THE UNIVERSITY OF CHICAGO
2005 Summer VIGRE Program for Undergraduates

This announcement describes an eight-week summer program of research and teaching for undergraduates at the University of Chicago. Its first year of operation was 2000. Although final word on funding will not be received from the NSF until the middle of April, we are determined to operate the program in 2005.

In this program, students have the opportunity for study and research in mathematics together with work in two of the outreach programs of the Department of Mathematics. Students participate in at least one of four courses taught by Department of Mathematics faculty members. They also work as counselors in either the Young Scholars Program (YSP) or the SESAME teacher development program.

The purpose of the summer VIGRE program is to provide an opportunity for students to be involved in a deeper experience in mathematics than is usually available during the academic quarters and to allow them to be effective partners in the educational outreach programs of the Mathematics Department. This program is especially beneficial for undergraduates who are considering graduate study and research in mathematics and for those who are interested in teaching mathematics at any level.

DATES: June 20–August 14, 2005

STIPENDS: Funding permitting, each student will receive a stipend of $3000, payable in two equal installments at the end of July and the end of August.

ACCOMMODATIONS: Students are expected to find their own accommodations. Graduate students and past participants will offer advice and assistance.

APPLICATIONS: Students must be currently registered students at the University of Chicago and must be United States citizens or permanent residents. Application forms for the summer of 2005 will be available in Eckhart 211 and 212 on Friday, February 25, and are due Monday, March 7, 2005. Completed applications should be returned to Ryerson 350.

THE PROGRAM OF STUDY AND RESEARCH: Students attend courses taught by Department of Mathematics faculty. The courses consist of lectures and problem solving sessions; graduate student assistants run help and problem sessions. Some research problems and some problems aimed simply to aid understanding are introduced by the professors. No previous knowledge or study in the areas taught is required. In addition, opportunities for reading and research with graduate students and/or faculty are offered.

Work with YSP and SESAME takes place during the third through eighth weeks. The first two weeks have a larger proportion of lectures than the intermediate weeks, setting up background in some areas, giving self-contained presentations in others. There will student presentations on days to be determined later. Participants are required to be in residence the full eight weeks, and it is hoped that many will make presentations. These can be made by individuals or by groups working together. Depending on demand, there may be an "apprentice program" lasting four weeks, whose participants will typically be freshmen and sophomores who have not been in advanced matheamtics courses.

Graduate student counsellors will be on hand ready and willing to offer help throughout the program. Moreover, each student will be paired with a graduate

student mentor, who will meet with the student on a regular basis and will be available to offer tutorials.

The program offers a wide variety of material at various mathematical levels. Some is problem oriented, some introduces areas that are not ordinarily encountered in the undergraduate curriculum. There will be lots of problems, including research problems, that students can work on in groups or alone throughout the program — and later!! Students are encouraged to work together and to organize evening and weekend sessions.

The program for 2005 has not yet been firmly established. Many faculty have volunteered to participate. As a provisional first approximation, we have in mind 4 eight week sequences of courses at various levels, one on discrete mathematics, one on topology and geometry, one on analysis and applied mathematics, and one problem and discussion sequence.

1. DISCRETE MATHEMATICS
Laszlo Babai

2. PROBLEMS, COMBINATORICS, and WHO KNOWS WHAT
Miklos Abert, Carley Klivans, Peter May

3. TOPICS IN APPLIED MATHEMATICS
Fausto Cattaneo, Marta Lewicka, Peter Gordon, Eduard Kirr

4. GEOMETRY and TOPOLOGY
Benson Farb, Uri Bader, Chris Hruska, Roman Muchnik

5. ANALYSIS (special lectures)
Robert Fefferman

Abstracts will be made available in early March.
To give an idea, the list of courses from 2002, 2003, and 2004 can be found at http://www.math.uchicago.edu/ may/VIGREMaster.html.

THE COUNSELOR PROGRAM: Each VIGRE student serves as a counselor in either YSP or SESAME. YSP is a four-week program for mathematically talented seventh through twelfth graders. There are three components: one for students in grades 7-8, one for students in grades 9-10, and one for students in grades 11-12. The YSP consists of lectures, problem solving sessions led by VIGRE counselors, and computer sessions. Counselors are assigned to a particular component and to a small group of students for problem solving and computer sessions. SESAME is a two-week program for elementary teachers from the Chicago Public Schools. VIGRE Counselors work in one of several courses in the SESAME program, and serve in much the same capacity as they do in YSP.

WEEKLY YSP and SESAME WORK SCHEDULE:
Week 1 (June 20 – 24) Free
Week 2 (June 27 – July 1) 9:00 - 12:00 Preparation and training sessions
Week 3 (July 5 – 8) YSP duties 9:30 a.m. - 2:30 p.m.
Week 4 (July 11 – 15) YSP duties 9:30 a.m. - 2:30 p.m.
Week 5 (July 18 – 22) YSP duties 9:30 a.m. - 2:30 p.m.
Week 6 (July 25 – 29) YSP duties 9:30 a.m. - 2:30 p.m.
Week 7 (August 1 – 5) SESAME duties 9:00 - 4:00
Week 8 (August 8 – 12) SESAME duties 9:00 - 4:00