

MEMORANDUM

TO: Sean Rafferty, Senate Chair

FROM: Havidán Rodríguez, President

DATE: February 25th, 2021

SUBJECT: Senate Bill Approval

I am pleased to approve the following Senate Bill, which was recommended following approval by the University Senate at its meeting of February 24th, 2021.

Senate Bill 2021-04:

**PROPOSAL TO ESTABLISH AN ADVANCED CERTIFICATE IN
TOPOLOGICAL DATA ANALYSIS**

Approved: _____



Havidán Rodríguez, President

UNIVERSITY SENATE
UNIVERSITY AT ALBANY
STATE UNIVERSITY OF NEW YORK

Introduced by: Graduate Academic Council
University Policy and Planning Council

Date: February 22, 2021

Proposal to Establish a New Advanced Certificate in Topological Data Analysis.

IT IS HEREBY PROPOSED THAT THE FOLLOWING BE ADOPTED:

1. That the University Senate approves the attached Program proposal as submitted by the College of Engineering and Applied Sciences, to the Graduate Academic Council and the Undergraduate Policy and Planning Council
2. That this takes effect for the Fall 2021 semester.
3. That this proposal be forwarded to President Havidán Rodríguez for approval.

College of Arts and Sciences

Course and Program Action Form

Proposal No. 19-098

Please check one: Course Proposal Program Proposal

Please mark all that apply:

<input type="checkbox"/> New Course	Revision of:	<input type="checkbox"/> Number	<input type="checkbox"/> Description
<input type="checkbox"/> Cross-Listing		<input type="checkbox"/> Title	<input type="checkbox"/> Prerequisites
<input type="checkbox"/> Shared-Resources Course		<input type="checkbox"/> Credits	
<input type="checkbox"/> Deactivate/Activate Course (boldface & underline as appropriate)		<input checked="" type="checkbox"/> Other (specify):	<u>New Online Graduate Certificate Program</u>

Department: Mathematics and Statistics

Effective Semester, Year: Summer 2020

Course Number Current: _____ New: _____ Credits: 9

Course Title: Online Graduate Certificate Program "Topological Data Analysis"

Course Description to appear in Bulletin:

The Certificate in Topological Data Analysis offers a combination of theoretical foundations and a variety of applications that bring participants to the forefront of this rapidly developing area of Data Science. The program is designed with courses that, when taken in sequence, allow a participant with no degree in advanced mathematics develop enough background knowledge and skills to gain expertise in the rather technical field of Topological Data Analysis. The Certificate is offered completely online. It consists of 3 courses:

- AMAT 522 Linear Algebra for Applications (3 credits)
- AMAT 583 Topological Data Analysis I (3 credits)
- AMAT 584 Topological Data Analysis II (3 credits)

Prerequisites statement to be appended to description in Bulletin:

A standard sequence of three calculus courses, including multivariable calculus (AMAT 112, 113, 214 at UAlbany) and an undergraduate course in linear algebra (AMAT 220).

If S/U is to be designated as the only grading system in the course, check here:

This course is (will be) cross listed with (i.e., CAS ###): _____

This course is (will be) a shared-resources course with (i.e., CAS ###): _____

Explanation of proposal:

(Undergraduate Course/Program proposals: please address the effect on the department's General Education competency plan)

Online Graduate Certificate Program "Topological Data Analysis" is directed to both current graduate students and working professionals willing to enhance their skills in this contemporary area in Data Science.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

There are no other offerings in this area at Albany.

If this proposal is for an interdisciplinary program, please indicate the Department where the major/minor will be housed:

Chair of Proposing Department (TYPE NAME) Michael Stessin	Administrative Manager or Department Secretary (TYPE NAME) Joan Mainwaring	Date 09/30/19
Approved by Chair(s) of Department(s) having cross-listed course(s) [Copy of e-mail approval(s) on following page.] Date	Dean of College Caren Stark	Date 2/18/20
Chair of Academic Programs Committee Alejandra Bronfman	Dean of Undergraduate or Graduate Studies	Date 11/6/19

Section 2: Enrollment

Year	Anticipated Headcount Enrollment			Estimated FTE
	Full-time	Part-time	Total	
1	10	5	15	
2	15	10	25	
3	20	10	30	
4	25	10	35	
5	30	10	40	

Section 3: Program Information

- a) **Term length** (in weeks) for the distance program: 4 weeks
- b) Is this the same as term length for classroom program? [X] No [] Yes
- c) How much "**instructional time**" is required per week per credit for a distance course in this program? (Do not include time spent on activities that would be done outside "class time," such as research, writing assignments, or chat rooms.) **NOTE:** See [SUNY policy on credit/contact hours](#) and [SED guidance](#).
- 15 hours per week
- d) What proportion or percentage of the program will be offered in Distance Education format? Will students be able to complete 100 percent of the program online? If not, what proportion will be able to be completed online?
- 100%
- e) What is the maximum number of students who would be enrolled in an online course section?
- 15 students per section. Multiple sections are possible.

Part A: Institution-wide Issues: Submit Part A only for the **first** Distance Education program proposed by your institution using this form. SUNY and the State Education Department will keep this in a master file so that your institution will not need to resubmit it for each new proposed online program, **unless there are significant changes, such as a new platform.**

Part A.1. Organizational Commitment

- a) Describe your institution's planning process for Distance Education, including how the need for distance access was identified, the nature and size of the intended audiences, and the provisions for serving those audiences, including how each student's identity will be verified.
- b) Describe your institution's resources for distance learning programs and its student and technical support services to ensure their effectiveness. What course management system does your institution use?
- c) Describe how the institution trains faculty and supports them in developing and teaching online courses, including the pedagogical and communication strategies to function effectively. Describe the qualifications of those who train and/or assist faculty, or are otherwise responsible for online education.
- d) If your institution uses courses or academic support services from **another provider**, describe the process used (with faculty participation) to evaluate their quality, academic rigor, and suitability for the award of college credit and a degree or certificate.

- e) Does your institution have a clear **policy on ownership of course materials** developed for its distance education courses? How is this policy shared with faculty and staff? **NOTE:** You may refer to [SUNY's statement on copyright and faculty ownership of instructional content](#), and/or faculty contract provisions.

Part A.2. Learner Support

- a) Describe how your institution provides distance students with **clear information** on:

- Program completion requirements

To successfully complete the program a student must pass all three courses with grades B- or higher and have total GPA 3.0 or above.

- The nature of the learning experience

Students will take online lectures, do homework assignments, and pass exams.

- Any specific student background, knowledge, or technical skills needed

Calculus courses AMAT 112, AMAT 214 and an undergraduate Linear Algebra (AMA 220).

- Expectations of student participation and learning

Students are supposed to study the Lectures material provided for them, participate in bulletin board discussions, and perform in time the required classwork.

- The nature of interactions among faculty and students in the courses.

Students are supposed to communicate with the instructor via bulletin board discussions and via e-mail messages.

- Any technical equipment or software required or recommended.

No special equipment is required.

- b) Describe how your institution provides distance learners with adequate **academic and administrative support**, including academic advisement, technical support, library and information services, and other student support services normally available on campus. Do program materials clearly define how students can access these support services?

SUNY Albany supports Blackboard platform for the program and provides technical consultations for courses development.

- c) Describe how **administrative processes** such as admissions and registration are made available to distance students, and how program materials inform students how to access these services.

The admission and registration for the program courses is maintained by the Office of Summer Sessions. All appropriate material is available through the University web page.

- d) What **orientation** opportunities and resources are available for students of distance learning?

For each course of the program the instructor prepares and posts on board course description and detailed information on course requirements, procedures, and schedules.

Part B: Program-Specific Issues: Submit Part B for each new request to add Distance Education Format to a proposed or registered program.

Part B.1. Learning Design

- a) How does your institution ensure that the **same academic standards and requirements** are applied to the program on campus and through distance learning? If the curriculum in the Distance Education program differs from that of the on-ground program, please identify the differences.

The curriculum of each course of this program is identical to the one offered in the face-to-face format and typically is taught by the same faculty. The same academic standards are assumed for the online program.

- b) Are the courses that make up the distance learning program offered in a sequence or configuration that allows **timely completion of requirements**?

Each course of the program is planned to be offered every Summer and Winter session which allows student necessary flexibility to complete the program in a timely manner.

- c) How do faculty and others ensure that **the technological tools** used in the program are appropriate for the content and intended learning outcomes?

The courses of the program are supported by the Blackboard platform, which proved to be an effective and reliable venue for this kind of classes.

- d) How does the program provide for appropriate and flexible interaction between faculty and students, and among students?

Bulletin board is proven to be a successful way of communication in addition to regular e-mail correspondence.

- e) How do faculty teaching online courses verify that the student who registers in a distance education course or program is the same student who participates in and completes the course or program and receives the academic credit?

The University at Albany utilizes two layers of authorization and authentication for students who participate in online learning. Students are required to establish an account and to log in to the University password protected domain using the NETID protocol and must also log into the Blackboard Learning Management System using their university credentials. Blackboard also uses Safe Assign as a tool to monitor the completion of certain tasks within the LMS environment.

Part B.2. Outcomes and Assessment

- a) Distance learning programs are expected to produce the **same learning outcomes** as comparable classroom-based programs. How are these learning outcomes identified – in terms of knowledge, skills, or credentials – in course and program materials?

The online courses are routinely offered on campus. They follow the same syllabi outlining necessary of knowledge, skills, or credentials in course and program materials

- b) Describe how the ***means chosen for assessing student learning*** in this program are appropriate to the content, learning design, technologies, and characteristics of the learners.

Assessing student learning in the program will be equivalent to assessing the student in a face-to-face environment. Neither our classroom versions nor our online courses rely on high-stakes exams that are incompatible with the asynchronous online pedagogy employed in the program. All course activities can be successfully completed and assessed online. In general learners are required to demonstrate developing understanding through a variety of assessments that include written work in various forms with formative and summative feedback provided by the instructor.

Part B.3. Program Evaluation

- a) What process is in place to monitor and ***evaluate the effectiveness*** of this particular distance education program on a regular basis?

The Department of Mathematics and Statistics has a yearly evaluation process, including course surveys, graduation surveys and monitoring of course grades. This program will use the same evaluation system as the other accredited degrees.

- b) How will the evaluation results will be used for ***continuous program improvement?***

The Graduate Director routinely reviews evaluation results and arranges for mentoring and other supports where needed to improve instruction. The department faculty members routinely discuss the courses and programs drawing on evaluation results, to discuss any needed improvements.

- c) How will the evaluation process assure that the ***program results in learning outcomes appropriate to the rigor and breadth*** of the college degree or certificate awarded?

The program evaluation is the same for students taking online or campus based courses. Most of these courses are already part of programs with national accreditation. Therefore they meet university requirements for rigor and breadth required of graduate coursework, including credits, format, and assignments needed for a graduate degree.

Part B.4. Students Residing Outside New York State

SUNY programs must comply with all "[authorization to operate" regulations](#) that are in place in other U.S. states where the institution has enrolled students or is otherwise active, based on each state's definitions.

- a) What processes are in place to monitor the U.S. state of residency of students enrolled in any distance education course in this program while residing in their home state?

Distance learning students will be flagged in our integrated administrative system. This will allow regular querying so that we can identify any our of state students who participate from their home state. We can then seek approval from their home state if necessary.

- b) Federal regulations require institutions delivering courses by distance education to provide students or prospective students with contact information for filing complaints with the state approval or licensing entity in the student's

state of residency and any other relevant state official or agency that would appropriately handle a student's complaint. What is the URL on your institution's website where contact information for filing complaints for students in this program is posted? **NOTE:** *Links to information for other states can be found at [here](#).*

www.albany.edu/ir/rtk/

NOTE: *Links to information for other states can be found at <http://system.suny.edu/academic-affairs/distance-learning/>*