzgerald asked if this is the year when the parameters of the MCAT exam changes, which Professor Harriott affirmed.

Professor Giapponi thanked Dean Berdanier and Professor Taylor for attending the meeting.

Motion: The EPC endorses the proposal for a bioengineering major. 
Gannett/Giapponi

Professor Harriott noted that there is only one biology course required and is unclear about the rationale for this.

SVPPA Fitzgerald remarked that the biology course may provide the skeletal, while the chemistry courses focus on cellular dimensions.

Professor Harriott remarked that she would think the program would need more biology courses. Professor Giapponi agreed.

Professor Manister commented that she thinks the program would need more Anatomy and Physiology courses.

Dean Crabtree commented that she likes the rationale for the program. She commented that our natural science resources are already at capacity, particularly in biology and chemistry. We need to make sure that if these students materialize that we have resources. She too was curious about the lack of required biology courses.

Professor Harriott commented that she would like to know more about courses, particularly the medical courses.

Professor Biselli expressed that only top-tier students could partake in this program given the rigor.

SVPPA Fitzgerald said that given the rigor, students would have to take courses over the summer to complete the program in a timely manner.

Professor Crabtree commented that a challenge for the University is to ensure that these students have a meaningful core experience.

Professor Bayers expressed concern that the program will have the proper faculty resources given the stress on existing departments.
Professor Crabtree commented that we must be sure to have adequate resources, particularly full-time faculty, for this program to move forward.

**The Motion Passed: 9-0-0**

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**Agenda Item 3**

*Proposal for Dual Degree/M.S. in Mechanical Engineering*

**Guest:** Professor Shahrokh Etemad

Professor Etemad explained that competitor engineering schools all have a 5 year degree in Mechanical Engineering. He then explained how the original proposal has been modified to address the previous concerns by EPC.

Concerns identified by EPC in April 2013:

1. *The curriculum plan needs clarification and differentiation between electives and required courses.*

2. *There needs to be differentiation between pure undergraduate students and graduate students who are sitting in the same classroom in a cross-listed course, through assignments, or outputs that distinguish the two.*

With respect to the distinction between electives and required courses, Professor Etemad indicated that this is addressed in the revised proposal for the dual-degree program. Courses in the proposal are now clearly identified as *Grad Required* and *Grad Major Elective* in Table II of the proposal and they are also clearly identified in section 6.b.IV of the document.

With respect to concerns related to cross-listing courses, Professor Giapponi asked if the 400 level courses are graduate courses and whether or not undergraduates can take these courses.

Professor Etemad explained that courses at the undergraduate and graduate level—even if they share undergraduate and graduate students—had to be differentiated between undergraduate and graduate levels to address NEASC requirements.

Professor Gannett asked if this meant that graduate students in the course would have additional assignments.

Professor Etemad affirmed that this would be the case and reiterated that the difference in a given course between undergrad and graduate expectations must be clear according to NEASC, which includes different numbering and a different course description, even if undergraduate and graduate students share the course. [Note: The additional assignments for cross-listed courses are identified in Appendix A of the proposal.]
Professor Giapponi asked about the timing of admittance to program.

Professor Etemad explained that undergraduate students apply during their junior year, or right at the beginning of their senior year. He also pointed out that 4 year undergraduate program remains the same in terms of its curricular sequence and requirements.

Professor Giapponi thanked Professor Etemad for coming to the meeting.

**Motion:** The EPC approves the Dual Degree Master of Science degree in Mechanical Engineering.
Bayers/Harriott

Motion Passed: 7-0-0

**Motion to adjourn the meeting.**
Bayers/Gannett

Motion Passed 7-0-0.

Draft minutes respectfully submitted,

Peter L. Bayers
January 9, 2014  
Academic Council,  
Fairfield University  

To the members of the Academic Council:  

I write today to provide support for the School of Engineering’s proposed Bachelor of Science Degree program in Bioengineering. Working with Drs. Bill Taylor and Jack Beal over the last two years I have been privy to their (and others’) hard work in the development of the new major proposal for Bioengineering. My inclusion in the process was minimal; however, my key contribution was to advise on the suitability (or indeed, feasibility) of a bioengineering curriculum for students who also wish to pursue a pre-medical course of study. I am pleased to strongly recommend the new program be adopted by the university and to vouch for its compatibility with a pre-health preparatory sequence, not only for pre-medical students, but those interested in most of the allied health careers as well.  

During the proposal’s development the curricular requirements for pre-medical preparation changed nationwide. The School of Engineering kept abreast of these changes and was able to incorporate them into the version that I have most recently reviewed in December 2013. I believe that the four-year organization of the proposed course of study will allow for future changes in the pre-medical curricula as well. While it will be a difficult undertaking to combine the proposed degree requirements with pre-medical requirements, this is nothing new for many university students and alumni who have balanced all manner of majors (even double majors) and minors with the demands of being pre-med or pre-health.  

In addition, I estimate that students earning this degree will be highly competitive for graduate programs in the health sciences, especially medical and dental programs. Furthermore, a foundation from this type of degree will serve students well as they navigate graduate programs and set them up for numerous new career avenues within health care after they have completed their medical training. Should the proposal be accepted, I look forward to working with the new students pursuing this interest and am sure they will prove to be valuable members of the pre-health community on campus.  

Sincerely,  

Geoff Church, PhD  
Health Professions Advisor  
Assistant Professor of Biology  
Fairfield University