

Division of Science and Mathematics

**Divisional Plan
2001-2002**

Last Update 10-26-01

Division of Science and Mathematics
Division Plan 2001-2002
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Mission Statement

Division of Science and Mathematics

The faculty and staff of the science and math division provide learning opportunities to enable and encourage students to:

- ❖ develop scientific and mathematical skills and knowledge;
- ❖ solve problems;
- ❖ think critically;
- ❖ work within the framework of the nature of science to investigate the natural world;
- ❖ communicate mathematically and scientifically.

**Division of Science and Mathematics Plan
Divisional Objectives**

October 26, 2001

NOTE: The following objectives are not listed in order of importance.

I. Development of Adjunct Faculty

Objective	Description	Resource
First Year Adjunct Experience	Adjuncts would receive mentoring from a full-time faculty in the discipline area. The adjunct faculty would be assigned to a full-time instructor during Adjunct Orientation in the beginning of each academic year. The Mentoring Faculty would be a point-of contact for all “how to” questions and provide the adjunct with resources to enhance teaching in the classroom. The Division Chair is still responsible for supervision and evaluation of adjuncts.	<ul style="list-style-type: none"> • Compensation of mentoring faculty would consist of reassigned time, special services contract, or release from a committee assignment • Partnerships with other areas of EMCC (e.g.CTL – Adjunct Institute)
Adjunct Survival Guide	Packet of information that would be given to each adjunct consisting of: <ul style="list-style-type: none"> • Syllabus Template including course schedule • Sample Tests, Sample Quizzes, Review for Final Exam • Academic Calendar (Dates of withdraws, etc.) • Discipline Guidelines and resources • Inform adjuncts of EMCC/MCCD workshops and funding opportunities • job description of lab staff 	<ul style="list-style-type: none"> • Packet composed by full-time faculty • Point of contact to receive information and feedback
Recruitment of Adjunct faculty	Develop discipline advertisements and informational packets	

II. Development of Current Divisional Programs

Objective	Description	Resource
Optimize current courses by adding/enhancing resources	Each current course will be assessed to determine needs in the following areas: software, equipment, hardware, and any restructuring of classrooms	
	<p><u>Mathematics</u></p> <ul style="list-style-type: none"> • Manipulatives for MAT 160/161 • Wireless laptops for Math Corridor <ul style="list-style-type: none"> ○ To meet course competency of Elementary Education ○ To foster Interdisciplinary Units ○ Students access to the internet to gather real world data ○ Adaptability – maximize use of classroom resources including the computer labs ○ Promotes active learning strategies 	<ul style="list-style-type: none"> • Capital Request funding from EMCC • Divisional Process to determine capital request Items • Quotes from Rich Marmon – Technology Services
	<p><u>Science</u></p> <ul style="list-style-type: none"> • Videos, DVD’s, etc. to support science courses • Release time, summer contracts to develop materials and explore teaching methods • Chairs in selected labs instead of stools • Wireless laptop technology in selected labs • Maintenance and service of equipment in sciences • Expand Honors sections <p><u>Biology</u></p> <ul style="list-style-type: none"> • Upgrades (hardware and software) of all computers • Wireless laptops technology, more specimens • Fume hood for MON 139 <p><u>Microbiology</u></p> <p>Equipment, room renovation for lab</p>	<ul style="list-style-type: none"> • Capital Request funding from EMCC • Divisional Process to determine capital request Items • Quotes from Rich Marmon – Technology Services <ul style="list-style-type: none"> • Quote from Facilities for cost and installation • Bond funds or other sources • Capital Request funding from EMCC

II. Development of Current Divisional Programs (Continued)

Objective	Description	Resource
Optimize current courses by adding/enhancing resources	<p><u>Chemistry</u></p> <ul style="list-style-type: none"> • Build adjunct pool • Standardized rooms for Chemistry lectures with appropriate visual aides • Acquire instruments (lease?) • Install gas tank anchors, gas line, and gas tanks for GC (gas chromatograph) • Install IR (Infrared spectrophotometer) and GC. • Obtain service contracts for IR and GC • Acquire Instruments: Specifically centrifuges, UV-Vis (Ultraviolet-Visible Range Spectrophotometer.) • Update Instruments: FTIR, GC • Tables & Arrangement in MON 111 	<ul style="list-style-type: none"> • Facilities • Facilities & PE Service Rep • Administrative Services/PE Service Rep. • Capital Request • Future Capital Request • Facilities & Kathy (To determine who else uses the room on a regular basis.) • Possible cost of new tables.
	<p><u>Geology</u></p> <ul style="list-style-type: none"> • Build adjunct pool • Mapping software 	
	<p><u>Physics</u> Design and implement optimal Physics classroom</p>	<ul style="list-style-type: none"> • Help design classroom with Facilities Area • Cost of new tables and chairs • Whiteboard marker sets for students • Move toward dedicated Physics Lab/Classroom • Purchase printer for MON 109
Develop a plan for the S&M Division to maintain equipment	<ul style="list-style-type: none"> • Explore maintenance options for divisional equipment (computers, calculators, view-screens, laboratory instrumentation, etc.) • Upgrades on computer software and hardware (both platforms) • Purchase of Maintenance contracts for major equipment/instrumentation 	<ul style="list-style-type: none"> • Establish an EMCC coordinator or point of contact • EMCC Funding • Reporting process for problems (e.g. HelpDesk sends request to coordinator) • Administrative Services for both coast and logistics
Investigate budget process	<ul style="list-style-type: none"> • Investigate allocation of Division Funds (FTSE, lab fees, capital, soft money, start-up money for new courses) 	<ul style="list-style-type: none"> • Fiscal Office

III. Expansion of Divisional Programs

Objective	Description	Resource
Develop new course/programs for the division	<p><u>Mathematics</u> Investigate adding new courses (e.g. MAT 160/161 – Math for Elementary Teachers)</p>	<ul style="list-style-type: none"> • Cost of manipulatives • Access to computers • Software
	<p><u>Science</u> Investigate development of new courses and programs such as:</p> <ul style="list-style-type: none"> • Botany • Geology of Arizona • Marine Biology • Pathophysiology <p><u>Chemistry</u> CHM 107: Chemistry and Society CHM 230: Organic Chemistry (1 semester) CHM 235: General Organic Chemistry CHM 236: General Organic Chemistry II</p> <p><u>Physics</u> PHY 105,PHY 121, PHY 131, PHY 251</p>	<ul style="list-style-type: none"> • EMCC provide start-up funds for new courses • Build relationships with other areas of the college that may impact the sciences • Support from Administration for small classes • Support from Administration for equipment and instruments necessary for quality classes • Advertising • Institutional research to determine current/projected student needs • Advertise to students • Work with advising • Administrative support for small classes while program develops
Develop new instructional spaces	Create new physical spaces to allow for the expansion of programs	<ul style="list-style-type: none"> • Future Bond Money
Expand numbers of sections in existing courses/Times Offered	<p><u>Mathematics</u> Determine areas of specialization and times that have greatest student impact (e.g., Business block, SMET block, Cisco,)</p>	<p><u>Administrative Policies</u></p> <ul style="list-style-type: none"> • Class cutoffs (max/min) • Support in expansion of times • Seating Capacity

III. Expansion of Divisional Programs (Continued)

Objective	Description	Resource
Hire new faculty	<p><u>Mathematics</u> Add new math faculty to meet the teaching load of expanded program</p> <ul style="list-style-type: none"> • Recitation courses • Increased number of sections to meet demands of population growth • Increased number of students • Difficulty in recruiting adjuncts particularly for day classes • Majority students begin in Developmental courses and subsequently need more courses to complete program requirements • All students must take math as core requirement • Partnerships with Occupational Education for math courses offsite creates competition for math adjuncts <p><u>Chemistry</u> OYO chemistry (day and evening load)</p> <ul style="list-style-type: none"> • Chemistry adjuncts are difficult to locate. • Poor adjuncts impact student enrollments and student success. 	<p><u>Administrative Support</u></p> <ul style="list-style-type: none"> • OPIE • Funding for new positions • Adjunct Open House • Web space for recruitment • Change in hiring timelines for broader selection and faculty availability and sufficient preparation time for new faculty

IV. Develop or Continue Partnerships for Student Success

Objective	Description	Resource
Continue dialogues with areas that may impact mathematics at EMCC	<p><u>Mathematics</u> Have periodic meetings with:</p> <ul style="list-style-type: none"> • Math Instructional Council Representative • Developmental Education <ul style="list-style-type: none"> ○ Study groups through MWC ○ Service Learning Partnership with ASUW and MWC (tutors) • Math and Writing Center • Advising/Counseling <ul style="list-style-type: none"> ○ Updates from MIC • Dual Enrollment Coordinator • Campus initiative coordinators <ul style="list-style-type: none"> ○ Title V and 2+2+2 SMET Initiatives ○ Inspire.teach 	<ul style="list-style-type: none"> • Cost of Manipulatives • Access to computers • Software
Retain and recruit more students, improve transfer rates in to SMET disciplines	<p><u>Science</u></p> <ul style="list-style-type: none"> • Improve tutor staffing • help with access to financial aid • facilitate study groups • integrate Title V • SMET Resources 	<ul style="list-style-type: none"> • Partnership with Science Center to improve tutor and staff preparation, advise in the hiring of tutors per discipline/course, establish better communication with discipline faculty • Office Hours/Study Groups • SMET Resource Center on Campus • Partnership with Advising and counseling area to better inform and advise students • Name Science study room • Awarding of Stashak scholarship

V. Evaluation of Divisional Programs

Objective	Description	Resource
Common Final Exams	<p><u>Mathematics</u> Agree on “core questions” that will be a part of each final exam in MAT 082 – MAT 151.</p> <p><u>Chemistry</u> CHM 130, CHM 151</p>	
Trend Data	<p><u>Mathematics</u> Develop trend data in the following areas:</p> <ul style="list-style-type: none"> • Math courses associated with list of declared majors (CEG) • Student population • Number of sections offered/made/canceled • Growth trends of EMCC service population • Tracking student success through the course <p><u>Chemistry</u></p> <ul style="list-style-type: none"> • Current proposed majors of students enrolled in CHM 130, CHM 151. • Projections fro nursing at EMCC • Projections for TPD’s that require chemistry courses and which courses each requires • Needs of night students 	<ul style="list-style-type: none"> • OPIE(Office of Planning and Institutional Effectiveness) • CEG Coordinator • Institutional Research
Assessment of Lecture and Lab Schedules	<p><u>Science</u> Possibly restructure Biology/Chemistry schedules for optimal use of labs</p>	

VI. Foster Faculty Professional Development

Objective	Description	Resource
Membership in Professional Organizations	<p><u>Mathematics</u></p> <ul style="list-style-type: none"> • Institutional Membership in MAA ,AMATYC, or AMS to support: <ul style="list-style-type: none"> ○ Professional Growth (Full-time and Adjunct) ○ Faculty Recruitment ○ Expansion of resources (journals) <p><u>Science</u></p> <ul style="list-style-type: none"> • American Chemistry Society • American Physical Society • American Institute of Biological Sciences • American Society for Microbiology • Geological Society of America 	Division would incur cost of membership
Expansion of Resources	<ul style="list-style-type: none"> • Expand journals (print and electronic format) for all disciplines in the division 	
Sharing of Ideas	<p><u>Mathematics</u></p> <ul style="list-style-type: none"> • First 15 minutes of each Math meeting devoted to sharing of teaching ideas. • Mathematics faculty use classroom visitations to gain teaching ideas from other faculty. 	
Faculty Orientation Checklist	Develop informational packets for frequently asked questions	

VII. Development of Divisional Processes

Objective	Description	Resource
Develop a Divisional Timeline/Calendar	Determine timelines for book orders, capital requests, staffing requests, dual enrollment, adjunct faculty packet, schedule building	
Dual Enrollment Process	Determine timeline for the addition of new dual enrollment partnerships/courses for the Division	
E-Learning/Distance learning process	Discuss impact of E-Learning on Division	
Course Waivers	Determine the authorization process for the Division and set up a means to verify student enrollment	
Course Advisement	Determine timelines to update and disseminate information to Advisement	

Schedule for Evaluation and Update of Plan

The Division of Science and Mathematics will review progress on division objectives in September of each year.

Appendix A

Capital Requests: Prioritization and Justification Fall 2001

The Division of Science and Mathematics has the following prioritized list of Capital Request Items. The list is intended for faculty and administration in determining the acquisition of Capital Items through Fund 1, Fund 2, Fund 7, and other available monies (grants, etc.). The justification for these Capital Request Items are attached.

Rank	Item	Quantity, Cost and Information
1	Wireless Laptop Computers	Wireless Laptop Package Quantity: 2 15 Laptops 1 Chargeable Carts 1 Base Stations 1 Wireless Printer Area: Biology, Geology, Mathematics, and Physics Cost: \$22,679.00 each (MAC) \$40,604.00 each (PC with a nonwireless printer)
2	Centrifuges	Centrifuges Quantity: 2 - 3 Area: Chemistry Cost: \$1303.90 each (if more than one is purchased, the cost becomes \$1000 each)
3	Microscopes	Microscopes with reticles Quantity: 12 Area: Biology Cost: \$1000 each
4	Sterilizer	Sterilizer Quantity: 1 Area: Biology Cost: \$7,800 (including stand) (possible discount of 20%-60% may be deducted)
5	Incubators	Incubators Quantity: 3 Area: Biology Cost: \$7500 each (possible 20% discount may be deducted)
6	UV-Vis Spectrophotometer	UV-Vis Spectrophotometer Quantity: 1 Area: Chemistry Cost: \$ 5571.00