UNIVERSITY OF MARY WASHINGTON – EXPEDITED COURSE CHANGE PROPOSAL

Submit this form electronically, beginning with the first required level of review (department or college level). Each level of review passes the form and any attachments to the next level when the action is approved.

Submitted by: Randall D. Helmstutler	**Date Prepared: 9/26/2019**
Department/Discipline(s) and Course Number(s): MATH 253	
Course Title: Introduction to Cryptography	

Type of change (*check all applicable*):
Number* _____ Title_____ Description__X__ Prerequisites ____ Deletion_____ Cross list**____
**This course number must be approved by the Office of the Registrar before the proposal is submitted. With this course proposal, attach a list of ALL COURSES that will be affected by the number change (for example, cases where the course number that is changing is a prerequisite for another course).*

***To cross list courses between departments/colleges, there should be two cover sheets submitted with the proposal – one by the chair of each department with signatures from the relevant College Curriculum Committee Chair.*

Effective Date: FALL Semester, Year __Fall 2020_____

Current Catalog Entry	**Proposed Catalog Entry** (suggested length – less than 50 words)
MATH 253 – Introduction to Cryptography (3) Prerequisites: MATH 201 or CPSC 284. An introduction to standard encryption schemes and the relevant mathematics, including the classical symmetric ciphers, Diffie-Hellman key exchange, and modern public key encryption systems. Also includes cryptanalysis techniques in the context of standard message attacks.	***MATH 253 – Introduction to Cryptography (3)*** Prerequisites: MATH 201 or CPSC 284. An introduction to standard encryption schemes and the relevant mathematics, including the classical symmetric ciphers, Diffie-Hellman key exchange, and modern public key encryption systems. Also includes cryptanalysis techniques in the context of standard message attacks. Credit for only one of MATH 253 or MATH 453 may count toward degree requirements.

JUSTIFICATION *(including impact on majors, minors, concentrations, and general education courses within the University curriculum; attach additional pages if required).* **Any change that impacts another Department must have a written statement (such as a copy of an email) from the Chair(s) agreeing to the change.**

MATH 253 is a required course in the cybersecurity major, but may also count as a 200-level elective in the mathematics major. While MATH 253 was designed specifically for the cybersecurity major, we are currently proposing an upper-level theory course in cryptography (MATH 453) as a 400-level elective for mathematics majors. We have proposed MATH 453 to have MATH 431 (Abstract Algebra I, a required major course) as a prerequisite. A mathematics major taking MATH 431 and 453 would have sufficient exposure to cryptography as to make MATH 253 redundant and obsolete (it would be going backwards, in essence). Similarly, a student applying all of 253, 431, and 453 to the mathematics major would not exhibit the breadth we wish to see in our majors. Hence we wish to prevent a student from earning credit for both 253 and 453. As both 253 and 453 are electives in mathematics, this will affect no double majors or minors.

TRANSITION PLAN (*describe how will students who are in Catalogs where the course is required for a major be accommodated; attach additional pages if required)*

This change does not affect majors in cybersecurity. Since MATH 453 does not yet exist, this change does not affect majors in mathematics either.

Approvals

Department Chair___Randall D. Helmstutler_____ **Date: ___9/26/2019___**

College Curriculum Chair_____ **Date:**_____11/25/19_____

Expedited course changes are posted for a 10-class day comment period. If no comments are raised, the proposal becomes final. All expedited proposals approved in this way will be noted on the UCC web site. If comments are raised, the proposal may be reviewed by the UCC and then approved or it may be returned to the CCC for additional deliberation (as required).

From: Ian Finlayson (ifinlay)
Sent: Friday, September 27, 2019 7:48 AM
To: Andrew Marshall (amarsha2); Randall Helmstutler (rhelmstu)
Subject: Re: MATH 253

Hi Randall,

Sounds fine to me too.

Thanks,
- Ian

From: Andrew Marshall (amarsha2) <amarsha2@umw.edu>
Sent: Thursday, September 26, 2019 9:27 PM
To: Randall Helmstutler (rhelmstu) <rhelmstu@umw.edu>; Ian Finlayson (ifinlay) <ifinlay@umw.edu>
Subject: Re: MATH 253

Hi Randall,
This sounds reasonable to me.
Best,
Andrew
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From: Randall Helmstutler (rhelmstu) <rhelmstu@umw.edu>
Sent: Thursday, September 26, 2019 1:42:41 PM
To: Ian Finlayson (ifinlay) <ifinlay@umw.edu>; Andrew Marshall (amarsha2) <amarsha2@umw.edu>
Subject: MATH 253

Ian and Andrew,

We are proposing a small curricular change to the description of MATH 253, a required course in your cybersecurity major. This is coming about because we are proposing our own upper-level theory course (MATH 453) in crypto. Because the prereq of MATH 453 will be MATH 431, a student completing MATH 453 will already know all of MATH 253. So, we wish to prevent this "gaming" of the system. We are proposing that credit may only be earned for ONE of 253 or 453. Since 453 is an elective in mathematics, this shouldn't affect any double majors or minors.

If you approve of this change, please let me know. And, importantly, also let me know if you don't!

Thanks,

RH

Randall D. Helmstutler | Chair and Associate Professor
Department of Mathematics | University of Mary Washington
(540) 654-1329

Office hours: MWF 9:30-11:00 | T 1:30-2:30 | Th by appt only