

**Manhattanville in West Harlem Implementation Plan Report  
October 17, 2016 Submission**

**Declaration Reference and Key Data**

Obligation Section Number: **5.07(c)(ix)**

Obligation Title: **Availability of Faculty**

Obligation Page Number: **54**

Obligation Trigger: **When Upper Level Students Matriculate**

Obligation Start Date: **Beginning of 2012-2013 Academic Year**

Obligation End Date: **End of 2036-2037 Academic Year (25 Years from Commencement)**

Obligation Status: **In Compliance**

**Obligation: Innovation/Changed Conditions**

In accordance with the Declaration of Covenants and Restrictions Section 5.08, Obligation 5.07 (c)(ix) is modified to clarify the obligation. In general, the scope of services to be provided has not been changed. Additionally, the obligation in Section 5.07(c)(viii) New Public Middle and High School for Math, Science and Engineering that focuses on curriculum support from Columbia Faculty has been moved to this obligation for clarity of faculty engagement.

*Availability of Faculty.* Columbia shall provide curriculum support to the faculty of Columbia Secondary School created in accordance with Section 5.07(c)(viii) to ensure the highest level of education in math, science and engineering, and continuing for a 25 year period from May 20, 2009. This portion of the commitment will end in 2034.

Commencing with the academic year in which the School matriculates upper level students eligible for competing in regional and national math, science and engineering competitions, CU shall endeavor in good faith to make its faculty from existing campuses available to upper level students from the School interested in competing in regional and national math, science and engineering competitions. As the Project Site is developed, CU shall endeavor in good faith to make its faculty from the Project Site available to upper level students at the School interested in competing in regional and national math, science and engineering competitions. Columbia shall provide curriculum support to the faculty of the new school to ensure the highest level of education in math, science and engineering, and continuing for a 25 year period from commencement.

**Evidence of Compliance**

1. Annual report

Columbia University's Implementation Plan and all supporting documentation are made available on the Community Services Webpage at <http://manhattanville.columbia.edu/community/benefits-and-amenities>.

# Manhattanville in West Harlem Implementation Plan Report

## October 17, 2016 Submission

### **EOC Checklist for Obligation 5.07(c)(ix):**

Please check to verify EOC items submitted for review.

☐ 1. Annual report

**Monitor's Notes / Comments:**

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

**Status:**

                      
Please check to indicate the status of Obligation 5.07(c)(ix):

☐ In Compliance☐ In Progress

☐ Not In Compliance

☐ Not Triggered

# COLUMBIA SECONDARY SCHOOL

## for Math, Science, & Engineering

425 West 123<sup>rd</sup> Street, New York, NY 10027



A Public School, Community, and University Partnership

Challenging Academics – A Passion for Reason and Knowledge – Strength in Diversity

### Memorandum

To: [REDACTED] Office of the Provost, Columbia University  
From: Miriam Nightengale, Principal *mg*  
Re: Columbia University Faculty/Columbia Secondary School Staff Interactions  
Updated: September 16, 2016

Columbia University's libraries, computing facilities, and other academic support facilities and services are available to those upper level students at Columbia Secondary School for Math, Science, and Engineering who are currently taking courses at the University. This access benefits our students and staff by exposing them to high-quality research databases and computing facilities on Columbia's Morningside campus. Columbia Secondary Students who are enrolled in classes at Columbia University have the support and guidance of their instructors and classmates and have demonstrated the maturity and responsibility needed to successfully navigate a university campus without direct supervision. Students who are not taking courses visit the campus under the supervision of CSS-MSE teachers in collaboration with Columbia's administrative and academic faculty.

In addition to this access to Columbia's facilities, from September 1, 2015 through August 31, 2016, the staff and students at Columbia Secondary School for Math, Science, and Engineering have benefitted from the following interactions/services from the faculty and staff at Columbia University.

University Faculty, Instructor, or Staff Member	School, Department, or Unit	CSS-MSE Students or Staff Member	Project/Purpose	Time Period
[REDACTED]	Fu Foundation School of Engineering and Applied Science (SEAS)	[REDACTED]	<p>Faculty member [REDACTED] Professor of Mechanical Engineering at the Fu Foundation School of Engineering and Applied Science, has been working closely with CSS-MSE for several years on the Engineering the Next Generation Program (E.N.G.), previously the Young Scholar's Summer Program. This program started as a smaller scale program for CSS-MSE students to develop hands-on lab experience in Columbia research laboratories and has developed into CSS-MSE's inclusion in a six-year National Science Foundation grant that resulted in the establishment of the MRSEC (Material Research Science and Engineering Center) at Columbia, which is under the direction of [REDACTED]. CSS-MSE is an integral, long-term part of the program, and continues to be in consultation to enhance the CSS-MSE curriculum.</p> <p>The E.N.G. Program, now in its third year of operation, has expanded its programming to include an intensive research skills curriculum in addition to pre-existing college readiness components and the hand on research experience. The program also follows a "tiered mentoring" format, which structurally incorporates opportunities for high school students to interact with members of the research team at all levels. This format has a range of benefits for students and professionals alike. For this program, tiered mentorship includes high school, undergraduate, graduate, and postdoc researchers, as well as the faculty members; each member of the</p>	Ongoing

University Faculty, Instructor, or Staff Member	School, Department, or Unit	CSS-MSE Students or Staff Member	Project/Purpose	Time Period
			group represents a unique educational or professional level. In addition to the benefits of mentorship, high school students receive the opportunity to publish their research in an academic journal, present their research at the Columbia Undergraduate Research Symposium, and earn a letter of recommendation from their principle investigator for college admissions. Students are also eligible to continue their research during the academic year, and at least two CSS students have expressed interest in doing so for the 2016-2017 academic year.	
	Zuckerman Mind Brain Behavior Institute (ZMBBI)		CSS worked with Columbia's Zuckerman Mind Brain Behavior Institute to include six CSS students in its BRAINYAC Program from January 2016 through August 2016. The eight month BRAINYAC Program has replaced the four week summer internship program that was hosted by Columbia in earlier years. Another group of students will participate again in 2016-2017. BRAINYAC is a program for students with an interest in biomedical and specifically neuroscience research. Through the program, students learn basic neuroscience concepts and laboratory skills which prepare them for a four-week research experience at a Columbia University Medical Campus (CUMC) neuroscience lab the following summer. Students receive a stipend for their participation. The students' contributions can be extremely meaningful: one CSS student from the 2014-2015 program was invited to continue conducting her research after the completion of the formal BRAINYAC program in summer 2015, and has since continued her research in the Gordon Lab, noted below.	Ongoing
	Gordon Lab/Psychiatry and Integrative Neuroscience Department	CSS Student	One CSS student continued her work from last summer's BRAINYAC program, moving into the Gordon lab to continue research into the understanding the neural circuitry underlying working spatial memory in mice.	Summer 2016
	CU Teachers College, Cognitive Studies in Education		Helping to design and implement research and action steps to reduce student anxiety around science and to encourage persistence through increasingly difficult materials. Work included interviewing CSS students to determine attitudes around science and academic struggle, and the ongoing creation and modification of CSS curricular materials that support students' development of persistence and appreciation of the scientific inquiry process to problem-solve. This partnership resulted in the publishing of the article "Even Einstein Struggled" in the Spring 2016 issue of the Journal of the American Psychological Association, which detailed the findings of the research.	Ongoing
	Office of the Provost		Continue supporting existing admissions structures for CSS-MSE students to enroll in the University's School of Professional Studies (SPS) through meetings and calls with SPS and CSS staff as needed. Continue providing outreach and introductions to University departments.	As needed, ongoing
	Office of the Provost		Working with Vice Provost to promote CSS-MSE within Columbia.	Ongoing



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[REDACTED]	School of Professional Studies	[REDACTED]	Facilitating registration of CSS-MSE students in Columbia classes, including outreach to University faculty and staff, refining a system to vet courses to ensure that they are suitable for CSS-MSE students, creating and delivering an orientation for CSS-MSE student registration.	Ongoing
[REDACTED]	Columbia University Bookstore, School of Professional Studies	All CSS-MSE students who are enrolled in CU courses through SPS; Assistant Principal [REDACTED]	The Columbia University Bookstore, in conjunction with School of Professional Studies, has developed a streamlined process to facilitate CSS-MSE's acquisition of textbooks for the CU courses for which they are registered. This partnership was developed specifically for CSS-MSE students and is evaluated and improved each semester to ensure students have easy access to appropriate course materials.	Ongoing
Various	Various	[REDACTED]	Taking graduate courses in specific specializations to further work at CSS-MSE.	Ongoing
[REDACTED]	Office of the Provost	[REDACTED]	Providing administrative coordination and assisting with production of CSS-MSE 2016 graduation at Lerner Hall.	June 2016
[REDACTED]	Metacognition and Memory Lab, Psychology Department	[REDACTED]	CSS-MSE was included in a grant awarded to Department of Psychology faculty member [REDACTED] by the U.S. Department of Education's Institute for Education Sciences to study the role of errors in learning math. CSS-MSE students benefitted through an after-school academic support program that resulted in the entire 8 <sup>th</sup> grade passing the Algebra Regents. A key aim of the program is to enhance CSS-MSE students' understanding of math.	Ongoing
[REDACTED]	Hk Maker Lab/SEAS/ Department of Biomedical Engineering	[REDACTED]	The Hk Maker Lab is an intensive six-week summer program to learn the foundations of engineering design. The program, run by the non-profit organization Hypothekids, takes place in partnership with SEAS. Focusing on addressing a global health problem, students work in teams to prototype and test a biomedical device and develop an associated business plan. The program culminates in a pitch event to leading executives from the biomedical community. Winning projects may then be incubated using the state-of-the-art facilities at Harlem Biospace. Students then also have the opportunity to be placed in internships within New York City's biotech community. Six CSS students participated in this summer program, forming part of four teams that worked on prototypes of biomedical devices. Two CSS students will continue working with the team during the year to continue to develop and refine their device.	Summer 2016, ongoing

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[REDACTED]	Teachers College Department of Health and Behavior Studies, Nutrition Program	[REDACTED]	Recruit and organize Teachers College student volunteers to support CSS-MSE programming related to the CSS Community Garden, including instruction on sustainable gardening techniques, plant maintenance, and poultry care.	Ongoing
[REDACTED]	History Department	[REDACTED]	Faculty in CU's History Department is engaged in a new partnership with CSS-MSE's History faculty to support and improve the focus on research and writing in CSS-MSE's history curriculum and prepare students for college-level work. Planning work occurred in 2015-2016.	Ongoing
[REDACTED]	Lamont-Doherty Earth Observatory	[REDACTED]	CSS-MSE faculty spent a day at the Lamont-Doherty Earth Observatory meeting with Lamont-Doherty staff to identify opportunities for student visits and plan further development. This resulted, so far, in CSS student participation in A Day on the Hudson, during which students took data samples from various physical locations along the river to contribute to a better understanding of the water flow and current behavior. CSS students also participated in The Explorers Club, a career fair/open house that included career panels that featured science and sustainability careers in academia, government, and the private sectors and hands-on demonstrations and activities that showcase Lamont's work.	Ongoing
[REDACTED]	SEAS	[REDACTED]	Throughout the year, CSS students prepare for and participate in the FIRST Robotics Competition, an annual national robotics competition for students in grades 9-12. Working closely with peer team members, undergraduate mentors, and staff from the Mechanical Engineering Department, CSS students build and program robots and compete at the local and regional level.	Ongoing
[REDACTED]	SEAS	[REDACTED]	SEAS staff and graduate students acted as judges for the CSS middle school science fair.	Spring semester/ May 2016
[REDACTED]	SEAS	[REDACTED]	SEAS has adopted an online platform to match student volunteers with local STEM teachers and students, which it will use at CSS this academic year. A CSS faculty member has been working with the founder to develop a mobile app version of the platform. Through use of this tool, a greater number of matches between SEAS tutors and CSS students is anticipated with the work being conducted on the application.	Ongoing
Columbia National Society of Black Engineers (NSBE)	SEAS	[REDACTED]	Students from Columbia's National Society of Black Engineers (NSBE) chapter spoke to CSS students about various fields of engineering, studying engineering at Columbia, and career opportunities with a degree in engineering.	October 2015
Columbia Society of Women Engineers (SWTE)	SEAS	[REDACTED]	SWE hosted the Engineering Exploration Experience, an all-day program for high school girls interested in learning more about engineering. Students from CSS were invited to attend programming, which included seminars from Columbia SEAS faculty and postdocs and hands on engineering activities hosted by other SEAS student groups.	March 2016
[REDACTED]	Mathematics MESAAS* Psychology	56 CSS-MSE students	In the fall 2015 semester, 56 CSS-MSE students took courses for college credit at Columbia university,	September through

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	Italian Mathematics Mathematics Anthropology Psychology Germanic Languages Psychology Philosophy Mathematics Statistics Italian  *Middle East, South Asian, and African Studies		including 34 CSS-MSE students who were newly enrolled at Columbia. Students enroll through the School of Professional Studies and provided with a student orientation and access to discounted textbooks at the Columbia University bookstore. Students have full access to Columbia instructors, including use of office hours if needed. Courses this semester included Calculus I and II; Intermediate Bengali; Abnormal Behavior; The Origins of Human Society; Philosophy of Law; and Introduction to Statistics.	December 2015
	Visual Arts Astronomy Statistics MESAAS* Economics Mathematics French Italian Philosophy Political Science History Visual Arts Psychology Mathematics Germanic Languages Professional Studies French Mathematics Psychology Psychology Visual Arts E. Asian Lang. and Cultures Mathematics Professional Studies French Creative Writing Economics Mathematics E. Asian Lang. and Cultures  *Middle East, South Asian, and African Studies	62 CSS-MSE students	In the spring and summer 2016 semesters, 62 CSS-MSE students took courses for college credit at Columbia university, including 26 CSS-MSE students who were newly enrolled at Columbia. Students enroll through the School of Professional Studies and provided with a student orientation and access to discounted textbooks at the Columbia University bookstore. Students have full access to Columbia instructors, including use of office hours if needed. Courses these semesters included Calculus I, II, and III; Comparative Jurisprudence; Fiction Workshop; German; Digital Filmmaking; Cognitive Psychology; Intro to Economic Reasoning; Stars, Galaxies, and Cosmos; and Romans/Empire 754 BC to 565 AD.	January through August 2016