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## Mathematics/Middle Grades (MTHM)

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## Mathematics/Middle Grades

		instruction.
MSSN122	Title	Secondary Instrument Guitar II.
	Prerequisites	MSSN 121; Music majors or minors only.
	Number and type of credits	2 hours studio.
	Course Description	Continuation of MSSN 121. Group instruction.
MSSN203	Title	Keyboard Musicianship III.
	Prerequisites	MSSN 102.
	Number and type of credits	2 hours studio.
	Course Description	Continuation of MSSN 102. Group instruction. Previous course MSSN 103 effective through Spring 2014.
MSSN204	Title	Keyboard Musicianship IV.
	Prerequisites	MSSN 203.
	Number and type of credits	2 hours studio.
	Course Description	Continuation of MSSN 103. A final comprehensive examination must be passed at the end of the semester. Group instruction. Previous course MSSN 104 effective through Spring 2014.
MTHM101	Title	Foundations of Pre-Service Mathematics.
	Prerequisites	By permit only; Failing score on Praxis 1 Core Math exam or those that plan to take the Praxis 1 Core Math exam.
	Number and type of credits	1 hour lecture.
	Course Description	This course will focus on the foundations of mathematics necessary for pre-service teachers to have a mastery of mathematics in preparation for careers in teaching. Students study an overview of four major content areas in mathematics: numbers and quantity, algebra and functions, geometry, statistics and probability. For students applying to majors in the School of Education.
MTHM201	Title	Mathematics in Elementary Schools I.
MTHM201	Prerequisites	ECEL 200.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course is intended for undergraduate students seeking certification to teach early childhood and elementary school (P-3, K-6). The course will

provide prospective early childhood and elementary school teachers with opportunities to develop deep, connected understandings of (1) content included in the Operations & Algebraic Thinking and Number & Operations strands of the Common Core State Standards for Mathematics (CCSSM), as well as (2) factors that influence student learning of that content, (3) characteristics of instruction that are effective in promoting development of student understanding of the concepts from operations and algebraic thinking and number and operations included in the Pre-K through grade 6 mathematics curriculum, and (4) research on student learning of Pre-K through grade 6 operations and algebraic thinking and number and operations.

MTHM302	<p>Title</p> <p>Prerequisites</p> <p>Number and type of credits</p> <p>Course Description</p>	<p>Mathematics in Elementary Schools II.</p> <p>ECEL 200 and MTHM 201.</p> <p>3 hours lecture.</p> <p>The course is intended for undergraduate students seeking certification to teach early childhood and elementary school (P-3, K-6). The course will provide prospective early childhood and elementary school teachers with opportunities to develop deep, connected understandings of (1) content included in the Geometry, Measurement &amp; Data, and Fraction Operations strands of the Common Core State Standards for Mathematics (CCSSM), as well as (2) factors that influence Pre-K through grade 6 student learning of that content, (3) characteristics of classroom instruction that are effective in promoting development of student understanding of elementary geometry, measurement and data, and fraction operations, and (4) research on student learning of elementary school geometry, measurement and data, and fraction operations.</p> <p>Previous course MTHM 202 effective through Spring 2011.</p>
MTHM505	<p>Title</p> <p>Prerequisites</p> <p>Special Fee</p> <p>Number and type of credits</p> <p>Course Description</p>	<p>Number and Operations in the Middle Grades.</p> <p>Acceptance in the certificate or Master's program in Teaching Middle Grades Mathematics (TMGM) and permission of the graduate program coordinator.</p> <p>Special fee.</p> <p>3 hours lecture.</p> <p>Topics are organized around the fundamental concepts of number and operations with them. This course prepares middle-grade teachers to help their students understand numbers, ways of representing numbers, relationships among numbers, number systems, operations on numbers, how to compute fluently and how to make</p>

		reasonable estimates.
MTHM506	Title	Algebra and Algebraic Thinking in the Middle Grades.
	Prerequisites	MTHM 505 and permission of graduate program coordinator.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Topics from pre-algebra and algebra are studied to prepare middle-grades mathematics teachers to enable all students to understand patterns, relationships and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; and analyze change in various contexts. Topics initially approach algebra from a numerical perspective. Strategies for gradually increasing the use of variables and abstract thinking with middle-grade students are discussed.
MTHM507	Title	Geometry for Middle-Grade Math Teachers.
	Prerequisites	MTHM 505 and permission of graduate program coordinator.
	Special Fee	Special fee.
MTHM507	Number and type of credits	3 hours lecture.
	Course Description	Topics are organized around the fundamental concepts of geometry, the use of geometric thinking as a problem-solving tool, and the methods and techniques needed to help students understand and apply these concepts and skills in the middle grades. Teachers gain the knowledge needed to enable their students to develop spatial sense and an ability to use geometric properties and relationships to solve problems in mathematics and in everyday life. Specific emphasis is placed on recognizing, visualizing, representing, and transforming geometric shapes in two and three dimensions.
MTHM508	Title	Data Analysis and Probability in the Middle Grades.
	Prerequisites	MTHM 505 and permission of graduate program coordinator.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Topics include the basics of collection, summarization, and interpretation of data, and the fundamental ideas of probability. Sampling techniques, experimental design, graphical and numerical summarization of data and the

		basic ideas of drawing conclusions from data are discussed. Methods for teaching these concepts in the middle grades are discussed in tandem as the material is presented.
MTHM509	Title	Measurement in the Middle Grades.
	Prerequisites	MTHM 507 and permission of graduate program coordinator.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Topics are organized around the fundamental and unifying topic of measurement. What attributes of an object are measurable? How are those attributes measured? What system of measurement should be used? What are the units and how are the results converted to other systems? Measurement is a topic that is found across the school curriculum, not just in the mathematics curriculum, and thus it is a topic that can be used to develop cross-subject discussions and investigations. Methods for teaching measurement in the middle grades are discussed in tandem with the content being studied.
MTHM511	Title	Workshop in Mathematics Education.
	Prerequisites	MTHM 505 and permission of Graduate Program Coordinator.
	Number and type of credits	3 hours lecture.
	Course Description	Specific contemporary topics and current issues in school mathematics. May be repeated for a maximum of 6 credits as long as the topic is different.
MTTH131	Title	Freshman Studio I.
	Special Fee	Special fee.
	Course Description	A rehearsal and performance laboratory, focusing on musical theatre material with an emphasis on thorough and efficient preparation as the student develops movement and musicianship skills and ensemble performance technique.
MTTH132	Title	Acting for the Singer I.
	Prerequisites	MUCP 101 or equivalent. Music and Musical Theatre majors only. Departmental approval.
	Number and type of credits	2 hours lecture.
	Course Description	Acting for the singer is a music performance course focused on the issues of acting in musical/dramatic works. Students will learn an analytical process for the construction and performance of a dramatically viable character within a musical/dramatic work, and apply this process to the preparation of 3-4 songs/arias/duets during the course of each semester.