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a,b

NOTICE of INTENT (NOI)

New Degree or Extending Degree to New Locations and/or to the Global Campus

Send this completed NOI electronically to the Office of the Provost (provost.deg.changes@wsu.edu)

Degree Title:	BS in Mathematics
Department(s) or Program(s)	Mathematics
College(s):	Arts and Sciences

Contact Name:	Charles Moore, Chair Bala Krishnamoorthy, Campus Program Leader	Email Address:	cnmoore@math.wsu.edu bkrishna@math.wsu.edu
Contact Phone:	x54918 x69167	Proposed start date:	Fall 2016

Mode of Delivery:

Single campus (location): extend existing degree to Vancouver
Multiple locations (list):
Global Campus:
Other:

Rationale for New Degree or Extending the Degree (briefly explain):

The mathematics program in Vancouver currently supports math instructional needs for the entire campus, offers a minor in mathematics, and significantly contributes to the Middle Level Mathematics Endorsement and the Mathematics (Secondary Level) Endorsement across various campuses. In addition, students may obtain a quantitative biology certificate. This proposal is to make the natural extension of offering the BS in Mathematics with options in Secondary Education without certification and in Applied Mathematics.

Collaborative Relationship, if any, with Other Educational Partners (briefly explain):
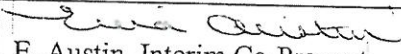
See full proposal

Projected Enrollment:

FTE in Year 1: ___15_____

At Full Enrollment by Year ___6__: _60 FTE

Funding:

Proposed New Funding Required: _____
Proposed Source(s) of Funding (mark all that apply):
  State funding: X
  Self-support (fee-based)
  Other (please specify):

Provost Office Sign:	_E. Austin, Interim Co-Provost_	Date:	August 5, 2015

Comments:
This proposal, originally submitted in AY 2014-15, has been revised to reflect feedback in the Provost's Office review phase and the complete proposal is ready to move to the Faculty Senate for consideration. MFW

Send completed form to: provost.deg.changes@wsu.edu

From:	Anderson, Gayle M
Sent:	Wednesday, September 23, 2015 3:10 PM
To:	Lambeth, Suzanne Terese; Schmidtlein, Barb
Cc:	Anderson, Gayle M
Subject:	Extend BS in Math to Vancouver [printed for packets 9/23/2015]
Attachments:	Extend BS in Mathematics.Vancouver.pdf

Dear Suzanne and Barb,

I am forwarding on to CSC the attached proposal, Extending BS in Math to Vancouver , for your committee review.   Both Library and Budget Committees have reviewed and approved this proposal.

Please let me know when it is out of your committee so it can be forwarded on to AAC.

Thanks,

Gayle Anderson
Principal Assistant
Administrative Professional Advisory Council
Faculty Senate
Washington State University
French Administration Bldg #344
Pullman, WA 99164
Anderson53@wsu.edu or faculty.senate@wsu.edu
509-335-8350

PROPOSAL TO EXTEND A WSU PULLMAN DEGREE PROGRAM TO NEW LOCATION(S) AND/OR THE GLOBAL CAMPUS

Send this completed proposal electronically to the OFFICE OF THE PROVOST (donnac@wsu.edu).

Degree Title: Bachelor of Science in Mathematics:

Department(s) or Program(s): Mathematics

College(s): Arts and Sciences

Degree will be Extended to *(check all that apply)*:

    ☒   New Location(s)   *Vancouver*

    ☐   Global Campus

    ☐   Other   *Explain*

Departmental Contact Name: Charles Moore, Chair

    email: cnmoore@math.wsu.edu   phone: x54918

Campus Contact Name: Bala Krishnamoorthy, Program Leader

    email: bkrishna@math.wsu.edu   phone: x69167

a) DESCRIPTION AND RATIONALE – *briefly* explain:

The mathematics program in Vancouver currently supports math instructional needs for the entire campus, offers a minor in mathematics, and significantly contributes to the Middle Level Mathematics Endorsement and the Mathematics (Secondary Level) Endorsement across various campuses. In addition, students may obtain a quantitative biology certificate. This proposal is to make the natural extension of offering the BS in Mathematics with options in Secondary Education without certification and in Applied Mathematics.

[handwritten: b] [handwritten: Mathematics Teaching Option] [handwritten: a]

    (a) Disciplinary focus of the degree program

[handwritten: b] The BS Mathematics Secondary Mathematics Teaching Option without Certification will focus on providing a broad mathematical background and pedagogical methods specific to the area of mathematics for future educators at the Secondary School level. The program will fill a gap in Southwest WA for place-bound students to obtain teaching credentials in mathematics beyond the endorsement level and become leaders in the field of mathematics education.

The BS Mathematics Applied Mathematics Option will allow students to specialize in mathematical modeling within the fields of science, technology, and engineering. Classroom study will be linked to field experience in areas of student interests through a range of research experiences, internships, and other opportunities. On the Pullman campus, there are three suggested tracks to the BS in Applied Mathematics: Mathematical Modeling, Computational Mathematics, and Operations Research. In Vancouver, the Mathematical Modeling and Operations Research tracks align well with current faculty expertise as well as with campus strengths in science, engineering, and business, allowing for interactions across the campus. We would expect, however, to be able to offer the Computational Mathematics track as interest dictates.

(b) Likely characteristics and career goals of students who will enroll.

The Mathematics Department's undergraduate population in Pullman is comprised of approximately 200 mathematics majors. Of those students, about 40% are pursuing the secondary mathematics teaching options, 40% are pursuing the actuarial option, and about 20% are pursuing the pure and applied mathematics options.
http://www.math.wsu.edu/academics/guide11.pdf

Higher Education Coordinating Board reports show that students living in the Southwest Washington region tend to stay in the area to attend college (HECB, 2005, 2011). We therefore assume that most of our students will be from the Southwest Washington region. Because we have in recent years offered all courses necessary for completion of the BS Mathematics Secondary Teaching Option without Certification, our plan is to initially offer that degree and to phase in the Applied Mathematics Option. Based on this plan, we expect that initially the majority of our students will be in the Secondary Mathematics Teaching option (about 65-70%), with the remainder in Applied Mathematics (30-35%). As the program expands, we expect a distribution of majors similar to that of the main campus.

Graduates with the Secondary Teaching option without certification would go on to complete a Master in Teaching with Secondary Certification and fill needed positions in local and statewide public school systems as math educators and leaders in mathematics education.

Graduates with the Applied Mathematics option would eventually target jobs in government, industry, and/or continue to graduate studies. Many jobs that are closely related to applied mathematics or operations research require a master's degree or a Ph.D. An exception to this rule is employment with the federal government. However, an undergraduate degree in Mathematics can be attractive to employers in combination with a second area of interest, such as another STEM (Science, Technology, Engineering and Mathematics) or business-related field. Employers are often interested in programming skills, so students who intend to find employment after obtaining a bachelor's degree should have computational experience as well as a good grounding in mathematics (WSU Mathematics Handbook, 2011).

(c) Delivery Model
Courses will predominantly be taught on-campus with face-to-face delivery. In addition, we have collaborated with our colleagues on all campuses on the remote delivery and receipt of select courses. For example, we have offered math courses for the middle level endorsement to the Spokane and Tri-Cities campuses (ex. Math 151, Math 303) and graduate courses with the Pullman campus (ex. Math 566), as well as receiving occasional courses (ex. Math 402 Spring 2015 from Pullman).

Rationale for extending the degree to this location or medium

The proposed degree will address a critical missing component in the educational portfolio of Southwest Washington. Currently, Washington students from this region who wish to obtain a BS in mathematics must leave the area or attend a program in the Portland area at higher cost. In addition, the Washington State Legislature recently mandated that public institutions dramatically increase the number of qualified math teachers and students in STEM fields (House Bill 1872). The new major will contribute to the strategic growth goals of WSU Vancouver by adding about 40 new students within five years, with the possibility of further expansion beyond that timeframe.

The investment for offering the BS Mathematics is low. We offer all required mathematics courses for the two educational endorsements, and have also offered all the required courses for the BS Mathematics Secondary Teaching Option. Similarly, we offer all courses required for the mathematics minor, and have offered nearly all of the required courses for the Applied Mathematics option.

(d) Collaborative relationship, if any, with other educational partners.

On campus:
There is a strong demand for mathematics courses on the Vancouver campus, currently driven by students in science, engineering, education, and business. Other departments are also interested in expanding the quantitative skills of their students (psychology, sociology). There is a steady demand for a minor in mathematics, which is sometimes unmet by the scarcity of upper level math courses. Initial concentration will be in high-demand and strategic options: Mathematics Education and Applied Mathematics. These concentrations also draw on the expertise of faculty in other units. In particular, the School of Education (SoE), with its strong focus on educational practices, will be a prime collaborator in the secondary mathematics teaching option, just as the SoE has ongoing collaborations in middle level mathematics, Master's in Teaching (MiT), as well as in the PhD in Mathematics and Science Education programs with mathematics concentration. In addition, the School of Engineering and Computer Science provides a strong basis for applications of mathematics in engineering. Faculty in those areas have focus and expertise in applying mathematics to real world engineering problems.

Off campus:
We currently have collaborative relationships with our community college partners in the region. Our faculty and academic coordinators will continue to develop those relationships to ensure that students who express interest in a mathematics degree are advised appropriately and that the courses included in the Direct Transfer Degree fulfill requirements for the BS Mathematics degree.

iTech Prep, a local public high school located on our campus, will offer unique opportunities for us to recruit high-achieving high school students to the mathematics program. iTech Prep students are currently enrolled in WSU Vancouver courses and we will continue to build on this relationship.

Along with the College of Education, we will continue to build partnerships with other local public schools, currently used for placement of student teachers.

b)   PROJECTED NUMBER OF STUDENTS AND DEGREES

	Site	Year 1	Year 2	Year 3	Year 4	Year 6*
Headcount Enrollments	Pullman					
	Vancouver	15	20	30	40	60
FTE** Enrolled	Pullman					
	Vancouver	11	15	23	30	46
Degrees Awarded	Pullman					
	Vancouver			15	20	30
		N/A	N/A			

Initially estimating 65% Secondary Education Option, 35% Applied Mathematics Option
* Year of full enrollment
** *ANNUAL AVERAGE FTE. For undergraduates, divide total annual credits by 2 to get annual average credits, then by 15 to get AAFTE. For graduates, divide total annual credits by 2 to get annual average credits, then by 10 to get AAFTE. (Assumes that 76% of math majors are FT, consistent with enrollment pattern for the Vancouver campus).*

c) **NEEDS ASSESSMENT** –*Explain the rationale for estimates of student demand for each location and/or the Global Campus, and the employment outlook for students with this degree.*

STEM disciplines in general, and mathematics in particular, have been identified as components of high demand professions both nationally (Bureau of Labor Statistics (BLS), 2013) and in the state of Washington (WSAC 2012, 2013a). A recent study by Washington STEM (WSTEM, 2013) showed that the people in Washington are very enthusiastic and supportive of STEM education as a venue of economic opportunities. *The Roadmap: A Plan to Increase Educational Attainment in Washington*, recently authored by the WSAC (2013b) explicitly states that "Employers are expressing increasing concern over difficulties finding Washington residents with the skills necessary to fill select types of job openings, particularly in the fields of science, technology, engineering, math, and healthcare" (p.18). A degree program in mathematics is a necessary ingredient to increase the output of students with STEM-related degrees in WSU-Vancouver, in order to meet those current and future challenges facing the State of Washington.

The proposed B.S. Mathematics degree will help address the goal of increasing college participation rates by offering a degree unavailable to residents of SW Washington. The Southwest WA region has experienced and is predicted to continue to experience the highest rate of population growth in the state (HECB, 2005, 2011, 2012; WSAC 2012). The studies also note that students living in the Southwest WA region tend to stay in the area to attend college, but that the college participation rate of the population is below average for the state.

The proposed Secondary Mathematics Teaching option will also attract students because of the current need and the projected job growth in this area. A 2010 report from the Office of the

Superintendent of Public Instruction, State of Washington, noted shortages of qualified math teachers in K-12 (STEMWG, 2010). Specifically, in the 2010 STEM Working Group report to the Governor and Washington State Legislature (STEMWG, 2010), several priority recommendations and strategies were identified: (1) the need to "increase the number of candidates, including those from underrepresented populations, seeking careers in STEM teaching"; (2) to increase the number of teachers that hold content endorsements; and (3) a proposed directive that "all state funded colleges and universities with teacher prep programs will offer endorsements and degrees in Science, Technology, Engineering, and Mathematics".

Demand for middle school and secondary school teachers of all disciplines will remain strong over 2010-2020 (Bureau of Labor Statistics, 2013), with a projected increase in demand of 17% for post-secondary teachers of all disciplines nationwide. The Bureau of Labor Statistics points out the rapidly growing western states as those with even higher projected rates of need. The need for teachers in all disciplines is strong, but the need for qualified mathematics teachers is even stronger. There are current shortages nationwide of mathematics teachers, and as a result many school districts have difficulty hiring qualified math teachers.

The proposed Applied Mathematics option fits well in the current educational structure of WSUV and state educational needs (WSAC 2013a,b). One of the strongest drivers for applied mathematics studies, the School of Engineering, provides a fruitful environment for majors to get involved in applications of mathematics. The synergistic relationship will also benefit students whose main interest is in engineering by providing access to peers with increased mathematical sophistication as well as interest in analytical and modeling work. In addition to government positions in analysis and research, the main source of employment for applied mathematicians are engineering companies. The interactions with the School of Engineering will provide majors in Applied Mathematics with opportunities for professional networking that will likely lead to productive careers, as envisioned in WSAC's *Roadmap* (WSAC 2013b). The job outlook for mathematicians is projected to increase 16% from 2010-2020 (Bureau of Labor Statistics, 2013).

The estimates for program size are based on the mathematics program size in Pullman, the relative size of the two institutions, and the projected growth patterns in Vancouver. About 200 students are currently pursuing mathematics majors in Pullman. With Vancouver undergraduate population about 15% of the Pullman population (WSU Facts & Figures, 2012-2013), the projected program size here is about 30 students seeking mathematics degrees. As the Vancouver campus is targeted to grow, expecting to reach about 20–25% of the Pullman undergraduate population, we foresee a full math program size of 40–50 FTE (see Table 2b).

4. CURRICULUM - *explain and provide rationale for any <u>differences</u> between locations or the Global Campus in:*

(a) how university and departmental requirements are satisfied at each location/Global Campus,

University and departmental requirements will be identical to those on the main campus. We will offer fewer courses initially, but will expand course offerings based on student need and enrollments. A table showing proposed course rotations and instructor assignments is shown below.

<center>WSU Vancouver Planned Upper-Level Math Course Teaching Rotation</center>

Class	Fall Even	Spring Odd	Fall Odd	Spring Even	Other Program	Instructor
Math 216 Discrete Mathematics*		1		1	Engr	Mocas (Engr)
Math 220 Linear Algebra*	2	1	2	1	Engr, Sci	Various
Math 273 Calc III*	2	1	2	1	Engr	Krouss, Strigul, Krishnamoorthy
Math 300 Math Computing*				1	Engr, Educ	Mapes, Strigul, Dimitrov
Math 301 Intro to Math Reasoning*		1		1	Educ	Strigul, Krouss, Dimitrov
Math 303 Geometry for the middle school teacher*			1		Educ, Engr	Lesseig, Slavit
Math 315 Differential Equations*		1		1	Engr	Mapes, Dimitrov, Strigul
Math 320 Elementary modern algebra*		1		1	Educ	Mapes, Krouss
Math 330 Methods of teaching secondary math*			1		Educ	Lesseig, Slavit
Math/Biol 340 Math Biology*				1	Engr, Sci	Dimitrov, Strigul
Math 360 Probability and Statistics*	2		2		Engr, Sci	Dimitrov, Strigul, Leslie New
Math 364 Principles of Optimization			1		Engr, Business	Krishnamoorthy
Math 398 Math Snapshots*	1		1		Educ, Engr	Various
Math 401 Intro to Analysis I*			1		Engr	Krouss, Strigul
Math 402 Intro to Analysis II				1 (AMS or face-to-face)	Engr	Krouss, Strigul, Dimitrov
Math 403 Geometry for secondary teachers	1					Simmons
Math 415 Intermediate Differential Equations*		1			Engr	Strigul, Dimitrov
Math 416 Simulation methods		1			Engr, Business	Strigul, Dimitrov
Math 420 Advanced Linear Algebra				1	Engr	Mapes, Krouss, Krishnamoorthy
Math 421 Intro to Algebraic Structures		1			Engr	Krishnamoorthy
Math/Stat 423/523 Stat method for engineers and scientists*	1		1		Engr, Sci, grad	Strigul, Dimitrov, Leslie New
Math 431 Intersection Culture/Math (as T&L 512)*		1		1	Educ	Slavit, various (Ed)
Math 432 Math for college and secondary teachers			1		Educ	Lesseig, Slavit
Math 440/540 Applied Math*	1		1		Engr	Mapes, Dimitrov,

						Strigul
Math 443 Applied Probability*	as needed				Engr, Business	Dimitrov, Strigul, Leslie New
Math 448 Numerical Analysis	as needed			Engr		Strigul, Dimitrov, Mapes
Math 456 or 490	as needed				Engr	Strigul, Leslie New
Math 466/566 Optimization in Networks*	1				Engr, Business	Krishnamoorthy
Math 464 [CAPS] Linear Optimization		1				Krishnamoorthy,
Total Sections	11	11	14	11		

* Courses already being offered on campus.

(b) the content of required courses at each location/Global Campus.

The content of required courses will follow standards set by the Mathematics Department on the main campus, as outlined in the Mathematics Handbook (WSU Mathematics Handbook, 2011) and Mathematics Program Assessment procedures and goals.

5. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

Program outcomes, learning outcomes and program assessment will be similar to what has been established by the Mathematics Department in Pullman, though minor adjustments may be needed to account for different student populations and course offerings (e.g., a course that generates assessment data may be offered less frequently in Vancouver than in Pullman). A math faculty member at WSU Vancouver has been serving as assessment contact for the program and this will continue.

Student Learning Outcomes

The student learning outcomes and assessment tools in the program at WSU Vancouver are expected to be identical to the WSU Pullman campus outcomes and tools. Students completing the undergraduate major in Mathematics will have attained the following:

1. The ability to read and communicate mathematics with understanding and clarity. This includes the ability to use the language of mathematics both in its idiomatic and rigorous forms, to give a clear written or oral explanation of the meaning of certain fundamental concepts and statements and of how such concepts and statements apply in particular situations. This ability includes interpreting and using conventional mathematical notation.
2. The ability to formulate and test conjectures and to construct simple mathematical proofs.
3. Persistence and skill in applying precise, logical reasoning to problem solving.
4. Basic competency in core areas including: calculus, differential equations, linear algebra, probability and statistics, and analysis.

Alignment with the seven goals of the baccalaureate:

Program's Student Learning Outcomes	Seven Goals of the Baccalaureate
1, 2, 3, 4	**CRITICAL and CREATIVE THINKING.** Graduates will use, evidence, and context to increase knowledge, to reason ethically, and to innovate in imaginative ways.
1, 2, 3, 4	**QUANTITATIVE REASONING.** Graduates will solve quantitative problems from a wide variety of authentic contexts and everyday life situations.
	SCIENTIFIC LITERACY. Graduates will have a basic understanding of major scientific concepts and processes required for personal decision-making, participation in civic affairs, economic productivity and global stewardship.
	INFORMATION LITERACY. Graduates will effectively identify, locate, evaluate, use responsibly and share information for the problem at hand.
1, 2, 4	**COMMUNICATION.** Graduates will write, speak and listen to achieve intended meaning and understanding among all participants.
	DIVERSITY. Graduates will understand, respect and interact constructively with others of similar and diverse cultures, values, and perspectives.
1, 2, 3, 4	**DEPTH, BREADTH, AND INTEGRATION OF LEARNING.** Graduates will develop depth, breadth, and integration of learning for the benefit of themselves, their communities, their employers, and for society at large.

Program Assessment

The assessment plan will be as similar as possible to the one adopted in Pullman, striving for a true system-wide assessment. The plan at the launch of the major should be similar to the departmental assessment plan proposed for 2015-2016, which is listed below. Any actions or decisions specific to the Vancouver campus will be documented in future reports. As the department adjusts its assessment plan at Pullman (as the faculty have in the past year), assessment in Vancouver will reflect the same adjustments. For example, if materials from a particular course will be used to assess student learning, that course will be offered on both campuses with adequate frequency to allow for representative assessment or the assessment plan should reflect the modifications needed. Further, Vancouver campus faculty will continue to be included in discussions to update or revise the assessment plan and measures, and have access to assessment materials and archives. A WSU Vancouver Math Program Committee will oversee assessment activities taking place in Vancouver, coordinate with the undergraduate curriculum committee in Pullman, and implement any program changes if needed. The program's assessment archive will remain appropriately available to faculty on both campuses.

Curriculum Map

Core courses	1: Ability to read and communicate mathematics with understanding and clarity	2: Ability to formulate and test conjectures and to construct simple mathematical proofs	3: Develop persistence and skill in applying precise, logical reasoning to problem solving	4. Basic competency in core areas: calculus, differential equations, linear algebra, probability and statistics, and analysis.
171	I	I	I	I
172/182	I	I	R	R
220/230	I/R	I/R	R	R
273/283	I/R	I/R	R	R/M
300	R	I	R	R
301	I/R	I/R	R/M	R/M
315	R	I	R/M	I/R
360/443	R/M	R/M	R/M	R/M
401	M	M	M	M
421/320	M	M	M	M

Legend: I= Introduced; R=Reinforced; M=Mastered

Mathematics Department Assessment Plan for 2015-16

Fall 2015

- Assessment Committee fills out rest of SLO rubric
- SLO rubric taken before the faculty for discussion at a faculty meeting
- Discuss results of preliminary work with the SLO rubric
- Have a norming session related to using the SLO rubric
- Test rubric on student work at both the basic and developing levels to make sure it is appropriate for use at those levels as well as the advanced level
- Bring overarching goals for math majors before the faculty for discussion
- Share Spring 2015 assessment report of the MLC with the faculty
- Discuss assessment of capstone courses within committee
- Monitor enrollment and graduation of majors (including double majors)

Spring 2016

- Collect student work in key classes to assess using the SLO rubric
- Make recommendations based on assessment and share with faculty
- Monitor enrollment and graduation of majors (including double majors)
- Monitor enrollment and pass rates in UCORE and Foundational courses
- Develop senior exit interview questions and interview at least a sample of graduating seniors. As part of the exit interview, find out plans of our graduates such as whether or not they will continue to graduate school and, if so, where. If they will be working, who will they be working for?
- Develop a brief entry survey asking why they chose a math major and what they hope to do with their major.
- Summarize results of the senior exit interviews
- Develop a zzusis query for the grade distributions of graduating seniors in key courses to assess SLO #4

Assessment measures:

Indirect measures

Type of measure	Year(s) collected	Brief description of measure	Relates to which degree SLO?	Relates to which WSU Big 7 or other issue (if any)?
Course Evaluations	2012-2015	Course evaluations are collected in all classes to gather student perception of class and curriculum	1,2,3	CCT,QR,C,DBIL
Placement Data	2012-2015	Placement summaries including best score, change in score, and use of review module.	1,3	CCR, QR
Math 103 Study	2013-2014	Student and instructor surveys, interviews, and focus groups were used to gather information about the effectiveness of the two treatments in the Pullman Math 103 study.	1,2,3	CCT,QR,C

Math Learning Center Usage**	2013-2015	Weekly summaries of usage including average length of visit was gathered and presented at faculty meetings.	1,3		CCT, QR, C

* Vancouver will be added to the study when major begins.
** Quantitative Skills Center at WSU Vancouver; Usage data collected since 2012. Additional data collected through student surveys.

Direct measures

Type of measure	Year(s) collected	Brief description of measure	Relates to which degree SLO?	Relates to which WSU Big 7 or other issue (if any)?
Math 103 Study	2013-2014	Student work, exam scores, and skills assessment	1,2,3	CCT, QR, C
Common Exams in Foundational Courses	2012-2014	Common exams are administered in many UCORE QR classes and most foundational classes.	1,2,3	CCT, QR, C
Capstone projects	2013-2014	Capstone courses were approved and each included specific projects identified as capstone projects	1,2,3,4	CCT, QR, I, C, DBIL
Candidate review for Sec. Ed. Program*	2012-2014	As part of the review process for admission to the program, faculty assess and rank the candidates based on SLOs 1-4, their professional disposition, interview results, GPA and whether they have completed the WEST-B	1,2,3,4	CCT, QR, I, C, DBIL

** To be initiated in Vancouver at start of major.

6. DIVERSITY -- *Identify strategies for promoting diversity at each new location and/or Global Campus.*

The Admissions staff and Assistant Director for Student Diversity at WSU Vancouver will incorporate information about this program into their event programming. Events that specifically target underrepresented populations include the MOSAIC: Education, Leadership and Diversity Conference, campus visits by Boys and Girls Club, AVID, GEAR UP, TRIO, MESA and Washington State School for the Blind. We will collaborate with MESA to present the program at the regional MESA day organized every spring. Mathematics faculty will also continue to participate in these events by presenting mathematical activities and discussing math careers with the attending students. Math faculty will also attend annual regional and national conferences which target underrepresented populations (SACNAS*, NWMC**).

*Society for Advancement of Hispanics/Chicanos and Native Americans in Science
**Northwest Mathematics Conference

We will continue to work with our community college partners, including faculty and advising staff, to increase awareness of the mathematics program and proposed degree.

In terms of retention, the Vancouver campus has adopted two programs aimed at academically at-risk students: LEAPS (Learn, Explore, Achieve and Promote Success), and CLASP (Critical Literacies Achievement and Success Program). Mathematics faculty will continue to be partners in these two programs. The campus also offers a variety of resources to help students succeed academically: tutoring, study skills and stress management workshops, supplemental instruction, and peer mentorship. Tutoring is available in small groups through the Quantitative Skills Center. Individual tutors are available through the Student Resource Center for a small fee (currently $10/hour). PELL-eligible students qualify for tutoring scholarships, also administered by the SRC.

7. RESOURCE ASSESSMENT – *Identify basic resources needed to deliver program at each new location and/or Global Campus.*

> **a) Faculty and Staff** – *In order to extend this program, what is your faculty hiring plan at each location/Global Campus - both transitionally and long-term - for tenure-track, clinical and adjunct faculty, TAs, and staff?*

WSU Vancouver has been building up the infrastructure for a math degree program for the last 3 years. Hiring is completed at a level sufficient to offer the foundation and advanced courses of the program. Currently there are 4.25 tenure lines in mathematics. This includes Leslie New, a new assistant professor in statistics who joined the faculty in January 2015, and Bala Krishnamoorthy, an associate professor of mathematics who transferred from the Pullman campus in Fall 2014. Two faculty members from the College of Education, including one with a .25 FTE appointment in the Math department, also contribute to the teaching of math education classes in the math program. There are four full-time instructors who predominantly teach the foundation classes shared with Engineering and Science, but also contribute to some of the advanced classes based on their levels of expertise. An additional full-time instructor has been hired with temporary funds.

Administrative and advising staff for the major will be provided by CAS. This support will continue as previously. The main readjustment here will be the transition of an advisor to more specific advising of students in the math program. Advising is expected to increase commensurate with program growth to a .50 position in Year 5. CAS support staff will also likely expand over time, given enrollment growth in sciences and the college as a whole. Allocation of personnel effort to the math major is shown below.

See TABLE 2 on p. 16.

Notes:

*Faculty member has a .25 FTE appointment in Department of Mathematics and .75 FTE in the College of Education.

**Math faculty members teach 3 courses per year. In addition to courses serving the major, faculty members' instructional commitment includes occasional graduate courses and introductory math classes, so effort was reduced by two courses per year. In any given year, total courses in the major taught by tenure-line math faculty=10.

***Teaches occasional math courses supporting secondary teaching option, but appointment is in the College of Education.

> **b) Curriculum** – *What resources will be available to develop and maintain the necessary courses at each location/Global Campus?*

Most math classes do not require special resources beyond a room and a whiteboard. Some will involve technology for computer-based mathematics, most of which is available on campus and used by the introductory mathematics sequence. When specialized software is needed, its cost will be offset through course fees.

a) **Assessment** – *What faculty will be available to participate in assessment, and to coordinate assessment in this location, to ensure that students and courses in this location are included in program-level assessment?*

Assessment will be coordinated by the current program leader of mathematics on the Vancouver campus. All faculty will implement standardized and system-wide coordinated assessment tools in their classes.

8. FUNDING -- *Describe the funding model for extending program to the proposed new location(s) and/or Global Campus.*

(a) Describe and justify the budget requirements.

No new funds are needed to launch this degree program on the Vancouver campus. The instructional cost per AAFTE for the math program in Vancouver in AY13-14 was just under $4000. Included in this amount are costs for several courses required for the math major but that also serve other programs on campus, especially sciences, engineering, and education. In AY14-15, we added two more tenure-line faculty in math, increasing our instructional capacity significantly. Instructional costs per AAFTE for AY14-15 for the math program as a whole were $5437.

In AY15-16 and beyond, instructional costs for the math program *as a whole* will grow commensurate with campus enrollment and enrollment in science, engineering, and education. (Even without the math major, AAFTE in math has been steadily increasing.) It is therefore difficult to estimate the *net* costs of the math major over the next five years. As noted, math majors are required to take several math courses that are currently offered because they are required for other majors besides math (e.g., 171/172, 220, 273, 301, 303, 315, 330, 360). More sections of these courses will be needed regardless of the math major, and most are normally taught by instructors. By year 3 of the major, we will likely need additional math elective courses at the 300 and 400 levels. These can be offered on a rotating basis. With four full-time tenure-line faculty in math we have the capacity to teach these classes, which will also serve as electives for students in other programs. New net instructional costs for the math major are thus likely to be fairly minimal, perhaps equivalent to the addition of one instructor (8 courses) by Year 5.

Current funding for the math program comes from PBL that has already been allocated or from temporary CAS funds. With expected enrollment increases for the campus and programs that require math courses, additional funding for the program as a whole will be required. Net new funds for the math major will be a small portion of these funds, equivalent to one additional instructor position.

See Table 2 on p. 16.

(b) Will the program be state-supported or self-supported (fee-based)?

Mathematics is a state-sponsored program.

(c) *What tuition will be charged?*

Standard WSU undergraduate tuition rates.

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Use Table 1 to report enrollment projections						
Students	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Headcount	15	20	30	40	50	60
AAFTE	7.6	11.4	22.8	30.4	38	45.6

*Note on Year "N": Please replace the letter "N" with the year in which you expect the program to reach full enrollment.

Mathematics

8/4/2015

	1st FTE	2nd FTE	Nth* FTE	1st Academic Year	2nd Academic Year	Nth* Academic Year
Total Student HDC	15	20	60	15	20	60
Total Student AAFTE	7.6	11.4	42	11.4	15.2	45.6
				↑Enrollment values linked to Table 1↑		

Personnel

	1st FTE	2nd FTE	Nth* FTE	1st Academic Year	2nd Academic Year	Nth* Academic Year
Faculty	↓Insert employee FTE by job title↓			↓Insert annual salaries by job title↓		
Professor* (Slavit)	0.125	0.125	0.125	$10,946	$10,946	$10,946
Associate Professor** (Krishnamoorthy)	1.00	1.00	1.00	$75,375	$75,375	$75,375
Assistant Professor** (Leslie New)	0.66	0.66	0.66	$46,200	$46,200	$46,200
Assistant Professor** (Dimitrov)	0.66	0.66	0.66	$44,627	$44,627	$44,627
Assistant Professor** (Strigul)	1.00	1.00	1.00	$64,993	$64,993	$64,993
Assistant Professor*** (Lesseig)	0.125	0.125	0.125	$7,630	$7,630	$7,630
Instructor (Various)	1.00	1.00	2.00	$45,000	$45,000	$90,000
Subtotal	4.57	4.57	5.57	294,771	294,771	339,771
Exempt						
Academic Advisor (AP) (Earhart)	0.25	0.25	0.40	11,248	11,248	17,996
Subtotal	0.25	0.25	0.40	11,248	11,248	17,996
Classified						
Classified (Office Asst II) (Various)	0.20	0.20	0.25	6,400	6,400	8,000
Subtotal	0.20	0.20	0.25	6,400	6,400	8,000
Total Personnel	5.02	5.02	6.22	312,419	312,419	365,767

Benefits

↓Insert benefits based on current benefit rates↓

Faculty	84,305	84,305	97,175
Exempt	3,734	3,734	5,975
Classified	2,957	2,957	3,696
Total Benefits	90,996	90,996	106,845

<u>Link to current benefits model rates</u>

Goods and Services		8,570	8,570	9,570
Travel		4,570	4,570	5,910
Equipment		-	-	-
Total Direct Costs		416,555	416,555	488,093
Total Indirect Costs	35%	224,299	224,299	262,819
Total Costs		640,854	640,854	750,912
One-Time Costs	*User inputs one-time costs→*	0	0	0
Recurring Costs	*Formula calculates recurring costs→*	640,854	640,854	750,912
Total Costs		640,854	640,854	750,912
Calculated total cost per student AAFTE:		56,215	42,161	16,467
Calculated direct cost per student AAFTE:		36,540	27,405	10,704

Revenue			
Internal Departmental /Area Reallocation	416,555	416,555	488,093
Enrollment Funding	-	-	-
New State Funds	-	-	-
WSU Allocation (Institutional reallocation)	-	-	-
Indirect Allocation (Central reallocation for support services)	224,299	224,299	262,819
Other <Insert Description>	-	-	-
Total Revenue	640,854	640,854	750,912
	TRUE	TRUE	TRUE

↑Total costs must equal total revenue↑

Note on Year "N": Please replace the letter "N" with the year in which you expect the program to reach full enrollment.