Teachers College Course of Study
Domain: Mathematics Content (5-12)
Subdomain: Part XII: College Algebra, Linear Algebra, and Abstract Algebra (MBC)

Description:
This Course of Study has been designed to help students prepare for the MBC4 or MBC5 assessment.

Introduction
This is an Objective Exam. The topics of this exam are covered in the MEA and MRA Courses of Study. The sub-domain of MBC covers the topics outlined in MEA and MRA Courses of Study that were not evaluated via the tasks found in the MEA and MRA assessments. It is necessary for candidates wishing to take the MBC objective exam to have previously completed the MEA and MRA assessments.

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                              Tuesday, 6-10 pm, Eastern Time Zone
                              Wednesday, 1-6 pm, Eastern Time Zone
                              Thursday, 1-6 pm, Eastern Time Zone
                              Friday, 1-6 pm, Eastern Time Zone

Disposition Statement: Western Governors University supports the development and demonstration of professional teaching dispositions throughout the course of its Teachers College (TC) licensure programs. All TC students and faculty will demonstrate the following dispositions described in the Teachers College's conceptual framework and code of ethics:

Competent and caring
Respectful and embracing of diversity
Reflective practitioners
Equitable and fair
Professional practice consistent with the belief that all students can learn
Collaborative professionals
Professional leaders and change agents

Please review the <Teachers College Code of Ethics> found in the WGU Student Handbook.

Appropriate Calculator: The TI-84+ graphing calculator, its predecessors TI-82, TI-83, or TI-83+, or equivalent calculators of other brand are recommended. Graphing calculators possessing built-in Computer Algebra Systems (CAS) are not allowed to be used on competency exams, so we recommend you do not use such a calculator while working on the mathematics tasks and topics. To download your TI screenshots to your computer, you will need a TI Connectivity Kit, available at: http://education.ti.com/educationportal/sites/US/productDetail/us_ti_connectivity_kit.html

Week 1
Linear Algebra Objective Exam Review
Begin preparing for the MBC objective assessment by reviewing the linear algebra topics and concepts covered on the exam.
Background Information
The topics and concepts on this assessment are related to those which were covered by the tasks found in the MEA and MRA assessments. They cover Linear and Abstract Algebra.

Competency 203.1.2: Linear & Abstract Algebra (p100162)
The graduate understands the basic concepts and important results in linear algebra and abstract algebra and understands the wide applicability of linear and abstract algebra to other areas of mathematics.

Vector Spaces
Vector Space Review

- **Review vector space properties & definition.**
  Review Sections 4.1 – 4.3 in Linear Algebra and its Applications, by Lay.

  Work even numbered problems in each section, and check your answers in back of text.

  **URL:** [www.coursecompass.com](http://www.coursecompass.com)

  Login to the website above to access the MyMathLab e-text resource for this text.

Linear Transformations
Linear Transformation Review

- **Review Linear Transformation definition, properties & applications.**
  Review Sections 1.8 and 1.9 in Linear Algebra and its Applications, by Lay. Work even numbered problems in each section, and check your answers in back of text.

  **URL:** [www.coursecompass.com](http://www.coursecompass.com)

  Login to the website above to access the MyMathLab e-text resource for this text.

Vectors
Vector Review

- **Review Vector Properties, Characteristics & Applications.**
  Review Sections 1.3 and 1.4 in Linear Algebra and its Applications, by Lay. Work even numbered problems in each section, and check your answers in back of text.

  **URL:** [www.coursecompass.com](http://www.coursecompass.com)

  Login to the website above to access the MyMathLab e-text resource for this text.

Matrices
Review Matrix properties, characteristics and applications.
Textbook Content Review
Review Sections 1.4; 1.9; and 2.1-2.3 in Linear Algebra and its Applications, by Lay. Work even numbered problems in each section, and check your answers in back of text.

URLs: www.coursecompass.com

Login to the website above to access the MyMathLab e-text resource for this text.

Pre-Preassessment
Take an online assessment covering the Linear Algebra topics covered by both the pre-assessment (PAMB) and the actual MBC assessment.

Online multiple choice pre-preassessment.
URL: www.coursecompass.com

Login to the website above to access the MyMathLab e-text resource for this text. Click on the Practice Assessment button found on the left hand side of the website. Then click on the click ‘here’ link to launch the test.

Week 2
Abstract Algebra objective exam review.
Begin preparing for the MBC objective assessment by reviewing the Abstract Algebra topics and concepts covered on the exam.

Background Information
The topics and concepts on this assessment are related to those which were covered by the tasks found in the MEA and MRA assessments. They cover Linear and Abstract Algebra.

Competency 203.1.2: Linear & Abstract Algebra (p100162)
The graduate understands the basic concepts and important results in linear algebra and abstract algebra and understands the wide applicability of linear and abstract algebra to other areas of mathematics.

Groups
Review of Groups

Review Groups: Definition and Properties.
Review chapter 4 in An Introduction to Abstract Algebra with Notes to the Future Teacher, by Nicodemi; Sutherland, and Towsley.

Work odd numbered problems in each section, and check your answers in back of text.

Rings & Fields
Review of Rings & Fields
- Review groups: definition and properties.
  Review sections 2.4 and 2.5 in An Introduction to Abstract Algebra with Notes to the Future Teacher, by Nicodemi; Sutherland, and Towsley.

  Work odd numbered problems in each section, and check your answers in back of text.

Week 3

Linear and Abstract Algebra objective exam review.
Begin preparing for the MBC objective assessment by taking the PAMB pre-assessment.

Background Information
The topics and concepts on this pre-assessment cover Linear and Abstract Algebra.

Competency 203.1.2: Linear & Abstract Algebra (p100162)
The graduate understands the basic concepts and important results in linear algebra and abstract algebra and understands the wide applicability of linear and abstract algebra to other areas of mathematics.

Pre-Assessment PAMB.
Take the pre-assessment associated with the MBC assessment.

- Refer for the PAMB pre-assessment.
  Take the pre-assessment under genuine exam conditions. (You will be able to take it as soon as your mentor approves the referral.)

  Use one writing utensil, one blank sheet of paper (at a time), a graphing calculator (such as the TI-84+), that does not possess a Computer Algebra System; and a time limit of 60 minutes. It is important to make this practice test as realistic as possible, because this first time is the only one with good predictive power for your performance on the exam – because of test familiarity, the reliability of results from taking it a second time are low.

Interpret the PAMB Pre-Assessment Results.
You should get your results in an email from your mentor no more than three business days after you take the pre-assessment – you will receive two sub-scores: Linear Algebra and Abstract Algebra. The scoring notes will also contain topic titles which should help you focus on that which you missed. Plan to revisit those areas on the MEA and MRA COS, as well as reviewing those topics within this MBA COS.

- Study Plan
  Design a study plan based on your results to strengthen your areas of lowest performance. Be specific in your plan, not only about what chapters/Websites/courseware modules you'll review, but also how much time you will spend and when.

  A website dedicated to helping students study: http://www.ucc.vt.edu/stdysk/stdyhlp.html

  This site contains tips for studying for a math final: http://coolmath.com/finaltip.htm
Week 4

Linear and Abstract Algebra objective exam review.
Take the MBC assessment.

Background Information
The topics and concepts on this assessment cover Linear and Abstract Algebra.

Competency 203.1.2: Linear & Abstract Algebra (p100162)
The graduate understands the basic concepts and important results in linear algebra and abstract algebra and understands the wide applicability of linear and abstract algebra to other areas of mathematics.

Assessment MBC.
Take the MBC assessment.

- Refer for the MBC Assessment.
  You will be able to take it after your mentor approves the referral and the Assessment Scheduling Department has made the arrangements.
  You should bring writing utensils, blank sheets of scratch paper, and a graphing calculator (such as the TI-84+) that does not possess a Computer Algebra System. This assessment has 10 items and a time limit of 60 minutes.

Interpret the MBC assessment results.
You should get your results in an email from your mentor no more than three business days after you take the assessment – you will receive two sub-scores: Linear Algebra and Abstract Algebra. The scoring notes will also contain topic titles which should help you focus on that which you missed. If you have not passed the MBC, plan to revisit those topic areas on the MEA and MRA COS, as well as reviewing those topics within this MBA COS.

- Study Plan
  Design a study plan based on your results to strengthen your areas of lowest performance. Be specific in your plan, not only about what chapters/Websites/courseware modules you’ll review, but also how much time you will spend and when.

  A website dedicated to helping students study: http://www.ucc.vt.edu/stdlib/stdyhlp.html
  
  This site contains tips for studying for a math final: http://coolmath.com/finaltip.htm

Feedback
If you wish to provide feedback on this course of study, please contact Rob Duncan, Mathematics Program Coordinator, at rduncan@wgu.edu.