UNIVERSITY OF NEBRASKA AT OMAHA

OMAHAS. Omaha Mathematics Academy for High Achieving Students

Topic. The Theory of Numbers, also known as The Higher Arithmetic, is a subject known for an abundance of questions that are easy to grasp, but notoriously difficult to solve:

> The ancient Greeks knew that there are infinitely many integer triples that satisfy the Pythagorean equation $a^2 + b^2 = c^2$. The most familiar of these solutions are (3,4,5) and (5,12,13). Famously, Fermat conjectured in 1637 that any related equation $a^n + b^n = c^n$ with $n \geq 3$ has no integer solutions, except "trivial" ones where one of the coordinates is zero. For example, $2^n + 0^n = 2^n$. This problem, which became known as "Fermat's Last Theorem," remained unsolved for over 300 years before Andrew Wiles solved it in 1995.

The nice balance between accessibility and challenge means that Number Theory is often used to introduce the young mathematician to the creativity and beauty inherent in mathematics. Such is the case with the Ross Mathematics Program at The Ohio State University rossprogram.org and PROMYS at Boston University promys.org.

In Spring 2020, UNO will be offering a course in the Theory of Numbers to high achieving high school students. The course will be taught be Dr. Griff Elder, assisted by two UNO Scott Scholars double majoring in mathematics and computer science/engineering.

- Students will be selected based upon their performance at the UNO Math Contest, as well as, high school teacher recommendations addressing the student's problem solving ability as well as their written ability to explain their ideas.
- Class will be held at UNO on Saturday's from10:00 AM – 2:00 PM. Lunch provided.
- Tentative calendar: January 18 through May 9. March 7, 14 off (OPS Spring Break).
- Students will have the opportunity to take this course for 3 UNO credit hours at approximately the dual enrollment rate of $250. Note: This course is not actually dual enrollment, and thus it will not result in high school credit.
    - Students with financial need may use the Access College Early (ACE) Scholarship for the entire cost of tuition. Please contact your high school counselor.
- The textbook, Elementary Number Theory & its applications by Kenneth H. Rosen, will be provided on loan.

Carl Friedrich Gauss, one of the greatest mathematicians to have ever lived, is said to have claimed: "Mathematics is the queen of the sciences and number theory is the queen of mathematics."

Patrick Kerrigan (UNO Class of '74) is supporting this activity by generously providing each participant with what is roughly a $500 scholarship to reduce the cost of tuition from the Early Entry rate to the Dual Enrollment rate. He is also providing lunch each Saturday.

For More Information:

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University of Nebraska Omaha