

MISSOURI SECTION  
NEWSLETTER

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From the Chair: David John, MWSC

We at Missouri Western State College are looking forward to hosting the April 11 and 12 joint meetings of the Missouri Section of the Mathematical Association of America, The Missouri Mathematical Association for Two Year Colleges (MOMATYC), the Missouri Mathematical Association for the Advancement of Teacher Training ((MAT)2), and the Northwest Missouri Association of Mathematics Teachers (NWMAMT). The various sessions and talks should prove to be interesting as well as informative. All sessions including the banquet will be held in the Leah Spratt Building.

Professor Dieter Armbuster of Arizona State University will give the Invited Address on Friday afternoon. The title of his talk is "ODE: Science of Methods". Dr. Jimmy Albright will be the banquet speaker on Friday evening, when he will talk on "Does Archaeology Measure Up?". Professor Martha J. Siegel of Towson State University, the Secretary of the MAA, will present the Invited Address on Saturday morning entitled "Industrial Mathematics for Fun and Profit".

Campus Security suggests that those attending the meetings on Friday park in lots C, D, E, and F in spaces with white markings. On Saturday, you may park in any lot on campus.

I encourage you to make your reservations and especially your motel arrangements early.

We anticipate your coming to the meeting in April and expect it will be a rewarding experience.

COLLEGIATE MATHEMATICS COMPETITION

The second Missouri MAA Collegiate Mathematics Competition will be held Thursday, April 10, and Friday, April 11, 1997 on the campus of Missouri Western State College in St. Joseph, Missouri.

Any college or university in the state of Missouri can send up to two teams of 1 to 3 undergraduates each to compete in the competition.

A one-person team will only be allowed in the competition if this person is his or her college's only representative in the competition.

A completed registration form for each team must be sent one week before the competition begins. Late registration will be accepted only if there is room for the team in the competition.

No calculators, computers, or reference material can be used during the competition. The contest will consist of challenging mathematical problems, comparable but not quite as difficult as the

Putnam Exam. The Putnam Exam is a national exam sponsored by the MAA and given to outstanding college mathematics students. Previous Putnam Exams can be found in past October issues of the American Mathematical Monthly.

The Thursday evening competition will begin at 7:30 pm and last until 10 pm and will consist of 5 problems for each team to solve. The Friday morning competition will begin at 8:30 am and will end at 11 am.

It will also contain an additional 5 problems. Each problem will be worth 10 points and will be scored by a committee of the MAA Missouri section. The committee consists of the following members: Mangho Ahuja (SEMSU), Hang Chen (CMSU), Curtis Cooper (CMSU), Joseph Dence (UMSL), Joe Flowers (TSU), Leon Hall (UMR), and Alvin Tinsley (CMSU). Some partial credit may be earned for substantially correct work toward a solution to the problem.

There will be a registration fee of \$25 per team. A complimentary continental breakfast will precede the Friday morning competition. Each team member is also invited to be a guest at the MAA Missouri Section Banquet on Friday night. At that time, the results of the competition will be announced. A traveling trophy will be awarded to the first place team. In addition, the winning school will receive a plaque. Certificates will also be given to the members of the first place team.

Any questions about the competition can be sent to Curtis Cooper, Department of Mathematics and Computer Science, Central Missouri State University, Warrensburg, MO 64093-5045, (816) 543-8851 email: ccooper@cmsuvmc.cmsu.edu

Congratulations Again to Dr. T. Christine Stevens

In the last issue of this Newsletter we reported that Dr. Stevens received the 1996 Missouri Section Award for Distinguished University Teaching of Mathematics at the Spring Section Meeting in Cape Girardeau. The winners of the various section awards are entered into a pool from which three national winners are selected. On January 9, 1997, at the Joint Mathematics Meeting in San Diego Dr. Stevens received one of the three Deborah and Franklin Tepper Haimo Awards. Congratulations again!

From the Governor:

Lanny Morley, TSU

The Board of Governors met on January 7 in conjunction with the Joint Meetings in San Diego. As usual there was a full agenda including a substantial number of consent and informational items with several issues requiring approval as well.

Several reports followed by questions and responses focused on the financial condition of the Association. Four persons--Treasurer Gerald Porter, Executive Secretary Marcia Sward, Chair of the Finance Committee Barbara Faires, and (new) Finance Director Nancy Baugher-- provided background and current information about various aspects of our finances. The picture has been complicated by the departure of two key persons in the finance area, the Accounting Supervisor and the Finance Director, the latter leaving early in the year and not replaced until November. With the shortage of personnel the Finance Committee put in much extra time and effort. Nevertheless, it was impossible to keep to the normal schedule of reports and budget planning. The Governors were able to approve a "draft" budget for 1997 with the anticipation that a final budget would be approved in late February.

In 1996 the Association experienced another year in which expenses exceeded income. However these years were preceded by a few in which there was a positive balance. The Finance Committee is studying a number of strategies which may be adopted to bring about a balanced budget. These include looking at the programs and services offered to members and our means of generating revenue. The reorganizations which have been made in the headquarters office should begin to produce greater efficiency in operations and effectiveness in promoting membership and marketing books and other services. Also, the mortgage on the headquarters building will be paid up in January of next year and over time this should improve our financial picture. In any case, although there is no reason for alarm, the Governors are interested in preserving a financially stable Association and encouraged the Finance Committee to proceed in developing strategies which will ensure that.

Gerald Porter reported that the Investment Fund has grown by 18% this year thanks to a strong stock market. It is now valued at 2.1 million dollars.

In November the AMS decided to join with the MAA and the NCTM in supporting a Joint Office of Minority Participation in Mathematics. A search for a director has been initiated. This cooperative effort is partially in response to the anticipated termination of the external funding for SUMMA, although there are ongoing efforts to identify and secure alternative sources of support as well as fundraising efforts for some of the existing or proposed programs. The San Diego Meetings offered an opportunity for one hundred project directors and two hundred college and pre-college minority students from SUMMA projects across the country to participate in the fifth annual SUMMAC conference providing a forum for numerous student presentations and a mathematical problem-solving session.

Dan Kalman, Director of Member Services and Programs, reported on membership in 1996. Although total membership was down slightly (from 27,763 to 27,505), paid memberships actually increased by 318. He reported that the Departmental Liaisons program is off to a great start with nearly 1,200 active liaisons. Since the AMS is no longer participating in the summer Mathfest, the MAA staff has taken on the full responsibility of planning and hosting this summer's meeting. Comprehensive planning for all the events and activities were already under way. Dan also reported that a proposal was under development to extend the Project NEXT program which is in its final year of the original three-year grant from EXXON. This program seems to have been an unqualified success.

Walter Mientka reported that the Department of Education has approved \$500,000 over five years to help fund the International Mathematical Olympiad in 2001, the first in the twenty-first century.

Gerald Porter called attention to the professional development activities the Association is making available and the desire to expand these using the World Wide Web. He mentioned three workshops in particular: Cooperative Learning in Undergraduate Mathematics to be offered three times (April, June, and September) in 1997--email inquiries to David M. Matthews@cmich.edu; a course on Teaching Undergraduate Mathematics, thirteen weeks in the summer, email js9484@tntech.edu; and a course Presenting Mathematical Concepts on the World Wide Web to be offered twice in the summer, email scheftic@geom.umn.edu. Each course is \$350 to MAA members and \$400 to others.

Other actions taken included approving Ron Graham as Polya Lecturer and Jonathan King for the Hasse Prize, electing James Leitzel as Governor-at-Large Representing Teacher Education and Jeffrey Lagarias of AT&T Labs-Research as Governor-at Large Representing Mathematicians Outside

Academia, and adopting an Affirmative Action Statement.

Later in the week the official business meeting of the Association was held and, at its conclusion, President Ken Ross handed over the gavel to incoming President Gerald Alexanderson. Ken has done an excellent job during his two-year term and the Association is indeed fortunate to have Prof. Alexanderson assuming that leadership role. It has been a privilege and an honor to associate for the last three years with a large number of individuals who unselfishly give of their time, effort, expertise, and financial resources to serve and promote the MAA. I thank the Missouri Section for allowing me to represent the section on the Board.

Motels in St. Joseph  
When making reservations, mention MAA.

Best Western Classic Inn	1-4 persons, two beds	\$45.00
4502 S 169 Hwy at I-29 Exit 44		
(816) 232-2345 conf. # AA218859		
Days Inn	1-2 persons, two beds	\$49.00
I-29 & Frederick Blvd (816) 279-1671		
Drury Inns	1 person, one bed	\$55.00
I-29 & Frederick Blvd	2 persons, two beds	\$65.00
(800) 325-8300 or (816) 364-4700		
Motel 6	1 person, one bed	\$33.99
I-29 & Frederick Blvd	2 persons, two beds	\$39.99
(816) 232-2311		
Ramada Inn	1-4 persons, two beds	\$56.00
I-29 & Frederick Blvd (816) 233-6192		
Super 8 Motel of St. Joe	1 person, one bed	\$43.00
I-29 & Frederick Blvd	(816) 364-3031 2 persons, two beds	\$47.00

Campus Security suggests that those attending the meetings on Friday park in lots C, D, E, and F in spaces with white markings. On Saturday, you may park in any lot on campus.

Spring Meeting of the Missouri Section of the MAA

Friday, April 11, 1997

All Activities Will be Held in the Leah Spratt Building.

8:00 AM - 4:00 PM Registration -Spratt 216

Welcome and Invited Address -Spratt 101

1:00 PM - 2:00 PM ODE: Science over Methods by Dieter Armbruster  
(Arizona State University)

Contributed Paper Session I - Spratt 110

2:20 PM - 2:35 PM Controlling Your Shape: The Bezier Curve by Steve  
Klassen (MWSC)

2:40 PM - 2:55 PM            Immunization of Bond Portfolios Using Linear Programming by Jean Tao (CMSU)

3:00 PM - 3:15 PM            Mathematical Model of Wears Creek by Angela Grant (Lincoln University)

Contributed Paper Session II - Spratt 203

2:20 PM - 2:35 PM            More on Conway's Rats by Curtis Cooper (CMSU)

2:40 PM - 2:55 PM            The 3K + 1 Problem: The Hydra's Heads by Scott Garten (NWMSU)

3:00 PM - 3:15 PM            On an Upper Bound for the Number of Small Digits in a Power by Robert E. Kennedy (CMSU)

Student Paper Session I - Spratt 108

2:20 PM - 2:35 PM            Symmetric Pythagorean Triple Preserving Matrices by Tracy R. Lohmeier (SEM0)

2:40 PM - 2:55 PM            The Space  $Z_2$  as a Feuchel-Orlicz Space by Dan Cazacu (UMC)

3:00 PM - 3:15 PM            Exploring and Implementing the Learning Styles of Students From Diverse Cultures into the Mathematics Classroom by Mary Talbot (NWMSU)

MOMATYC Session I - Spratt 205

2:10 PM - 3:10 PM            Mathematica in Calculus and Student Responses: Interesting/Unexpected by Wanda Long (St. Charles County CC)

MOMATYC Session II - Spratt 211

3:15 PM - 5:15 PM            The Use of the Internet in the Mathematics Classroom by Tim Chappell (Penn Valley CC)

Contributed Paper Session III - Spratt 110

3:30 PM - 3:45 PM            Units and Subgroups in a Semilattice of Semigroups by Phoebe Ho (CMSU)

3:50 PM - 4:05 PM            My Favorite Semigroups by Carol Collins (Drury College)

4:10 PM - 4:25 PM            Remarks on Mathematics and Public Affairs by Kishor Shah (SMSU)

Contributed Paper Session IV - Spratt 203

3:30 PM - 3:45 PM            Statistics Activities to Explore Algebraic Relationships by Lynda M. Plymate (SMSU)

3:50 PM - 4:05 PM            Perfect Squares in the Sequence 3, 5, 7, 11, ... by Wayne McDaniel (UMSL)

4:10 PM - 4:25 PM Selected Non-Geometry Problems from the American High School Mathematics Examination (AHSME) by Alvin Tinsley (CMSU)

Contributed Paper Session V - Spratt 213

3:30 PM - 3:45 PM The Impact of Using Supplemental Instruction (SI) in College Algebra by Kathleen Conway (SEM0)

3:50 PM - 4:05 PM The Louisville Shutterbug: A Mathematical Pilgrimage into History by Charlie Smith (Park College)

4:10 PM - 4:25 PM Cancer and the Exponential Function by Elizabeth Berman Appelbaum

Student Paper Session II - Spratt 108

3:30 PM - 3:45 PM Student Lab Projects in ODE (Modeling a Parachutist Using the CBL) by the ODE class from MWSC

3:50 PM - 4:05 PM Student Lab Projects in ODE (Chaos in Euler's Method) by the ODE class from MWSC

4:10 PM - 4:25 PM Student Lab Projects in ODE (Model the Motion of a Slinky Using the CBL) by the ODE class from MWSC

(MAT)2 Meeting - Spratt 208

3:30 PM - 4:30 PM Business Meeting and Presentation

Banquet and Speaker - Spratt 214-216

6:30 PM - 8:30 PM Carved Steamship (roast beef) and Sliced Turkey Breast Buffet

Does Archaeology Measure Up?  
by Dr. Jimmy Albright, Archaeologist

Spring Meeting of the Missouri Section of the MAA

Saturday, April 12, 1997

6:15 AM - 7:00 AM 5K Run/Walk

7:30 AM - 8:30 AM Breakfast - Room 214  
Department Chairs Breakfast and  
MAA Representatives Breakfast

8:30 AM - 10:00 AM Registration - Spratt 216

8:30 AM - 10:00 AM Displays & Exhibits - Spratt 216

MOMATYC Session III - Spratt 205

8:30 AM - 9:30 AM Mathematics Reform Initiative: The AMATYC Standards by Martha Haehl (Maple Woods CC)

MOMATYC Session IV - Spratt 205

9:30 AM - 10:00 AM Mathematics Instruction in Missouri's Colleges and Universities  
by Rick Armstrong (St. Louis CC-Florissant Valley)  
Note the related article on the next page.

Contributed Paper Session VI - Spratt 110

8:40 AM - 8:55 AM Conceptual & Procedural Knowledge by Dennis Sentilles (UMC)

9:00 AM - 9:15 AM The  $s$ -Interior and  $s$ -Annulus of a Strong Digraph by Songlin Tian (CMSU)

9:20 AM - 9:35 AM An Alternate Paradigm for the Concept of Limit Value by Dennis Sentilles (UMC)

Contributed Paper Session VII - Spratt 203

8:40 AM - 8:55 AM Fixed Point Theory for Non-Metric Spaces by Troy Hicks (UMR)

9:00 AM - 9:15 AM Introduction to Matroids by Keith Brandt (MWSC)

9:20 AM - 9:35 AM Some Counter-Examples in the Power Sets of Convergence Spaces by Shing S. So (CMSU)

Contributed Paper Session VIII - Spratt 213

8:40 AM - 8:55 AM Mathematica in Calculus III at Truman State University by Joe Hemmeter (TSU)

9:00 AM - 9:15 AM Some Future Directions in Computing and Mathematics at Truman State University by Todd Hammond (TSU)

9:20 AM - 9:35 AM Writing Assignments for Calculus by Susan Callahan (Cottey College)

Invited Address - Spratt 101

10:00 AM - 11:00 AM Industrial Mathematics for Fun and Profit by Martha J. Siegel (MAA)

Business Meeting - Spratt 101

11:00 AM - noon Business Meeting chaired by David John (MWSC)

Mathematics Instruction  
in Missouri's Colleges and Universities

Rick Armstrong's (Florissant Valley Community College, St. Louis) Fall, 1996, Sabbatical Project was "Mathematics Teaching in Missouri's Colleges and Universities". Rick mailed a survey to the chairs of all community college and university mathematics departments in Missouri. The survey asked about courses, texts, enrollments, and teaching innovations in all courses through Differential Equations. The issues he raised included technology, calculus reform, use of groups and writing, the General Education

mathematics requirement, and developmental mathematics courses.

Rick has summarized his findings in a 78 page final report that has been mailed to all 26 responding departments. Increased use of technology, groups, and student projects are widespread in Missouri. Many departments have recently developed 'Alternative to College Algebra' courses for their General Education requirement. Lindenwood College (Harvard), Rockhurst College (Project CALC), University of Missouri-Rolla (Dick & Patton), St. Louis University (Ostebee & Zorn for Calculus I and II; Harvard for III), and University of Missouri-Columbia (Mathematica notebooks) have implemented major reform in their calculus sequence (UMR has subsequently returned to a traditional text). However, there are relatively few innovations in Missouri in the curriculum and teaching of developmental mathematics courses or differential equations.

The Technology section of his final report is included in this Newsletter. He will present his findings at the Sectional meeting in April. Mathematics departments may still complete the survey and be included in the final updated report. Contact Rick (e-mail: rarmstrong@fv.stlcc.cc.mo.us) for more information.

#### USE OF TECHNOLOGY

NOTE: This is primarily a listing of the calculator policies and the software being used at the responding colleges and universities in Missouri. For the more important information about how they are being used, I strongly recommend that you contact the instructors and department chairs at these institutions. Some of that information is also contained in other sections of this sabbatical report.

#### COTTEY COLLEGE

Calculators are permitted in all classes, but required only in Statistics. Susan Callahan uses Derive and the freeware programs Histo, MPP, and Slopes for student labs in various courses: Elementary Statistics, Calculus I, Calculus III, and Differential Equations.

#### CROWDER COLLEGE (Neosho)

Calculators are permitted in any classes but are not required in any classes. Pre-engineering students are strongly urged to learn to use graphing calculators.

MathCad and Microsoft Office are used in the Calculus sequence and in Differential Equations. Their use may be expanded to lower level courses in the future.

As of Fall, 1996, all students have access to e-mail and the Internet on Crowder Network.



EAST CENTRAL COLLEGE (Union)

Graphing calculators (TI-82) are required in all Algebra and Calculus courses. A departmental set of twenty TI-92's are used by some faculty in College Math, College Algebra, and the Calculus sequence.

JEFFERSON COLLEGE (Hillsboro)

Scientific or graphing calculators are required for College Algebra and Trigonometry, with graphing calculators being recommended. Some faculty use Converge software in College Algebra and Trigonometry and they use Derive in Differential Equations.

LINDENWOOD COLLEGE (St. Charles)

Calculators are encouraged in all courses. Graphing calculators are required in Precalculus and Calculus. MATLAB is used for demonstrations in Calculus and for homework projects in Linear Algebra. In Spring, 1997, Lindenwood will offer a one-credit course in MACSYMA.

MAPLE WOODS COMMUNITY COLLEGE (Kansas City)

Individual faculty set calculator policies for their classes. Policies include "no scientific calculators allowed" and "no graphing calculators allowed". In Spring, 1997, the students in one section of College Algebra will be required to have a graphing calculator (TI-83 recommended). A text with extensive use of a graphing calculator has been adopted for this section.

One instructor has used Derive in the past, but difficulties in getting lab time has severely restricted its use. Differential Equations software will be used in the Spring, 1997, course.

MOBERLY AREA COMMUNITY COLLEGE

Even in Fundamentals of Mathematics and Fundamentals of Algebra, TI-82's and TI-85's are introduced and students use the software programs TeMath, Cricket Graph, and Calculus Toolkit. Most sections of College Algebra use graphing calculators. The college owns a classroom set of TI-82's as well as eight TI-85's.

NORTH CENTRAL COLLEGE (Trenton)

Graphing calculators are used in Basic Algebra and Intermediate Algebra for explorations. TI-82's or TI-83's are required in College Algebra and above. Melody Shipley is very interested in any interactive textbooks being published.

ROCKHURST COLLEGE (Kansas City)

Supported by a 1995 National Science Foundation grant and in conjunction with their implementation of Project CALC for their calculus sequence, Rockhurst College has built the Mathematics Technology Classroom.

Designed to facilitate activity based learning, the room has no front or rear. The students sit around 4 rather large tables, each containing 4 computer

stations. This allows for groups of 2 to 8 students to work on any one activity. The system consists of a Power PC Macintosh, a Robotel Microselect broadcasting system, an ELMO overhead color document camera, a VCR, and a sound system. This classroom is used for mathematics instruction 33 hours per week and students are allowed access at all other times. Pre-Calculus, Linear Algebra, and Probability & Statistics courses also meet in the Mathematics Technology classroom.

#### ST. CHARLES COUNTY COMMUNITY COLLEGE

Calculators are forbidden in Developmental Mathematics I and II and in Beginning Algebra. Scientific or graphing calculators (instructor option) are required in all other courses. Four instructors use computers in all classes that they teach at the level of College Algebra and above. The software used includes Derive, Converge, and Mathematica.

#### ST. LOUIS COLLEGE OF PHARMACY

John Pais makes extensive use of software labs that he has developed in their one semester calculus course. He plans to develop similar software for Precalculus.

#### ST. LOUIS COMMUNITY COLLEGE AT FOREST PARK

Calculators are not allowed in Basic Math. They are optional in Elementary Algebra and in Intermediate Algebra. Scientific or graphing calculators are required in Technical courses, College Algebra, Trigonometry, Precalculus, Finite Mathematics, and Survey Calculus. Graphing calculators and MathCad software are required in the Calculus sequence and in Differential Equations.

#### ST. LOUIS COMMUNITY COLLEGE AT MERAMEC

Calculators are "absolutely forbidden" in Basic Mathematics. They are at instructor's discretion in all other courses. In each course in the Calculus sequence, students are required to complete 5-7 labs using "Animating Calculus" labs written in Mathematica by Ron Goetz. Differential Equations now uses a text that relies heavily on modeling, graphics and labs in Mathematica. One-credit courses are offered that demonstrate the mathematics capabilities of the HP48 and of Mathematica.

#### ST. LOUIS COMMUNITY COLLEGE AT FLORISSANT VALLEY

For Survey Calculus and for 5 of 13 sections of College Algebra, graphing calculators are required. These students may borrow TI-82's from the library. For all other courses, calculator policy and computer use are up to the individual instructors. Calculators are not allowed on the departmental part of the final exams in Basic Mathematics, Elementary Algebra, Intermediate Algebra, and College Algebra. Derive, Mathematica, and Maple software are available for student use in the Mathematics and Science Learning Center. To encourage broader use of calculators, the

department owns a classroom set of TI-82's, a classroom set of TI-30's, three TI-92's, and one HP48G that can be borrowed by faculty.

#### ST. LOUIS UNIVERSITY

Graphing calculators are required in College Algebra, Survey Calculus, Precalculus, and the Calculus sequence. In these courses calculators are forbidden on any Gateway tests that the instructors create to test basic symbolic manipulation skills. Symbolic manipulators (for example, the TI-92) are permitted, but they would be of little advantage on tests due to the conceptual type questions being stressed and therefore few students have purchased TI-92's.

Because of the student inconvenience of accessing computer labs, computer packages are used only when they present a definite advantage over graphing calculators. Such topics occur primarily late in the Calculus sequence and in Differential Equations.

#### SOUTHEAST MISSOURI STATE UNIVERSITY

Calculators are permitted and encouraged in all classes. In Spring, 1997, a supplementary Derive manual will be required in all sections of College Algebra. In Calculus, Johnson and Evans' Discovering Calculus with Derive is being used in conjunction with Anton's text. Several instructors have used GyroGraphics in Calculus III. Numerical Analysis and Differential Equations use both FORTRAN and Derive. Linear Algebra is built around the software package MATLAB.

The Mathematics for Elementary Teachers course currently is using LogoWriter and may soon incorporate Geometer's Sketchpad. The sophomore level probability and statistics course makes extensive use of the statistical package SAS.

#### STATE FAIR COMMUNITY COLLEGE (Sedalia)

Calculators are allowed in all courses, "but like a compass or protractor, they are only tools and one can learn geometry quite well without a protractor or compass". Derive is available in the computer lab where students can "check their answers and construct different algorithms and graphs".

#### THREE RIVERS COMMUNITY COLLEGE (Poplar Bluff)

Calculators are rented to students for \$5.00 per semester. Some instructors allow scientific calculators in Beginning Algebra and Intermediate Algebra, but not in Fundamentals of Mathematics. In the Math Lab, computer tutorials for most courses and Derive are available for student use.

#### TRUMAN STATE UNIVERSITY

Faculty have determined their own policies with respect to graphing calculators. Many instructors have used them in Precalculus, Trigonometry, and Calculus.

Computers are required only in Calculus III (Mathematica labs), Numerical Analysis, and some

statistics courses (Mystat). Derive, Maple, and LaTeX have been used by some instructors.

UNIVERSITY OF MISSOURI - COLUMBIA

Under the direction of Dr. Saab, the entire Calculus sequence is taught via Calculus with Mathematica. Dr. Sentilles made extensive use of self-designed Maple labs in one Writing Intensive section of Calculus I in Fall, 1996.

Graphing calculators are required in the Math 10A version of College Algebra.

UNIVERSITY OF MISSOURI - ROLLA

HP48G calculators are required in all courses College Algebra and above. All instructors of Calculus III require one major project using Maple or Mathematica. Before graduation, all engineering students are expected to become familiar with at least one word processing package, one spreadsheet program, and one powerful symbolic manipulation software program.

UNIVERSITY OF MISSOURI - ST. LOUIS

No calculators are allowed in Calculus or any lower level courses.

This is the third year of a Curriculum Enhancement program, that is, computers in the classroom. In Calculus and in appropriate courses above Calculus, students meet 1-2 days per week in a computer classroom. Maple is the most popular program with statistics courses using MiniTab and Adventures in Statistics. After three years of experimentation, in 1997 the department will evaluate their efforts and begin to draw some tentative conclusions.

WEBSTER UNIVERSITY (St. Louis)

Graphing calculators are required in College Algebra and Trigonometry and are permitted for certain activities in other courses. Students may rent TI-81's. Optional computer-based labs in all three courses of the Calculus sequence have had very low enrollment.

WILLIAM JEWELL COLLEGE (Liberty)

Derive and StatDisk are used extensively in the required freshman course, Mathematical Model Building and Statistics. Derive is used occasionally in Calculus I and II on certain applied problems which otherwise would be omitted due to computational difficulties. Applications, solved with Derive, are emphasized in Linear Algebra.

SECTION OFFICERS 1996 - 1997

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jrd399f@wpgate.smsu.edu

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#### NEWSLETTER INFORMATION

The Newsletter is published in November and March each year. This Newsletter is also available on the Missouri Section www Home Page at <http://www.math-cs.cmsu.edu/maa.html>. Current information about articles appearing herein, such as the Spring Meeting, will be posted on the Home Page as it becomes available.

#### MISSOURI MAA COLLEGIATE MATHEMATICS COMPETITION

#### REGISTRATION FORM

Name of College \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_ E-mail \_\_\_\_\_

Team A

Team B

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sponsor's Name \_\_\_\_\_

Registration Fee(s) \_\_\_\_\_ (\$25/team)

Payment Enclosed \_\_\_\_\_ Pay at Contest \_\_\_\_\_

Make checks payable to MAA Missouri Section

Return to: Curtis Cooper  
Department of Mathematics and Computer Science  
Central Missouri State University  
Warrensburg, MO 64093-5045  
(816) 543-8851  
Email: ccooper@cmsuvmc.cmsu.edu

MAA - Missouri Section Spring Meeting  
April 11 - 12, 1997  
Missouri Western State College, St. Joseph, MO 64507

Registration Form

Name \_\_\_\_\_

Institution \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

_____ Meeting Registration Fee	\$ 10.00
_____ Friday Banquet	\$ 15.00
_____ Saturday Buffet Breakfast	\$ 5.00

Total enclosed \_\_\_\_\_

Make check payable to MAA - MWSC.

Send check and registration form to:

David John  
Department of CS/M/P  
Missouri Western State College  
4525 Downs Drive  
St. Joseph, MO 64507

Deadline for preregistration: Wednesday, April 2, 1997