



VCU

**VIRGINIA COMMONWEALTH UNIVERSITY
BOARD OF VISITORS EXECUTIVE COMMITTEE**

11:00 a.m.

OCTOBER 8, 2018

**910 WEST FRANKLIN STREET
RICHMOND, VIRGINIA**

DRAFT

AGENDA

- 1. CALL TO ORDER & OPENING COMMENTS** Ms. Phoebe Hall, *Rector*
Dr. Michael Rao, *President*

- 2. APPROVAL OF AGENDA** Ms. Phoebe Hall, *Rector*

- 3. ACTION ITEMS:**
 - a. Approve modification to Ph.D. in Biomedical Engineering Dr. Gail Hackett, *Provost and Sr. Vice President for Academic Affairs*

 - b. Approve new Military-Affiliated Students Policy Dr. Gail Hackett, *Provost and Sr. Vice President for Academic Affairs*

 - c. Approve resolution approving VCU's Six-Year Plan Dr. Gail Hackett, *Provost and Sr. Vice President for Academic Affairs*

 - d. Approve resolution regarding Series 2018 VCU Revenue Bonds Dr. Meredith Weiss, *Vice President for Administration*

 - e. Approve project plan for Scott House Renovation Dr. Meredith Weiss, *Vice President for Administration*

 - f. Approve project plan for West Hospital Transplant Surgery Renovations Dr. Meredith Weiss, *Vice President for Administration*

- 4. CLOSED SESSION** Ms. Phoebe Hall, *Rector*

Freedom of Information Act Sections 2.2-3711 (A) (1), (7), (8), and (11) specifically:
 - a. Faculty Appointments, Changes in Status and Other Personnel Actions Dr. Michael Rao, *President*

b. Special Awards - Honorary Degree and Edward
A. Wayne Medal Recipients

Dr. Michael Rao, *President*

c. Funds Eligible for Naming

Mr. Jay Davenport, *Vice President for
Development and Alumni Relations*

**5. RETURN TO OPEN SESSION AND
CERTIFICATION**

Ms. Phoebe Hall, *Rector*

Action Item:

Approval of items discussed in closed session

6. OTHER BUSINESS

Ms. Phoebe Hall, *Rector*

7. ADJOURNMENT

Ms. Phoebe Hall, *Rector*

Ph.D. in Biomedical Engineering

**Virginia Commonwealth University
Proposed Program Brief**

**Proposal to Modify
Biomedical Engineering, PhD**

Overview

VCU requests approval for a substantial modification of the existing Ph.D. in Biomedical Engineering (BME-PH.D.) program. The modification has two major components: 1) reduce the number of credits in the core from 16 to 12 credit hours; and 2) create an entry point for students with an M.S. degree.

The BME-PH.D. program at VCU was established in 1992, making it one of the earliest Biomedical Engineering Ph.D. programs in the country. The field has grown exponentially in the last 25 years and the need for engineers who focus on clinical and biomedical problems has expanded greatly. VCU's BME-PH.D. program has not been substantially revised since its inception. As such, the core of the curriculum needs to be brought into alignment with the current paradigm for research in the field of biomedical engineering and to meet the demands of students already holding a M.S. who seek admission into this degree program.

Method of Delivery

The program will be taught in the traditional classroom format.

Target Implementation Date

Fall 2019.

Demand and Workforce Development

Market demand for biomedical engineers drives student demand for admission. In 2012, "Biomedical Engineer" was listed as #1 in *CNN Money's* ranking of "Best Jobs in America."¹ BLS statistics show that biotechnology jobs in general and biomedical engineering in particular, are experiencing high growth rates. At the same time, the number of students enrolled in graduate degrees in biomedical engineering has almost doubled in the last ten years.

External Competition

Four BME PhD programs are currently offered at public institutions in Virginia: VCU, Virginia Tech, UVA, and George Mason. The VCU PhD program has been in existence for 26 years; it is ranked #63 nationally among BME Graduate Programs (#38 amongst public institutions).

Target Population

The target population are students with an undergraduate or graduate degree in biomedical engineering or in other engineering fields who are looking to move into biomedical research. Typical candidates are top students who are future leaders either in the biotech industry or in academic or government research. Accepted students are typically well above VCU averages for incoming GPA and GRE.

Impact on Existing Programs/Policies

As this program is already well established, there will be no impact on other programs at VCU or any VCU policies.

¹ "Best Jobs in America." CNN Money U.S. <http://money.cnn.com/pf/best-jobs/2012/snapshots/> Accessed on 1/30/2018.

Impact on Faculty

The Biomedical Engineering Department has made many faculty hires over the last few years, and these hires have made the proposed changes feasible. No new faculty hires are needed to implement and sustain the program.

Funding

The program will incur no additional expenses. It will be based on existing courses taught by the existing faculty and utilize an administrative structure already in place. The Biomedical Engineering Department and the School of Engineering fully support the changes to this program.

Benefit to the University

The BME graduate program is currently the highest ranked program in the School of Engineering. These changes will bring our curriculum into alignment with industry standards, which will improve our ability to recruit top students and thus continue the recent rise in quality of the BME graduate program.

Next Steps

<u>Approving Body</u>	<u>Date</u>	<u>Action</u>
• University Graduate Committee's Programs and Courses	3/27	Approved
• University Graduate Committee	4/10	Approved
• University Council Academic Affairs and University Policy	4/26	Approved
• University Council	5/3	Approved
• President's Cabinet	6/25	Approved
• Board of Visitors	9/14	

Full Proposal

- See attached.

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Background

Virginia Commonwealth University (VCU) requests approval for a substantial modification of the existing Ph.D. in Biomedical Engineering (BME-PH.D.) program. The proposed modified program will reside in the School of Engineering, Department of Biomedical Engineering. The target start date is Fall 2019.

VCU seeks two modifications to the Ph.D. in Biomedical Engineering:

- 1) reduce the number of credits in the core from 16 credit hours to 12 credit hours; and
- 2) create an entry point for students with a M.S. degree.

The BME-PH.D. program at VCU was established in 1992, making it one of the earliest Biomedical Engineering Ph.D. programs in the country. The field has grown exponentially in the last 25 years and the need for engineers who focus on clinical and biomedical problems has expanded greatly. VCU's BME-PH.D. program has not been substantially revised since its inception. As such, the curriculum needs to be brought into alignment with the current paradigm for research in the field of biomedical engineering and to meet the demands of students already holding a M.S. who seek admission into this degree program.

The purpose of the modified degree program is to prepare researchers and scientists to work in the interface between medicine and engineering in areas such as tissue engineering, rehabilitation science, pharmaceuticals, orthopedics, assistive technology, and computational biology.

These proposed modifications arose from BME-PH.D. faculty discussions that began in the summer of 2016 and continued through the 2016-17 academic year. A work group was convened to assess the curriculum and student needs in terms of learning and preparation for entering industry and/or academe.

Modified Degree Program

The current BME-PH.D. program has a core of 16 credit hours. VCU is proposing to modify the core to 12 credit hours. Moreover, the current degree program offers only a B.S. entry. VCU is proposing to add an entry point for students who have completed an M.S. Following are two tables that juxtapose the current and proposed curriculum. The first table pairs the current curriculum with the proposed curriculum with a B.S. entry. The second table pairs the current curriculum with the proposed M.S. entry curriculum.

New courses are indicated with an asterisk.

Current BME-PH.D. (B.S. Entry)	Proposed BME-PH.D. (B.S. Entry)
<u>Core Courses</u> EGRB 507 Biomedical Instrumentation (3)	<u>Core Courses</u> EGRB 601 Numerical Methods and Modeling in Biomedical Engineering (4) *

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EGBR 603 Biomedical Signal Processing (3) EGBR 604 Fundamentals of Biomechanics (3) EGBR 613 Biomaterials (3) EGBR 690 Biomedical Engineering Seminar (1x4) Total: 16 credits	EGRB 602 Biomedical Engineering Systems Physiology (4) * EGBR 690 Biomedical Engineering Seminar (1x4) Total: 12 credits
<u>Required Courses</u> BIOS or STAT at 500 level or above (3) PHIS 501 Mammalian Physiology (5) Total: 8 credits	<u>Required Courses</u> BIOS or STAT at 500 level or above (3) OVPR 603 Responsible Conduct of Research (1) GRAD 614 Grant Writing (1) Total: 5 credits
	<u>Restricted Electives</u> Choose 3 courses from the following: EGRB 507 Biomedical Instrumentation (3) EGRB 521 Human Factors Engineering (3) * EGBR 603 Biomedical Signal Processing (3) EGBR 604 Fundamentals of Biomechanics (3) EGBR 613 Biomaterials (3) EGRB 616 Cell Engineering (3) Total: 9 credits
<u>Open Electives</u> With the approval of the dissertation advisor, students select 15 credits of graduate coursework. Total: 15 credits	<u>Open Electives</u> With the approval of the dissertation advisor, students select 12 credits of graduate coursework. Total: 12 credits
<u>Dissertation Hours</u> EGRB 697 Directed Research (1-15) Total: 33 credits	<u>Dissertation Hours</u> EGRB 697 Directed Research (1-15) Total: 34 credits
<u>Credits to Degree</u> Total: 72 credits	<u>Credits to Degree</u> Total: 72 credits

Table 1. Biomedical Engineering Ph.D.: Current and Proposed Modified Curriculum (B.S. Entry)

The following table presents the current BME-Ph.D. program alongside the modified BME-Ph.D. program with a M.S. entry. New courses are indicated with an asterisk.

Current BME-PH.D. (B.S. Entry)	Proposed BME-PH.D. (M.S. Entry)
<u>Core Courses</u> EGRB 507 Biomedical Instrumentation (3) EGBR 603 Biomedical Signal Processing (3) EGBR 604 Fundamentals of Biomechanics	<u>Core Courses</u> EGRB 601 Numerical Methods and Modeling in Biomedical Engineering (4) * EGRB 602 Biomedical Engineering Systems Physiology (4) *

(3) EGBR 613 Biomaterials (3) EGBR 690 Biomedical Engineering Seminar (1x4) Total: 16 credits	EGBR 690 Biomedical Engineering Seminar (1x4) Total: 12 credits
<u>Required Courses</u> BIOS or STAT at 500 level or above (3) PHIS 501 Mammalian Physiology (5) Total: 8 credits	<u>Required Courses</u> BIOS or STAT at 500 level or above (3) OVPR 603 Responsible Conduct of Research (1) GRAD 614 Grant Writing (1) Total: 5 credits
	<u>Restricted Electives</u> Choose 2 courses from the following: EGRB 507 Biomedical Instrumentation (3) EGRB 521 Human Factors Engineering (3) * EGBR 603 Biomedical Signal Processing (3) EGBR 604 Fundamentals of Biomechanics (3) EGBR 613 Biomaterials (3) EGRB 616 Cell Engineering (3) Total: 6 credits
<u>Open Electives</u> With the approval of the dissertation advisor, student selects 15 credits of graduate coursework. Total: 15 credits	<u>Open Electives</u> With the approval of the dissertation advisor, student selects 3 credits of graduate coursework. Total: 3 credits
<u>Dissertation Hours</u> EGRB 697 Directed Research (1-15) Total: 33 credits	<u>Dissertation Hours</u> EGRB 697 Directed Research (1-15) Total: 34 credits
<u>Credits to Degree</u> Total: 72 credits	<u>Credits to Degree</u> Total: 60 credits

Table 2: Biomedical Engineering Ph.D.: Current and Proposed Modified Curriculum (M.S. Entry)

Appendix A provides further information regarding the changes to the core, required courses, and the addition of the restricted electives.

Curriculum

The curriculum for the BME-PH.D. program with a B.S. entry comprises 72 credit hours. The curriculum for the BME-PH.D. with a M.S. entry comprises 60 credits hours.

Twelve credits of core curriculum are required for all students, regardless of entry path. The intent of the core courses is to prepare students with a biomedical engineer’s perspective on the organ systems of the human body, specifically how engineering concepts can be applied to human organ systems to enhance and improve human health and well-being. Additionally, the

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core furnishes students with how to use and apply computational methods for modeling biomedical engineering solutions.

Required courses provide students with advanced statistical methods and knowledge necessary for successful grant proposal writing and the ethical conduct of research.

Restricted electives are sub-specialty topics in biomedical engineering.

All students complete 34 credit hours of directed research, culminating in a dissertation.

New courses are indicated with an asterisk. Course credit hour value is indicated parenthetically. All students attend full-time.

BME-PH.D. - B.S Entry

Core Requirements: 12 credits

EGRB 601 Numerical Methods and Modeling in Biomedical Engineering (4)*

EGRB 602 Biomedical Engineering Systems Physiology (4)*

EGBR 690 Biomedical Engineering Seminar (1x4)

Required Courses: 5 credits

BIOS or STAT at 500 level or above (3)

OVRP 603 Responsible Conduct of Research (1)

GRAD 614 Grant Writing (1)

Restricted Electives: 9 credits

Students will select 3 courses from the following list:

EGRB 507 Biomedical Instrumentation (3)

EGRB 521 Human Factors Engineering (3) *

EGBR 603 Biomedical Signal Processing (3)

EGBR 604 Fundamentals of Biomechanics (3)

EGBR 613 Biomaterials (3)

EGRB 616 Cell Engineering (3)

Electives: 12 credits

With the approval of the dissertation advisor, student selects 12 credits of graduate coursework.

Dissertation: 34 credits

EGRB 697 Directed Research (1-15)

BME-PH.D. - M.S Entry

Core Requirements: 12 credits

EGRB 601 Numerical Methods and Modeling in Biomedical Engineering (4) *

EGRB 602 Biomedical Engineering Systems Physiology (4) *

EGBR 690 Biomedical Engineering Seminar (1x4)

Required Courses: 5 credits

BIOS or STAT at 500 level or above (3)
OVPR 603 Responsible Conduct of Research (1)
GRAD 614 Grant Writing (1)

Restricted Electives: 6 credits

Students will select 2 courses from the following list:

EGRB 507 Biomedical Instrumentation (3)
EGRB 521 Human Factors Engineering (3) *
EGBR 603 Biomedical Signal Processing (3)
EGBR 604 Fundamentals of Biomechanics (3)
EGBR 613 Biomaterials (3)
EGRB 616 Cell Engineering (3)

Elective: 3 credits

With the approval of the dissertation advisor, student selects 3 credits of graduate coursework.

Dissertation: 34 credits

EGRB 697 Directed Research (1-15)

Appendix B provides sample plans of study for the B.S. entry and the M.S. entry. All students attend full-time.

Appendix C provides VCU Bulletin descriptions of the core courses, required courses, and restricted electives.

Student Assessment

The purpose of the Biomedical Engineering Ph.D. curriculum is to prepare biomedical engineering students to be scientists and researchers who contribute in biomedicine and bioengineering. The curriculum is designed to provide students with technical fundamentals for problem posing, problem solving, and research design; content in engineering and the life sciences; and the ability to communicate effectively.

Learning Outcomes

- Apply Advanced Knowledge: Graduates will apply advanced knowledge of mathematics, biomedical sciences, and engineering to complex biomedical problems.
- Communicate Effectively: Graduates will demonstrate the ability to communicate effectively to engineers, scientists, and the layperson.
- Solve problems.: Graduates will demonstrate the ability to identify, formulate, and solve biomedical engineering problems.
- Design and Conduct Research: Graduates will demonstrate the ability to identify pertinent research problems, to formulate and execute a research plan, and to generate and analyze research results.

Assessments

Formative assessments such as exams, projects, presentations, and lab work are administered in courses. Summative assessments are administered at key points in a student's progress through the program: a written and oral comprehensive examination (upon completion of the first year) that tests core knowledge and the ability to apply it to problems; a doctoral research proposal that examines a student's readiness to conduct dissertation research; and the doctoral dissertation defense which assesses the student's ability to pose and solve problems, conduct research, and to communicate effectively. At VCU, evaluating the compliance and quality of a degree program's student assessment plan is part of academic program review.

Employment Skills/Workplace Competencies

Graduates of the Biomedical Engineering Ph.D. program will be prepared to do the following in the workplace:

- Design systems and products, such as artificial organs, artificial devices that replace body parts, and machines for diagnosing medical problems.
- Bring together knowledge from many technical sources to develop new procedures or research clinical problems.
- Evaluate the safety, efficiency, and effectiveness of biomedical products and equipment.
- Collaborate with life scientists, chemists, and medical scientists to research the engineering aspects of biological systems of humans and animals.
- Work in multi-disciplinary teams in manufacturing, universities, hospitals, and research facilities of companies, universities, and medical institutions. The biomedical engineer, given the cross-disciplinary preparation in engineering and life sciences, is prepared to provide a coordinating function in multidisciplinary contexts.
- Develop mathematical and statistical models for testing biomedical products and processes.

Rationale for Proposed Modified Degree Program

Modifying the Core: The goal of the Biomedical Engineering Ph.D. program is to train students to work in fields at the interface of medicine and engineering, including both industry and academic positions in fields such as tissue engineering, rehabilitation science, pharmaceuticals, orthopedics, assistive technology, and computational biology. The Biomedical Engineering Ph.D. program was created in 1992, at a time when Biomedical Engineering was only beginning to emerge as an engineering discipline. Biomedical Engineering has grown exponentially as a field over the past two decades, and the need for engineers who focus on clinical and biomedical problems has expanded greatly.

As the field of Biomedical Engineering has expanded in size, it has also expanded dramatically in scope. Twenty years ago, Biomedical Engineering was limited primarily to mechanical and electrical engineering problems that had a clinical or medical component. Today, Biomedical Engineering encompasses truly interdisciplinary work. For example, the area of mechanobiology studies how cells communicate by applying forces on neighboring cells: this subfield has become a major area of research in the medical sciences and it requires a deep

understanding of physics and mechanics and deep knowledge of cell biology and molecular biology. Similarly, brain-machine interface research investigates how to design smart machines to directly interact with neurons in the brain. This subfield requires an in-depth understanding of electronics and instrumentation as well as neuroscience. As such, there is a sustained need for engineers with this unique skill set in the workplace. The US Bureau of Labor Statistics (BLS) estimates that in 2016 there were 22,300 jobs for biomedical engineers with a projected 7% growth in jobs between 2016 and 2026.¹

An Entry Point for MS Students: When the BME-PH.D. program was initiated 25 years ago, few applicants had a M.S. degree in Biomedical Engineering because there were few biomedical engineering programs in existence. Most applicants had a B.S. degree in a different engineering discipline, and thus needed to undertake a full slate of biomedical engineering courses. Today, applicants to the current BME-PH.D. program frequently have achieved a M.S. in Biomedical Engineering. Adding the M.S. entry point will enable students with an M.S. to see readily program requirements and time to degree.

Student Projected Enrollment

Market demand for biomedical engineers drives student demand for admission. In 2012, “Biomedical Engineer” was listed as #1 in *CNN Money’s* ranking of “Best Jobs. in America.”² As the BLS statistics show, biotechnology jobs in general, and biomedical engineering in particular, are experiencing high growth rates. At the same time, the number of students enrolled in graduate degrees in biomedical engineering has almost doubled in the last ten years.

At VCU, the student demand for the current Biomedical Engineering Ph.D. program is illustrated by the table below.

Fall 13 Enrollment	Fall 14 Enrollment	Fall 15 Enrollment	Fall 16 Enrollment	Fall 17 Enrollment
36	27	27	28	33

Table 3: Biomedical Engineering, Ph.D. Enrollment. VCU, Office of Planning and Decision Support, Enterprise Analytics and Advanced Research

¹ “Biomedical Engineers.” Occupational Outlook Handbook, Bureau of Labor Statistics. <https://www.bls.gov/ooh/architecture-and-engineering/biomedical-engineers.htm> (Accessed 1/30/18).

² “Best Jobs in America.” CNN Money U.S. <http://money.cnn.com/pf/best-jobs/2012/snapshots/> Accessed on 1/30/2018.

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SUMMARY OF PROJECTED ENROLLMENTS IN PROPOSED PROGRAM

Projected enrollment:

Year 1		Year 2		Year 3		Year 4 Target Year (2-year institutions)			Year 5 Target Year (4-year institutions)		
2019 - 2020		2020 - 2021		2021 - 2022		2022 - 2023			2023 - 2024		
HDCT <u>36</u>	FTES <u>36</u>	HDCT <u>39</u>	FTES <u>39</u>	HDCT <u>42</u>	FTES <u>42</u>	HDCT <u>42</u>	FTES <u>42</u>	GRAD _____	HDCT <u>45</u>	FTES <u>45</u>	GRAD <u>9</u>

Assumptions:

Retention percentage: 100%

Full-time students 100%

Full-time students credit hours per semester: 15

Part-time students credit hours per semester: N/A

Full-time students graduate in 5 years

Program accepts 9 new students per year, in accordance with Strategic Plan growth

Duplication

Virginia Commonwealth University is one of four public institutions in Virginia that offer an Ph.D. in Biomedical Engineering. Other programs are:

School	Program Name	Format
George Mason University	Bioengineering	Traditional
University of Virginia	Biomedical Engineering	Traditional
Virginia Tech	Biomedical Engineering	Traditional

Projected Resource Needs of Proposed Modified Program

Resource Needs

Virginia Commonwealth University has all of the faculty, classified support staff, equipment, library and other resources necessary to offer the modified Ph.D. in Biomedical Engineering. The following categories detail the resources required to operate the program through the target year. Assessments of the need for full-time faculty, part-time faculty, and adjunct faculty are based on the following ratio of student enrollment to faculty effort: 6 student FTE of enrollment requires one FTE faculty for instruction.

Full-time Faculty - No faculty in the Department of Biomedical Engineering will devote more than 50% of teaching effort to the proposed program. All faculty teach across degree programs at graduate levels.

Part-time Faculty – Twenty-one faculty members in the Department of Biomedical Engineering will devote less than 50% of their teaching effort to the proposed program. The Department of Biomedical Engineering has 18 tenured or tenure-track faculty who will each commit 25% of their teaching effort to the core and restricted electives. The faculty roster also includes three term faculty who contribute 50% of their teaching effort to the proposed program. The current use of part-time faculty teaching effort adds up to a 5.50 FTE. Furthermore, the department envisions hiring 6 new tenure-track faculty over the next five years, consistent with recent hiring trends. These 6 faculty will each contribute 0.25 FTE to the program; this will bring the projected total for the 5-year target to 7.0.

Adjunct Faculty – No adjunct faculty will be needed for this program.

Graduate Assistants – Graduate students receive assistantships from the School of Engineering for the first two years of their study with a salary of \$26,000. Eighteen students receive these assistantship salaries annually. After the second year, graduate students are salaried by sponsored research projects.

Classified Positions – Classified support is provided by an administrative assistant. The total effort of the classified employee will be 0.50 FTE. This is an ongoing position.

Equipment (including computers) - All faculty members and graduate assistants have offices and appropriate technology (e.g., computers, software) to conduct their work. The equipment resources are sufficient to initiate and sustain this degree program modification. No additional funds are necessary to initiate and sustain the proposed modified program.

Library - No new library resources will be required to initiate and sustain the proposed modified program. The library has sufficient and appropriate journals, books, on-line journals to support the proposed modified degree program. The library resources are sufficient to initiate and sustain this degree program. No additional funds are necessary to initiate and sustain the proposed modified program.

Telecommunications - Offices and graduate student desks are equipped with conference-call capable telephones. In addition, most computer workstations have video cameras and SKYPE software programs. to provide additional avenues for connecting with others in research and/or teaching. The telecommunication resources are sufficient to initiate and sustain this degree program. No additional funds are necessary to initiate and sustain the proposed modified program.

Space - Faculty members have office space available for their work, and to meet individually with doctoral mentees. There is dedicated space in the School of Engineering's 4 locations (Engineering East, Engineering West, Biotech One, and Biotech Eight) for graduate assistants. The space resources are sufficient to initiate and sustain this degree program. No additional funds are necessary to initiate and sustain the proposed modified program.

Targeted Financial Aid - VCU will not offer any targeted financial aid to initiate and sustain the proposed modified degree program. All Ph.D. students in the program will be supported 100%, including stipend and tuition, as is required by the School of Engineering. Funds are provided by either the Graduate School or by research mentors' extramural funding.

Other Resources (specify) – No additional resources are needed for this program.

Part A: Answer the following questions about general budget information.

Has the institution submitted or will it submit an addendum budget request to cover one-time costs? Yes _____ No X

Has the institution submitted or will it submit an addendum budget request to cover operating costs? Yes _____ No X

Will there be any operating budget requests for this program that would exceed normal operating budget guidelines (for example, unusual faculty mix, faculty salaries, or resources)? Yes _____ No X

Will each type of space for the proposed program be within projected guidelines? Yes X No _____

Will a capital outlay request in support of this program be forthcoming? Yes _____ No X

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Part B: Fill in the number of FTE and other positions needed for the program				
	Program Initiation Year		Expected by Target Enrollment Year	
	2119- 2020		2023- 2024	
	On-going and reallocated	Added (New)	Added (New)***	Total FTE positions
Full-time faculty FTE*	0.00	0.00	0.00	0.00
Part-time faculty FTE**	5.50	0.00	1.50	7.00
Adjunct faculty	0.00	0.00	0.00	0.00
Graduate assistants (HDCT)	18.00	0.00	0.00	18.00
Classified positions	0.50	0.00	0.00	0.50
TOTAL	24.00	0.00	1.50	25.50
*Faculty dedicated to the program. **Faculty effort can be in the department or split with another unit.				
*** Added after initiation year				

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Part C: Estimated resources to initiate and operate the program				
	Program Initiation Year		Expected by Target Enrollment Year	
	2019 - 2020		2023 - 2024	
Full-time faculty	0.00	0.00	0.00	0.00
salaries	\$0	\$0	\$0	\$0
fringe benefits	\$0	\$0	\$0	\$0
Part-time faculty (faculty FTE split with unit(s))	5.50	0.00	1.50	7.00
salaries	\$487,500	\$0	\$132,900	\$620,400
fringe benefits	\$183,325	\$0	\$49,763	\$233,088
Adjunct faculty	0.00	0.00	0.00	0.00
salaries	\$0	\$0	\$0	\$0
fringe benefits	\$0	\$0	\$0	\$0
Graduate assistants	18.00	0.00	0.00	18.00
salaries	\$468,000	\$0	\$0	\$468,000
fringe benefits	\$0	\$0	\$0	\$0
Classified Positions	0.50	0.00	0.00	0.50
salaries	\$20,000	\$0	\$0	\$20,000
fringe benefits	\$7,480	\$0	\$0	\$7,480
Personnel cost				
salaries	\$975,500	\$0	\$132,900	\$1,108,400
fringe benefits	\$190,805	\$0	\$49,763	\$240,568
Total personnel cost	\$1,166,305	\$0	\$182,663	\$1,348,968
Equipment	\$0	\$0	\$0	\$0
Library	\$0	\$0	\$0	\$0
Telecommunication costs	\$0	\$0	\$0	\$0
Other costs	\$0	\$0	\$0	\$0
TOTAL	\$1,166,305	\$0	\$182,663	\$1,348,968

Part D: Certification Statement(s)

The institution will require additional state funding to initiate and sustain this program.

Yes _____
Signature of Chief Academic Officer

No x _____
Signature of Chief Academic Officer

If “no,” please complete items. 1, 2, and 3 below.

1. Estimated \$\$ and funding source to initiate and operate the program.

Funding Source	Program initiation year 2019 - 2020	Target enrollment year 2023 - 2024
Reallocation within the department (<i>Note below the impact this will have within the department.</i>)	\$507,500 +\$190,805 fringe for 5.5 FTE faculty and .5 FTE administrative assistant to initiate the modified program.	The target enrollment year will not call for reallocation of funds within the department.
Reallocation within the school or college (<i>Note below the impact this will have within the school or college.</i>)	The program initiation year will not call for any reallocation of funds within the school.	The target enrollment year will not call for reallocation of funds within the department.
Reallocation within the institution (<i>Note below the impact this will have within the institution.</i>)	The program initiation year will not call for any reallocation of funds within the institution.	The target enrollment year will not call for reallocation of funds within the institution.
Other funding sources (<i>Specify and note if these are currently available or anticipated.</i>)	No additional funding sources are needed for the initiation year.	Lines for additional FTE have been granted by the Provost’s office to the School of Engineering.

2. Statement of Impact/Funding Source(s). A separate detailed explanation of funding is required for each source used and a statement of impact on existing resources.

Reallocation within the department

The department of Biomedical Engineering will reallocate all existing resources from the current Ph.D. in Biomedical Engineering program into the modified program. Faculty effort will

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be used to support the proposed modified degree program. The reallocation of resources will not negatively impact existing academic programs.

Reallocation within the School

The program will not call for any reallocation within the school.

Reallocation within the Institution

The program will not call for any reallocation within the school.

Other funding sources

No additional funding sources

3. Secondary Certification.

If resources are reallocated from another unit to support this proposal, the institution will not subsequently request additional state funding to restore those resources for their original purpose.

Agree X _____
Signature of Chief Academic Officer

Disagree _____
Signature of Chief Academic Officer

Appendices

Appendix A - Modified Curriculum

Modifications to the Core: Because the field of biomedical engineering has expanded exponentially over the last decade, a “core” no longer is represented by courses focusing on topic areas such as instrumentation, signal processing, biomechanics, or biomaterials. Although these topic areas remain relevant, the core knowledge that is general is computational modeling and numerical methods for solving advanced math problems across the expanded range of biomedical engineering topics (EGBR 601 Numerical Methods and Modeling in Biomedical Engineering). Additionally, core knowledge for biomedical engineers is a foundational understanding of the human body’s organ systems and how engineering principles and mathematical models can be applied for improving and/or repairing these systems (EGBR 602 Biomedical Engineering Systems Physiology).

Modifications to Required Courses: Content for human physiology will be addressed within the department curriculum (EGBR 602) making redundant course work from the Physiology Department (PHIS 501). Future scientists and researchers need to be prepared in seeking grant funding (GRAD 614) and ethical conduct in research (OVPR 603).

Addition of Restricted Electives: The previous core course topics (instrumentation, signal processing, biomechanics, biomaterials) no longer represent the range of research topics in biomedical engineering. Because these topic areas are relevant but no longer general knowledge, they have, along with two additional topic areas, been assigned to a list of restricted electives.

Modification to Qualifying Examination: The proposed modifications to the curriculum require a concurrent change to the Ph.D. Qualifying Examination. Currently, students take a written exam based on the four core BME courses. With the proposed changes, the qualifying exam will contain material from the new BME core courses (EGRB 601 and EGRB 602). The modified examination will have a written and oral component. The oral component will be given to a three-member panel and focus on material from the restricted electives courses the student has chosen.

Appendix B - Sample Plans of Study

B.S.-to-Ph.D.

Term	Courses	Total Credit Hours
YR 1 Fall	EGRB 601 Numerical Methods in Biomedical Engineering (4) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (3) BIOS or STAT 500 level or above (3) <u>Pick One:</u> EGRB 616 Cell Engineering (3) EGRB 603 Biomedical Signal Processing (3)	14 credits
YR1 Spring	EGRB 602 Physiological Foundations of Biomedical Engineering (4) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (3) <u>Pick Two:</u> EGRB 604 Biomechanics (3) EGRB 613 Biomaterials (3) EGRB 507 Instrumentation (3) EGRB 521 Human Factors Engineering (3)	14 credits
YR1 Summer	EGRB 697 Directed Research (3)	3 credits
YR 2 Fall	Open Elective 1 (3) Open Elective 2 (3) OVPR 603 Responsible Conduct of Research (1) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (6)	14 credits
YR 2 Spring	Open Elective 3 (3) Open Elective 4 (3) GRAD 614 Grant Writing (1) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (6)	14 credits
YR2 Summer	EGRB 697 Directed Research (3)	3 credits
YR3+	EGRB 697 Directed Research (10)	10 credits
	Total	72 credits

M.S.-to-Ph.D. Plan of Study

Term	Courses	Total Credit Hours
YR 1 Fall	EGRB 601 Numerical Methods in Biomedical Engineering (4) BIOS or STAT – 500 level or above (3) EGRB 697 Directed Research (3) EGRB 690 Biomedical Engineering Seminar (1) <u>Pick One:</u> EGRB 616 Cell Engineering (3) EGRB 603 Biomedical Signal Processing (3)	14 credits
YR1 Spring	EGRB 602 Physiological Foundations of Biomedical Engineering (4) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (6) <u>Pick One:</u> EGRB 604 Biomechanics (3) EGRB 613 Biomaterials (3) EGRB 507 Instrumentation (3) EGRB 521 Human Factors Engineering (3)	14 credits
YR1 Summer	EGRB 697 Directed Research (3)	3 credits
YR 2 Fall	Open Elective (3) OVPR 603 Responsible Conduct of Research (1) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (10)	15 credits
YR 2 Spring	GRAD 614 Grant Writing (1) EGRB 690 Biomedical Engineering Seminar (1) EGRB 697 Directed Research (12)	14 credits
Total		60 credits

Appendix C - Course Descriptions

Core Courses

EGRB 601. Numerical Methods and Modeling in Biomedical Engineering. 4 Hours. Semester course; 4 lecture hours. 4 credits. The goal of this course is to develop an enhanced proficiency in the use of computational methods and modeling, to solve realistic numerical problems. in advanced biomedical engineering courses and research, as well careers. The course will discuss and students will develop advanced technical skills in the context of numerical data analysis and modeling applications in biology and medicine. An important component of this course is developing problem-solving skills and an understanding of the strengths and weaknesses of different numerical approaches applied in biomedical engineering applications.

EGRB 602. Biomedical Engineering Systems Physiology. 4 Hours. Semester course; 4 lecture hours. 4 credits. Biomedical engineering requires a foundational understanding of organ Systems in the body as well as an advanced understanding of how to apply engineering principles and mathematical models to those systems. In this course, students will learn the basic physiology of major organ Systems while also identifying and implementing mathematical modeling approaches to simulate and better understand these organ systems. Students will also learn how to apply engineering concepts, such as fluid dynamics, thermodynamics, structural mechanics and mass transport to better understand organ system physiology.

EGRB 690. Biomedical Engineering Research Seminar. 1 Hour. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

Restricted Elective Courses

EGRB 507. Biomedical Electronics and Instrumentation. 3 Hours. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Fundamental principles and applications of electronics and instrumentation as related to biomedical sciences.

EGRB 521. Human Factors Engineering. 3 lecture hours. 3 credits. Course explores the principles and practices of ergonomics and human factors with respect to effective design and decision-making. Course addresses the physical and cognitive aspects of user-centered design including factors related to the sensory systems, human memory, movement control and control systems, physical and mental workload, decision-making, mathematical modeling, environmental factors, simulation, usability testing, task analysis, eye tracking, display systems, and controls.

EGRB 603. Biomedical Signal Processing. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisites: Calculus and differential equations (MATH 301 or equivalent), including Laplace

and Fourier Transforms.. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems., the Discrete/Fast Fourier Transforms. (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.

EGRB 604. Biomechanics. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisites: Calculus and ordinary differential equations (MATH 200-201, MATH 301 or equivalent). Presents basic mechanical properties of materials, describes methods of material testing and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances.

EGRB 613. Biomaterials. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate material science or permission of the instructor. Primary and secondary factors determining the performance of materials used for implants in the human body. Topics will include metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials and medical polymers.

EGRB 616. Cell Engineering. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 501. This course will cover the cell and its engineering principles with an emphasis on current research techniques. Topics covered include the organization and structure of the cell, cell signaling, and application of cell biology to biomedical research. Advanced methods are taught enabling students to interpret and present findings from primary literature.

Required Courses

OVRP 603. Responsible Conduct of Research. 1 Hour. Short course; 1 lecture hour. 1 credit. Restricted to graduate or professional students, with preference given to Preparing Future Faculty students. Registration requires permission of PFF Program office. This course is designed to provide a learning experience that will enable students to develop and refine skills needed to solve problems involving relevant topic areas of responsible scientific conduct and to clearly articulate ethically and legally acceptable solutions to problems posed about scientific conduct. Content of the course includes relevant guidelines, policies and laws bearing on the conduct of scientific research including those dealing with scientific authorship, use of humans and animals in research, conflict of interest, data ownership, scientific record keeping, collaborative research, and ownership, protection and use of intellectual property in the arena of scientific research. Conventions and normative behavior related to responsibilities in the scientific mentor-trainee relationship will also be covered. Graded as pass/fail.

GRAD 614. Introduction to Grant Writing. 1 Hour. Semester course; 1 lecture hour. 1 credit. Enrollment requires graduate standing. This course introduces the graduate student to the grant writing process. Topics include basic components of a grant application, writing the proposal, identifying funding sources, understanding proposal guidelines and the grant proposal review process. Graded S/U/F.

Sample of courses in Biostatistics (BIOS) and Statistics (STAT)

BIOS 516. Biostatistical Consulting. 1 Hour. Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The non-statistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

BIOS 524. Biostatistical Computing. 3 Hours. Semester course; 3 lecture hours. 3 credits. Techniques for biostatistical computing are presented by way of contemporary statistical packages. Students learn how to create and manage computer data files. Methods for data entry, preparation of data for analysis and summaritive procedures are covered. Students learn the basics of random number generation and its applications, numerical methods for statistical algorithms, and concepts of numerical accuracy and stability. Advanced topics include interactive matrix and macro languages. Emphasis is placed on computational methods and data management rather than on statistical methods and procedures.

BIOS 571. Clinical Trials. 3 Hours. Semester course; 3 lecture hours. 3 credits. Concepts of data management and statistical design and analysis in single-center and multicenter clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

BIOS 572. Analysis of Biomedical Data I. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisites: one course in statistics and permission of instructor. This course provides an overview of the analysis of continuous response data. The material begins with a brief review of theoretical tools used in inference and segues into common univariate and bivariate statistical methodologies for the analysis of continuous response data. Model-based statistical methodologies including linear regression, ANOVA, ANCOVA and mixed effect models will also be covered. Practical consideration and usage of statistical methods, utilizing commonly used statistical software packages, will be emphasized over theoretical underpinnings of the methods.

STAT 543. Statistical Methods I. 3 Hours. Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students with graduate standing, or those with one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit.

STAT 613. Stochastic Processes. 3 Hours. Continuous courses; 3 lecture hours. 3-3 credits.

Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of instructor. Introduction to the theory and applications of stochastic processes. Random walks, Markov processes, queuing theory, renewal theory, birth-death and diffusion processes. Time series, spectral analysis, filter, autocorrelation.

STAT 623. Discrete Multivariate Analysis. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of the instructor. Methods for the analysis of categorical data, including logistic regression and the general log-linear model. Emphasis on social and biomedical applications of these techniques using SPSS and SAS software.

STAT 625. Applied Multivariate Analysis. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of instructor. Multivariate statistics is a study of dependent random variables. This course covers methods for analyzing continuous multivariate data, such as numerical and graphical summary of multivariate observations, principal component analysis, factor analysis, classification and discrimination, canonical correlation analysis, and cluster analysis. Students will learn the motivation behind these methods, how to implement them in statistical software packages and how to interpret the results.

STAT 636. Machine Learning Algorithms. 3 Hours. Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students with graduate status in mathematical sciences, systems modeling and analysis, decision sciences and business analytics, or computer science, or by permission of the instructor. Includes an in-depth analysis of machine learning algorithms for data mining, equipping students with skills necessary for the design of new algorithms. Analyses will include framing algorithms as optimization problems and a probabilistic analysis of algorithms. Students will be exposed to current areas of research in the construction of data mining algorithms. Cross-listed as: OPER 636.

STAT 642. Design and Analysis of Experiments I. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of instructor. An introduction to the design and analysis of experiments. Topics include the design and analysis of completely randomized designs, one variable block designs, the family of Latin square designs and split-plot designs. Introductions are also given to multiple comparison procedures and contrasts, analysis of covariance and factorial experiments. Applications involve the use of a statistical software package.

STAT 648. Systems Reliability Analysis. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of the instructor. An introduction to engineering reliability and risk analysis, specifically failure data analysis, maintenance problems, system reliability and probabilistic risk assessment. Applications in computer science and engineering will include stochastic characterization of wear in hardware systems and the development of failure models for software systems. Decision problems such as the optimal maintenance of repairable systems and optimal testing policies for hardware and software systems will be examined. The analysis of

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risk through fault trees, event trees and accident precursor analysis also will be discussed. Cross-listed as: OPER 648.

STAT 649. Statistical Quality Control. 3 Hours. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status in mathematical sciences or systems modeling and analysis, or permission of the instructor. Demonstrates how statistics and data analysis can be applied effectively to process control and management. Topics include the definition of quality, its measurement through statistical techniques, variable and attribute control charts, CUSUM charts, multivariate control charts, process capability analysis, design of experiments, and classical and Bayesian acceptance sampling. Statistical software will be used to apply the techniques to real-life case studies from manufacturing and service industries. Cross-listed as: OPER 649.

STAT 650. Design and Analysis of Response Surface Experiments. 3 Hours. Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students with graduate status in mathematical sciences or systems modeling and analysis, or permission of the instructor. Philosophy, terminology and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analysis, description of the response surface, rotatability, uniform information designs, central composite designs and design optimality. Cross-listed as: BIOS 650.

Military-Affiliated Students Policy



EXECUTIVE SUMMARY OF PROPOSED POLICY: Military-Affiliated Students

New Policy or Substantive Revision

This policy consolidates the three existing policies relating to military-affiliated students and adds a component to comply with federally required legislation on the Veterans Choice Act

Policy Type: Board of Visitors

Responsible Office: [Division of Student Affairs and Military Student Services]

Draft Date: 03/15/2018

Initial Policy Approved:

Awarding of Credit for Military Activation-03/23/2016

Early Course Registration for Military-Related Students-05/05/2012

Course Credit Active Duty Military Students-11/12/2009
Choice Act- New Policy

Revision History: ["None – New Policy" or list Revision Date(s) and Policy Title(s)]

Governance Process Tracking:

If **new BOV policy**, enter date and name of President (or designee) approving development of policy: This is a new policy document that consolidates three existing policies and adds a section on the Choice Act which was passed and modified by Congress in December of 2016 into Public Law 114-315

If **new Administrative policy**, enter date and name of President's Cabinet member approving development of policy: MM/DD/YYYY - Name

Integrity & Compliance Office Review: 03/12/2018

University Counsel Review: 03/28/2018

Public Comment Posting: 04/03/2018 through 04/16/2018

University Council Academic Affairs and University Policy Committee Review: 04/01/2018

University Council Review: 04/02/2018

President's Cabinet Approval: 05/29/2018

Board of Visitors Approval (if applicable): MM/DD/YYYY

<p>1. Why is this policy being created <input checked="" type="checkbox"/> <u>or</u> revised <input type="checkbox"/>?</p>	<p>This is a new policy document that combines three existing policies related to military-affiliated students and adds the Choice Act, as required by federal mandate. This policy has been developed in order to clarify and consolidate all military-affiliated policies and improve veteran support.</p>
<p>2. <u>New policy</u> <input checked="" type="checkbox"/>: What are the general points or requirements covered in this policy? <u>or</u> <u>Revised policy</u> <input type="checkbox"/>: What are the substantive differences between this draft and the current policy?</p>	<p>The Choice Act is federal legislation that addresses veterans and their dependents in the application of certain GI Bill educational benefits and their eligibility for in-state tuition at public institutions.</p> <p>Awarding of Credit for Military Education is an existing policy that addresses veteran students' eligibility to receive credit towards their degrees based upon completion of equivalent coursework or educational experiences while serving in the armed forces.</p> <p>Early Course Registration for Military-Related Students is an existing policy created to provide early course registration accommodations for veterans, active duty, reservists, National Guard, and the US Coast Guard.</p> <p>Course Credit Active Duty Military Students is an existing policy that is being renamed to The Military Activation Policy as well as implementing minor changes to improve veteran friendliness and support for students being called to active duty during an academic semester.</p>
<p>3. Which stakeholder offices or personnel have provided input into this policy draft?</p>	<p>All areas of the division of Strategic Enrollment Management, and University Academic Advisors.</p>
<p>4. Which other universities' policies or resources (e.g., laws, regulations, etc.) did you consider when preparing this draft?</p>	<p>George Mason, Eastern Virginia Medical, James Madison, Mary Washington, Hampton University, Norfolk State, Northern Virginia CC, Old Dominion, Radford, Tidewater Community College, Armstrong State, Colorado State, Georgetown, Georgia State, Rutgers</p>
<p>5. What is your general assessment of this policy's impact on the university community?</p>	<p>Impact is designed to consolidate university military related policies providing easier accessibility for faculty, staff and students. This policy addresses issues such as residency, military activation, early registration, credit review approval for military affiliated students and acknowledgment of military service commitments, thus enhancing the university's ability to recruit and support military-affiliated students.</p>



[DRAFT] Military-Affiliated Students

Policy Type: Board of Visitors

Responsible Office: Office of Military Student Services, Division of Student Affairs, Office of the Provost

Initial Policy Approved: MM/DD/YYYY

Current Revision Approved: MM/DD/YYYY

Policy Statement and Purpose

Virginia Commonwealth University recognizes the unique needs of military students and students who are dependents of those in the armed forces. The purpose of this policy is to describe programs and exemptions available to such military-affiliated students at VCU in compliance with applicable law and state policy governing such students.

Noncompliance with this policy may result in disciplinary action up to and including termination. VCU supports an environment free from retaliation. Retaliation against any employee who brings forth a good faith concern, asks a clarifying question, or participates in an investigation is prohibited.

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Who Should Know This Policy

Military-affiliated students and university employees (including faculty) are responsible for knowing this policy and familiarizing themselves with its contents and provisions.

Definitions

Call to Active Military Duty

Any operation, including a defense crisis, in which the President of the United States declares a sudden mobilization of any part of the U.S. Armed Forces, including reserve forces or the U.S. National Guard. This includes involuntary inactive duty for training (IDT) and annual training for Reserves and National Guard forces

College Level Examination Program (CLEP)

CLEP is a group of standardized tests that assess college-level knowledge in several subject areas by students pursuing college degrees in non-traditional formats.

Continuous enrollment

Students who withdraw from all courses after the first week of the semester are considered to have been enrolled for the semester. Students who do not attend VCU for three or more successive semesters excluding summer sessions must submit an application for readmission to Undergraduate Admissions.

Course Requirements

Components that must be completed in order to obtain credit for a course, which may include, but is not limited to, papers, tests, quizzes, class participation, contact time, examinations, projects, experiments, work experience, or clinical experience.

Credit Hour

A credit hour is defined as a reasonable approximation of not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks, or the equivalent amount of work over a different amount of time. Credit is based on at least an equivalent amount of work for other academic activities including laboratory work, internships, practice, studio work, and other academic work leading to the award of credit hours and established by individual programs. This definition represents the minimum standard. Student time commitment per credit hour may be higher in individual programs.

Dependent

Military dependents are the spouse(s), children, and possibly other familial relationship categories of a sponsoring military member for purposes of pay as well as special benefits, privileges, and rights.

DSST Exam

Academic tests offered by DANES Subject Standardized Tests (DSST) for college credit.

JST

The Joint Services Transcript (JST) is a synchronized transcript presenting data for the United States Army, Marine Corps, Navy, and Coast Guard.

Military-Affiliated Student

A military student or a dependent of a military student

Military Student

An active-duty member, or veteran, of a branch of the U.S. Armed Forces, including reservists, or of the U.S. National Guard, or of the U.S. Coast Guard.

USAF Transcript

The USAF Transcript is a synchronized transcript presenting data for the Community College of the United States Air Force (USAF), federal program offered by the Air Force that grants two-year Associate of Applied Science degrees in association with Air University.

Contacts

The Office of Military Student Services (MSS) officially interprets this policy. MSS is responsible for obtaining approval for any revisions as required by the policy *Creating and Maintaining Policies and Procedures* through the appropriate governance structures. Please direct all policy questions to MSS militaryserv@vcu.edu.

Policy Specifics and Procedures

1. **Military In-State Tuition and Academic Advising:** This policy and procedure accords eligible military-affiliated students in-state tuition rates regardless of residency status, as required by applicable law, including the **Veterans Access, Choice, and Accountability Act of 2014 (“Choice Act”)**, as amended.
 - A. VCU will charge the following covered individuals a rate of tuition not to exceed the in-state rate for tuition and fees:
 - I. A veteran using educational assistance under the Montgomery G.I. Bill–Active Duty Program or the Post-9/11 G.I. Bill, who lives in Virginia while attending a school located in Virginia (regardless of their formal state of residence) and enrolls in the school within three years of discharge or release from a period of active duty service of 90 days or more.
 - II. Anyone using transferred Post-9/11 GI Bill benefits who lives in Virginia while attending a school located in Virginia (regardless of their formal state of residence) and enrolls in the school within three years of the transferor’s discharge or release from a period of active duty service of 90 days or more.
 - III. Anyone described above while they remain continuously enrolled (other than during regularly scheduled breaks between courses, semesters or terms) at the same school. The person so described must have enrolled in the school prior to the expiration of the three year period following discharge or release as described above and must be using educational benefits under either the Montgomery G.I. Bill–Active Duty Program or the Post-9/11 G.I. Bill.
 - IV. Anyone using benefits under the Marine Gunnery Sergeant John David Fry Scholarship who lives in Virginia while attending a school located in Virginia (regardless of his/her formal state of residence).

- V. Anyone using transferred Post-9/11 G.I. Bill benefits who lives in Virginia while attending a school located in Virginia (regardless of the individual's formal state of residence) and the transferor is a member of the uniformed service who is serving on active duty.
 - B. VCU will inform students of their in-state or out-of-state (non-resident) status once the admissions office has completed the student's application review. Non-resident students in one of the categories described in section 1(A) above must contact MSS to confirm eligibility and provide necessary supporting documentation for the 702 Choice Act waiver. VCU classifies students eligible for a waiver as non-residents for reporting purposes but charges the in-state tuition rate for any credit earned up to 125 percent of the credit hours needed to complete their academic program.
 - C. If a student using the 702 Choice Act waiver described above exceeds 125 percent of the credit hours needed to complete their academic program, the waiver is void, and VCU will charge the non-resident tuition rate for all credits above the 125 percent limit. At that time, VCU will charge the student the difference between the in-state and non-resident rates for all credits above the 125 percent level.
 - D. VCU offers academic advising to any student eligible under section 1(A) regardless of their degree-seeking status.
2. **Awarding Credit for Military Education:** Military students admitted to a degree-seeking program may receive credit towards their degree for completion of equivalent coursework and/or educational experiences while serving in the armed forces.
- A. A student seeking credit for military education must submit any JST or USAF Transcript and all relevant documents to admissions to determine eligibility for credit. VCU will consider documentation in light of previous decisions made in other cases by VCU, by other Virginia colleges and universities, and by other accredited universities to the greatest extent possible.
 - B. Such credit may be awarded for:
 - I. Courses that have received the positive recommendation of the Commission on Accreditation of Service Experiences of the American Council for Education for undergraduate credit as stated in the most recent edition of the "Guide to the Evaluation of Educational Experiences in the Armed Services."
 - II. Acceptable scores earned on Dantes/DSST subject tests.
 - III. Acceptable scores earned on CLEP subject tests.
 - IV. Acceptable scores earned on the Excelsior College examination.
 - V. Individualized portfolio evaluation, which may be conducted by faculty at the individual colleges or by using the Council for Adult and Experiential Learning (CAEL) guidelines or CAEL's LearningCounts.org, a national online prior learning assessment service.

- C. Schools and colleges are not required to award credit for coursework that is not offered at VCU or is not reasonably comparable to coursework that is offered at VCU. Any denial of credit shall include documentation of an educationally grounded rationale.
 - D. Any credits for military education count towards degree requirements but are not a factor in calculating GPA.
 - E. VCU may grant advanced standing to veterans, Junior ROTC graduates or members of the Reserves/National Guard after the relevant academic department chair's review of academic records and verification of ROTC academic alignment. The number of credits accepted toward graduation requirements is determined by each school.
3. **Early Course Registration:** This procedure allows military-affiliated students to register for classes before standard advance course registration as set forth in the VCU academic calendar.
- A. A military student is eligible for early registration after completing one semester at VCU. VCU may grant early registration to spouses of military students who petition MSS for early registration if, in the opinion of MSS, the active duty/deployment has sufficient impact on their academic schedule.
 - B. A military student not utilizing Veterans Administration educational benefits must contact MSS or admissions to request early registration no later than two weeks prior to the published VCU academic calendar's first day of early registration. If MSS has not yet verified eligibility, the student must provide the appropriate verification documentation to MSS before early registration is activated.
 - C. All students identified for early registration will receive a notification email with instructions approximately two weeks prior to the early registration date. Students with holds in place must resolve holds before they can register.
 - D. All students registering for classes early may register on or after the early registration date in the appropriate system. If a military student has any issues registering for classes, they should contact MSS.
 - E. Students, Academic Advisors, Faculty, Department Chairs, Assistant and Associate Deans, Deans, the Division of Strategic Enrollment Management, and the Office of the Senior Vice Provost for Academic Affairs are responsible for knowing this policy and familiarizing themselves with its contents and provisions.
4. **Military Activation Policy:** This policy and procedure permits any students called to active military duty during an academic semester to have an opportunity to earn full course credit.
- A. A military student who must relocate due to active military duty and seeks full credit for courses in progress must provide MSS with a copy of the student's active duty orders.
 - B. If an admissions decision has been rendered and an offer of admission has been made, but the student has not yet enrolled when they are deployed for active duty military service, they

may defer enrollment for up to one year from the date of admission by submitting the relevant active duty orders to MSS along with a request to defer enrollment. After a deferral has been granted, the student must provide updated contact information and information for determination of residency for tuition purposes to the office of admissions prior to their enrollment.

- C. If activation occurs after the semester has begun, the student may notify MSS in writing of a request for one of the following options, and provide any required additional documentation:
- I. If activation is before the end of the add/drop period, drop all courses and receive a full refund of all payments to the university including deposits. Students will be asked to certify with the registrar that they are not owed and have not received a financial aid refund.
 - II. Receive a grade of Incomplete (IM – Incomplete Military) in one or all courses. Students residing in university housing and/or on a dining services contract will receive a prorated refund of these charges including deposits. Students with grades of IM will not receive a tuition and fees reduction for these courses because the student will earn the credits temporarily marked IM once the student completes the work, submits the grade change form, and receives a grade for the credits. Students will have 12 months from the date that they return from active service to complete the course work and earn a course grade.
 - III. Accept administrative withdrawal (WM – Withdrawn Military) from all courses as of the effective date of the orders to active duty. Students choosing this option receive a full refund of all tuition and fees, as well as a prorated refund of dining and housing charges, including deposits. If a student received financial aid, the amount recovered to financial aid accounts will follow Federal financial aid policy.
 - IV. If a student has completed 75 percent or more of the course requirements at the time of military activation and receives written permission from the instructor, they may receive full course credit. The instructor must determine what percentage of course requirements has been completed and certify this as part of their written permission. The awarding of full credit cannot be made where the uncompleted requirements are essential components of the course or program, or required by law or regulatory bodies, or required for competency in the workplace, or required to complete licensure examinations.
- D. Upon receipt of the student's request, the registrar administers the appropriate enrollment action, posts the appropriate grades, and sends a copy of the orders and the Tuition Relief Form to the Financial Aid Office and the Student Accounting Office. Any refund payable to a student who is a financial aid recipient shall be subject to the applicable state and federal regulations regarding refunds.

- E. If the student returns to VCU from a military leave of absence within five years, or provides notice of intent to return within three years, of completing their active military duty, they may return to VCU and the same program of study without reapplying for admission, as an exception to the university's standard continuous enrollment policy. If the student reapplies for admission after this period, the reapplication admission fee shall be waived. To the extent permitted by legal, regulatory, or accreditation requirements, any requirements for a program of study to be completed within a certain amount of time will not count the time during which the student was on active military duty.
 - F. VCU offers deferred or readmitted students academic advising to determine the impact of their absence from the program, the ability to resume study and options if an academic program is no longer available or suitable. Academic programs with specialized accreditation and selective admission requirements shall establish criteria for reinstatement of such students that are consistent with any relevant standards of the respective accrediting agency, if the admission requirements have changed since the student's original admission.
5. The Military Student Services Office will offer annual policy updates and information for all VCU staff responsible for administering these policies through the VCU bulletin and the MSS website.

Forms

Tuition relief form – <https://militaryservices.vcu.edu/media/strategic-enrollment-management/military-services/docs/RRDefCrisRel.pdf>

Course request form – https://rar.vcu.edu/media/strategic-enrollment-management/rar/docs/course_request_form2-1.pdf

Related Documents

Military In-State Tuition

1. Veteran's Access, Choice, and Accountability Act
<http://www.schev.edu/docs/default-source/tuition-aid-section/financial-aid/veteranschoiceactfaq.pdf>
2. In-State Tuition; Surcharge, Virginia Code § 23.1-509
<https://law.lis.virginia.gov/vacode/title23.1/chapter5/section23.1-509/>
3. All Volunteer Force Educational Assistance, 38 U.S.C. Chapter 30
4. Post-9/11 Educational Assistance, 38 U.S.C. Chapter 33
5. Educational assistance for service in the Armed Forces commencing on or after September 11, 2001, 38 U.S.C. § 3311
6. Eligibility for in-state tuition charges; domicile; domiciliary intent. Virginia Code § 23.1-502
<https://law.lis.virginia.gov/vacode/23.1-502/>

7. Determination of domicile; exception; certain active duty and retired military personnel, etc., Virginia Code § 23.1-504,
<https://law.lis.virginia.gov/vacode/title23.1/chapter5/section23.1-504/>
8. Determination of domicile; exception; dependents of certain active duty military personnel, etc., Virginia Code § 23.1-505,
<https://law.lis.virginia.gov/vacode/title23.1/chapter5/section23.1-505/>

Credit for Military Education

1. Course credit; veterans; active duty military students, Virginia Code § 23.1-904,
<https://law.lis.virginia.gov/vacode/title23.1/chapter9/section23.1-904/>
2. Course credit; Advanced Placement, Cambridge Advanced, College-Level Examination Program, and International Baccalaureate examinations, Virginia Code § 23.1-906
<https://law.lis.virginia.gov/vacode/title23.1/chapter9/section23.1-906/>
3. SCHEV Guidelines on Award of Academic Credit for Military Education, Training and Experience by Virginia Public Higher Education Institutions
www.schev.edu/docs/default-source/students-section/military-education/guidelines-on-award-of-credit-for-military-training-education-and-experience.pdf

Early Course Registration

1. [VCU Undergraduate Bulletin](#)
2. SCHEV Guidelines on Course Registration Policies for Military-Related Students at Virginia Public Higher Education Institutions
www.schev.edu/docs/default-source/students-section/military-education/guidelines-on-course-registration-policies-for-military-related-students.pdf

Military Activation

1. SCHEV Virginia Tuition Relief, Refund, and Reinstatement Guidelines
<http://www.schev.edu/docs/default-source/students-section/military-education/virginia-tuition-relief-refund-and-reinstatement-guidelines.pdf>
2. Tuition relief and refunds and reinstatement for certain students in the Armed Forces, Virginia Code § 23.1-207
<https://law.lis.virginia.gov/vacode/title23.1/chapter2/section23.1-207/>
3. VCU Policy: [Financial Aid Recalculation Due to Withdrawal](#)

Other Related Documents

1. Authority to transfer unused education benefits to family members, 38 U.S.C. § 3319
2. Disapproval of courses, 38 U.S.C. § 3679

Revision History

This policy supersedes and replaces the following archived policies:

11/12/2009
05/05/2014
03/23/2016

Course Credit: Active Duty Military Students
Early Course Registration for Military-Related Students
Awarding of Credit for Military Education

FAQ

1. What is the credit hours surcharge?

If a student exceeds 125 percent of the credit hours needed to complete their academic program, they can lose the subsidized (in-state) rate and VCU will charge the non-resident tuition rate for all credits above the 125 percent limit. At that time, VCU will charge the student the difference between the in-state and non-resident rates for all credits above the 125 percent level.

2. Can a spouse benefit from early registration?

Yes, spouses can petition MSS for this benefit. Criteria for approval will be the impact of the active duty on the academic schedule.

3. What is early registration?

Early registration occurs before the general population of VCU students register.

4. Why is early registration being given to students outlined in the policy and purpose?

Active-duty military and Coast Guard members have current responsibilities for national defense that affect their educational progress. Individual reservists and National Guard members have monthly obligations to the military that may affect their ability to plan and pace their educational pursuits. Students outlined in the policy and purpose may be adversely affected by education benefit restrictions and the course registration schedule.

5. How does a student become eligible to receive early registration accommodations?

To become eligible, a student must provide proof of their military service to the office of MSS.

6. Where can I find policy updates and information regarding policies related to military students?

Policy updates will be posted to the VCU bulletin and the MSS web site.

VCU'S SIX-YEAR PLAN

SCHEV Six Year Operating Plan Update

The Virginia Higher Education Opportunity Act of 2011 requires institutions to submit plans to SCHEV (State Council of Higher Education for Virginia) highlighting enrollment projections, academic strategies, and financial revenue projections.

- Plans are submitted at the beginning of the fiscal year (July). New plans are submitted every odd year for the next biennium; updates on alternate years.
- Figures are for planning purposes only and are not considered as binding on the Board of Visitors.

July 2018 Update Submission:

- Conservative enrollment growth from FY 2019 to FY 2025
- 4% increase in tuition for FY 2020
- Limited State support assumed:
 - Approximately ½ of state mandated salary increases for faculty and staff
 - Health-related initiatives
- \$6.7M in FY2019 will be reallocated to provide funding for Six Year Plan strategies

VIRGINIA COMMONWEALTH UNIVERSITY
BOARD OF VISITORS
September 14, 2018

Action Item
Approval of Virginia Commonwealth University's
2018 Six-Year Plan

Item:

Board of Visitors approval of Virginia Commonwealth University's 2018 Six-Year Plan as required by § 23-38.87:17 of the "*Preparing for the Top Jobs of the 21st Century: The Virginia Higher Education Opportunity Act of 2011*" (TJ21).

Background:

In response to the requirements outlined in § 23-38.87:17 of the "*Preparing for the Top Jobs of the 21st Century: The Virginia Higher Education Opportunity Act of 2011*" (TJ21) legislation, attached is a copy of Virginia Commonwealth University's 2018 amended Six-Year Plan submitted to the State Council of Higher Education for Virginia (SCHEV) by the stated deadline of July 1, 2018.

TJ21 established a mandate that the governing board of each public institution of higher education develop and adopt biennially and amend or affirm annually a six-year plan for their institution. The act requires the plans to be submitted to the State Council for Higher Education of Virginia (SCHEV) by July 1 of each odd-numbered year and also requires any amendments or affirmations to existing plans to be submitted by July 1 of each even-numbered year.

The instructions and template to complete the six-year plan, or the plan update, are usually provided by SCHEV in May, typically at the time of the May Board meeting. Due to this timeline and in accordance with SCHEV instructions, the University has historically submitted the plan, or update, to SCHEV by the July 1st deadline and then has presented it to the Board for approval at the next scheduled meeting which is usually held in September. Over the July and August months, State representatives review the plans submitted by each institution and then provide comments in early September for each institution to respond. The responses as well as the final board approved six-year plan is then due to SCHEV by October 1st. This process was once again followed for the 2018 Six Year Plan submission.

The strategies identified in the University's 2018 Six-Year Plan were developed collaboratively with each division through the annual budget development cycle. Building upon the strategic multi-year budget developed in the previous cycle, divisions reviewed their respective submissions and updated strategies to align with current priorities and objectives. The academic strategies related to programmatic growth were developed by the Provost through the respective academic unit.

The presented tuition and fee increases assume a proportionate share of general fund support for modeling purposes only. The funding of the proposed strategies are subject to change unless incremental general fund support is received. Additionally, approval of tuition and fees is the responsibility of the Board of Visitors and may be adjusted based upon factors such as incremental general fund support, legislative requirements, projected enrollment growth, and prioritization of strategies to implement.

Virginia Commonwealth University's 2018 Six-Year Plan was updated to reflect the status of existing strategies based on institutional priorities and legislative action during the 2018 General Assembly Session. Comments regarding the University's 2018 Six-Year Plan update are anticipated to be received by September 1, 2018. Once received the institution will need to respond to any questions and resubmit the final plan to SCHEV by October 1, 2018.

Action:

Virginia Commonwealth University Board of Visitors approval of the Virginia Commonwealth University 2018 Six-Year Plan.

Resolution

Approval of Virginia Commonwealth University's 2018 Six-Year Plan September 14, 2018

WHEREAS, the Higher Education Opportunity Act of 2011 became effective July 1, 2011, and requires each public institution of higher education in Virginia to develop and submit an institutional six-year plan; and

WHEREAS, § 23-38.87:17 of the Act requires, “*The governing board of each public institution of higher education shall develop and adopt biennially and amend or affirm annually a six-year plan for the institution and shall submit that plan to the Council (State Council of Higher Education for Virginia), the Governor, and the Chairs of the House Committee on Appropriations and the Senate Committee on Finance no later than July 1 of each odd-numbered year, and shall submit amendments to or an affirmation of that plan no later than July 1 of each even-numbered year or at any other time permitted by the Governor or General Assembly*”; and

WHEREAS, Virginia Commonwealth University prepared a six-year plan in accordance with the requirements of the Higher Education Opportunity Act of 2011 and guidelines provided by the State Council of Higher Education for Virginia; and

WHEREAS, the University submitted the six-year plan to the State Council of Higher Education for Virginia by the stated deadline of July 1, 2018 for the 2018 submission; and

WHEREAS, the 2018 Six-Year Plan must be approved by the Board of Visitors prior to the October 1 final submission;

THEREFORE, BE IT RESOLVED the Virginia Commonwealth University Board of Visitors approves the Virginia Commonwealth University 2018 Six-Year Plan as presented in the format provided by the State Council of Higher Education for Virginia; and

BE IT FURTHER RESOLVED, that the University is authorized to revise the 2018 Six-Year Plan as required by State officials for final submission by the stated deadline.

VCU REVENUE BONDS

Approval of the Issuance of General Revenue Pledge Bonds

FINANCE, BUDGET AND INVESTMENT COMMITTEE

By Chapter 10, Title 23.1 of the Virginia Code, the University has entered into a management agreement with the Commonwealth of Virginia which was enacted as Chapter 594 of the 2008 Virginia Acts of Assembly that empowers the University with the authority to issue and sell bonds for the purposes of financing and refinancing the acquisition of any interest in land (including improvements on acquired land), new construction, and improvements or renovations to existing construction. Under this authority, the University has developed a plan of finance in an amount of approximately \$113,509,000 of total project costs and refunding principal, and the University intends to issue its Series 2018 General Revenue Pledge Bonds to finance and refinance the following projects:

College of Engineering Research Expansion Project: \$49,750,000 (not to exceed)

The College of Engineering Research Expansion project will construct a 131,249 gross square foot building that will support advanced research and economic development initiatives with a design that emphasizes makerspaces, collaborative research facilities and flexible gathering areas, located at the intersection of Cary and Belvidere Streets on the Monroe Park Campus. The total project cost is not expected to exceed \$101.39 million, which will be funded with an amount not to exceed \$49.75 million of university debt-funded project costs and \$51.64 million of state appropriations. The Board previously approved the use of the University's line of credit to temporarily finance this project, and these bonds will provide permanent financing. Debt service will be paid by the College of Engineering through a combination of annual development fund distributions, tuition and fee revenues and cost recoveries related to research.

Basketball Development Center Project: \$6,645,000

The Basketball Development Center project is a 60,000 square foot facility that opened in the fall of 2015 that provides state-of-the-art practice space for the VCU men's and women's intercollegiate basketball teams, located at 1300 West Marshall Street on the Monroe Park Campus. Due to the timing of the receipt of gift pledges, the Board previously approved the use of the University's line of credit to temporarily finance this project. Now that the timing of the remaining pledges is clear, these bonds will provide permanent financing. Debt service will be paid by the Athletic Department through a combination of pledge receipts, sponsorship revenues and naming rights revenues.

Engineering East Hall and Snead Hall Series 2012A and 2012B Refinancing: \$57,114,000

In 2006, the University financed Snead Hall for the School of Business and East Hall for the College of Engineering, which were subsequently refinanced with the University's Series 2012A and 2012B bonds. Given current favorable interest rates, the University intends to refinance both series of outstanding bonds for debt service savings and to pay for all or a portion of the termination costs of two interest rate swaps associated with the Series 2012A and 2012B bonds. Debt service will be paid by the School of Engineering Foundation and the School of Business Foundation, just as both Foundations have paid the debt service on the original bonds since their issuance in 2006.

The resolution identifies (1) the President, (2) the Senior Vice President and Chief Financial Officer, and (3) the Treasurer of the University as each being authorized to approve, negotiate, execute and deliver each bond resolution on behalf of the University as well as all related

contracts, agreements, documents and certificates associated with the issuance of the bonds, provided that (i) the maximum aggregate par amount of all Bonds shall not exceed an aggregate amount of \$125 million (which includes a cushion above the \$113.509 million total expected project/refunding costs identified above to fund reserve funds, original issuance premiums/discounts, swap terminations, issuance costs, and other financing expenses); (ii) the average true interest cost of all series bearing interest at a tax-exempt fixed rate shall not exceed 5.5% per annum; (iii) the average true interest cost of all series bearing interest at a taxable fixed rate shall not exceed 6.0% per annum; and (iv) the final maturity of all bonds shall not exceed 40 years beyond the issuance date.

**RESOLUTION OF THE EXECUTIVE COMMITTEE OF THE BOARD OF VISITORS
OF VIRGINIA COMMONWEALTH UNIVERSITY**

ADOPTED OCTOBER 8, 2018

Issuance of General Revenue Pledge Bonds

WHEREAS, Chapter 23, Title 23.1 of the Code of Virginia of 1950, as amended (the "Virginia Code"), establishes a public corporation under the name and style of Virginia Commonwealth University (the "University") which is governed by a Board of Visitors (the "Board"); and

WHEREAS, Title 23.1 of the Virginia Code classifies the University as an educational institution of the Commonwealth of Virginia; and

WHEREAS, by Chapter 10, Title 23.1 of the Virginia Code (as amended, the "Act"), the University entered into a management agreement with the Commonwealth of Virginia which was enacted as Chapter 594 of the 2008 Virginia Acts of Assembly, which, as amended, classifies the University as a public institution of higher education and empowers the University with the authority to undertake and implement the acquisition of any interest in land, including improvements on the acquired land at the time of acquisition, new construction, improvements or renovations and to borrow money and make, issue and sell bonds of the University for such purposes, including the refinancing of any such facilities; and

WHEREAS, the Act further authorizes the University to provide for the payment of the principal of and the interest on any bonds from any one or more of the following sources: (i) its revenues generally; (ii) income and revenues derived from the operation, sale, or lease of a particular project or projects, whether or not they are financed or refinanced from the proceeds of such bonds, notes, or other obligations; (iii) funds realized from the enforcement of security interests or other liens or obligations securing such bonds, notes, or other obligations; (iv) proceeds from the sale of bonds, notes, or other obligations; (v) payments under letters of credit, policies of municipal bond insurance, guarantees, or other credit enhancements; (vi) any reserve or sinking funds created to secure such payment; (vii) accounts receivable of the University; or (viii) other available funds of the University; and

WHEREAS, the University has developed plans to finance or refinance a series of projects, including some or all of the following:

(i) financing the acquisition, construction and equipping of one or more engineering research facilities;

(ii) refunding the University's note evidencing the University's obligations related to an existing line of credit, which financed the acquisition, construction, expansion, renovation and equipping of certain of the University's basketball practice facilities;

(iii) subject to approval by the affected University-related foundations, refunding all or a portion of the University's (a) General Revenue Pledge Refunding Bonds, Series 2012A, the

proceeds of which were used to refinance the costs associated with East Hall of the University's Engineering School and (b) General Revenue Pledge Refunding Bonds, Series 2012B, the proceeds of which were used to refinance the costs associated with Snead Hall of the University's School of Business;

(iv) financing all or a portion of the termination payments due from the University to Deutsche Bank AG or an affiliate in connection with the termination of two interest rate swaps associated with the Series 2012A and B Bonds (the "Swaps"); and

(v) financing, if and as needed, capitalized interest on the Bonds (as defined below), a debt service reserve fund for the Bonds, costs of issuance related to the issuance of the Bonds, working capital, routine capital expenditures for any of the foregoing described projects and other related costs (collectively (i) – (v), the "Plan of Finance").

WHEREAS, the Executive Committee of the Board has determined it desirable to authorize the University to terminate the Swaps and to issue its general revenue pledge bonds (the "Bonds") in a maximum principal amount not to exceed \$125,000,000 for purposes of undertaking the Plan of Finance, of which approximately \$60,000,000 is expected to be issued to refinance existing indebtedness and \$65,000,000 is expected to be issued for new projects; and

WHEREAS, the Executive Committee of the Board desires to provide for the reimbursement to the University of previously incurred costs associated with the Plan of Finance; and

WHEREAS, the Executive Committee of the Board desires to authorize certain officers of the University to approve the final forms and details of the Bonds, as set forth below; and

WHEREAS, the Executive Committee of the Board anticipates that the Bonds will be secured by a general revenue pledge of the University and not be in any way a debt of the Commonwealth of Virginia (the "Commonwealth") and shall not create or constitute any indebtedness or obligation of the Commonwealth, either legal, moral, or otherwise; and

WHEREAS, pursuant to Section 23.1-2304 of the Virginia Code and the University's bylaws, the Executive Committee of the Board is authorized to convene and exercise the full power and authority of the Board between meetings of the Board.

NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF VISITORS OF VIRGINIA COMMONWEALTH UNIVERSITY:

RESOLVED, that the Board hereby authorizes and approves of the Plan of Finance and hereby authorizes the implementation of the Plan of Finance by authorizing the issuance of one or more series of Bonds to undertake the Plan of Finance and providing for the terms thereof, through the delivery of one or more bond resolutions in substantially the form utilized in previous issuances of general revenue pledge bonds by the University (each, a "Bond Resolution") with such changes and additions as may be approved by the Authorized Officers designated below consistent with prior practice of the University so that each Bond Resolution may reflect the final terms and conditions of the Bonds; and

RESOLVED FURTHER, that the President of the University, the Senior Vice President and Chief Financial Officer of the University and the Treasurer of the University (collectively, the "Authorized Officers") are authorized and directed to approve the final terms of each series of Bonds, including, without limitation, their original principal amounts and series, their maturity dates and amounts, redemption provisions, prices and interest rates and tax status of interest on each series of bonds, provided that (i) the maximum aggregate par amount of all Bonds to be issued hereunder shall not exceed an aggregate amount of \$125,000,000; (ii) the average true interest cost of all series bearing interest at a tax-exempt fixed rate shall not exceed 5.5% per annum; (iii) the average true interest cost of all series bearing interest at a taxable fixed rate shall not exceed 6.0% per annum; and (iv) the final maturity of all bonds shall not exceed 40 years beyond issuance date; and

RESOLVED FURTHER, the Authorized Officers are each hereby authorized and directed to approve, negotiate, execute and deliver each Bond Resolution on behalf of the University; and

RESOLVED FURTHER, the officers and staff of the University are hereby authorized and directed to prepare an official statement (the "Official Statement") in preliminary and final forms, and the Authorized Officers are hereby authorized and directed to execute the Official Statement in final form; and

RESOLVED FURTHER, the Authorized Officers are each hereby authorized to take any and all actions necessary to terminate the Swaps, to execute any and all documents evidencing such termination, and to make any termination payments associated therewith; and

RESOLVED FURTHER, the Authorized Officers are each hereby authorized to negotiate, execute and deliver such other documents as such officer deems necessary or desirable to facilitate the issuance of the Bonds, including without limitation a continuing disclosure undertaking; and

RESOLVED FURTHER, that all officers of the University are authorized and directed to take all such further actions, including without limitation the designation of underwriters, paying agents, remarketing agents, solicitation agents, trustees, and liquidity providers for the bonds, and to execute all such instruments, agreements, documents, and certificates as they shall deem necessary or desirable to carry out the terms of the financing plans presented to this meeting, including without limitation any liquidity facilities, swap, swap terminations or other interest rate management agreements associated with the Bonds, and any agreements or modifications to existing agreements with the VCU School of Business Foundation or the VCU School of Engineering Foundation relating to the Bonds; and

RESOLVED FURTHER, pursuant to the Section 147(f) of the Internal Revenue Code of 1986, as amended, and applicable regulations thereunder, the University designates each of the Authorized Officers as a public hearing officer to hold any public hearings required in order to ensure the tax-exempt status of interest on all or a portion of any bonds of the University; and

RESOLVED FURTHER that all acts of all officers of the University which are in conformity with the purposes and intent of this Resolution and in carrying out the financing plans presented to this meeting are ratified, approved and affirmed; and

RESOLVED FURTHER that, upon approval, this action shall take effect immediately.

SCOTT HOUSE RENOVATION

VIRGINIA COMMONWEALTH UNIVERSITY
Project Plans
Scott House Renovation

PROJECT: This project renovates the 1910 historic Scott House to create usable academic, office and meeting space.

LOCATION: 909 West Franklin Street, Richmond, Virginia

PROJECT COSTS: Construction Budget.....\$5,000,000
Total Budget\$7,000,000

FUND SOURCES: University Funds.....\$ 3,500,000
State Budget Funding\$ 3,500,000

TIMETABLE: Complete Planning December 2018
Construction Starts January 2019
Construction Complete December 2019

PROJECT DESIGN: The project consists of exterior work to repair the roof, masonry, windows and doors as well as interior work including new restrooms, a new HVAC system, electrical upgrades and restoration of the elevator.

RECOMMENDATION: Approve project plans for the Scott House Renovation.

WEST HOSPITAL TRANSPLANT SURGERY RENOVATION

VIRGINIA COMMONWEALTH UNIVERSITY
Project Plans
West Hospital Department of Transplant Surgery Renovations

PROJECT: Consolidate and modernize facilities to accommodate the School of Medicine’s Department of Transplant Surgery in West Hospital. The improvements involve renovations to portions of the 8th and 15th floors of West Hospital.

LOCATION: 1200 East Broad Street, Richmond, Virginia

PROJECT COSTS: Construction Budget.....\$1,190,000
Total Budget\$2,275,000

FUND SOURCES: School of Medicine Funds\$ 2,275,000

TIMETABLE: Complete Planning December 2018
Construction Starts February 2019
Construction Complete March 2020

PROJECT DESIGN: The project consists of renovations to the north and south wings and the elevator lobby of the fifteenth floor, totaling approximately 7,300 SF; and the east wing of the eighth floor totaling approximately 3,200 SF. The fifteenth floor work includes all new mechanical systems, lighting, and electrical systems, new ceilings, lights, and finishes. Renovated offices will be arranged to improve staff working conditions. A large conference room will serve the department. The eighth floor will receive minor partition changes, new flooring and wall finishes to provide improved educational spaces for the Trauma Education group.

RECOMMENDATION: Approve project plans for the West Hospital Department of Transplant Surgery Renovations.