



Director: Richard Waring
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YEAR 6

BACK TO WORK, & BACK TO THE MOON !

This summer marked the 20th anniversary of the US walk on the moon, and the President committed the country to doing it again, and even traveling to Mars. The last five years of the MPI have prepared nearly 300 students with calculus and physics and perhaps laid a foundation for their future studies in fields supporting this new ambitious space program. We have endeavored to join the nationwide movement toward a more solid education in mathematics and the sciences these last five years, and will continue to do so. But we must not forget that our strength comes from the support of parents and out of the talents of our high school staff, and we thank them all.

Social Security Number.

Daily Schedule of High School Classes.

Schedule of Extracurricular Activities.

High School Counselor's Name.

Car License Number, Make and, Model for those ever planning to drive to the Institute.

Ideas for Enrichment Speaker topics.

Otherwise, we look forward to seeing our newest class on Wed. Sept. 6!

THE 1989 MPI AWARDS PRESENTATION

THE TOP 10 MPI STUDENTS OF 1988-89

Our final awards presentation was held on May 19, 1989, during which we were pleased to present many of our 1988-89 students with the following variety of awards:

Certificates for Outstanding Achievement (college grade of A or B) in:

CALCULUS I

(Name)	(School)
Evan Carpenter	Truman
Melissa Chance	Wm Chrisman
Kevin Crosby	Wm Chrisman
Brian Edgar	Van Horn
Jay Eifler	Wm Chrisman
James Hitchcock	Wm Chrisman
Dean Keeling	Wm Chrisman
Steve Kuhn	Truman

STUDENT ORIENTATION

SEPT. 6 - 8, 1989

Each year the first three days at the Institute are spent in giving our students an overview of how we operate, a discussion of our policies on attendance, grading, etc., and two diagnostic tests. Time is then set aside for the instructors to informally 'get to know' their classes before we all become preoccupied with classwork.

In particular, on the first day, Sept. 6, 1989, we'll provide each student with a packet of information and have each of them fill out a personal data form. This last requires that all students bring with them the following information:

Andrea Linville	Fort Osage
Audrey Linville	Fort Osage
Rachel Mack	Truman
Todd Myers	Wm Chrisman
Tammy Phelps	Wm Chrisman
Cindy Roby	Wm Chrisman
Mike Schmidt	Wm Chrisman
Candi Smith	Van Horn

6)	Candi Smith	Van Horn
7)	Tammy Phelps	Wm Chrisman
8)	James Hitchcock	Wm Chrisman
9)	Dean Keeling	Wm Chrisman
10)	Stephanie Young	Fort Osage

CALCULUS I and II

Anthony Aguilera	Fort Osage
Jeff Coleman	Truman
Jon Fox	Fort Osage
Seth McMenemy	Truman

PHYSICS

Evan Carpenter	Truman
Jeff Coleman	Truman
Sean Combs	Fort Osage
Kevin Crosby	Wm Chrisman
Brian Edgar	Van Horn
Jay Eifler	Wm Chrisman
Jon Fox	Fort Osage
Jesse Hafemeister	Fort Osage
James Hitchcock	Wm Chrisman
Dean Keeling	Wm Chrisman
Andrea Linville	Fort Osage
Audrey Linville	Fort Osage
Seth McMenemy	Truman
Anthony Aguilera	Fort Osage
Huong Nguyen	Northeast
Tammy Phelps	Wm Chrisman
Cindy Roby	Wm Chrisman
Mike Schmidt	Wm Chrisman
Candi Smith	Van Horn
Stephanie Young	Fort Osage

Finally, we list here those MPI students planning to attend UMKC who received various scholarships from UMKC; included here are those students to whom the MPI awarded Chancellor's Scholarships:

UMKC Scholar's Award Winners:

Kevin Crosby	Wm Chrisman
Brian Edgar	Van Horn
Candi Smith	Van Horn

UMKC Chancellor's Award Winners:

Melissa Chance	Wm Chrisman
Jay Eifler	Wm Chrisman
James Hitchcock	Wm Chrisman
Jon Morgan	Wm Chrisman

Curators' Award Winners:

Anthony Aguilera	Fort Osage
Melissa Chance	Wm Chrisman
Jeff Coleman	Truman
Brian Edgar	Van Horn
Dean Keeling	Wm Chrisman
Seth McMenemy	Truman
Todd Myers	Wm Chrisman
Tammy Phelps	Wm Chrisman
Cindy Roby	Wm Chrisman

We also honored the TOP TEN students (ranked according to their composite calculus and physics grade point averages) by giving them a useful CRC science and mathematics reference book:

TOP 10 MPI STUDENTS 1988-89

1)	Kevin Crosby	Wm Chrisman
2)	Anthony Aguilera	Fort Osage
3)	Jay Eifler	Wm Chrisman
4)	Seth McMenemy	Truman
5)	Jon Fox	Fort Osage

THE 1989-90 CLASS (TO DATE)

Section A

Jamy Bacchus	Wm Chrisman
Minerva Bermudez	Northeast
Drue Cohoon	Fort Osage
Thien Doan	Northeast
Chris Hess	Truman
Ryan Johnson	Truman
Keir Jones	Wm Chrisman

Section A (con.)

Curt Krause
Jarrett Lanpher
Jason D. Larsen
Dien Le
Chris Lewis
Ronald L. Overbeck
Hien Phung
Malissa Shrout
Tracey Sterbenz
Jeff Thate
Vuthy Tong
Dawn Walker
Denise Worley

Wm Chrisman
Van Horn
Truman
Northeast
Wm Chrisman
Fort Osage
Northeast
Fort Osage
Fort Osage
Fort Osage
Northeast
Van Horn
Van Horn

Section B

Amy Agee
Mary Atwell
Denise Brattain
Thanh Thuy Bui
Joseph Bullock
Lisa Cauthon
Duc Dang
Lacie Harrington
Shane Henry
Matt Hey
Tina Jenkins
Brian McBroom
Dung Mai
Garrett Mosiman
Trinie Ortiz
Hemaben Patel
Thuy Uy Phan
Danny Porter
Jonathan Reed
Raymond Rhodes
Devin E. White
Matt Zelk

Truman
Van Horn
Fort Osage
Northeast
Truman
Fort Osage
Northeast
Truman
Northeast
Van Horn
Northeast
Wm Chrisman
Fort Osage
Van Horn
Wm Chrisman
Wm Chrisman

Section C
(Calculus I and II)

Ivan Bird
Mitchell Dobson
Chris Harder
Brian Harves
John Hooper
Shannon Lundy
Tri Pham
Lawrence Trimble, Jr.
Christopher Walker
Hiromi Yokoyama

Truman
Truman
Truman
Van Horn
Truman
Truman
Northeast
Van Horn
Northeast
Truman

Section D

Teresa Alleman
Matt Arnold
Robert Brown
Rachelle Durham
Shawn Franssens
Danielle Glossip
Danny Gomez
Richard Greer
Mark Lambros
Pamela Moore
Kim Uyen Nguyen
Tu Viet Nguyen
Jeff Peterson
Danh C. Pham
Stephanie Reynolds
Devon Richardson
Jennifer Sessa
Jeff Slifer
David Dean Smith
Shane Thompson
Sokha Vath
J. Grady Zans

Fort Osage
Wm Chrisman
Van Horn
Fort Osage
Fort Osage
Wm Chrisman
Wm Chrisman
Northeast
Truman
Van Horn
Northeast
Northeast
Truman
Northeast
Fort Osage
Van Horn
Wm Chrisman
Truman
Van Horn
Fort Osage
Northeast
Van Horn

These are the total of 74 students (as of this newsletter) who will be enrolled. As usual there will be additions and deletions through September, but this is the largest beginning number we've ever had! A good omen for our second five years?

THE 1989-90 STAFF

Our staff once again includes those high school teacher veterans of the past five years:

In Physics,

Larry Harding from Fort Osage,
Calvin Nelson from Northeast,

and, in Calculus,

Sheri Adams from Truman,
Joe Kaifes from Van Horn,
& Al Morse from Wm Chrisman,

while our University staff is listed above in the heading of

this newsletter. We should also mention our new and invaluable half-time secretary and assistant Doris Kirst, without whom we would stumble instead of stride into the new academic year.

UPCOMING ENRICHMENTS

One of the special features of the Institute is its biweekly enrichment series, in which on alternate Wednesdays either professionals in the sciences, engineering, mathematics, etc., speak to our MPI students, or, we have a field trip to such places as the nuclear reactor in Columbia, the GM Fairfax plant, or Worlds of Fun to do some 'hands on' physics.

The October 1 newsletter will report on those speakers scheduled for October and beyond. But as part of our first three days of orientation Jan Longhorn of UMKC will speak on Fri. Sept. 8 about college admissions in general, and the importance of thinking about applications EARLY. (This is not intended to be a recruitment for UMKC, but a general discussion to help sensitize our students to the importance for colleges of deadlines.)

During the first two weeks of classes at the MPI we will also spend two days discussing four topics which we have come to believe are vital study and college survival skills that are too often not directly addressed. Specifically, these are: NOTE-TAKING, TEST-TAKING, READING A TEXTBOOK, and lastly, and perhaps most importantly, TIME MANAGEMENT. These sessions will be jointly presented by Kit Gordy from UMKC's Academic Support Services, and the MPI mathematics coordinator.

Then, on Sept. 27, our first 'regular' enrichment Wednesday of the year, we hope to have Dr. Wai Yim Ching of the UMKC Physics Dept. to update us on the blitzkrieg pace of current superconductor research.

TO THE PARENTS OF THE 1989-90

CLASS AT THE INSTITUTE

[Reprinted in part from the August 1, 1987 newsletter.]

This newsletter is written for your information, and there will be one sent to you every two months during this year while your son or daughter is at the Institute.

We firmly believe that without your support and concern at home students cannot succeed in such a rigorous program as the MPI. Our classes are NOT high school classes -- they are special college classes, and require both study skills and a commitment that students still in high school, however talented, have not experienced before. In both of these areas YOU as parents can be of enormous help.

One of the first facts we have learned to face in the last four years is that many bright students never learn to study efficiently; they have often gotten along very well with a 'wait and cram' attitude, giving textbooks only an occasional cursory look in time for testing, and relying on their innate ability to absorb information and skills in the classroom. However, in coming to the Institute these same students always find themselves at first, and suddenly, falling behind.

In general, in college classes MORE MATERIAL is covered, and MORE SKILL with concepts is required, i.e., THINKING is expected regularly. This comes as a shock to many talented students. One of the Institute's goals is to expose students to this shock, and help them overcome it by learning effective study skills in actual practice. But YOU as parents can help this transition enormously, by suggesting that your children actually spend the minimum of one hour per subject, per night of study that we here at the MPI urge. They must come to realize that longer study times reflect the new rigor of the COURSES, not their lack of talent. This is a point of view that many students find hard to accept at first. Your encouragement can help them over this hump. Encourage them to seek the help of all the teachers involved in the program, and to put aside the false idea that only remedial students need to TALK about mathematics and physics. The fact is that true understanding comes only from learning to discuss and explain a subject, and this is ESPECIALLY SO in physics and mathematics.

Finally, we urge you to call us if you ever have a question, and we hope that you will find time to visit the Institute during our annual OPEN HOUSE on Sunday afternoon, November 5, 1989. (More about this in the October newsletter.)

SOME FINAL 1988-89 STUDENT QUOTES

"Attending the MPI was sort of a short term dream for me. See, I knew by attending the MPI it would test my abilities to their fullest limit. Hence, it was the closest I could get to the actual hard-core

classes of an Electrical Engineer. However, I didn't know the courses were going to be as challenging as they were, but luckily, because I confronted the challenge with a positive attitude and determined not to quit, I can say that what I learned here will provide the basic skills I need to get a head-start on the rest."

Anthony Thornton
Van Horn High School
Kansas City, MO. District

"MPI has given me an idea of what to expect next fall at college. It has also taught me the importance of good study habits. I am glad I have had the opportunity to learn good study habits now, instead of at college when I will have a million other things to worry about."

Andrea Linville
Fort Osage High School
Fort Osage District

"What I like about the Institute is the challenge. It also provides a break from the monotony of high school. To me, Calculus is a completely different way to look at math. I like that. It's more interesting than the regular algebra and geometry classes at high school.

After the first quarter of Physics, I knew that I would gain more knowledge than from my previous high school Physics course. The MPI does a more thorough job of teaching also."

Kevin Crosby
Wm Chrisman High School
Independence School District

(Continued after the Calendar.)

MPI CALENDAR -- 1989-90

Institute Begins	September 6, 1989
Mid - Quarter 1 Progress Reports Sent	October 5, 1989
1st Quarter Grade Reports Sent	November 3, 1989
MPI OPEN HOUSE for Parents/Teachers/Etc.	November 5, 1989
Thanksgiving Holiday	November 23-24, 1989
Mid - Quarter 2 Progress Reports Sent	December 7, 1989
Institute Christmas Party	December 15, 1989
Christmas Holiday	December 16, 1989 -- January 1, 1990
Institute Classes Resume	January 2, 1990
College Credit WD Deadline (Math C only)	January 12, 1990
Martin Luther King Holiday	January 15, 1990
Final Exam -- Calculus I (Math C only)	January 16, 1990
Deadline for Transfer from Math C to Math A,B,D & Quarter 2/ Semester 1 Grade Reports Sent	January 18, 1990
Presidents' Day Holiday	February 19, 1990
Mid - Quarter 3 Progress Reports Sent	February 23, 1990
3rd Quarter Grade Reports Sent	March 23, 1990
High School Credit WD Deadline (A,B,C,D) & College Credit WD Deadline (A,B,C,D)	March 30, 1990
MPI Spring Break	April 9 - April 13, 1990
Institute Classes Resume	April 16, 1990
Mid - Quarter 4 Progress Reports Sent	April 20, 1990
Final Exams -- Calculus I (A,B,D) Calculus II (Math C only)	May 15, 1990
Final Exam -- Physics (A,B,C,D)	May 16, 1990
MPI Picnic Breakfast (McCoy Park)	May 17, 1990
MPI Awards Presentation (UMKC Truman Campus)	May 18, 1990
Last Day of Institute Classes & Quarter 4/ Semester 2 Grade Reports Sent	May 18, 1990

" I became intrigued in the MPI program ever since the orientation last year at East High School. When I committed myself to be a part of the Institute I knew it was going to be a challenge, but a task that I would never forget which was necessary to further my education. I can't stress enough how it has given me a taste of what to expect of college in the future."

Rafael Zarate
East High School
Kansas City, MO. District

LETTERS FROM FORMER MPI STUDENTS

From STEPHANIE YOUNG (MPI 88-89):

"...The fast-paced lectures, confusing terms, difficult tests, and the many hours I spent studying [at the MPI] have given me a sense of accomplishment. The non-high school location was a good idea. The early 7:10 classes to which I had to provide my own transportation have instilled in me a sense of responsibility. I now better understand the expectations that will be placed on me in the next few years.

All of the MPI staff have been extremely helpful and supportive. I hope the program will continue for many more years so that other students may experience what I have."

From CINDY GILLESPIE (MPI 86-87):

"I have excellent news. I got a Co-op job. I'll be working every other semester for Litton in Springfield. I'm an assistant engineer.... I have my own project as well as title. I'm doing tests on impedance. They can't seem to control it. Companies want, say, an 80 ohm impedance and we give

them 90 ohms. Actually the problem is with the design which is their problem. Litton just builds boards, not design them. The designers don't even know how exactly to control impedance on circuit boards. I'm also doing chemical line audits and calling sales people for info on their electrical equipment, while my board is being built. It's exciting. I want to become a salesman. There's a sales agency in Springfield that sells technical stuff. They hire engineers...It would be perfect... I realize now I can be an engineer. I wasn't sure at UMR. Now I see the theories being applied... Thanks for all the encouragement!"

MORE PAST STUDENTS SPEAK UP

We recently sent our annual questionnaire to former MPI students and here are some excerpts from their replies:

In answer to "List specific study skills or habits you developed because of your experience at the MPI that have been vital for college":

- Make sure you can do any problem in any form.
- You have to do more than just homework to succeed. You have to make yourself study.

In answer to: List specific thinking/reasoning strategies you developed because of your experience at the MPI...":

- I learned how to attack a problem.
 - I have been able to successfully drop what I started to do and then attack it with a totally different approach.
-

- The realization about just how long it would take to study for a test.

- I learned not to give up.

Under "Miscellaneous comments":

- Even though I was not a 'good' or active student I saw a lot of value in the MPI program. The level of instruction was better than nearly all other courses I have taken and the teachers were understanding and reasonable. I rate it very highly.

- I think that there are many great teachers there who want to see everyone succeed.

- It is a good program for intelligent, motivated students.

- Definitely one of the best ways to prepare one for college.

MPI T-SHIRTS

Beginning in about October, we will once again be selling bright blue MPI T-shirts and sweatshirts to our students. These shirts have a classy 3D graph on the back and a clever student-designed logo on the left front.

A SOLUTION TO
MATHEMATICS CHALLENGE # 9

Recall the problem statement:

Every person on earth has shaken a certain number of hands. PROVE that the number of persons who have shaken an ODD number of hands is EVEN.

SOLUTION:

Before any handshakes have occurred, the number of persons

who have shaken hands an odd number of times is zero.

The first handshake will produce two "odd" persons. From then on, handshakes will occur between either two even persons, two odd persons, or one odd and one even person. Each even-even handshake INcreases the number of odd persons by TWO. Each odd-odd handshake DEcreases the number of odd persons by TWO. Each odd-even handshake changes an odd person to even and an even person to odd, leaving the number of odd persons UNCHANGED. Therefore there is no way that the even number of odd persons can shift its even-odd parity; it must always remain an even number!

[Solution due to Gerald Schoenfeld in the 2ND SCIENTIFIC AMERICAN BOOK OF MATHEMATICAL PUZZLES & DIVERSIONS.]

MATHEMATICS CHALLENGE #10

Given a 1 unit by 1 unit square and ANY five points inside it, PROVE that among these points there are at least two whose distance apart is $\leq \sqrt{2}/2$.

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