Advising Newsletter
Department of Mathematics and Statistics

Dear Majors and Minors in the Department of Mathematics and Statistics,

Registration for Spring 2019 classes will start November 6th. We cannot emphasize enough the importance of meeting with your advisor to discuss your academic plans, progress, and career goals. To encourage you, every student who meets with their advisor will be entered to win a **$25 gift card** from the bookstore. To enter the raffle, please pick up an entry form when you meet with you advisor. Fill out the information and drop the form into the box in the department office. We'll draw and announce the winner once registration is over. If you haven't met with advisor yet, please reach out to them to arrange a meeting. Good luck in the drawing!

Here are a number of general department announcements that you should be aware of:

1. *Highlights and recent curricular changes:*
   - *Sophomore/Junior Seminar:* Dr. Marcus will again be offering a .5 unit course MAT 270 to introduce students to topics not normally seen in the foundational courses of the curriculum, career opportunities, research methods, and the use of computers.
   - *Cryptography:* MAT 370-01 will be a cryptography course taught by Dr. Schmoyer. The prerequisite is MAT 200.
   - *Math Finance:* Dr. Akhunkov will be offering a half-course (MAT 370-02) on mathematical finance. The prerequisites are MAT 205 and MAT 229.
   - *Honors Calculus:* MAT 128-H1 is an honors section of Calculus B that has approximately 20% more material and covers additional theoretical material and additional applications.
   - *MAT 255: Perspectives on the Development of Mathematics* is now offered every Spring semester.
   - CSC 220: Sections 01, 02 of CSC 220 in Spring 2019 are tailored for math/stat majors. If you are taking CSC 220, try to enroll in one of these sections.
   - Seminar requirement: Math/Stat majors must attend four department colloquia in their junior year or senior year (fall semester) as a prerequisite for their capstone course.
   - *Minors:* Students with minors should plan their schedule so that they can complete the minors, if possible, before their last TCNJ semester. A few students have experienced problems where a required course for the minor conflicts with the required capstone for their major.
   - *Computer Science courses*: Students interested in taking upper level computer science courses or pursuing a Computer Science minor should consider the new Computer Science course CSC 271: Discrete Structures of Computer Science for Math Majors. The course meets once a week and is worth .5 course units and is for students who have taken MAT 200. Completion of this course allows students to register for CSC courses that

have CSC 270 as a prerequisite. Interested students should contact Prof. Salgian (salgian@tcnj.edu) in the CS department.

2. *Internships:* The department offers students the opportunity to earn academic credit for internships with the courses MAT 299/399, STA 299/399, and MTT 299. For more information, please see the department webpage for details and contact internship coordinators Dr. Mizuhara, Dr. Ochs, and Dr. Liebars (for MTT 299).

3. *Sections of Courses.* The following list shows the currently anticipated number of sections to be offered for the upper level courses in the major. The list of all regular offerings can be found on the course offering page of our web site: http://mathstat.pages.tcnj.edu/information-for-students/courses-2/courses/ .

<table>
<tr><td colspan="2" align="center">*Spring 2019 Semester (# of sections)*</td></tr>
<tr><td>270: Sophomore/Junior Seminar (1)</td><td>453: Seminar in Analysis (1)
498: Capstone (2)</td></tr>
<tr><td>301: Number Theory (2)</td><td></td></tr>
<tr><td>305: Abstract Algebra (1)</td><td>490: Clinical Practice II (as needed)</td></tr>
<tr><td>310: Real Analysis (2)</td><td>498: Math Secondary Ed Capstone (1)</td></tr>
<tr><td>330: Math. Biology* (1)</td><td></td></tr>
<tr><td>326: Differential Equations (2)</td><td>306: Applied Multivariate Analysis (1)</td></tr>
<tr><td>351: Geometry (1)</td><td>404: Computational and Bayesian
          Statistics (1)</td></tr>
<tr><td></td><td>410: Mathematical Statistics* (1)</td></tr>
<tr><td></td><td>498: Capstone (1)</td></tr>
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= an Applied Mathematics Options course

4. *Waiting Lists.* The Department will again have a waiting list for all closed classes. Once your registration time opens up, if a class is closed, you should fill out the Google wait list form (the link is at the top right of our web site). As students change courses, and spots open up in closed classes, the Department will fill the spots with students from the wait-list. The wait list should be used only when there is a closed section that you need to enroll in and there is no open section that fits your schedule.

5. *Seat Reservations*: Some courses have seat reservations to help ensure that students from different specializations and majors can take the course. At registration, a course might be listed as open, but because of seat reservations, PAWS might not let register for the course. If you experience this, please try to register for another section of the course. If none fit your schedule, please let us

know by filling out the waitlist. We will do our best to see if you can be enrolled.

6. *Differential Equations*. All students considering the Applied Mathematics specialization should take MAT 326: Differential Equations as early as possible in their college career, and if possible, no later than the end of their sophomore year. We have reserved seats in the course for applied math students and all sophomore math majors.

7. *Math Capstone courses:* Students in the mathematics specialization can choose to take either the Mathematics capstone or the Applied Mathematics capstone. Here are the descriptions of the two capstones:
   - The applied mathematics capstone will allow students the flexibility to explore a topic in applied mathematics that is of interest to them. The topic must fit into one of four broad themes: 1) differential equations/dynamical systems, 2) mathematical modeling, 3) optimization, 4) numerical analysis. Independent of which theme a student chooses to focus on, the student will have the option of exploring a theoretical aspect of the topic, or considering a real-world application of the subject. The topic will be chosen in consultation with the professor, taking into account student interest and background.
   - The mathematics capstone will allow students the flexibility to explore a topic in mathematics that is of interest to them. The topic must fit into one of four broad themes: 1) topology of surfaces 2) winding numbers 3) graph theory 4) quotient groups and group presentations. The topic will be chosen in consultation with the professor, taking into account student interest and background.

8. *Capstone Courses Requirements:* Mathematics (non-ed) students should plan their schedules so that they meet the following prerequisites for their capstone course.
   - For Applied Mathematics: Prerequisites: Senior Standing and completion of MAT 310, MAT 326, CSC 220 (or CSC 250), and two 300/400 MAT or STA options. Corequisites: Two additional 300/400 MAT or STA options.
   - For Mathematics: Prerequisites: Senior Standing, and completion of MAT 305, 310, one MAT 400-level course and one additional 300/400-level MAT course. Corequisites: Two additional MAT 300/400 courses.
   - For Statistics: Senior Standing, and completion of MAT 316 and two 300-level courses. Corequisite: STA 410.

9. *Capstone Courses:* All senior Mathematics and Statistics majors are required to complete a capstone course (MAT/STA 498). These courses are only offered in the Spring semester. When planning your fall schedule, you should ensure that your schedule will allow you to take the capstone course in the spring. Also, students who expect to graduate in Fall 2019 will need to take the capstone course in the Spring 2019 semester. Education students take the capstone course that accompanies Clinical Practice II. Please make sure that you have completed the necessary prerequisites for the capstone. Remember that one of the prerequisites for the capstone is to attend four seminar/colloquium presentations in your junior and senior years prior to taking the capstone course. Students currently enrolled in a capstone will be giving presentations at the end of the

Spring semester. Other students, especially juniors, are encouraged to attend.

10. *Departmental Honors*. Departmental honors are awarded by our department at graduation and appear on one's transcript. They are independent of the College's Honors Program, and the Latin honors (*summa cum laude*, …) awarded at graduation. To earn departmental honors, students must have a 3.5 GPA in mathematics and statistics courses and complete the following:
    - A student must engage in independent research during their junior or senior year. The student should successfully complete an Independent Research 493 course during a semester they spend on-campus, and prepare a paper which will be due the middle of their last (graduating) term. A presentation (which we envision being a 40 minute talk, perhaps during a lunch period) will be given in the two week period following the submission of the paper. The members of the student's Honors Committee will be present, and be given ample opportunity to ask the students questions about their research to gauge their level of understanding.

    There will be Honors presentations in April in the department. Students considering departmental honors should attend these presentations.

We wish you a successful registration session. Please write or see us if you have any questions!

Sincerely,

Professor Thomas Hagedorn   Professor Cathy Liebars
Chair   Associate Chair
Department of Mathematics and Statistics   Department of Mathematics and Statistics