APPROVED BY SENATE
04/30/2018

EP.18.52 FINAL
Approved by EPC 04/09/2018

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE:

Establish a Combined Bachelor of Science and Master of Science in Aerospace Engineering degree in the Department of Aerospace Engineering, College of Engineering.

SPONSOR:

Prof. Greg Elliott, Associate Head for Graduate Programs, Department of Aerospace Engineering, 302A Talbot Lab MC-236, 265-9211, elliottg@illinois.edu.

COLLEGE CONTACT:

Harry Dankowicz, Associate Dean for Graduate, Professional & Online Programs, College of Engineering, 402 Engineering Hall MC-266, 244-1231, danko@illinois.edu.

BRIEF DESCRIPTION:

The Department of Aerospace Engineering (AE) requests establishment of a combined Bachelor of Science – Master of Science (B.S. – M.S.) degree in Aerospace Engineering (AE). Students would need to take a total of 121 hours for the B.S. degree and 32 hours for the M.S. Further details of the requirements for the degree are given in the Appendices.

JUSTIFICATION:

The combined B.S. – M.S. degree program will allow Illinois AE students to obtain B.S. and M.S. degrees in 5 years, or just one year (two semesters) more than the traditional B.S. degree. It is generally accepted in industry and in academe that a 4-year B.S. in AE is barely adequate to prepare students for current and future engineering challenges, and that an M.S. degree is highly desirable preparation for employment in today's competitive industrial environment. Core topics currently required in the undergraduate curriculum are necessary but not sufficient in most cases to meet industry's needs. This is evident today when an increasing number of companies coming to campus are explicitly looking for applicants with a graduate degree. Global competition is forcing an increased emphasis on innovation, interdisciplinary approaches to problem solving, communication skills, and teamwork. A fifth year will enable our top undergraduate students to expand their horizons and be well prepared to meet these challenges.

BUDGETARY AND STAFF IMPLICATIONS:

1) Resources
    a. How does the unit intend to financially support this proposal?

       Undergraduate enrollment will not be increased as a result of establishing this program, and no additional funds will be necessary to support the undergraduate component of this combined degree program as they are both current degrees offered on campus.

    b. How will the unit create capacity or surplus to appropriately resource this program? If applicable, what functions or programs will the unit no longer support to create capacity?

       The proposed curriculum for this program groups together existing courses currently available for student enrollment. No new courses are being proposed to support this curriculum. Please see Resource Implications discussion in section 2 for a discussion of the impact on course enrollments and TA support.

    c. Will the unit need to seek campus or other external resources? If so, please provide a summary of the sources and an indication of the approved support.

       No campus or other external resources will be sought.

    d. Please provide a letter of acknowledgment from the college that outlines the financial arrangements for the proposed program.

       The College of Engineering (CoE) returns $110/IU to AE for their undergraduate program for fall and spring term and $200/IU for summer term. For the master¹s degree, the college returns 80% of the tuition above the baseline that is established by the college to AE. Under this joint BS-MS agreement, this same funding model will continue for both programs.

2) Resource Implications
    a. Please address the impact on faculty resources including the changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc.

       Based on M.S. admission enrollments, we expect the number of B.S. students who will pursue the B.S. - M.S. to result in a program with 30 to 45 students total. The plan in place to accommodate current students in the B.S. and M.S. are sufficient to accommodate this projection.

    b. Please address the impact on course enrollment in other units and provide an explanation of discussions with representatives of those units.

No impact on course enrollment in other units is expected.

c. Please address the impact on the University Library.

No impact on the University Library is expected.

d. Please address the impact on technology and space (e.g. computer use, laboratory use, equipment, etc.)

No impact on technology and space is expected.

For new degree programs only:

1) Briefly describe how this program will support the University's mission, focus, and/or current priorities. Include specific objectives and measurable outcomes that demonstrate the program's consistency with and centrality to that mission.

The M.S. program is an established program. The AE B.S. – M.S. program will offer students the opportunity to obtain a master's degree in addition to the bachelor's degree in an accelerated time frame compared to pursuing the degrees individually. Highly qualified students applying to our B.S. degree often ask if we offer a combined B.S. - M.S. By providing this degree we expect to attract and retain the most highly qualified students in AE who make this request.

2) Please provide an analysis of the market demand for this degree program. What market indicators are driving this proposal? What type of employment outlook should these graduates expect? What resources will be provided to assist students with job placement?

In the aerospace industry, getting an M.S. degree greatly enhances the career outlook of our students. Aerospace engineers often play the role of systems engineers for complex aerospace systems, and the extra coursework associated with a graduate degree in the key areas of aerospace engineering such as fluid mechanics and aerodynamics, aerospace materials and structures, dynamical systems and controls greatly improves their education and their employability. The substantial difference in starting salaries between recent graduates with a B.S. in aerospace engineering $60,870 versus those starting with an M.S. degree $75,539 indicates the importance placed by the industry on this graduate degree. Students will have the resources of the CoE Engineering Career Services office to assist with job placement.

3) If this is a proposed graduate program, please discuss the programs intended use of waivers. If the program is dependent on waivers, how will the unit compensate for lost tuition revenue?

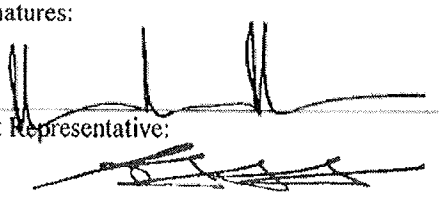
   Students in the M.S. program are eligible for Board of Trustees waivers, which will hold true in this combined degree.

DESIRED EFFECTIVE DATE: Fall 2018

STATEMENT FOR PROGRAMS OF STUDY CATALOG: See Appendix A.

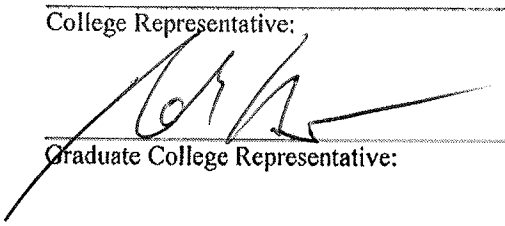
CLEARANCES: *(Clearances should include signatures and dates of approval) - - These signatures must appear on a separate sheet. If multiple departments or colleges, add lines.)*

Signatures:



Unit Representative: Date: Oct. 2, 2017

College Representative: Date: 12-21-17



Graduate College Representative: Date: 3/1/18

Provost Representative: Date:

Educational Policy Committee Representative: Date:

APPENDIX A
STATEMENT FOR PROGRAMS OF STUDY CATALOG

The material included in this appendix would be added to the current combined B.S.-M.S. description section in the College of Engineering Program Information section of the Programs of Study Web Site: http://catalog.illinois.edu/degree-programs/ and would be replicated at the AE Web site. It is not available through the directory of the University POS Web Site.

Combined Degree of Bachelor of Science and Master of Science in Aerospace Engineering.

The joint B.S. – M.S. program in AE combines two degrees: a B.S. in AE with a M.S. in AE. Current Illinois AE students enrolled in the CoE with junior standing (normally at least 90 credit hours, including those in process, and at least one year of undergraduate coursework remaining) who maintain superior academic performance are eligible to apply for this program. The program is designed to broaden a student's knowledge beyond that possible in the standard 4-year curriculum. Students admitted to the program will receive both degrees once all requirements for both the B.S. – M.S. degree have been successfully completed.

Course Requirements

B.S. Component (121 hours)*

- Same required courses as the traditional B.S. degree with minimum hours required reduced from 128 to 121 hours
- The reduction of 7 credit hours includes:
    - 4 hours in Free Electives in both AE curricula
    - 3 hours in other non-AE Technical Electives
- Overall GPA of 3.40 must be maintained through completion of B.S. component of the program.
- Students can apply after they complete their junior level courses, but before they start their senior year.
- Illinois undergraduate student minimum residence requirement must be satisfied.

M.S. Non-Thesis Track (32 additional hours of coursework)

- Identical M.S. non-thesis degree requirements:

Requirements	
	Hours
Course Work	32
AE 590 – registration (0 hours) every term while in residence	0
500-level courses (subject to Other Requirements and Conditions below)	12
1 course (3-4 hours) of Math from approved list	3-4
Elective courses (subject to Other Requirements and Conditions below)	16-17
Total Credit for the Degree	32
Other Requirements and Conditions (may overlap):*	
A minimum of 8 credit hours of AE course work at 500-level must be applied toward the degree. Up to 4 hours of AE 597 (or other individual study) may be applied toward this degree requirement.	
Course work must include at least 16 credit hours of AE course work	
No course used to fulfill any degree requirement may be taken using the "Credit/No Credit" option.	
This degree option is non-thesis only.	
Maintain a minimum program GPA of 3.0.	

M.S. Thesis Track (32 additional hours of coursework)

- Identical M.S. thesis degree requirements:

Requirements	
	Hours
Course Work	24
AE 590 – registration (0 hours) every term while in residence	0
500-level courses (subject to Other Requirements and Conditions below)	12
1 course (3-4 hours) of Math from approved list	3-4
Elective courses (subject to Other Requirements and Conditions below)	16-17
Thesis Research (min-max applied toward the degree)	8
Total Credit for the Degree	32
Other Requirements and Conditions (may overlap):*	
Up to 4 hours of AE 599 may be applied toward this degree requirement.	
Course work must include at least 16 credit hours of AE course work. Up to 8 hours of AE 599 may be applied toward this degree requirement.	

No course used to fulfill any degree requirement may be taken using the "Credit/No Credit" option.
8 hours of AE 599 for thesis credit
Maintain a minimum program GPA of 3.0.

Admission to the Program

For deadlines and procedures, consult the department web site. Current Illinois AE students can apply after they complete their Junior level courses, but before they start their senior year. Students with an overall GPA of at least 3.40 may apply for admission to the program. Admission decisions are based on overall academic performance, letters of reference, and statement of purpose. The GRE general test is not required.

Students provisionally admitted to the program:

- are assigned a graduate academic advisor when admitted.
- must maintain an overall GPA of 3.40 through completion of the B.S. component of the program in order to remain in the program
- must maintain a technical GPA of 3.4 through completion of the B.S. component of the program.
- may register for graduate courses and earn graduate hour credits, with approval from their graduate academic advisor, when they have less than 12 credit hours remaining in their B.S. component.
- must earn at least 121 hours of undergraduate credit and satisfy all B.S. requirements of this program to be officially admitted to the Graduate College.

Upon successful completion of the B.S. component students

- must apply and be officially admitted into the Graduate College.
- will be issued letters of admission from the Graduate College and the AE Department, at which time they will be considered graduate students and assessed graduate tuition the following semester.
- Students must satisfy the graduate student minimum residence requirement, which is 24 graduate credit hours.
- must continue to maintain a graduate GPA of 3.00 or better in order to remain in the combined program.

Withdrawal

Students may withdraw from the program at any time by notifying the AE Undergraduate Programs Office. Students who do not complete all 5-year B.S. – M.S. degree program requirements may request by petition to have graduate hours earned converted to undergraduate hours and applied toward a traditional B.S. in AE degree. Students reverting to a traditional B.S. degree program must complete 128 hours and satisfy all degree requirements. Graduate credit not used to fulfill the B.S. degree requirements will

remain on the transcript and may, at some future point, be considered for transfer to another degree program.

*The 121-hour B.S. degree from the B.S. – M.S. Program is not ABET accredited, but would be if the student withdrew from the M.S. component and completed the requirements of the traditional 128-hour B.S. program.

Appendix B

COMPARISON OF EXISTING TRADITIONAL B.S. AE PROGRAM AND B.S. COMPONENT OF PROPOSED COMBINED B.S. – M.S. PROGRAM.

Note: M.S. component of Combined B.S. – M.S. program is identical to stand-alone coursework only M.S. program.

	B.S. in AE Existing	B.S. in AE Combined
Social science, humanities, rhetoric	22	22
Mathematics	16	16
Chemistry and physics	14	14
AE core	58	58
Technical electives	12	9
Free electives	6	2
TOTAL	128	121

Office of the Provost and Vice Chancellor for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820

March 8, 2018

Gay Miller, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Miller:

Enclosed is a copy of a request from the College of Engineering to establish the combined Bachelor of Science/Master of Science in Aerospace Engineering.

Sincerely,

Kathryn A. Martensen
Assistant Provost

Enclosures

c: A. McKinney
J. Hart
A. Edwards
E. Stuby
H. Dankowicz
G. Elliott
R. McElroy

UNIVERSITY OF ILLINOIS
AT URBANA–CHAMPAIGN

Graduate College

110 Coble Hall
801 South Wright Street
Champaign, IL 61820-6210

February 28, 2018

Kathy Martensen
Office of the Provost

Dear Kathy,

Included is a proposal from the College of Engineering to "**Establish a Combined Bachelor of Science and Master of Science in Aerospace Engineering degree in the Department of Aerospace Engineering, College of Engineering**".

The proposal was received on December 21, 2018 and reviewed at the Graduate College Executive Committee meeting on February 16, 2018. The committee approved the proposal, with one point of clarification requested regarding the ABET accreditation for the BS component of this program.

That clarification has now been received and we have found that this proposal meets the standards of Graduate Education at Illinois. We now forward for your review.

Sincerely,

John C. Hart
Executive Associate Dean
Graduate College

c: H. Dankowicz
G. Elliott

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

College of Engineering

Executive Committee
306 Engineering Hall, MC-266
1308 West Green Street
Urbana, IL 61801

December 21, 2017

Associate Dean John Hart
Graduate College
204 Coble Hall
MC-322

Via: Andreas Cangellaris, Engineering College

Dear Dean Hart:

The College of Engineering Executive Committee has reviewed and approved the following new program. We now submit for campus approval.

"Establish a Combined Bachelor of Science and Master of Science in Aerospace Engineering degree in the Department of Aerospace Engineering, College of Engineering"

Attached is a copy of the request.

Sincerely yours,

David Lange, Vice Chair
Executive Committee

Approval Recommended:

12-21-2017

Andreas Cangellaris, Dean
College of Engineering

Date

Harry Dankowicz
Rhonda McElroy
David Lange

telephone 217-333-2151 • *fax* 217-244-7705

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Senate Educational Policy Committee
Proposal Check Sheet

PROPOSAL TITLE (Same as on proposal): Establish a Combined Bachelor of Science and Master of Science in Aerospace Engineering degree in the Department of Aerospace Engineering, College of Engineering

PROPOSAL TYPE (select all that apply below):

A. ☒ Proposal for a NEW or REVISED degree program. Please consult the Programs of Study Catalog for official titles of existing degree programs.

1. Degree program level:

   ☒ Graduate ☐ Professional ☒ Undergraduate

2. ☒ Proposal for a new **degree** (e.g. B.S., M.A. or Ph.D.):

   Degree name, "*e.g., Bachelor of Arts or Master of Science*": BS-MS in Aerospace Engineeirng

3. ☐ Proposal for a new or revised **major, concentration, or minor**:

   ☐ New or ☐ Revised **Major** in (name of existing or proposed major): _____

   ☐ New or ☐ Revised **Concentration** in (name of existing or proposed concentration): _____

   ☐ New or ☐ Revised **Minor** in (name of existing or proposed minor): _____

4. ☐ Proposal to rename an existing major, concentration, or minor:

   ☐ Major ☐ Concentration ☐ Minor

   Current name: _____

   Proposed new name: _____

5. ☐ Proposal to terminate an existing degree, major, concentration, or minor:

   ☐ Degree ☐ Major ☐ Concentration ☐ Minor

   Name of existing degree, major, or concentration: _____

6. ☐ Proposal involving a multi-institutional degree:

   ☐ New ☐ Revision ☐ Termination

Name of existing Illinois (UIUC) degree: _____

Name of non-Illinois partnering institution: _____

Location of non-Illinois partnering institution:

☐ State of Illinois ☐ US State: _____ ☐ Foreign country: _____

B. ☐ Proposal to create a new academic unit (college, school, department, program or other academic unit):

Name of proposed new unit: _____

C. ☐ Proposal to rename an existing academic unit (college, school, department, or other academic unit):

Current name of unit: _____

Proposed new name of unit: _____

D. ☐ Proposal to reorganize existing units (colleges, schools, departments, or program):

1. ☐ Proposal to change the status of an existing and approved unit (e.g. change from a program to department)

   Name of current unit including status: _____

2. ☐ Proposal to transfer an existing unit:

   Current unit's name and home: _____

   Proposed new home for the unit: _____

3. ☐ Proposal to merge two or more existing units (e.g., merge department A with department B):

   Name and college of unit one to be merged: _____

   Name and college of unit two to be merged: _____

   Proposed name and college of new (merged) unit: _____

4. ☐ Proposal to terminate an existing unit:

   Current unit's name and status: _____

E. ☐ **Other educational policy proposals** (e.g., academic calendar, grading policies, etc.)

Nature of the proposal: _____

Revised 10/2012

McKinney, Allison Ann

From: McElroy, Rhonda Kay
Sent: Monday, February 26, 2018 3:10 PM
To: McKinney, Allison Ann
Cc: Dankowicz, Harry
Subject: Re: Proposal to Establish a Combined BS/MS in Aerospace Engineering

Good Afternoon, Allison -

AE will have a webpage that outlines the admission requirements and application process for the joint BS-MS degree. On this page, it will state that the 121-hour B.S. degree from the B.S. – M.S. Program is not ABET accredited. It will state the MS degree is an accredited degree by the Higher Learning Commission. Lastly, AE will include a sentence that state if a student withdraws from the M.S. component and completes the required 128-hour B.S. program, this will be ABET accredited. In addition to having this clearly stated on the webpage, it will also be communicated to students in their admission offer letter to this joint program.

At this time, we have had no concerns from the joint BS-MS students of not having their bachelor's be ABET accredited. Since the master's degree is accredited by HLC, we have not received any concerns from employers.

If you need any additional information, please let us know. Thank you and have a wonderful afternoon!

Rhonda

Rhonda McElroy
Executive Director of Graduate Programs
rmcelroy@illinois.edu
(217) 244-2745
College of Engineering @ ILLINOIS
Engineering Hall 400A
1308 West Main
Urbana, IL 61801

ILLINOIS

From: "McKinney, Allison Ann" <agrindly@illinois.edu>
Date: Monday, February 26, 2018 at 10:06 AM
To: "Dankowicz, Harry" <danko@illinois.edu>
Cc: Rhonda McElroy <rmcelroy@illinois.edu>
Subject: Proposal to Establish a Combined BS/MS in Aerospace Engineering

Dear Professor Dankowicz,

The Graduate College Executive Committee approved the proposal to establish a Combined BS/MS in Aerospace Engineering with one point of clarification. Could you please provide some information about how students are advised regarding the accreditation piece (in relation to the BS) when they are advised about the BS/MS program? Are there any issues that students would experience by choosing the BS/MS track and forgoing the accredited BS degree?

Thank you,

Allison McKinney
Director
Academic Affairs
Graduate College

ILLINOIS

COLLEGE OF ENGINEERING

Graduate, Professional & Online Programs
401 Engineering Hall, MC-266
1308 West Green Street
Urbana, IL 61801

Date: March 29, 2018

To: Greg Elliott, Associate Head of Aerospace Graduate Programs

From: Rhonda McElroy, Executive Director of Graduate Programs, College of Engineering

RE: Funding Agreement for AE MS Program

The College of Engineering has the following funding agreement with the Department of Aerospace Engineering for their master's degree program.

- College of Engineering retains 20% and returns 80% of the growth in tuition to Aerospace beyond the agreed baseline of $220,000.

This same funding model will be followed in the joint BS-MS degree within the Department of Aerospace Engineering.

cc: Tessa Hile, Director of Budget and Resource Planning, College of Engineering