

U.S. Department of Education
2013 National Blue Ribbon Schools Program
A Public School - 13NJ3

School Type (Public Schools): Charter Title 1 Magnet Choice

Name of Principal: Dr. Linda Russo

Official School Name: Middlesex County Academy for Science, Mathematics & Engineering Technologies

School Mailing Address: 100 Technology Drive
Edison, NJ 08837-3644

County: Middlesex State School Code Number*: 23-3150-010

Telephone: (732) 452-2600 E-mail: russol@mcvts.net

Fax: (732) 906-8421 Web site/URL: http://www.mcvts.net

I have reviewed the information in this application, including the eligibility requirements on page 2 (Part I - Eligibility Certification), and certify that all information is accurate.

_____ Date _____
(Principal's Signature)

Name of Superintendent*: Mr. Brian Loughlin Superintendent e-mail: LoughlinB@mcvts.net

District Name: Middlesex County Vocational and Technical Schools District Phone: (732) 257-3300

I have reviewed the information in this application, including the eligibility requirements on page 2 (Part I - Eligibility Certification), and certify that it is accurate.

_____ Date _____
(Superintendent's Signature)

Name of School Board President/Chairperson: Mr. John Bicsko

I have reviewed the information in this application, including the eligibility requirements on page 2 (Part I - Eligibility Certification), and certify that to the best of my knowledge it is accurate.

_____ Date _____
(School Board President's/Chairperson's Signature)

**Non-Public Schools: If the information requested is not applicable, write N/A in the space.*

The original signed cover sheet only should be converted to a PDF file and emailed to Aba Kumi, Director, National Blue Ribbon Schools (Aba.Kumi@ed.gov) or mailed by expedited mail or a courier mail service (such as Express Mail, FedEx or UPS) to Aba Kumi, Director, National Blue Ribbon Schools Program, Office of Communications and Outreach, U.S. Department of Education, 400 Maryland Ave., SW, Room 5E103, Washington, DC 20202-8173.

PART I - ELIGIBILITY CERTIFICATION

The signatures on the first page of this application certify that each of the statements below concerning the school's eligibility and compliance with U.S. Department of Education, Office for Civil Rights (OCR) requirements is true and correct.

1. The school configuration includes one or more of grades K-12. (Schools on the same campus with one principal, even K-12 schools, must apply as an entire school.)
2. The school has made Adequate Yearly Progress (AYP) or its equivalent each year for the past two years and has not been identified by the state as "persistently dangerous" within the last two years.
3. To meet final eligibility, the school must meet the state's AYP requirement or its equivalent in the 2012-2013 school year. Meeting AYP or its equivalent must be certified by the state. Any AYP status appeals must be resolved at least two weeks before the awards ceremony for the school to receive the award.
4. If the school includes grades 7 or higher, the school must have foreign language as a part of its curriculum and a significant number of students in grades 7 and higher must take foreign language courses.
5. The school has been in existence for five full years, that is, from at least September 2007 and each tested grade must have been part of the school for that period.
6. The nominated school has not received the Blue Ribbon Schools award in the past five years: 2008, 2009, 2010, 2011 or 2012.
7. The nominated school has no history of testing irregularities, nor have charges of irregularities been brought against the school at the time of nomination. The U.S. Department of Education reserves the right to disqualify a school's application and/or rescind a school's award if irregularities are later discovered and proven by the state.
8. The nominated school or district is not refusing Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district-wide compliance review.
9. The OCR has not issued a violation letter of findings to the school district concluding that the nominated school or the district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan from the district to remedy the violation.
10. The U.S. Department of Justice does not have a pending suit alleging that the nominated school or the school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
11. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the school or school district in question; or if there are such findings, the state or district has corrected, or agreed to correct, the findings.

PART II - DEMOGRAPHIC DATA

All data are the most recent year available.

DISTRICT

1. Number of schools in the district 0 Elementary schools (includes K-8)
 0 Middle/Junior high schools
 7 High schools
 0 K-12 schools
 7 Total schools in district
2. District per-pupil expenditure: 17916

SCHOOL (To be completed by all schools)

3. Category that best describes the area where the school is located: Suburban
4. Number of years the principal has been in her/his position at this school: 1
5. Number of students as of October 1, 2012 enrolled at each grade level or its equivalent in applying school:

Grade	# of Males	# of Females	Grade Total
PreK	0	0	0
K	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	27	13	40
10	24	18	42
11	23	14	37
12	17	17	34
Total in Applying School:			153

6. Racial/ethnic composition of the school: 0 % American Indian or Alaska Native
71 % Asian
0 % Black or African American
5 % Hispanic or Latino
0 % Native Hawaiian or Other Pacific Islander
24 % White
0 % Two or more races
100 % Total

Only the seven standard categories should be used in reporting the racial/ethnic composition of your school. The final Guidance on Maintaining, Collecting, and Reporting Racial and Ethnic data to the U.S. Department of Education published in the October 19, 2007 *Federal Register* provides definitions for each of the seven categories.

7. Student turnover, or mobility rate, during the 2011-2012 school year: 0%

This rate is calculated using the grid below. The answer to (6) is the mobility rate.

Step	Description	Value
(1)	Number of students who transferred <i>to</i> the school after October 1, 2011 until the end of the school year.	0
(2)	Number of students who transferred <i>from</i> the school after October 1, 2011 until the end of the school year.	0
(3)	Total of all transferred students [sum of rows (1) and (2)].	0
(4)	Total number of students in the school as of October 1, 2011	153
(5)	Total transferred students in row (3) divided by total students in row (4).	0.00
(6)	Amount in row (5) multiplied by 100.	0

8. Percent of English Language Learners in the school: 0%

Total number of ELL students in the school: 0

Number of non-English languages represented: 0

Specify non-English languages:

9. Percent of students eligible for free/reduced-priced meals: 0%
 Total number of students who qualify: 0

If this method does not produce an accurate estimate of the percentage of students from low-income families, or the school does not participate in the free and reduced-priced school meals program, supply an accurate estimate and explain how the school calculated this estimate.

10. Percent of students receiving special education services: 0%
 Total number of students served: 0

Indicate below the number of students with disabilities according to conditions designated in the Individuals with Disabilities Education Act. Do not add additional categories.

<u>0</u> Autism	<u>0</u> Orthopedic Impairment
<u>0</u> Deafness	<u>0</u> Other Health Impaired
<u>0</u> Deaf-Blindness	<u>0</u> Specific Learning Disability
<u>0</u> Emotional Disturbance	<u>0</u> Speech or Language Impairment
<u>0</u> Hearing Impairment	<u>0</u> Traumatic Brain Injury
<u>0</u> Mental Retardation	<u>0</u> Visual Impairment Including Blindness
<u>0</u> Multiple Disabilities	<u>0</u> Developmentally Delayed

11. Indicate number of full-time and part-time staff members in each of the categories below:

	<u>Full-Time</u>	<u>Part-Time</u>
Administrator(s)	<u>1</u>	<u>0</u>
Classroom teachers	<u>13</u>	<u>0</u>
Resource teachers/specialists (e.g., reading specialist, media specialist, art/music, PE teachers, etc.)	<u>3</u>	<u>0</u>
Paraprofessionals	<u>0</u>	<u>0</u>
Support staff (e.g., school secretaries, custodians, cafeteria aides, etc.)	<u>5</u>	<u>0</u>
Total number	<u>22</u>	<u>0</u>

12. Average school student-classroom teacher ratio, that is, the number of students in the school divided by the Full Time Equivalent of classroom teachers, e.g., 22:1:

12:1

13. Show daily student attendance rates. Only high schools need to supply yearly graduation rates.

	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Daily student attendance	97%	98%	98%	99%	98%
High school graduation rate	100%	100%	100%	100%	100%

14. **For schools ending in grade 12 (high schools):**

Show percentages to indicate the post-secondary status of students who graduated in Spring 2012.

Graduating class size:	<u>34</u>
Enrolled in a 4-year college or university	<u>97%</u>
Enrolled in a community college	<u>3%</u>
Enrolled in vocational training	<u>0%</u>
Found employment	<u>0%</u>
Military service	<u>0%</u>
Other	<u>0%</u>
Total	<u>100%</u>

15. Indicate whether your school has previously received a National Blue Ribbon Schools award:

No

Yes

If yes, what was the year of the award?

PART III - SUMMARY

The Middlesex County Academy for Science, Mathematics and Engineering Technologies (MCASMET) is a four-year, full-time career academy high school dedicated to advancing the learning and well-being of all students. The school opened in September 2000 with an initial class of 27 students, comprising the first graduating class of 2004. MCASMET is committed to ensuring high standards and challenging opportunities to students through the integration of academic and technical education. The school also strives to develop student self-awareness, confidence, character, sensitivity to the environment and leadership skills. Academic and technical disciplines are fully integrated; students are consistently called upon to challenge their levels of learning through assignments and projects requiring application of knowledge across all disciplines. Now in its thirteenth year, the school enrolls 161 students, representing twenty-five municipalities / sending school districts . MCASMET provides a nurturing environment in which motivated students can thrive. Successful learning is the result of a strong partnership between students, parents/guardians, and our dedicated faculty and staff.

The school is located on the campus of Middlesex County College. It offers a highly focused four year, full time curriculum concentrating on science, mathematics and engineering technologies that include civil/mechanical and electronic/computer engineering. The School's collaborative and innovative curriculum was designed in partnership with Middlesex County College as an alternative to traditional comprehensive high schools. MCASMET graduation requirements exceed those mandated by the New Jersey Department of Education. Studies are multi-disciplinary with technology integrated throughout each program. Students are afforded the opportunity to earn college credits during the high school day through the Middlesex County College High School Scholars program.

All students who apply participate in a selective admissions process. The process considers elementary/middle school grades, standardized test scores and a MCASMET developed assessment in language arts, mathematics and writing. Once a student is accepted into the school, he/she must successfully complete 160 credits prior to graduation. The number of applicants to the Academy has increased each year since the school's inception in September 2000 and each subsequent year reflects strong competition for a very limited number of seats. Two hundred sixty applicants tested for one of forty-two available slots. The class of 2012 was the Academy's ninth graduating class.

Our student body is diverse and that diversity brings a rich cultural school community and great opportunities for the students' learning. The fact that many of our students are first generation American brings a global perspective to their studies and high school experience.

Many of our students have been honored for their academic and leadership achievements. Examples include: a 2010 Presidential Scholar, numerous students recognized by the National Merit Scholarship Corporation as Commended Students, Semi-finalists, National Merit Finalists, College Board for AP Scholars, Young Science Achievers grants, and selection for attendance at prestigious NJ Governor's School summer programs, to name just a few. Students have been selected to participate in summer internships with professors in universities and government laboratories such as Rutgers University and the NASA Goddard Space Flight Center Several MCASMET students have earned the rank of Eagle Scout with the Boy Scouts of America.

MCASMET graduates have had extraordinary success gaining admission to prestigious tier-one universities such as: Massachusetts Institute of Technology, Oxford University, Princeton, Harvard, Carnegie Mellon, Rensselaer Polytechnic Institute, Rutgers, and many others. Since the first graduating class, 100% of our graduates have been accepted and continued on to college. Extra-curricular activities, clubs, and interscholastic sports, which include: National Honor Society, Spanish Honor Society, Mathematics League, Student Council, Student Government, Science League, School Newspaper,

Yearbook, Peer Mediation, Safe Schools Committee, Conflict Mediation, Model United Nations Club, Interact (Community Service) Club, Red Cross Club, Peer Tutoring, Varsity and Junior Varsity Soccer.

The staff consists of 15 instructional teaching members, 60% with advanced degrees. The two engineering instructors are former engineers who bring a wealth of experience and real world application and perspective. Support Services include a School Nurse, School Counselor and Media Specialist All of the instructors are “highly qualified” and participate in the School’s Professional Learning Community. Several instructors are also members of the School’s Leadership Committee.

The Middlesex County Academy for Science, Mathematics and Engineering Technologies has been recognized by US News & World Report as one of “America’s Best High Schools” for 2008, 2009, 2010 and 2012. This year the MCASMET was named the number 1 high school in Middlesex County by Inside Jersey Magazine. MCASMET was also honored by New Jersey Monthly for being ranked fourth in the state of New Jersey in its vocational high school survey and one of the top high schools in the United States.

We believe that our small learning environment, centered on rigorous and highly focused academic and technical education, combined with the school culture of service to others and the community has resulted in an extraordinary learning opportunity for our students and directly translate in to the outstanding success of our school and students.

PART IV - INDICATORS OF ACADEMIC SUCCESS

1. Assessment Results:

MCASMET is a public high school in the State of New Jersey and is therefore required to give the High School Proficiency Assessment (HSPA) in March to grade eleven students to determine if they fulfill the testing requirement currently in place for graduation. The performance levels indicated on the HSPA for both language arts literacy and mathematics are: Partially Proficient for scores of 0-199, Proficient for scores from 200-249, and Advanced Proficient for scores of 250-300. The scores are provided for the total population of the school and then broken down by subgroups of special education, economically disadvantaged, and ethnicity. The number of students in each subgroup is below 20 and therefore not considered to be statistically significant.

100% of MCASMET students that have taken the HSPA have been rated as Proficient or Advanced Proficient on Language Arts Literacy and Mathematics.

The HSPA results for the last five years for language arts literacy show an increase in the percentage of the students who are advanced proficient from the March 2008 to the March 2012 administration of the HSPA. The percentages grew from 36.1% advanced proficient in March 2008 to 91.9% advanced proficient in March 2012. Similarly, on the Mathematics portion of the HSPA, the advanced proficient population grew from 88.9% in March 2008 to 94.6% advanced proficient in March of 2012. MCASMET has recorded two graduating classes that achieved 100% Advanced Proficient in Mathematics. We are very proud of the improvements in raising the percentages of Advanced Proficient in Language Arts Literacy after implementing strategies to include more reading and writing across our curriculum. These strategies include students reading more nonfiction for enjoyment and taking one day per week to actually use paper and pen to perform all of their writing assignments.

In addition to administering the HSPA to students in grade eleven, we annually administer the PSAT/NMSQT to all students in grades nine, ten and eleven. We carefully analyze that data each year looking for trends in student performance in the areas of critical reading, writing and mathematics. The evaluation of the data allows us to look for strengths and weaknesses in our curriculum and to make adjustments accordingly. Since we have a population of motivated, high-achieving students, our quest is to continually look for areas of *relative weakness* that will allow us to make improvements leading to even higher student achievement.

We track the PSAT scores of individual students to assess their growth as they move from freshman to sophomore to junior year to determine if they are progressing as they should. To do this, we look at the College and Career Ready Benchmarks provided by the College Board for each of the critical reading, writing and mathematics sections. We assess the students on the PSAT in October and then use it as an additional piece of formative assessment in both English and mathematics classes to identify needs of the individual students. The Guidance Counselor meets with the students to discuss their results and uses them as a means to motivate the students to improve on the next administration of the test. Parents get copies of their child's results and are encouraged to call the school to discuss any questions they have about them.

2. Using Assessment Results:

Each year we also follow the progress of the class as a whole in grade nine, ten and eleven on the PSAT reading, writing and math sections. To illustrate this, we use a box and whisker plot to show the data. In this way we are able to clearly show the median score, upper quartile scores and lower quartile scores as well as the highest and lowest scores in each of the three PSAT tested areas and compare them to see if our students are making better academic progress each year. We place these graphically on a chart with

critical reading scores grade 9, critical reading scores grade 10, and critical reading scores grade 11 next to one another. We do the same for the other two tested areas of writing and mathematics. This visual representation allows all of the staff to look at the data to see if our students' academic progress is improving. We use our Professional Learning Communities to review data appropriate to various disciplines. The staff makes suggestions on changes we can make as a school to help our students succeed.

In looking at the charts of the class of 2009, 2010, 2011, and 2012 mentioned above, it is clear to see that all of our students are making appropriate improvement based on the PSAT benchmarks. All of our students including those at the outliers are making significant gains from year to year administrations of the PSAT test in all three tested subjects. This is truly a significant accomplishment and is one we are very proud of. This is evidence to our staff that the changes we have made to our curriculum, improved teaching strategies and district initiatives have supported our students well as they compete with other college bound students across the nation

Each year we rank our graduating classes total SAT score, math, verbal, and writing scores against those of other schools across the State of New Jersey. For total score we have never been ranked lower than number nine in the State of New Jersey and for the last two graduating classes we have been ranked fourth best total score in the state. We have looked at this particular data not only to applaud our students' achievements but to look at areas where we can improve our programs and practices. With that in mind, the School Leadership Committee devised a plan to improve our writing scores based on a ranking of number 14 one year in PSAT writing. At least one day each week students are required to complete some type of writing assignment in each academic and career class. Writing skills are improved through increased practice as well as feedback.

Each year we use the PSAT selection index percentile score of our individual students that compares the total of the critical reading, math and writing scores to those of other college bound juniors across the nation. We again use this measure to determine if we need to make adjustments in our curriculum and instruction to better prepare our students to be able to attend the post-secondary school of their choosing.

Finally, the MCASMET uses the PSAT Summary of Answers and Skills Report to look at our students' performance on each question by skill category and difficulty level. Each year the math and English staff review this data and make a presentation to the full staff about what they learned from their review. The math and English staff members are asked to provide the strengths and weaknesses they found on the skill analysis provided by the PSAT to the full staff. The Professional Learning Committee then meets and makes recommendations to address the identified weaknesses to the School Leadership Committee who then can decide on the best implementation strategy to use.

3. Sharing Lessons Learned:

MCASMET is one of seven high schools in the Middlesex County Vocational Technical School District. Strategies and techniques are shared throughout the seven schools in various ways. School wide professional development days are held several times a year whereby instructors meet in various groups to discuss commonalities, difficulties and methodologies of teaching and learning. Outside consultants and central office personnel have also shared best practices with the entire school district to ensure that all staff members were on the same page. Curriculum meetings bring instructors of similar disciplines together to write and edit curriculum as well as review final exams.

The district also works closely with the newly hired instructors in the New Teacher Program. Meetings are held monthly in a central location for all new instructors throughout the district. Teachers are there to support each other, share ideas and make suggestions. Presenters are experienced personnel who assist in setting goals, improving classroom management, analyzing data, planning lessons, utilizing technology and incorporating differentiation into the classroom.

The engineering focus at the Middlesex County Academy for Science, Mathematics and Engineering Technologies enables students to use their acquired skills at various events throughout the world. Students from both civil/mechanical and electronic/computer engineering compete for various internships from major colleges and corporations throughout the United States. Students have helped program microcontrollers for use in autonomous vehicle control systems as well as assist in the research of Developing Nanoparticles to Deliver Therapeutic Oligonucleotides to Cancer Cells.

F.I.R.S.T. (For Inspiration and Recognition of Science and Technology) is a non-profit public charity founded in 1989 to inspire young people's interest and participation in science and technology. Our students' F.I.R.S.T. robotics team "Say Watt?" has competed nationally for the past two years. The team uses its knowledge of programming and design to build a competitive robot. Students also share their leadership skills with F.I.R.S.T. members throughout the world. Recently the team competed in Russia and was a recipient of the Think Award and Inspire Award.

Many of the students at Middlesex County Academy for Science, Mathematics and Engineering Technologies serve as ambassadors to middle school students throughout the county. Sharing their knowledge of programming, mechanical drawing and scientific relationships at career fairs, open houses and parent meetings, enables the engineering students to demonstrate their passion for the skills and knowledge acquired each and every day.

Seniors at the Middlesex County Academy for Science, Mathematics and Engineering Technologies engage in a year-long project, Projects C.A.R.T.S. (Combining Academic Research and Technical Studies). Students write a proposal, examine how it reflects the school's curriculum and their technical area, state the problem they are solving, and what solutions they are offering and indicate whether the idea is patentable. Students are also required to maintain an engineering journal which highlights the progress of their project. Tables, charts, calculations and graphs are recorded as well as details of the project so anyone is able to make use of the invention. Many of the students share their journals with College Admissions Counselors as well as Job Recruiters.

4. Engaging Families and Communities:

As a school community, we believe that successful learning is the result of a strong partnership between students, parents/guardians, and our dedicated faculty and staff. Open lines of communication between the administration, faculty and parents helps ensure that students maintain a healthy equilibrium between academic studies, sports, other extra-curricular activities and community service projects. As a school of choice, we recognize that we must often go "beyond the call of duty" when compared to community-based comprehensive high schools.

The Academy Foundation is the organized Parent / School group for our school. Parents meet regularly to discuss issues of benefit for the school and students. The Principal and Foundation President enjoy a close working relationship and work collaboratively for the benefit of the school community.

The staff at the Middlesex County Academy for Science, Mathematics and Engineering Technologies continually works one-on-one with families and community members to ensure student success.

Parents have real time access to their child's grades and can see all completed and missing assignments through our Parents Access Module in our Student Management and online Gradebook Program. Test results for standardized tests are shared with parents as they become available.

Students at MCASMET are from all over Middlesex County and are extremely active in the communities in which they live. Many of the students participate in charitable walks and fundraisers for causes such as breast cancer, arthritis and heart disease. Several students received training from Citizen Corps, New Jersey Office of Emergency Management in TEEN CERT. This program is a National Homeland

Security Initiative directed at making our schools and communities safer by having educated/trained youth capable of preparing for and responding to disasters and emergencies.

Middlesex County Food Organization and Outreach Distribution Services (M.C.F.O.O.D.S) was created by the Middlesex County Board of Chosen Freeholders to ensure an adequate supply of food to county residents by collecting and distributing food to local food pantries and soup kitchens. The MCASMET students participated in the annual M.C.F.O.O.D.S. food donation drive that helps replenish the county's food emergency food network. Students donated almost 9,000 pounds of nonperishable food and were awarded a resolution from the Board of Chosen Freeholders for coming in second place in the county. Our school is one of the smallest in the county so we are particularly proud of this accomplishment.

Two senior students were selected as 2012 Hometown Heroes by the United Way of Central Jersey Volunteer Services Advisory Committee. Interact Community Service Club students are trained as safety ambassadors by members of Robert Wood Johnson University Hospital. The students visit a local elementary school on a monthly basis to talk with the youngsters about safety. The safety ambassadors' goals are to raise awareness of and decrease unintentional childhood injuries and their related risky behaviors.

The two engineering instructors are active members of the district's Advisory Committee. Unique to county vocational schools, periodic meetings are held to discuss instructional materials, skills sets/proficiencies, software applications, equipment needs, latest technology and employment outlook /job trends. Recommendations are made enabling the students to strengthen their ability to achieve career goals. This committee helps us develop strong partnerships with post-secondary educators and with business, industry, organized labor and community representatives who assist us in the evaluation of our programs and review of our curriculum in an effort to meet or exceed industry standards in our career areas. Post-secondary educators assist in ensuring that our high school students develop the research, study, communication and organizational skills required for college success. They are invaluable in the curriculum articulation that has enabled our graduates to perform on a high level in collegiate engineering programs. Our business and industry partners provide excellent feedback that enables our graduates to develop skills needed for business success.

The Middlesex County Academy for Science, Mathematics and Engineering Technologies also has a very active Academy Alumni Association that communicates with its members through social media. Students from the first graduating class to the present share information and are able to network with each other. Job opportunities, internships and general social information are just some of the items found on the alumni website. Alumni frequently return to the school and share experiences with current students, spanning the spectrum from college life to graduate school and ultimately, professional life.

PART V - CURRICULUM AND INSTRUCTION

1. Curriculum:

Students at the MCASMET are provided with the higher level technical and academic courses needed for college bound students who will enter a science, technology, engineering or mathematics (STEM) career.

The curriculum addresses rigorous academic requirements that lead to a career path in a variety of technical areas. High school students are enrolled in either Civil/Mechanical Engineering or Electronic/Computer Engineering. The academic curriculum is aligned with the Common Core State Standards for Language Arts and Math and with the New Jersey Core Curriculum Content Standards in Science, Social Studies, World Languages, Health & Physical Education and technology. All courses are taught at the honors or enriched level. The district has established a five year cycle for curricula revision.

Our four year, 40 credit Engineering Program offers students the opportunity to explore the areas of Civil/Mechanical and Electronic/Computer Engineering Technologies from both the theoretical and applied perspectives. Also included are applications of computer aided design and automated data collection techniques that are driving the nature of professional practice. It culminates with the CARTS Project, Combining Academic Research and Technical Studies and the senior thesis.

Mathematics

Students who attend MCASMET are required to successfully complete a minimum of four years of Mathematics. The courses include: Geometry, Algebra II, Pre-Calculus, Calculus or AP Calculus AB. Electives are also offered in the areas of Discrete Mathematics and Linear Algebra.

English/Language Arts

Students are required to successfully complete four years of study in Language Arts. All seniors take AP English Literature and Composition. Active participation in the arts leads to a comprehensive understanding of the imaginative and creative process. MCASMET students meet their arts graduation requirement through an intensive study of theatre and exposure to theatrical performance.

Science

Students at the Middlesex County Academy for Science, Mathematics and Engineering Technologies are required to take four years of honors-level Laboratory Science. The courses include: Environmental Science, Biology, Chemistry and Physics. All labs are equipped with state of the art equipment that mirrors a real world scientific laboratory.

Social Studies

The Social Studies curriculum at MCASMET has a comprehensive offering of required and elective courses. Required courses include: World History, U.S. History I and II and Economics. Our elective courses include: American Government and Contemporary World Studies.

Health & Physical Education

All students are required to complete a four year course of Health & Physical Education. Since the school is located on the Middlesex County College Campus, students utilize the Middlesex County College Physical Education Center for all of these classes. Students are afforded the opportunity to use the gymnasium, weight room, racquet ball courts, tennis courts, outdoor track and the Olympic size swimming pool. All students participate in a fitness challenge as a tool to help them lead active, healthy lives.

Technology

The Middlesex County Academy for Science, Mathematics and Engineering Technologies is equipped with the latest technology in every classroom and engineering lab. The school also has two technology

labs providing students with hands-on applied learning. Students are immersed in technology on a daily basis in both their academic and engineering career classes.

Foreign Language

All students are required to take two years of Spanish. Eleventh grade students are given the opportunity to take Spanish III as an elective. Additional World Language opportunities are available during the high school day at Middlesex County College.

Engineering

The MCASMET offers students the opportunity for in-depth study in the areas of Civil/Mechanical and Electronic/Computer engineering technologies. The Civil Engineering curriculum offers students a practical overview of this dynamic discipline by examining the interrelated fields of structural, geotechnical, transportation and environmental engineering and construction management.

The Mechanical Engineering curriculum, which is combined with the Civil Engineering curriculum, encompasses the design of such diverse systems as missiles, power plants, robots and machine tools. The spectrum of professional activity for the Mechanical Pre-engineering graduate runs from research through design and development to manufacturing and sales.

The Electronic Engineering course introduces the student to a variety of topics including: power distribution; motors; generators and electronic engineering integrated circuits; digital and analog hardware and electromagnetic fields and communications. Students acquire an understanding of concepts necessary for practical applications exploiting electrical, electronic and magnetic phenomena.

The Computer Engineering course introduces the student to the knowledge of DC/AC semiconductor, operational amplifier and microprocessor theory and their applications in analyzing systems operations. The course also includes a detailed background of computer networking systems hardware, software and industry troubleshooting procedures.

2. Reading/English:

The Language Arts Literacy curriculum employs an interdisciplinary approach and is aligned with the Common Core State Standards and includes the five general standards of reading, writing, speaking, listening and using language. All of the ninth, tenth and eleventh grade English courses are taught on an honors level and are linked to the corresponding social studies curricula. The ninth grade curriculum was created with an emphasis on the epic literature of various nations and cultures. Critical analysis, advanced writing assignments, independent reading and literary research are required.

The tenth graders improve their analytical skills, learn literary terms and how to use that knowledge to expand their ability to understand literature and explore the development of American Literature specifically from early literature to 1900.

Junior year is devoted to a study of American Literature from 1900 to the present with emphasis on major writers and the historical, social and philosophical movements of their time. In addition, emphasis is placed on skills needed for the SAT.

All twelfth grade students are required to take AP English Literature and Composition. Students employ an intensive, interpretative and critical approach to modern and classical literature through class and independent reading, through small and large group discussion and through a variety of writing experiences. One of the requirements is that all students write a research paper utilizing primary and secondary sources.

The instructors use a variety of instructional methods to ensure that all students are engaged and successful in Language Arts Literacy.

3. Mathematics:

In order to better serve the college bound student who will be entering a STEM career path, the mathematics program was designed to address rigorous academic requirements. Students are required to take four years of an accelerated mathematics course sequence. Ninth grade students begin their high school career in Honors Geometry and progress through Honors Algebra II, Honors Pre-Calculus and either Honors Calculus or AP Calculus AB. High school electives are offered in Discrete Mathematics and Linear Algebra.

The criteria that was used to develop the college and career readiness standards are: align college and work expectations; include rigorous content and application of knowledge through high-order skills; build upon strengths and lessons of current state standards; are informed by top-performing countries so that all students are prepared to succeed in our global economy and society and are evidence and/or research based.

Students in math class are encouraged to make sense of problems and persevere in solving them. As an engineer the work that you do is project based. Therefore, on any given day the students at MCASMET can be found transforming algebraic equations, working on their graphing calculators, solving complex problems, graphing data and searching for regularity or trends. The “future” engineers are constantly interpreting mathematical results and preparing justifications for their conclusions. They see complicated things and help simplify them. They utilize outside resources such as technology to solve problems and make presentations.

Students are assessed regularly on the basis of class participation, small and large group activities, tests/quizzes, reports, journals and oral presentations.

4. Additional Curriculum Area:

Prospective engineers need to have a strong foundation in Science. Therefore, students at MCASMET are required to take four years of honors-level laboratory science. Ninth grade students taking Honors Environmental Science cover such topics as scientific inquiry, the interdependence of Earth’s systems and an understanding of human population dynamics. In tenth grade students are required to take Honors Biology where they engage in laboratory and authentic learning experiences that encourage the application of biological knowledge to make decisions and solve problems. As a junior, Honors Chemistry students concentrate on concepts that include properties, classification and reactions of matter, atomic theory, bonding and periodic properties and dynamics. Students round out their high school career with Honors Physics. Topics include: one and two dimensional motion and vectors, forces and the laws of motion, work and energy, momentum and collisions, circular motion and gravitation, fluid mechanics, heat, thermodynamics, vibrations and waves, sound, light, electrical energy, circuits and magnetism.

Challenges, project based curriculum, technology and collaborative learning are all part of the mission of the Middlesex County Academy for Science, Mathematics and Engineering Technologies. In order to succeed in the 21st century, it is essential for our students to understand scientific literacy in an ever-changing global world. Our students demonstrate an understanding of scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs and economic productivity. On any given day, one can see students working on hands-on activities and viewing virtual labs that integrate technology into their coursework. Critical thinking and problem solving skills are encouraged as students work collaboratively on constructing a hypothesis, collecting and analyzing data and presenting the results to the entire class. Students often take their learning outside the school and engage in student centered activities in the Ecological Park on the Middlesex County Community College

Campus. Projects are related to real-world scenarios enabling students to experience richness and excitement of knowledge about the natural world and understanding how it functions.

Each year the Middlesex County Academy for Science, Mathematics and Engineering Technologies Science League participates in the New Jersey Science League competitions. This year the students won first place in the Environmental Science Division, fourth place in Biology, second place in Chemistry and second place in Physics. A ninth grade student also placed first in the individual category of Environmental Science.

5. Instructional Methods:

Even though the Middlesex County Academy for Science, Mathematics and Engineering Technologies is a high achieving school and most of its students are advanced proficient on standardized tests, differentiation is an important part of our daily routine. The instructors use varied instructional strategies to engage students in purposeful learning activities. The instructors value the role of students in promoting each other's learning through peer tutoring. Whenever students are struggling with a concept, instructors will open the floor to invite students to volunteer to help that student in real time by addressing the question. Teams of students will be given a thorough demonstration of a particular hands-on skill and will be charged with teaching other teams. This technique gives students a sense of responsibility while deepening their own knowledge of the skill. Instructors use this time to assess all the groups. Ongoing assessment is necessary for monitoring and promoting student learning. Instructors create learning communities in which students assume responsibility for themselves during independent and group work. In return, students develop social skills as they share responsibility for positive classroom interactions.

Instructors also utilize technology on a daily basis to tailor their instructional strategies to fit the need of their students. Between classrooms of similar disciplines is a “bridge”—a small room that connects the two rooms. These “bridges” house a bank of six computers and allows teachers to assign independent study activities to students while they focus on a smaller group of students in the main classroom.

In order to provide a more effective delivery system, Project C.A.R.T.S. (Combining Academic Research and Technical Studies) is an integral part of the senior engineering classes. This project is a long-term, structured, integrated effort designed to assist our students in not only increasing, but also demonstrating their levels of competence in both their academic and technical studies. Students may work individually or with a partner in either of the engineering labs. Students negotiate a proposal with their engineering instructor and design, package and ultimately present the final product to the entire class. This project enables students to work to their strengths— such as having a software student pair up with a hardware student on a computer project.

6. Professional Development:

The faculty and staff at the Middlesex County Academy for Science, Mathematics and Engineering Technologies have embraced the district's initiatives for Professional Learning Communities and Northwest Evaluation Association's (NWEA) Keeping Learning on Track (KLT®). Both of these initiatives have enabled the staff to work collaboratively on developing strategies to adapt teaching and learning to meet the students' learning needs on a daily basis.

One of the district's school wide initiatives is the Northwest Evaluation Association's (NWEA) Keeping Learning on Track (KLT®). “The KLT Program is a sustained, interactive professional development program that helps teachers adopt minute-to-minute and day-by-day formative assessment strategies that have been shown by research to powerfully increase student learning. The program was designed to support teacher change by joining two powerful ideas—formative assessment and sustained, school-embedded teacher learning communities.” The teachers share learning expectations, questioning techniques, feedback and self and peer assessment strategies. All of the district's instructors and staff

embrace the program's one big idea – evidence of student learning is used to adjust the instruction to better meet student learning needs. Staff was introduced to the program in general. Training sessions were designed to have teachers work collaboratively with their colleagues to focus on: Where is the learner right now? Where is the learner going? How does the learner get there? Teachers started integrating the program into their lessons by focusing on only one or two strategies at a time. Now after training and support through Professional Learning Communities, lesson plans demonstrate that teachers are comfortable with the techniques and vary them depending on the objective and the class.

This school year, the Middlesex County Vocational Technical Schools was chosen to participate in the Excellent Educators for New Jersey grant. One of our first tasks, as a pilot district, was to choose a quality teacher evaluation system. The McREL Teacher Evaluation system was chosen because it includes five standards of performance based on 21st century professional teaching standards. To facilitate a smooth transition to this new system, the district developed a three pronged approach to professional development for our teachers. The three prongs include: 1) Four professional development days for all teachers, focusing on instruction in the classroom and the importance of improving current practice. During the school year the protocol for the McREL system is being wedded to the improvement of current teaching practice. 2) Monthly PLC meetings are the vehicle used for improving classroom instruction. These teacher-led groups hold each other accountable for using new formative assessment techniques in the classroom and then reporting out to the group. 3) All teachers new to district become a cohort during their orientation program in August. They meet monthly throughout the year to learn about effective instruction and are coached to address any problems that arise in their classrooms. All district teaching staff members were introduced to the McREL Teacher Evaluation System at our opening staff development day on September 4 and at Faculty Meetings on September 5. Marzano's "Nine Essential Instructional Strategies" had been presented to the faculty Identifying similarities and differences, summarizing and note taking, reinforcing effort and providing recognition, homework and practice, nonlinguistic representations, cooperative learning, setting objectives and providing feedback, generating and testing hypothesis and cues, questions and advanced organizers are all a part of the teachers' resources that they can use to move instruction. These strategies align closely with the McREL Teacher Evaluation System that the district is presently piloting. We consider our teachers to be our most valuable asset. Therefore it is vital that our teacher evaluation system and the resulting professional development experiences exemplify our commitment to continuous and collaborative learning among professionals charged with improving student performance and learning opportunities. Professional development activities that arise out of our need to improve teacher practice will support our commitment in enriching the profession of teaching and improving student performance.

7. School Leadership:

The Principal is the instructional leader of the MCASMET. A School Leadership Committee has been created to plan and implement the school's shared vision. The committee consists of the principal, the school counselor, the engineering instructors, a physical education instructor and a science instructor. The premise of the committee is that schools are more likely to succeed when its staff plans cooperatively in a culture of commitment. Principals face greater demands and pressure to have all students reach higher levels of achievement. The leader's role is pivotal to schools becoming communities of learners in which teachers continuously improve their practice so they can enable students to succeed at high levels. The role of the principal has changed from being a good manager to being a good instructional leader. The building principal of the MCASMET believes it is her role to model for the teachers the importance of continuing learning by making professional learning part of our regular schedule, by monitoring instructional practices, by maintaining a culture of collaboration and by reviewing data. Her motto is to be successful, you have to have support—make everyone feel welcome. The climate needs to be positive—it's all about team work and celebrating all the good things.

The principal has to be transformational and set the focus for the school. The role requires being open and honest, being confident in what you know, saying what you mean and meaning what you say and

following up on things people ask you to do. It's also making sure that instructional strategies are appropriate.

The principal has to be able to model and facilitate strategies for staff members. Being an instructional leader means providing resources and support to teachers and making sure teachers understand how to teach what students need to learn. Teachers are expected to work together during professional development time. Teachers share what they have learned and what has worked. As the building's instructional leader, the principal is expected to do the same. Therefore the principal of MCASMET attends all Professional Learning Community meetings. It is also important for the principal to support teachers with materials and resources. Each day the principal at MCASMET makes herself visible either when the students are eating or by popping into their classrooms. Students frequently invite her to a class to hear a presentation or see a power point. The principal keeps the lines of communication open with the faculty and students by sending out a weekly calendar of events called the "Friday Focus." The week's agenda, a quote for the week and dates to remember are usually highlighted. The principal is an advocate and spokesperson for the school to all stakeholders. She makes herself available for club meetings, Academy Foundation meetings and attends as many extra curricular activities as possible. This helps create a school culture that is actually a small community.

The principal demands input from all staff members. Teachers should be involved in the design and implementation of important decisions and policies. The MCASMET principal established two goals at the opening day faculty meeting—increase writing across the curriculum and establish a School Leadership Committee. The entire faculty under the leadership of the building principal will accomplish these goals by year end. All instructors are required to select one day each week that will be devoted to writing. The School Leadership Committee has been established, meets twice a month and is diligently working on revisiting the school's purpose, vision and mission. Adopting school goals and selecting strategies to achieve them; understanding student data and using data to set school goals; monitoring implementation of school action plans and progress toward goals; and keeping staff focused on improving student performance are some of the commitments of the School Leadership Committee.

PART VII - ASSESSMENT RESULTS

STATE CRITERION-REFERENCED TESTS

Subject: Mathematics Grade: 11 Test: New Jersey High School Proficiency Assessment
Edition/Publication Year: 2005 Publisher: Measurement, Inc.

	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Testing Month	Mar	Mar	Mar	Mar	Mar
SCHOOL SCORES					
Proficient Plus Advanced	100	100	100	100	100
Advanced	95	94	100	94	89
Number of students tested	37	36	38	36	36
Percent of total students tested	100	100	100	100	100
Number of students alternatively assessed	0	0	0	0	0
Percent of students alternatively assessed	0	0	0	0	0
SUBGROUP SCORES					
1. Free/Reduced-Price Meals/Socio-economic Disadvantaged Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
2. African American Students					
Proficient Plus Advanced		Masked	Masked		Masked
Advanced		Masked	Masked		Masked
Number of students tested		1	2		1
3. Hispanic or Latino Students					
Proficient Plus Advanced	Masked		Masked	Masked	
Advanced	Masked		Masked	Masked	
Number of students tested	3		5	2	
4. Special Education Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
5. English Language Learner Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
6. White					
Proficient Plus Advanced	100	100	100	100	100
Advanced	88	94	100	100	86
Number of students tested	16	16	16	12	21
NOTES: Masked indicates data were not made public because fewer than 10 students were tested.					

STATE CRITERION-REFERENCED TESTS

Subject: Reading Grade: 11 Test: New Jersey High School Proficiency Assessment
Edition/Publication Year: 2005 Publisher: Measurement, Inc.

	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Testing Month	Mar	Mar	Mar	Mar	Mar
SCHOOL SCORES					
Proficient Plus Advanced	100	100	100	100	100
Advanced	92	92	61	47	36
Number of students tested	37	36	38	36	36
Percent of total students tested	100	100	100	100	100
Number of students alternatively assessed	0	0	0	0	0
Percent of students alternatively assessed	0	0	0	0	0
SUBGROUP SCORES					
1. Free/Reduced-Price Meals/Socio-economic Disadvantaged Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
2. African American Students					
Proficient Plus Advanced		Masked	Masked		Masked
Advanced		Masked	Masked		Masked
Number of students tested		1	2		1
3. Hispanic or Latino Students					
Proficient Plus Advanced	Masked		Masked	Masked	
Advanced	Masked		Masked	Masked	
Number of students tested	3		5	2	
4. Special Education Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
5. English Language Learner Students					
Proficient Plus Advanced					
Advanced					
Number of students tested					
6. White					
Proficient Plus Advanced	100	100	100	100	100
Advanced	94	94	69	25	29
Number of students tested	16	16	16	12	21
NOTES: Masked indicates data were not made public because fewer than 10 students were tested.					

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