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
- [x] Modify Existing (check **ALL** that apply)
  - [ ] Title (SCHEV approval required except for minors)
  - [ ] **Concentration** (Choose one): [ ] *Add* [ ] *Delete* [ ] *Modify*
  - [x] Degree Requirements
  - [ ] Admission Standards/ Application Requirements
  - [ ] Other Changes: _____

Type (Check one)**:**

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

College/School:	COS	**Department:**	Computational and Data Sciences		
Submitted by:	Dimitrios Papaconstantopoulos	**Ext:**	3-3624	**Email:**	dpapacon@gmu.edu

Effective Term: Fall 2016

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)

	Existing	New/Modified
Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept.	Graduate Certificate in Computational Techniques and Applications	Data Science Graduate Certificate
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	See attached pages	See attached pages
Courses offered via distance: (if applicable)		
TOTAL CREDITS REQUIRED:	15	15

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

Approval Signatures

Department Date | College/School Date | Provost's Office Date
Required for Minors and Interdisciplinary Programs

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

For Registrar Office's Use Only: Received_____Banner_____Catalog_____

revised 7/1/15

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.

FOR ALL PROGRAMS (required)

Program Title: **Graduate Certificate in Computational Techniques and Applications**

The Computational Techniques and Applications Graduate Certificate entails 15 total credits, from both tools courses and applications courses.

Tools Courses (3-12 credits as needed)

The tools courses are practical, skill-based courses covering specific software packages commonly used by scientists and engineers to solve science-related problems. Depending on the student's background, 3-12 credit hours of tools courses are required. These courses are designed for professionals who are already familiar with other languages, packages and operating systems, but need a rapid introduction to specific software and mathematical methods used by scientists and engineers. One 3-credit tools course is required.

Choose one to four courses from the following:

- CSI 500 – Computational Science Tools, Credits: 3
- CSI 501 – Introduction to Scientific Programming, Credits: 3
- CSI 600 – Quantitative Foundations for Computational Sciences, Credits: 3
- CSI 690 – Numerical Methods, Credits: 3

Applications Courses (minimum 3 credits)

The applications courses provide content from a specific scientific domain and demonstrate the utilization of techniques within its context. These courses are electives and can be selected from any CSI emphasis area. One 3-credit applications course is required.

- Choose from any CSI course listed in the catalog excluding CSI 796, CSI 798, CSI 799, CSI 898,CSI 899, CSI 991, CSI 996, and the courses used to satisfy the tools category

Certificate Total: 15 credits

FOR MODIFIED PROGRAMS (required if modifying a program)

Text after Modification (title, degree requirements, etc.):

Program Title: **Data Science Graduate Certificate**

Tools courses are practical, skill-based courses covering specific software packages commonly used by scientists and engineers to solve data-related problems. Twelve (12) credit hours of tools courses are required. The Tools courses are the following:

Tools Courses (12 credits)

- CSI 500 – Computational Science Tools, Credits: 3
- CSI 501 – Introduction to Scientific Programming, Credits: 3
- CDS 501 – Scientific Information and data Visualization, Credits: 3
- CDS 502 – Introduction to Scientific Data and Databases, Credits: 3

Applications Courses (3 credits)

The applications courses provide content from a specific scientific domain and demonstrate the utilization of techniques within its context. Choose one (1) course from the following:

- CSI 695 –Scientific Databases , Credits: 3
- CSI 777 –Principles of Knowledge Mining, Credits: 3
- CSI 692 – Social Networks Analysis, Credits: 3

Certificate Total: 15 credits

- Reason for the Modification: Because this Certificate has had low enrollment, the CDS Dept. proposes to shift the emphasis toward the Data Sciences, where there is greater demand for such training.

Date of Departmental Approval: 10/14/2015