



# Program Approval Form

For approval of new programs and deletions or modifications to an existing program.

### Action Requested:

- Create New (SCHEV approval required except for minors)
- Inactivate Existing
- Modify Existing (check **ALL** that apply)
  - Title (SCHEV approval required except for minors)
  - Concentration** (Choose one):  Add  Delete  Modify
  - Degree Requirements
  - Admission Standards/ Application Requirements
  - Other Changes: Adding PSM designation to our Bioinformatics Mgmt program

### Type (Check one):

- B.A.  B.S.  Minor (req. C3 approval)
- M.A.  M.S.  M.Ed.
- Ph.D.
- Undergraduate Certificate\* (req. C3 approval)
- Graduate Certificate\*
- Bachelor's/Accelerated Master's  Other: PSM

**College/School:**  **Department:**   
**Submitted by:**  **Ext:**  **Email:**

**Effective Term:** Fall  **Please note:** For students to be admitted to a new degree, minor, certificate or concentration, the program must be fully approved, entered into Banner, and published in the University Catalog.

### Justification: (attach separate document if necessary)

The first of its kind at Mason (and only the second in VA), the College of Science is introducing a Professional Science Master's (PSM) in Bioinformatics Management. Working from the MS in Bioinformatics Management's curriculum, we are creating a PSM designation with modified course offerings in consultation with the program's external advisory board. Perhaps the most notable difference between the two is that the PSM will require an internship while the MS requires a research project.

**Program Title:** (Required)  
Title must identify subject matter. Do not include name of college/school/dept.

**Concentration(s):**

**Admissions Standards / Application Requirements:** (Required only if different from those listed in the University Catalog)

**Degree Requirements:**  
Consult University Catalog for models, attach separate document if necessary using track changes for modifications

**Courses offered via distance:** (if applicable)

**TOTAL CREDITS REQUIRED:**

Existing	New/Modified
	Bioinformatics Management, PSM
	N/A
	Mirrors the Bioinformatics Management, MS
	We worked with the PSM's external advisory board to create the curriculum (attached). A PSM requirement, the board is comprised of bioinformatics leaders from business, government, and industry.
	BINF: 631, 634, 650, 731, 704, 705
	31 credits

\*For Certificates Only: Indicate whether students are able to pursue on a  Full-time basis  Part-time basis

## Approval Signatures

Department	Date	College/School	Date	Provost's Office	Date
<i>Required for Minors and Interdisciplinary Programs</i>					
If this program may impact another unit or is in collaboration with another unit at Mason, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.					

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

### For Minors and UG Certificates only (Cross-College Curriculum Committee Approval)

C3 Committee Member \_\_\_\_\_ Provost Office \_\_\_\_\_ C3 Committee Approval Date \_\_\_\_\_

### For Graduate Programs Only

Graduate Council Member \_\_\_\_\_ Provost Office \_\_\_\_\_ Graduate Council Approval Date \_\_\_\_\_

## **Program Proposal Submitted to the College of Science Curriculum Committee (COSCC)**

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference.  
Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

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### **FOR ALL PROGRAMS** (required)

Program Title: Bioinformatics Management, PSM

Date of Departmental Approval:

### **FOR INACTIVATED PROGRAMS** (required if inactivating a program)

- Reason for Inactivation:

### **FOR MODIFIED PROGRAMS** (required if modifying a program)

- Summary of the Modification:
- Text before Modification (title, degree requirements, etc.):
- Text after Modification (title, degree requirements, etc.):
- Reason for the Modification:

### **FOR NEW PROGRAMS** (required if creating a new program)

- Reason for the New Program:
  - According to SCHEV, this is not a new program, but rather we are adding a designation to an existing program. We are completing this paperwork in the most translucent way possible, but within the form's parameters (i.e. listing it as a new program).
  - Dean Agouris and the SSB administration wish to complement the MS Bioinformatics Management degree and foster student success with a more professionally-oriented degree designation (PSM).
- Relationship to Existing Programs:
  - Adding a PSM designation to our Bioinformatics Management program offerings- currently there is only an MS in Bioinformatics Management.
- Relationship to Existing Courses:
  - The PSM designation will mostly utilize BINF courses for its science coursework (optional science electives offer AIT, BIOS, CSI, CHEM, and SWE choices). An array of course prefix options (AIT, BIOL, COMM, GBUS, MBA, PUAD) are offered for its professional skills coursework.
- Semester of Initial Offering:
  - Fall 2016. The curriculum is currently under review at SCHEV and we will soon apply to the PSM program for their affiliation. Being able to offer the program is dependent upon both approvals.
- Insert Tentative SCHEV Proposal Below
  - Again, this isn't considered a new program by SCHEV so a new program proposal wasn't required. However, the current curriculum provided for SCHEV review is below.

## Board-approved Curriculum

### PSM in Bioinformatics Management- Post Board Meeting Curriculum

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Due to the varied course options and their associated prerequisites, students are encouraged to create a program of study with their faculty advisor by the end of their first semester of studies.

#### Bioinformatics (15 credits) [SCIENCE]

- [BINF 630- Bioinformatics Methods](#)- 3 credits
- [BINF 631- Molecular Cell Biology for Bioinformatics](#)- 3 credits
- [BINF 702- Biological Data Analysis](#)- 3 credits

Choose two from the following courses or other BINF-prefixed courses in consultation with the faculty advisor:

- [BINF 633- Molecular Biotechnology](#)- 3 credits
- [BINF 634- Bioinformatics Programming](#)- 3 credits
- [BINF 650- Introduction to Bioinformatics Database Design](#)- 3 credits
- [BINF 731- Protein Structure Analysis](#)- 3 credits
- [BINF 732- Genomics](#)- 3 credits
- [BINF 740- Introduction to Biophysics](#)- 3 credits

#### Professional Skills (7 credits) [PROFESSIONAL]

Please note: MBA-prefixed courses are offered on an alternative semester schedule (view the [Schedule of Classes](#) for details). Considering this, it may be advisable to take these courses in one semester rather than over several.

- [BINF 705- Research Ethics](#)- 1 credit
- [MBA 712- Project Management](#) or [MBA 715 Advanced Project and Program Management](#)- 3 credits

Choose one course from the following that hasn't previously been taken:

- [BIOL 508- Selected Topics in Animal Biology](#) (when the topic is *Research & Development in Biotechnology Companies*)- 3 credits
- [AIT 671 - Information Systems Infrastructure Lifecycle Management](#)- 3 credits
- [COMM 641- Advanced Communication Skills for STEM](#)- 3 credits
- [GBUS 540 - Analysis of Financial Decisions](#)- 3 credits
- [GBUS 550- Strategic Thinking](#)- 3 credits
- [MBA 712- Project Management](#) - 3 credits
- [MBA 715- Advanced Project and Program Management](#)- 3 credits
- [MBA 725- Leadership](#)- 3 credits or [GBUS 551- Leadership](#)- 3 credits
- [MBA 726- Negotiations](#)- 3 credits
- [MBA 730- Management of Technology and Innovation Processes](#)- 3 credits
- [MBA 738- Business Intelligence and Data Mining](#)- 3 credits
- [PUAD 781- Information Management: Technology and Policy](#)- 3 credits
- Or [other courses](#) in consultation with the faculty advisor

#### Scientific Electives (6 credits) [SCIENCE]

Choose 6 credits in courses that haven't previously been taken, tailored to suit interests and goals in consultation with the faculty advisor. Close attention should be paid to each course's prerequisites. Course suggestions by interest area include:

Big Data Analysis

- [CSI 654- Data and Data Systems in the Physical Sciences](#)- 3 credits

- [CSI 695- Scientific Databases](#)- 3 credits
- [AIT 622 - Determining Needs for Complex Big Data Systems](#)- 3 credits
- [AIT 581 - Problem Formation and Solving in Big Data](#)- 3 credits
- [AIT 580 - Analytics: Big Data to Information](#)- 3 credits

#### Synthetic and Systems Biology

- [CHEM 665- Protein-Protein Interactions: Methods and Applications](#)- 3 credits
- [BIOS 701- Systems Biology](#)- 3 credits

#### Human Health and Personal Genomics

- [BINF 732- Genomics](#)- 3 credits
- [BIOL 556- Cancer Genomics](#)- 3 credits
- [BIOL 562- Personalized Medicine](#)- 3 credits
- [BIOL 665 Environmental Hazards to Human Health](#)- 3 credits
- [BIOS 740- Laboratory Methods in Functional Genomics and Biotechnology](#)- 3 credits
- [BIOS 741- Genomics](#)- 3 credits

#### Software Development and Analysis

- [BINF 634- Bioinformatics Programming](#)- 3 credits
- [SWE 521- Software Engineering Essentials](#)- 3 credits
- [SWE 619- Object-Oriented Software Specification and Construction](#)- 3 credits
- [SWE 621- Software Modeling and Architectural Design](#)- 3 credits
- [SWE 626- Software Project Laboratory](#)- 3 credits
- [SWE 645-Component-Based Software Development](#)- 3 credits
- [SWE 637- Software Testing](#)- 3 credits
- [SWE 760- Software Analysis and Design of Real-Time Systems](#)- 3 credits

#### Colloquium

If chosen, it is recommended that students take the colloquium course early in their studies so that they may be exposed to various possibilities and areas of research presented by the speakers.

- [BINF 704- Colloquium in Bioinformatics](#)- 1 credit (may be repeated for up to 3 credits)

#### Continued Internship Experience

- BINF 795- Bioinformatics Internship- 1-3 credits [*to be created*] (may be repeated but the maximum amount of internship credits that can be applied to the degree is 6 credits)

#### Experiential Component/Internship (3 credits)

- BINF 795- Bioinformatics Internship- 1-3 credits [*to be created*]

**Degree Total: 31 credits**