MATH220 - Linear Algebra

Document Type: Master Course Outline Supplemental
Proposal Type: Revision
Requester(s): Rick A Downs
College: South
Origination Approved: 06/12/2014 - 1:09 PM

BASIC INFORMATION

Requester(s): Rick A Downs

College: South Seattle Community College

Division/Dept: Academic Programs

Dean: Laura Kingston

Peer Reviewer(s): Ted Coskey

COLLEGE SUPPLEMENTAL

Proposed Quarter of Implementation: NA ☑ Request Provisional Exception

The district was told by the state board that we need to change number of the prerequisite for this course from Math& 153 to Math& 163. Math 220 will be offered Summer 2014.

Class Capacity: 35

Modes of Delivery: (Check all that apply)

- ☑ Fully On Campus
- ☐ Fully Online
- ☑ Hybrid
- ☐ Other Explanation:

Select the Special Designation(s) this course will satisfy, if applicable:

(No Special Designations Selected)

Class Schedule Description:

Intro to linear algebra and its implications. Includes systems of linear equations, matrices, determinants, vector spaces, inner product spaces, and eigenvalue problems. Prerequisite: MATH&163 with a 2.0 or higher or permission.

Student Learning Outcomes:

Computation

Use arithmetic and other basic mathematical operations as required by program of study

Apply quantitative skills for academic and career purposes

Critical Thinking and Problem-Solving

Think critically in evaluating information, solving problems, and making decisions

Technology

Select and use appropriate technological tools for academic and career tasks

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Program Outcomes:

SLO #	Included in Course Objective Number	SSCC Student Learning Outcomes
SLO 1.1		Communication - Read and listen actively to learn and communicate.
SLO 1.2		Communication - Speak and write effectively for academic and caree
SLO 2.1	1 - 17	Computation - Use arithmetic and other basic mathematical operatio by program of study.
SLO 2.2	1 - 17	Computation - Apply quantitative skills for academic and career purp
SLO 3.1		Human Relations - Use social skills to work in groups effectively.
SLO 3.2		Human Relations – Have knowledge of the diverse cultures represent multicultural society.
SLO 4.1	1 - 17	Critical Thinking—Think critically in evaluating information, solving pr making decisions.
SLO 5.1	1 - 17	Technology - Select and use appropriate technological tools for acad tasks.
SLO 6.1		Personal Responsibility – Uphold the highest standards of academic h integrity.
SLO 6.2		Personal Responsibility – Respect the rights of others in the classroo all other school activities.
SLO 6.3		Personal Responsibility – Attend class regularly, complete assignmen effectively participate in classroom and online discussions, group wo class-related projects and activities.
SLO 6.4		Personal Responsibility – Abide by appropriate safety rules in laborat classrooms.
SLO 7.1		Information Literacy—Independently access, evaluate, and select inf variety of appropriate sources.
SLO 7.2		Information Literacy – Have knowledge about legal and ethical issue use of information
SLO 7.3		Information Literacy - Use information effectively and ethically for a s

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Course Outcomes / Objectives:

After completing this course, you should be able to

1. Solve linear systems of equations Ax=b using Gaussian elimination.
2. Perform the operations of addition, scalar multiplication, multiplication, and find the inverses and transposes of matrices and work with inverse matrices.
3. Manipulate elementary matrices.
4. Calculate determinants using row operations, column operations, and expansion down any column or across any row.
5. Solve systems of equations with Cramer's Rule.
6. Understand the definitions of Vector Space, Linear Independence, Basis and Dimension.
7. Work with the cross product and dot product.
8. Describe the concept of Orthogonality and determine the Orthogonal Projection onto a subspace.
9. State what a vector space and a vector subspace are. Work with linear independence, basis, change of basis. Find the dimensions of vector spaces, rank, nullity, etc.
10. Find the standard matrix for a matrix transformation.

11. Compute eigenvalues and eigenvectors of a matrix.
12. Use eigenvalues and eigenvectors to diagonalize, compute powers of or compute the exponential of a matrix.
13. Find least-squares approximations for an overdetermined system.
14. Apply the Gram-Schmidt process to find an orthogonal basis for a subspace.
15. Be able to orthogonally diagonalize a matrix.
16. Find the kernel, rank, range and nullity of a linear transformation.
17. Prove elementary theorems concerning linear algebra.

Explain the student demand for the course and potential enrollment:

The class is offered twice a year.

Explain why this course is being revised:

The prerequisite for this course was changed from Math& 153 to Math& 163.

What challenges, if any, do you foresee in offering this course:

None.

This is to certify that the above criteria have all been met and all statements are accurate to the best of my knowledge.

Faculty involved in originating this program:

Rick A Downs	*Rick A Downs*	5/12/2014
Print Name	**Signature**	**Date**

Dean:

Laura Kingston	*Laura Kingston*	5/30/2014
Print Name	**Signature**	**Date**

Results of SSCC Curriculum Coordinating Council Findings

Participating Faculty Response and Remarks

[X] Recommended for approval

[ ] Not recommended for approval

Chairman, Curriculum Coordinating Council:

Diane Schmidt	*Diane Schmidt*	6/12/2014
Print Name	**Signature**	**Date**

Vice President for Instruction:

Donna Miller-Parker	*Donna Miller-Parker*	6/12/2014
Print Name	**Signature**	**Date**