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## CAREER AND TECHNOLOGY EDUCATION

### EXECUTIVE SUMMARY

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**2009–2010**

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#### VISION

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The vision of Division of Career and Technology Education (CTE) is to provide students with an education that combines rigorous academic and technical study with the excitement of discovery through small learning communities and career-themed programs. With the support of the business and higher education communities, students will apply their acquired skills and knowledge to make informed decisions concerning education, careers, and a path toward lifelong learning.

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#### MISSION

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The mission of CTE is to build a competitive and inspired future workforce.

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### WHY IS PREPARATION FOR COLLEGE AND CAREERS SO IMPORTANT?

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An estimated 90 percent of the fastest-growing and best-paying occupations require at least some postsecondary education.<sup>1</sup> Today, employers demand the same skill sets from new employees as colleges demand from new students. As a result, the days of non-academic vocational education in MCPS have been replaced with the expectation that all students graduate ready for college and career success.

CTE continues to undergo a significant transformation to prepare students for successful futures by—

- increasing student engagement in learning through real-world connections;
- providing opportunities to earn industry/professional credentials to obtain higher entry-level wages; and
- ensuring defined pathways to high-wage, high-demand professions with potential for career advancement.

Early results indicate an increase in the number of students who complete both University System of Maryland requirements and a Career Pathway Program (CPP), positioning them for multiple opportunities after graduation. It is MCPS' goal that all graduates will be prepared for credit-bearing entry-level college courses and workforce training programs associated with high-wage, high-demand career fields.

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<sup>1</sup> *Business-Higher Education Forum 2003; U.S. Department of Labor 2008*

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## WHAT ARE THE 11 CAREER CLUSTERS IN MCPS?

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MCPS career clusters provide the basis for providing engaging interest- and strengths-based instruction around career-themed academies, based on the Maryland State Department of Education cluster areas.

### Career and Technology Education (CTE) Career Clusters:

- **Arts, Humanities, Media, and Communications**
- **Biosciences, Health Science, and Medicine**
- **Business Management and Finance**
- **Construction and Development**
- **Education, Training, and Child Studies**
- **Engineering, Scientific Research, and Manufacturing Technologies**
- **Environmental, Agricultural, and Natural Resources**
- **Human and Consumer Services, Hospitality, and Tourism**
- **Information Technologies, Network Operations**
- **Law, Government, Public Safety, and Administration**
- **Transportation, Distribution, and Logistics**

--Information about the Construction and Development career cluster, one Information Technology program, and the Transportation, Distribution, and Logistics career cluster maybe accessed from the Foundations Executive Summary of the Foundation Web site: <http://www.montgomeryschoolsmd.org/departments/foundations>.

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## WHAT IS THE FUTURE OF CAREER CLUSTERS IN MCPS?

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CPPs within the 11 career clusters are now available to MCPS students in all areas of the county. In this way, students are provided with additional relevant choices that relate to their interests, and they reap the benefits of an engaging learning environment as they complete a rigorous four- or five-credit pathway program. Benefits for students are many and range from personalized instruction to expertise in a specific pathway. The Carl D. Perkins Secondary and Technical Education Act was reauthorized in August 2006 and focuses on academic and technical preparation for college and careers, emphasizing attainment of professional credentials such as certifications and licensures.

An important milestone of Goal 1: Ensure Success for Every Student of the MCPS strategic plan, *Our Call to Action: Pursuit of Excellence*, states “All students will graduate prepared for postsecondary education or employment.” To support progress toward this milestone, CTE staff studied strategic plans in several systems and reviewed past performance in MCPS. Based on data obtained from CPPs implemented in MCPS over a five-year period, results indicate that the following instructional targets are achievable by 2014:

- Thirty percent of all MCPS graduates will complete a CPP.
- Of the graduates completing a CPP, 80 percent will be prepared for college and careers.

To ensure that students are well-prepared for college and careers, CTE has developed Cluster Advisory Boards (CABs) for each career cluster that include representatives from the business community and postsecondary institutions to provide seamless experiences for students as they move from middle school to high school to postsecondary experiences. For further information, please contact staff at 240-632-6900.

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## ARTS, HUMANITIES, MEDIA, AND COMMUNICATIONS

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**CONTACTS:** *Sandra Navidi, Supervisor, 240-632-6938*  
*Michelle Lipson, Specialist, 240-632-6942*

**CLUSTER DESCRIPTION:** Arts, Humanities, Media, and Communications programs offer opportunities for students to pursue interests in careers related to art, music, drama, and other creative expression. Students prepare to assume leadership roles in career majors that include, but are not limited to humanities, radio and television broadcasting, film and cinema studies, public relations/advertising, fine arts, digital media, electronic media, graphic arts, printing, and foreign language.

<b>AVAILABLE COURSES</b>		
<b>Broadcast Media</b>	<b>Graphic Communications PrintEd</b>	<b>Multimedia and Interactive Technologies</b>
TV Option Video Production A/B Electronic Video Field Production A/B Media, Management & Operations A/B	Introduction to Graphic Communications 1A/B	Foundation in Arts, Humanities, Media and Communications A/B
Radio Option Radio Production A/B Electronic Audio Field Production A/B Radio Station Management & Operations A/B	Introduction to Graphic Communications 2A/B	Web Option Web Site Development A/B Advanced Web Tools and Digital Media A/B
Arts, Humanities, Media, and Communications Internship	Printing, Graphics, and Electronic Media Internship	Game Option Multimedia Technologies and Game Development A/B Advanced Simulation and Gaming A/B

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### WHAT'S NEW THIS YEAR (FY0)

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- The Broadcast Media courses, Radio Production A/B, have completed the pilot process. Curriculum is now available on Blackboard
- The PrintEd program has received state accreditation.

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### WHAT'S COMING NEXT YEAR (FY11)

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- Adobe certification tests for Photoshop and Dreamweaver.

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### LIST OF CURRICULUM FRAMEWORK AND INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009

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- Introduction to Graphic Communications 1 A/B
- Radio Production A/B
- Web Site Development A/B
- Advanced Web Tools and Digital Media A/B

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**FUTURE PLANS FOR ADDITIONAL COURSES,  
FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- Curriculum frameworks and end-of-course assessments will be developed for the Foundations in Arts, Media, Humanities and Communication.
- New curriculum continues to be developed for the Broadcast Media program for the television and radio pathways.
  - Video Production, Electronic Video Field Production
  - Radio Production, Electronic Audio Field Production

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**TRAINING SESSIONS PLANNED FOR FY10**

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- Curriculum implementation training
- CPD course for Advance Flash
- End-of-course/program assessment writing
- Grading and reporting

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## BIOSCIENCES, HEALTH SCIENCE, AND MEDICINE

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**CONTACTS:** *Rosanna Thomas, Coordinator, 240-632-6948*

**CLUSTER DESCRIPTION:** Biosciences, Health Science, and Medicine programs offer rigorous academic curriculum combined with hands-on application of academic and technical skills. Students have the opportunity to earn nationally-recognized industry certifications in this program. Students use state-of-the-art technology and acquire new professional competencies as they participate in challenging internships at biotechnology firms and local hospitals. Employment trends for this cluster are considered to be exceptionally strong for the next ten years.

AVAILABLE COURSES			
Academy of Health Professions	Biomedical Sciences-Project Lead the Way, Inc.(PTLW)	Biotechnology	Medical Careers
Foundations of Medicine and Health Science A/B	Principles of Biomedical Sciences A/B	Molecular Biotechnology A/B	Biology A/B or Chemistry A/B (pre-requisite grade of B or better)
Anatomy and Physiology A/B	Human Body Systems A/B	Forensic Science A/B	Medical Careers A/B (co-requisite: Biology A/B or Chemistry A/B)
Fundamentals of Pharmacy*	Medical Interventions A/B	Special Topics in Biotechnology	Medical Careers Science A/B
Medical Careers <i>Pathway</i>	Guided Research A/B	AP or IB Biology	AP or IB Biology
Physical Rehabilitation Science*	College-dual Enrollment	AP or IB Chemistry	AP or IB Chemistry
AP or IB Biology	Internship	AP Environmental Science	College-dual Enrollment
AP or IB Chemistry		Anatomy and Physiology	Guided Research A/B
Guided Research A/B		Guided Research A/B	Medical Careers Internship
College-dual Enrollment		College-dual Enrollment	
Internship		Internship	

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### WHAT'S NEW THIS YEAR (FY10)

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*\*not offered in FY10*

- The Academy of Health Professions program is debuting at Seneca Valley High School. The program will offer Physical Rehabilitation Science as its specialized option.
- MCPS will continue to work with Maryland State Department of Education, Stevenson University, Montgomery College, and the University System of Maryland to offer specialized and capstone options for the Academy of Health Professions.
- The Cluster Advisory Board for Biosciences, Medicine and Health Science will review the course offerings of the Biotechnology pathway.

- MCPS will continue to investigate program expansion options for the PLTW Biomedical Sciences program and the Academy of Health Professions.
- SAT interventions will be provided to Biosciences, Medicine and Health Science pathway students at Kennedy, Paint Branch and Wheaton High Schools.

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### **WHAT'S COMING NEXT YEAR (FY11)**

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- The specialized course option, Fundamentals of Pharmacy, will be piloted at Paint Branch High School.
- The specialized course option, Physical Rehabilitation Science, will be piloted at Kennedy High School

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### **LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009**

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Curriculum frameworks are available for:

- Biotechnology
- Medical Careers
- Academy of Health Professions
- PLTW Biomedical Sciences

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### **FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- Physical Rehabilitation Science
- Fundamentals of Pharmacy

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### **TRAINING SESSIONS PLANNED FOR FY10**

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- In-service training sessions are planned for Biosciences, Medicine and Health Science instructors throughout the school year.
- Biomedical Sciences instructors will attend the Summer Training Institute for PLTW at Stevenson University.
- Academy of Health Professions instructors will attend a summer curriculum workshop for the foundational courses.

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## BUSINESS MANAGEMENT AND FINANCE

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**CONTACTS:** *Sandra Navidi, Supervisor, 240-632-6938*  
*Michelle Lipson, Specialist, 240-632-6942*

**CLUSTER DESCRIPTION:** Almost all organizations operate using similar business functions. These functions include hiring and training of staff, creating products or offering a service, marketing and selling those products or services, and managing the financial operations and information created in the organization. Within the Business Management and Finance cluster, students will be provided with opportunities to explore different careers and continuing education paths. They will obtain valuable knowledge of career choices as they apply new learning's in classrooms and workplaces. As lifelong learning takes place for these students, the quality of life for the community, and society as a whole, will be raised.

<b>AVAILABLE COURSES</b>			
<b>National Academy of Finance</b>	<b>Accounting</b>	<b>Business Management and Administration</b>	<b>Marketing</b>
Accounting A/B	Entrepreneurship and Business Management 1 A/B	Software Applications by Design A/B (SABD) and Advanced SABD	Entrepreneurship and Business Management 1 A/B
Economics and the World of Finance Or AP Microeconomics AP Macroeconomics	Accounting A/B	Entrepreneurship and Business Management 1 A/B	Accounting A/B
Banking and Credit	Advanced Accounting A/B, (Honors)	Accounting A/B	Marketing A/B
International Finance	Personal Finance or Fin. Management w/ Software Applications by Design A/B (FY 2011)	International Business	Advanced Marketing A/B
Financial Planning	Business Internship	Personal Finance or Fin. Management w/ Software Applications by Design A/B (FY 2011)	Business Internship
Entrepreneurship and Business Management 1 A/B	College and Internship Capstones	Economics and Business Law A/B Or AP Microeconomics AP Macroeconomics	College and Internship Capstones
Securities & Insurance	AP Microeconomics AP Macroeconomics	Entrepreneurship 2	
College and Internship Capstones		Business Internship	

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### WHAT'S NEW THIS YEAR (FY10)

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- Montgomery County Public Schools (MCPS) has six National Academy Foundation programs. The Academy of Finance (AOF) is being implemented at Albert Einstein, Gaithersburg, Northwest, Magruder, Paint Branch, and Watkins Mill high schools.
- James Blake High School is an official testing site for the College Level Examination Program (CLEP) exams. The CLEP exams available are Financial Accounting and Principles of Marketing.

Similar to Advanced Placement (AP) exams, CLEP exams allow students to earn college credit. Students may also take CLEP exams at Montgomery College, Rockville Campus.

- MCPS plans to hold the annual Entrepreneurship Expo in conjunction with the Young Professionals Conference on March 17, 2010 at the Universities at Shady Grove. Each school offering the Entrepreneurship and Management, A/B course may enter one team in each of these areas: Marketing, Finance, and Business Operations. Students in other career areas are welcome to participate.
- The Financial Management with Software Applications A/B course will be piloted in three schools this year. This course will replace Software Applications by Design as a business career program of study in FY 2011.
- Beginning summer 2010, the Personal Finance course, formerly Financial Management will be available for high school students to take online. This three-week elective course is designed to help students identify and learn personal strategies for managing financial resources.

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#### **WHAT'S COMING NEXT YEAR (FY11)**

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- The Financial Management with Software Applications A/B course will be expanded to more high school locations.

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#### **LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009**

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- Accounting A/B
- Advanced Accounting A/B (Honors)
- Entrepreneurship and Business Management 1 A/B
- Entrepreneurship and Business Management 2 (Framework)
- Personal Finance
- Marketing A/B
- Advanced Marketing A/B
- Financial Management with Software Applications A/B
- Software Applications by Design A/B
- Advanced Software Applications by Design A/B

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#### **FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- Curriculum and framework will be available for the Financial Management with Software Applications A/B course will be available in FY 2011.

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#### **TRAINING SESSIONS PLANNED FOR FY10**

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- Entrepreneurship and Business Management 1 and 2 courses are for students interested in participating in the Expo. Teacher training is required for team entrance for this event.
- Software Applications by Design (Microsoft Office Specialist) Certification best practices training for teachers. This training will provide support for student success on certification exams.

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## EDUCATION, TRAINING, AND CHILD STUDIES

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**CONTACTS:** *Regina Breiterman, Coordinator, 240-632-6933*  
*Mary Yeates, Specialist, 240-632-6939*

**CLUSTER DESCRIPTION:** Due to changing family dynamics and workplace demands, employment opportunities continue to grow in careers related to children. In addition, the nationwide shortage of educators affords students excellent opportunities in the classroom as well as in the business world. Students prepare for occupations which include, but are not limited to, teachers, teaching assistants, trainers, instructional coordinators, and administrators. Students who enroll in Education, Training, and Child Studies programs engage in authentic experiences that prepare them for careers in these rapidly-expanding professions.

<b>AVAILABLE COURSES</b>	
<b>Early Child Development</b>	<b>Teacher Education</b>
Child and Adolescent Development 1 A/B	Child and Adolescent Development 1 A/B
Child and Adolescent Development 2 A/B	Teaching as a Profession A/B
Child and Adolescent Development 3 A/B	Teaching and Curriculum A/B
Education, Training and Child Studies Internship A/B	Education, Training and Child Studies Internship A/B

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### WHAT'S NEW THIS YEAR (FY10)

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- The Maryland State Department of Education Office of Childcare Credentialing has approved the MCPS application for “Communication Skills for Child Care Professionals” training. As a result, students in the Early Child Development program who meet all of the requirements now may earn the 90 + 9 Clock Hours Certification.
- The pilot course process for three courses in the Teacher Academy of Maryland program is underway.

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### WHAT'S COMING NEXT YEAR (FY11)

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- Teachers participating in the Teacher Education Academy will receive training during the summer at the Teacher Academy of Maryland Summer Leadership Institutes at Towson University.
- Early Child Development and Teacher Academy of Maryland curricula will continue to be aligned with the initiatives of the Department of Curriculum and Instruction.

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### LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AS OF SUMMER 2009

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- Child and Adolescent Development 1 A/B
- Child and Adolescent Development 2 A/B
- Child and Adolescent Development 3 A/B
- Education, Training and Child Studies Internship A/B
- Teaching as a Profession A/B
- Towson University Teacher Academy of Maryland curriculum

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**FUTURE PLANS FOR ADDITIONAL COURSES,  
FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- Curriculum frameworks and end-of-course assessments will be developed for the remaining courses in the Teacher Academy of Maryland program.

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**TRAINING SESSIONS PLANNED FOR FY10**

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- Early Child Development and Teacher Academy of Maryland best practices sessions
- Teacher Academy of Maryland summer institutes

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## ENGINEERING, SCIENTIFIC RESEARCH, AND MANUFACTURING TECHNOLOGIES

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**CONTACTS:** *William E. Ball, Coordinator, 240-632-6932*  
*Steve Mikulski, Specialist, 301-279-3369*

**CLUSTER DESCRIPTION:** Engineering, Scientific Research, and Manufacturing Technologies programs offer opportunities for students to pursue interests at various levels within the engineering and research fields by experiencing and engaging in engineering practices. According to the National Alliance for Pre-engineering Programs, by 2010, half of all baby boomers will be gone, from the workforce. By 2020, the other half will be gone leaving a critical gap in the engineering fields. These two pathways prepare students to be successful in engineering fields like aerospace, architecture, chemical, civil, electrical, environmental, manufacturing, material, mechanical, nuclear and transportation.

<b>AVAILABLE COURSES</b>	
<b>Engineering</b>	<b>Project Lead The Way (PLTW) Advanced Engineering</b>
Creative Engineering A/B* Pre-engineering /B	Introduction to Engineering Design A/B
Systems and Cycles A/B*	Principles of Engineering A/B
Technological Innovations A/B	Digital Electronics A/B
Engineering Applications A/B* Communication Systems A/B	Computer Integrated Manufacturing A/B or Civil Engineering & Architecture A/B or Aerospace Engineering A/B
Engineering Science A/B or College-Level Engineering Course or Academy Capstone Experience	Engineering Design and Development A/B

\* *Restricted Courses (Offered only at selected sites)*

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### WHAT'S NEW THIS YEAR (FY10)

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- Project Lead the Way (PLTW) programs at Col. Zadok Magruder, Paint Branch, Poolesville, Rockville, Watkins Mill, Walt Whitman, and Wheaton high schools continue to increase as students are provided with advanced engineering coursework.
- The first course of PLTW is Introduction to Engineering Design (IED). It is offered at Bethesda Chevy Chase, Montgomery Blair, James Hubert Blake, Clarksburg, Damascus, Richard Montgomery, Northwood, Seneca Valley, Sherwood, Springbrook, and Thomas S. Wootton high schools.
- The second course of PLTW is Principles of Engineering (POE). It is being offered at Montgomery Blair, Richard Montgomery, Northwood, Seneca Valley, Sherwood and Thomas S. Wootton high schools.
- In the fall of FY10, Rockville High School is scheduled for its initial certification by PLTW and Maryland State Department of Education. Both Col. Zadok Magruder and Wheaton high schools are scheduled for their five-year certification renewal. Certification approval allows students to obtain up to 15 college/university credits if they earn a B or better as a final class grade and a B or better on Test C of the national PLTW exam.

- In Spring FY10, all non-certified high schools will need to become PTLW certified to have access to PLTW assessments.
- Articulation agreements are approved for MCPS-CTE PLTW program completers from Montgomery College. Completion of the PLTW career pathway program gives student three credits and completion of the ES 100 course.
- All schools will administer Test A and provide the option for Test C for all PLTW courses at every high school.
- Parent and corporate partners need to be identified at each high school.
- The focus of training and implementation focus will be the POE course as it is introduced in six high schools.
- A partnership is pending between MCPS and UMBC for providing annual training within Montgomery County.

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### **WHAT'S COMING NEXT YEAR (FY11)**

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- PLTW articulation agreements with the University of Maryland, Baltimore campus includes 15 transcribed credits for students.
- The final three PLTW courses can be completed at the Thomas Edison High School of Technology.
- Agreements with Montgomery College and the Universities at Shady Grove are pending.

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### **LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009**

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- All PLTW courses, developed in 2004
- Pre-engineering, developed in 2006

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### **FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- PLTW course reports will be developed to meet MCPS-BOE regulations.

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### **TRAINING SESSIONS PLANNED FOR FY10**

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- PLTW Teacher Summer Institute, July and August 2009
- National PLTW Counselor Conference, January 2010

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## ENVIRONMENTAL, AGRICULTURAL, AND NATURAL RESOURCES

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**CONTACTS:** *William E. Ball, Coordinator, 240-632-6932*  
*Steve Mikulski, Specialist, 301-279-3369*

**CLUSTER DESCRIPTION:** Programs in the Environmental, Agricultural, and Natural Resource cluster offer opportunities for students to pursue their interests in the green industry which may include, but are not limited to, fisheries management, wildlife management, soil and waste management, forestry, civil engineering, landscape design, environmental controls, environmental engineering, research and testing, earth sciences, agriculture, aquaculture, and horticulture.

<b>AVAILABLE COURSES</b>		
<b>Environmental Horticulture</b>	<b>Landscape Design</b>	<b>Green Industry Management</b>
Foundations of Horticulture A/B	Foundations of Horticulture A/B	Foundations of Horticulture A/B
Environmental Studies and Greenhouse and Nursery Production	Fundamentals of Design and Site Design	Greenhouse and Nursery Production and Landscape Maintenance
<u>Horticulture Electives:</u> (choice of 2) Floral and Interior Plant Design Fundamentals of Design Landscape Installation Landscape Maintenance	<u>Horticulture Electives:</u> (choice of 2) Floral and Interior Plant Design Advanced Application Landscape Design Environmental Studies Landscape Maintenance Turfgrass/Irrigation Management	<u>Horticulture Electives:</u> (choice of 2) Landscape Installation Environmental Studies Fundamentals of Design Turfgrass/Irrigation Management
Horticulture Internship or Entrepreneurial Horticulture or Academy Capstone Experience	Horticulture Internship or Entrepreneurial Horticulture or Academy Capstone Experience	Horticulture Internship or Entrepreneurial Horticulture or Academy Capstone Experience

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### WHAT'S NEW THIS YEAR (FY10)

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- The program proposal for horticulture that was approved by MSDE in 2007 identified three new pathways of study in horticulture: Environmental Horticulture, Landscape Design, and Green Industry Management.
- Strategic planning is scheduled to merge the expertise and resources of CTE Horticulture and Science Horticulture.
- Feasibility studies will be performed on the high schools originally identified for these programs. Additional sites for Natural Resource and Environmental Career Cluster programs may be identified.
- A phase-in plan for horticulture will be created and then proposed to the Cluster Advisory Board (CAB).

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### WHAT'S COMING NEXT YEAR (FY11)

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- The phase-in plan will be implemented and revised as needed.
- Annual articulation agreements will be developed in partnership with Montgomery College.

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**LIST OF CURRICULUM FRAMEWORKS AND  
INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009**

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- Curriculum frameworks for the Environmental Horticulture, Landscape Design and Green Industry Management programs were developed in 2006.

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**FUTURE PLANS FOR ADDITIONAL COURSES,  
FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- A curriculum framework draft and a sequence of career pathway courses will be reviewed by the CAB and/or adhoc committee.
- End-of-course and/or program assessments will be developed.

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**TRAINING SESSIONS PLANNED FOR FY10**

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- MATA Conference

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## HUMAN AND CONSUMER SERVICES, HOSPITALITY, AND TOURISM

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**CONTACTS:** *Regina Breiterman, Coordinator, 240-632-6933*  
*Mary Yeates, Specialist, 240-632-6939*

**CLUSTER DESCRIPTION:** Programs in the Human and Consumer Services, Hospitality, and Tourism cluster offer opportunities for students to pursue interests in careers related to the largest, fastest growing industry in the United States. The hospitality/food industry offers opportunities for dynamic career paths in high skill, managerial and entrepreneurial positions worldwide. Employers in this \$800 billion industry include the government, major food companies, restaurants, hotels, resorts, cruise lines, hospitals, and universities. The consumer services industry is growing to address the increasing needs of a work-oriented society. Through hands-on activities, laboratory work, and field experiences, students relate academic competencies to industry requirements.

<b>AVAILABLE COURSES</b>				
<b>Cosmetology</b>	<b>Hospitality Management</b>	<b>National Academy of Hospitality &amp; Tourism</b>	<b>Nail Technology (Manicuring)</b>	<b>Professional Restaurant Management</b>
Cosmetology 1 A/B	International Cultures & Cuisines A/B	Hospitality & Tourism A/B	Nail Technology (Manicuring) A	Professional Restaurant Management 1 A/B Culinary Arts, ACF
Related Math A (10th grade) Related Math B (12th grade)	Culinary Essentials A/B	Travel Geography for the Academy of Hospitality and Tourism A/B	Nail Technology (Manicuring) B	Professional Restaurant Management 2 A/B Culinary Arts, ACF
Cosmetology 2 A/B	Hospitality Management Internship	Economics for the Academy of Hospitality and Tourism A/B	On-the-Job Training for Nail Technology (Manicuring)	Internship (optional)
Cosmetology Science A/B		Systems for the Academy of Hospitality and Tourism A/B		Professional Restaurant Management 1 A/B Culinary Arts, ACF
Cosmetology 3 A/B		Business Management and Entrepreneurship		
		National Academy Foundation Internship		

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### OTHER COURSES

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- Food Trends and Technology A/B
- Foundations of Design A/B
- Design and Merchandising1 A/B
- Interior Design 2 A/B

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### WHAT'S NEW THIS YEAR (FY10)

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- All three Professional Restaurant Management program sites have received American Culinary Federation Certification.

- Teachers offering the Hospitality Management ProStart and professional restaurant management program have been trained to administer the ServSafe Food Protection Manager Certification exam to students in the program.
- The Maryland ProStart Invitational Competition provides opportunities for students in the Hospitality Management and Professional Restaurant Management programs to compete for scholarships.
- The Pilot Course Year 2 Report for Travel Geography B will be completed.
- An amendment will be submitted to the Maryland State Department of Education (MSDE) requesting that the Food Trends and Technology course be included as a course in the Hospitality Management program.
- Students in cosmetology and nail technology programs take the Maryland State Board Licensing Exams.

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### **WHAT'S COMING NEXT YEAR (FY11)**

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- Curricula will continue to be aligned with the initiatives of the Department of Curriculum and Instruction.

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### **LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AS OF SUMMER 2009**

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- Food Trends and Technology A/B
- Culinary Essentials A/B
- International Cultures and Cuisines A/B
- Professional Restaurant Management A/B
- National Academy Foundation Academy of Hospitality and Tourism curriculum
- Middle School Family and Consumer Sciences

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### **FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- A Design program proposal will be submitted to the MSDE.

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### **TRAINING SESSIONS PLANNED FOR FY10**

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- Best practices sessions for teachers in all programs
- ProStart 1 training
- National Academy of Hospitality and Tourism institutes
- Food Educators Network International professional development for Professional Restaurant Management teachers

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## INFORMATION TECHNOLOGIES

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**CONTACTS:** *Sandra Navidi, Supervisor, 240-632-6938*  
*Michelle Lipson, Specialist, 240-632-6942*

**CLUSTER DESCRIPTION:** Information Technology is one of America's fastest growing industries, encompassing computers, software, telecommunications products and services, Internet and online services, systems integration and professional services companies. The U.S. Department of Labor reports that, by 2016, the United States will require more than 1.3 million new highly-skilled IT workers ranging from computer scientists and engineers to systems analysts and programmers.

<b>AVAILABLE COURSES</b>			
<b>National Academy of Information Technology (AOIT)</b>	<b>National Academy of Information Technology (AOIT)</b>	<b>National Academy of Information Technology (AOIT) Cisco Academy</b>	<b>Oracle Academy</b>
<i>Computer Programming (4 of the following courses)</i>	<i>Information Resource Design (4 of the following courses)</i>	<i>Networking/Hardware Management (4 of the following courses)</i>	Computer Programming 1 A/B
Discovering Programming Concepts A/B	Discovering Programming Concepts A/B	Discovering Programming Concepts A/B	Database Administration Programming A/B
Computer Programming 1 A/B	Advanced Software Applications by Design A/B	Computer Programming 1 A/B or Advanced Software Applications by Design A/B	Computer Programming 2 A/B
Computer Programming 2 A/B	Web Site Development A/B	Microcomputer Technologies A/B	IT Internship
Computer Programming 3 A/B	Advanced Web Tools and Digital Media A/B	Network Engineering and Management A/B	College IT course
College IT course	Database Administration Programming A/B	Advanced Network Engineering and Management A/B	
AOIT Internship	College IT Course	College IT course	
	AOIT Internship	AOIT Internship	

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### WHAT'S NEW THIS YEAR (FY10)

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- MCPS is a Cisco Regional Academy and plans are being made to expand the program to selected schools, Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Springbrook, Wheaton and Thomas S. Wootton high schools will be implementing this program. Students are required to take the certification exams.
- The Oracle Academy will expand to include Clarksburg, Seneca Valley, and Thomas S. Wootton high schools. Students are required to take the certification exams.
- MCPS will increase the attendance of middle school girls at the Technology Day conference held at the Universities of Maryland Shady Grove Campus in November 2009.
- MCPS will continue collaborate with the Maryland Department of Education to develop a computer science (programming) career program of study.
- A hybrid computer science/technology education course is under development. It will be piloted in FY 2010. This course will meet the technology education standards for the graduation requirement.
- The Computer Programming 3 curriculum will continue to follow the outline of topics of the recently retired College Board course, AP Computer Science AB.

- Computer Programming 2 will reflect the topics of the College Board AP Computer Science A exam.

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### **WHAT'S COMING NEXT YEAR (FY11)**

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- Advanced Placement Computer Science teachers will continue to plan ways to recruit girls and other underrepresented student populations.

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### **LIST OF CURRICULUM FRAMEWORKS AND INSTRUCTIONAL GUIDES AVAILABLE AS OF SUMMER 2009:**

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Instructional guides for:

- Software Applications by Design A/B
- Advanced Software Applications by Design A/B
- Computer Programming 1 A/B
- Computer Programming 2, AP A/B
- Computer Programming 3, A/B
- Discovering Programming Concepts A/B
- Web Site Development A/B
- Advanced Web Tools and Digital Media A/B
- Multimedia Technologies and Game Development A/B for approved sites
- Designing Technology Solutions A/B – framework and curriculum only for FY10 pilot sites

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### **FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR INSTRUCTIONAL GUIDES**

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- The Designing Technology Solutions A/B course will be piloted in three schools in FY10. This course will focus on the Voluntary State Curriculum for technology education with a focus on programming and robotics. It will satisfy the technology education graduation requirement on an advanced level.

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### **TRAINING SESSIONS PLANNED FOR FY10**

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- A new CPD course, Website Development Using Adobe Flash, will be offered in the fall of 2009 at Montgomery College. It is highly recommended for teachers, or prospective teachers, of any website development course.

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## LAW, GOVERNMENT, PUBLIC SAFETY, AND ADMINISTRATION

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**CONTACTS:** Rhonda Dillard, Specialist, 240-632-6935

**CLUSTER DESCRIPTION:** Law, Government, Public Safety, and Administration programs offer students the academic background and critical thinking skills that enable them to enter postsecondary programs and access employment in this career field. Junior Reserve Officers Training Corps (JROTC) develops future leaders and offers students many opportunities for college scholarships and military academy nominations. Employment demand for jobs in this cluster continues to grow.

AVAILABLE COURSES		
Navy JROTC	Army JROTC	Justice, Law and Society
Naval Science 1 A/B	Leadership Education & Training 1 A/B	Introduction to Justice, Law, & Society A/B
Naval Science 2 A/B	Leadership Education & Training 2 A/B	Law & the Administration of Justice A/B
Naval Science 3 A/B	Leadership Education & Training 3 A/B	Contemporary Issues in Justice, Law, & Society A/B
Naval Science 4 A/B	Leadership Education & Training 4 A/B	Guided Research Justice, Law, & Society A/B
		College Law/Public Safety A/B

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### WHAT'S NEW THIS YEAR (FY10)

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- Four schools, Montgomery Blair, Northwood, Seneca Valley, and Springbrook high schools, will continue to offer the Justice, Law and Society career pathway program which will prepare students for college and careers in law, law enforcement, and government administration. Partnerships with community and industry representatives will provide students with authentic experiences in law, law enforcement, and public administration.
- Expanded course offerings in the Justice, Law and Society career pathway program allows students the ability to take advance placement and advanced level courses to complete the Justice, Law, and Society program of study.
- Northwood and Springbrook high schools will honor their Justice, Law, and Society program completers with a certificate ceremony.
- Northwest High School has applied for a *Marine Corps JROTC* program.

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### WHAT'S COMING NEXT YEAR (FY11)

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- The Justice, Law and Society program is planned for expansion to several interested high schools.

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### List of curriculum frameworks and instructional guides available as of summer 2009

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- Army JROTC
- Navy JROTC
- Justice, Law, and Society

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**FUTURE PLANS FOR ADDITIONAL COURSES, FRAMEWORKS, AND/OR  
INSTRUCTIONAL GUIDES**

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- A team of writers and consultants will continue to edit, revise and enhance all courses for the Justice, Law, and Society program.

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**TRAINING SESSIONS PLANNED FOR FY10**

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- Justice, Law, and Society teachers will participate in the Street Law Teacher Training Institute. Teachers will meet area lawyers and receive interactive lesson plans and materials developed by Street Law, Inc. to help students learn about the judiciary, rights and responsibilities, historic landmark cases of the Supreme Court, and practical law.
- Justice, Law, and Society teachers will meet four times in order to share best practices.
- JROTC staff will meet twice to share best practices.

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## ALL CLUSTERS INCLUDE: WORK-BASED LEARNING

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**CONTACT:** Rhonda Dillard, Specialist, 240-632-6935

**DESCRIPTION:** The Work-based Learning programs link students with industry professionals to gain relevant, firsthand experience in a career area of interest. Students develop an employment portfolio, develop plans for postsecondary education and employment, improve interviewing and work place skills, and obtain a deeper understanding of career pathways.

AVAILABLE COURSES		
College/Career Research and Development	Internship	Specialty Internship
College/Career Research and Development (CCRD) I A/B	Internship A/B (single, double, or triple period)	Specialty internships connected to Career Pathway programs
College/Career Research and Development (CCRD) II A/B		
On-the-Job Training		

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### What's new this year (FY10)

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- The Maryland State Department of Education accepted Montgomery County Public Schools' proposal to replace the Cooperate Work Experience career pathway program with the new College/Career Research and Development (CCRD) career pathway program.
- MCPS formed a partnership with the University of Maryland Eastern Shore to develop a cohort and provide Work-based Learning certification for MCPS teachers.
- A rollout plan will be developed to accommodate all MCPS schools offering CCRD I to the graduates in the Class of 2010.
- Curriculum writers will develop curriculum for CCRD II and College/Career Development Seminar A/B in collaboration with Montgomery College.

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### What's coming next year (FY11)

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- The new College/Career Research and Development pathway program will require that CCRD I be a pre-requisite to the On-the-Job Training course.
- Curriculum writers will continue to develop curriculum for CCRD I.

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### List of curriculum frameworks and instructional guides available as of summer 2009

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- Internship framework
- CCRD curriculum framework (*draft*)

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**Future plans for additional courses, frameworks, and/or instructional guides**

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- Instructional guides for CCRD I and II will be developed.

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**Training sessions planned for FY10**

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- CCRD curriculum workshop for all CCRD teachers will occur in the summer of 2009.
- Monthly in-service meetings for CCRD teachers.
- Four in-service meetings for Internship Coordinators.