



NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): Ozarks Technical Community College

Program Title: Associate of Science in Mathematics

Degree/Certificate: Associate of Science

Options: Click here to enter text.

Delivery Site(s): Ozarks Technical Community College

CIP Classification: 27.0101

*CIP code can be cross-referenced with programs offered in your region on MDHE's program inventory highered.mo.gov/ProgramInventory/search.jsp

Implementation Date: Fall, 2016

Cooperative Partners: Click here to enter text.

*If this is a collaborative program, form CL must be included with this proposal

AUTHORIZATION:

Dr. Steven Bishop, Provost

Name/Title of Institutional Officer


Signature

11-16-15

Date

Renee Graves, Coordinator of Curriculum

Person to Contact for More Information

417-447-8115

Telephone

www.dhe.mo.gov • info@dhe.mo.gov

205 Jefferson Street, P. O. Box 1469, Jefferson City, MO 65102 • (573) 751-2361 • (800) 473-6757 • Fax (573) 751-6635



STUDENT ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
Full Time	25	55	65	75	85
Part Time	5	15	25	25	25
Total	30	70	90	100	110

Please provide a rationale regarding how student enrollment projections were calculated:

Enrollment projections were calculated by using enrollment trends in Calculus III courses in conjunction with enrollment trends in other Associate of Science in STEM degree offerings at Ozarks Technical Community College.

Provide a rationale for proposing this program, including evidence of market demand and societal need supported by research:

The Associate of Science in Mathematics develops a pathway for students who plan to transfer and complete a Bachelor of Science in mathematics or related field at a four-year institution while also allowing them to earn an associate's degree in the process. The degree requirements provide structure in course selection allowing them to focus on their discipline specific requirements. AS math students will have a high level of understanding of mathematics and related STEM fields. In addition, these students will have completed a significant number of courses in general education. Therefore, these students will be well positioned to complete a bachelor's degree as they continue their educational goals. The U.S. Department of Commerce (2012) notes that job growth in STEM fields is projected to be almost two-times greater than in non-STEM fields. In Missouri, workers in STEM sectors earn 32.4% more with an associate's degree than non-STEM workers and the 2022 projected job growth for STEM occupations is higher than the combined growth of all other occupations (Missouri Economic Research and Information center, 2014).

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Missouri Economic Research and Information Center (Oct, 2014). "Missouri's STEM Occupations and Education."

http://www.missourieconomy.org/pdfs/stem_ed_booklet.pdf

U.S. Department of Commerce (Jan, 2012). The Competitiveness and Innovation Capacity of the United States.

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Form SE - Student Enrollment Projections



PROGRAM STRUCTURE

A. Total credits required for graduation: 62

B. Residency requirements, if any: _____

C. General education: Total credits: 35

Courses (specific courses OR distribution area and credits):

Course Number	Credits	Course Title
MTH 140 (or higher)	5	Analytical Geometry/Calc I
ENG 101	3	Composition I
ENG 150	3	Technical Writing
COM 105	3	Public Speaking
Humanities Elective	3	
BIO 160	4	General Biology I
PHY 220	5	Physics for Engineers and Scientists I
PLS 101	3	American Government and Politics
ECO 270	3	Principles of Macroeconomics
CIS 120	3	Problems Solving and Programming Concepts

D. Major requirements: Total credits: 17

Course Number	Credits	Course Title
MTH 141	5	Analytical Geometry/Calc II
MTH 215	3	Algebraic Structures
MTH 240	3	Analytical Geometry/Calc III
MTH Electives	6	Elective math courses. Choose from MTH 210, MTH 230, or MTH 241

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E. Free elective credits:

10

(Sum of C, D, and E should equal A.)

F. Requirements for thesis, internship or other capstone experience:

None

G. Any unique features such as interdepartmental cooperation:

None

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Form PS – Program Structure



PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name Ozarks Technical Community College
Program Name Associate of Science Degree in Mathematics
Date November 10, 2015

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

1. Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.
There are no special preparations and qualifications for the Associate of Science Degree in Mathematics
- Characteristics of a specific population to be served, if applicable.
This degree will increase access to mathematical studies in common STEM under-represented student populations. Specific diversity goals include students from low socio-economic backgrounds, women, and minority students.

2. Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
A master's degree with 18 graduate hours of related coursework from a regionally accredited institution of higher education.
- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.
It is estimated that 65% of the courses in the Associate of Science in Mathematics degree will be taught by full time faculty members.
- Expectations for professional activities, special student contact, teaching/learning innovation.
Faculty members are required to document twenty hours of professional development on an annual basis. Faculty members are required to be faculty advisors and will advise students who have designated this as their degree option.

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5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. **If there are no plans to seek specialized accreditation, please provide a rationale.**

There are no plans to seek individual accreditation for this program. As an Associate of Science Degree, current regional accreditation provides adequate credentials for this degree.

6. Alumni and Employer Survey

- Expected satisfaction rates for alumni, *including timing and method of surveys*. Graduation surveys will be distributed to those students completing the program. It is anticipated that students will respond with a 90% or higher satisfaction rate.
- Expected satisfaction rates for employers, including timing and method of surveys. As a transfer degree, this program will not have traceable data to determine employer satisfaction.

7. Institutional Characteristics

- Characteristics demonstrating why your institution is particularly well-equipped to support the program.

Ozarks Technical Community College is well suited to offer the Associate of Science in Mathematics because of the strong working relationship developed between the mathematics departments at OTC and Missouri State University. In addition, OTC has demonstrated a strong transfer agreement with MSU for students pursuing bachelor's degrees in other STEM related studies.



Missouri State

UNIVERSITY

Gavin O'Connor, Ph.D.
Special Assistant to the Provost
Ozarks Technical Community College
1001 E Chestnut Expressway
Springfield, MO 65802

Dear Dr. O'Connor

This letter is written in support of the Associate of Science (AS) degree proposal in Mathematics from Ozarks Technical Community College. The proposed AS in Mathematics at Ozarks Technical Community College would transfer to Missouri State University. Students interested in this degree program should be offered advising at both institutions to facilitate a smooth transition. Upon successful completion of the AS in Mathematics degree at OTC, students would be able to transfer to Missouri State University for either the BS non-comprehensive mathematics degree or the BSED degree in mathematics. The AS degree from OTC does not provide all General Education requirements at MSU, students will need to work with advisors at both institutions in this regard. The non-comprehensive degree requires select core mathematics courses, plus 12 credit hours in upper level mathematics dependent on the option chosen (Actuarial, Applied, General Math, Statistics) and a minor in another discipline. Similarly, the BSED degree requires select core courses in mathematics and mathematics education along with core courses in education and psychology needed for certification at the secondary level. Attached to this letter are proposed Transfer Degree Plans for each degree to assist students in planning on transferring to MSU with the AS degree from OTC that spell out the details of these requirements.

The AS in Mathematics from OTC will be particularly popular for students majoring in mathematics. Further, the AS degree from OTC will be of interest to students intending to major in other STEM fields who wish to pursue a minor or second major in mathematics from Missouri State University. This partnership will allow these students to complete the program in a shorter time period than the typical A.A. degree currently offered at OTC. MSU will continue to monitor course equivalencies at OTC.

Sincerely,

Tamera S. Jahnke, Dean
College of Natural and Applied Sciences
Missouri State University

William Bray, Department Head
Department of Mathematics
Missouri State University

COLLEGE OF NATURAL & APPLIED SCIENCES

901 South National Avenue • Springfield, Missouri 65897 • 417-836-5249 • TDD 1-800-735-2966 • Fax 417-836-6934
www.missouristate.edu • cnas@missouristate.edu

An Equal Opportunity/Affirmative Action/Minority/Female/Veterans/Disability Employer and Institution



MATHEMATICS

The following is a guide to graduation with a bachelor's degree in **MATHEMATICS** by completing two years at OTC and two years at MSU.

Year 1 and Year 2 at OTC	
<p>Complete OTC's Associate of Science in Mathematics degree. Include the following OTC courses, as they will transfer and fulfill part of your MSU major requirements. Note: Unlike the AA degree, the AS degree does not automatically fulfill MSU's general education requirements.</p>	
OTC course	MSU equivalent
MTH 140	MTH 261
ENG 101	ENG 110
ENG 150	GEC 105 (Writing GenEd)
COM 105	COM 115
<p>Humanities – Choose one: ART 101 or ART 105 or ENG 180 or HST 105 or HST 106 or HUM 101 or HUM 102 or MUS 105 or PHL 101 or PHL 120 or PHL 125</p>	GEC 111 (Humanities GenEd)
BIO 160	BIO 121
PHY 220	PHY 203
PLS 101 or HST 120	PLS 101 or HST 121
ECO 270	ECO 155
CIS 120	CSC 130
Electives (10 credit hours)	See item 4 below.
MTH 141	MTH 280
MTH 215	MTH 315
MTH 240	MTH 302
<p>Elective math courses- Choose MTH 230 and 241</p>	MTH 533 and 303

Year 3 and Year 4 at MSU			
First Fall semester	Hours	First Spring semester	Hours
MTH 421 Numerical Analysis	3	MTH 503* Advanced Calculus	3
MTH 532* Abstract Algebra	3	MTH 540* Statistical Theory I	3
Course for Minor	3	Electives/GenEd	6
Electives/GenEd	6	Course for Minor	3
Total hours	15	Total hours	15

Second Fall semester	Hours	Second Spring semester	Hours
MTH Required Electives	6	MTH 497* Topics	1
Courses for Minor	6	MTH Required Electives	6
Electives	5	Courses for Minor	6
Total hours	17	Total hours	13

Important Notes Relative to this Major

1. The major has four options: Actuarial Mathematics, Applied Mathematics, General Mathematics, and Statistics. Your MSU advisor will assist you in planning your personal schedule for the last two years based on the option you select.
2. The major requires a minor. Consult the MSU Catalog or the MSU Transfer Advisor for more details.
3. There is a 125-hour requirement for graduation.
4. The AS degree does not cover the following MSU General Education Requirements: Social Science (3), Arts (3), History (3), Cultural Competence (3), Public Issues (3). Total of 15 credit hours. However the AS degree has 10 credit hours in electives, so with planning most of MSU's general education requirements can be covered. Alternatively, these 10 elective credits can be used to begin taking courses toward your MSU minor. Please work with you advisor.
5. A student following this guide may be an excellent candidate for MSU's Accelerated Master's Program, see <http://math.missouristate.edu/graduate/acceleratedmasters.htm>
6. Starred courses above form the math core and provide the Mathematics Public Affairs Capstone.
7. This information is provided as a guide. Students are required to fulfill MSU graduation requirements to receive a degree and should consult their MSU advisor and the MSU undergraduate catalog for details, including the policy under which a transfer student who remains continuously enrolled may follow MSU graduation requirements in effect when the student first enrolled at their transfer institution (OTC).

Important resources for MATHEMATICS majors

MSU departmental office

Mathematics

Cheek Hall, Room 10M

417-836-5114

<http://math.missouristate.edu>

Email: Mathematics@missouristate.edu

MSU transfer advisor

Dr. William Bray

Department Head

417-836-5114

wbray@missouristate.edu

Online resources for prospective transfer students

Specific information for OTC students

www.missouristate.edu/otc

MSU catalog

www.missouristate.edu/catalog

General transfer information

www.missouristate.edu/admissions/transfer

Transfer equivalency guide

www.missouristate.edu/admissions/colcredit.htm

For assistance with admission and general questions

Donna Rebmann

MSU-OTC Transfer Help Desk

417-447-6926

DonnaRebmann@MissouriState.edu

Additional contact information available at: www.missouristate.edu/admissions/otcinformationdesk.htm

Dixie Williams

Assistant Director of Admissions-Transfer Coordinator

417-836-5517

DixieWilliams@MissouriState.edu

This document was prepared by the MSU Department of Mathematics in conjunction with MSU Office of Admissions. This information was last updated on September 18, 2014 and is subject to change.



MATHEMATICS: BSED

The following is a guide to graduation with a bachelor's degree in **MATHEMATICS** for secondary teachers by completing two years at OTC and two years at MSU.

Year 1 and Year 2 at OTC	
<p>Complete OTC's Associate of Science in Mathematics degree. Include the following OTC courses, as they will transfer and fulfill part of your MSU major requirements. Note: Unlike the AA degree, the AS degree does not automatically fulfill MSU's general education requirements.</p>	
OTC course	MSU equivalent
MTH 140	MTH 261
ENG 101	ENG 110
ENG 150	GEC 105 (Writing GenEd)
COM 105	COM 115
<p>Humanities – Choose one: ART 101 or ART 105 or ENG 180 or HST 105 or HST 106 or HUM 101 or HUM 102 or MUS 105 or PHL 101 or PHL 120 or PHL 125</p>	GEC 111 (Humanities GenEd)
BIO 160	BIO 121
PHY 220	PHY 203
PLS 101 or HST 120	PLS 101 or HST 121
ECO 270	ECO 155
CIS 120	CSC 130
PSY 110	PSY 121
Electives (7 credit hours)	See item 4 below.
MTH 141	MTH 280
MTH 215	MTH 315
MTH 240	MTH 302
<p>Elective math courses- Choose MTH 210 and 230</p>	MTH 340 and 533

Year 3 and Year 4 at MSU			
First Fall semester	Hours	First Spring semester	Hours
MTH 460 College Geometry	3	MTH 532 Abstract Algebra	3
MTH 575 History of Math	3	MTH Required Elective	3
SEC 302 Method Instruction & Field Exp.	3	PSY 360 Devel. of Adolescent Student	3
EDC 150 Intro to Teaching	0	MTH 409 Teaching & Learning of Math I	3
General Education Courses	6	RDG 474 Reading and Writing in Content Field	3
Total hours	15	Total hours	15

Summer Semester	
EDC 345 Multicultural Education	3 credit hours
SPE 340 Educational Alternatives	3 credit hours

Second Fall semester	Hours	Second Spring semester	Hours
MTH Required Electives	3	MTH 493 Student Teaching	6
MTH 410 Teaching & Learning of Math II	3	MTH 494 Student Teaching	6
MTH 411 Teaching & Learning of Math III	3		
EDC 350 School & Society	3		
GenEd/Electives	3		
Total hours	15	Total hours	12

Important Notes Relative to this Major

1. There is a 125-hour requirement for graduation.
2. The AS degree does not cover the following MSU General Education Requirements: Arts (3), History (3), Cultural Competence (3), Public Issues (3). Total of 12 credit hours. However the AS degree has 7 credit hours in electives, so with planning most of MSU's general education requirements can be covered. Please work with you advisor.
3. This information is provided as a guide. Students are required to fulfill MSU graduation requirements to receive a degree and should consult their MSU advisor and the MSU undergraduate catalog for details, including the policy under which a transfer student who remains continuously enrolled may follow MSU graduation requirements in effect when the student first enrolled at their transfer institution (OTC).

Important resources for MATHEMATICS majors

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Mathematics

Cheek Hall, Room 10M

417-836-5114

<http://math.missouristate.edu>

Email: Mathematics@missouristate.edu

MSU transfer advisor

Dr. William Bray

Department Head

417-836-5114

wbray@missouristate.edu

Online resources for prospective transfer students

Specific Information for OTC students

www.missouristate.edu/otc

MSU catalog

www.missouristate.edu/catalog

General transfer information

www.missouristate.edu/admissions/transfer

Transfer equivalency guide

www.missouristate.edu/admissions/collcredit.htm

For assistance with admission and general questions

Donna Rebmann

MSU-OTC Transfer Help Desk www.missouristate.edu/admissions/otcinformationdesk.htm

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