THEORY OF NUMBERS, Math 115 B
Some Suggested projects

1. Write a program that counts the number of lattice points inside planar simple polygons.
2. Write an essay on the Riemann Hypothesis. What is it and why is it important.
3. Explain how the knapsack cyphering method can be broken (work by Shamir and Zippel).
4. Discuss what are pseudorandom numbers and how one can obtained them using number theory. Why are pseudorandom numbers important?
5. Write a computer program that implements a simple version of the RSA encryption method.
6. Discuss the problem of representing integer numbers in terms of quadratic forms.
7. which numbers are the sum of 5 nonzero squares?
8. Discuss all you can about the LLL algorithm to find the shortest vector of a lattice. Explain connections to cryptographic systems.
9. choose a famous sequence of integers (e.g Fibonacci numbers, binomial coefficients, etc) and investigate all you can about it.
10. What are Elliptic curves and why are they interesting for computer applications.
11. Write an essay on the life and work of Minkowski, Gauss, Euler Wiles, or any other famous number theorist. Discuss in detail one theorem of your choice.