



**Saturday Engineering Enrichment & Discovery**  
Massachusetts Institute of Technology

**Spring 2008 Family Handbook**

# Welcome!

We are delighted to have a full house this term with 91 students, including 27 members of our new freshman class and seven additions to our sophomore class in SEED Academy. This is an exciting time and we are looking forward to see your progress and development in the program.

Each term, we publish this handbook to provide each family with important information and resources for the semester. Please be sure to take a few minutes to review its content so that you will be able to take advantage of all SEED Academy has to offer. Also, please visit us online at [web.mit.edu/seed](http://web.mit.edu/seed) for additional resources and updated information.

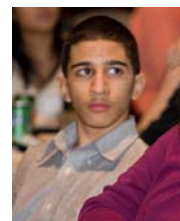
Welcome!

The SEED Academy Staff



# Calendar

SPRING 2008	
<b>FEBRUARY 2008</b>	<b>7</b> Spring Orientation - Kirsch Auditorium, Stata Center - Building 32-123, 6:30pm <b>9</b> Session 1 <b>18</b> NO CLASS President's Day holiday <b>19-22</b> Public School Vacation <b>23</b> Session 2
<b>MARCH 2008</b>	<b>1</b> Session 3 <b>8</b> Session 4 <b>15</b> Session 5 <b>22</b> Session 6 <b>24-28</b> MIT Vacation <b>29</b> NO CLASS MIT students on vacation
<b>APRIL 2008</b>	<b>5</b> Session 7 <b>12</b> Session 8 <b>19</b> Session 9 <b>24-28</b> MIT Vacation <b>26</b> NO CLASS MIT students on vacation
<b>MAY 2008</b>	<b>3</b> Session 10 <b>8</b> Kirsch Auditorium, Stata Center 6:00pm-8:00pm



# Curriculum and Program

## DAILY SCHEDULE

Time	Activity
9:00 a.m.	Students Arrival
9:00 – 9:30 a.m.	Homework Submission/ Tutoring (light breakfast served)
9:45-11:45 a.m.	Class Session I (including quizzes, lessons, demonstrations, and learning activities)
12:00-1:00 p.m.	Lunch
1:15-3:00	Class Session II
3:00 PM	Students Dismissed
3:15- 4:15	Staff Meeting (Review SEED Day)
4:15 p.m.	End SEED Academy Day

## CURRICULUM

We are continuing to reorganize our curriculum plan to better address students' needs and interests. The entire reorganization will be phased in over the next three years.

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
SPRING 2008	Mechanical Engineering	Aeronautical & Astronautical Engineering	Robotics	Synthetic Biology/ Biological Engineering

### Mechanical Engineering

Mechanical Engineering is a foundation course in SEED Academy that sets the stage for future courses. From battery-powered cars to catapults, force and motion play a part in how things work.

## **Aeronautical and Astronautical Engineering**

How does 100 ton aircraft stay in the air? This spring's "Aero/Astro" course will reinforce key mathematics concepts introduced in the context of hands-on experiments that use physics and aerodynamical forces. Students will create their own designs for aeronautical vehicles.

## **Robotics**

From Terminator to vacuum cleaners, robots are all around us, but how do they operate? Students will apply their understanding of Computer Science to build and operate robots using the LEGO Mindstorms program.

## **Synthetic Biology/ Biological Engineering**

This course is a new component to the SEED Academy curriculum. It is a new course for the seniors in SEED Academy that will be offered for the first time this spring. Our purpose of the course is to introduce a "hands on" life sciences/engineering curriculum to SEED Academy that grows interest in this increasingly important field of engineering.

# **Student Life**

## **STUDENT EVALUATIONS**

We are working to improve our programming and services to SEED Academy families with each semester. To that end, we ask our students to provide us with their recommendations on their impressions of the program and how we can increase our capacity. Students will receive evaluation forms on the last class, May 3.

## **STUDENT ASSESSMENT**

In an effort to provide families with more feedback on students' performance in the program, SEED Academy's instructional teams will prepare mid-term and final assessments. We encourage families to review this feedback with their son or daughter.

## **CANCELLATIONS AND ANNOUNCEMENTS**

In the case of inclement weather or an emergency causing SEED Academy's Saturday programming to be cancelled, a recorded message will be available at 617-253-5063. In addition, SEED Academy will list its cancellations on our website including WBZ-TV4, WCVB-TV 5 and WHDH-TV 7.

## **MIT CAMPUS**

While MIT is a relatively safe environment, it is open to the public, so students are not allowed to leave the program or the supervision of our staff at any time during the day. Also, please note that **SEED Academy students under 18 years old are not allowed to use the Stratton Student Center Arcade.**

## **ADMISSIONS**

Based on feedback from students and programmatic considerations regarding attrition, we have decided to accept students at two entry points—freshman and sophomore year — beginning in spring 2007.

## **MEALS**

We provide SEED Academy students with free breakfast (9:00 a.m. - 9:30 a.m.) and lunch (12:00 p.m. - 1:00 p.m.). For the Spring 2008 Session, we are introducing a "Healthy Options" catering for our students and staff. The menu rotates, but we are able to provide a vegetarian option during breakfast and lunch. We will not be able to accommodate special dietary restrictions but with advance notice from parents/guardians, a student will be allowed to bring food from home.

\*\*\* Students are not allowed to purchase food on campus during the program and we ask that staff not assist students in bringing undocumented food into the dining area with students.

## **ATTIRE**

We want students to feel comfortable at SEED Academy; however, we expect our students to dress appropriately as guests of MIT. Baggy, tight or revealing clothing; tank tops; low-riders; and do-rags, head scarves and baseball hats are not appropriate for the classroom.

## DRUGS AND ALCOHOL

SEED Academy students are prohibited from consuming (drinking, smelling, and/or transporting) alcoholic beverages or illegal drugs. Use of these substances will lead to the loss of stipends and immediate dismissal from the program. SEED Academy students are not permitted to be in any room or setting where alcohol or illegal drugs are being used.

## MIT PROPERTY

Defacement or destruction of MIT property will jeopardize the future of SEED Academy, and is grounds for immediate dismissal and loss of stipends. Parent(s) or guardian(s) will be held financially responsible for the necessary replacement of, or repairs to property damaged by his or her child.

## PERSONAL PROPERTY

Students are responsible for their personal belongings at all times. Neither SEED Academy nor MIT is responsible for lost or stolen property. We ask students to leave large amounts of cash and/or valuables at home.

\*\* Electronic devices, including headphones, mobile phones, and video games are **not allowed** at SEED Academy. If students bring these items to the program, they will be held in the SEED Academy office and returned to the student at the end of the day.

If there is an emergency, students should alert a member of the staff who will arrange for them to make a phone call. We ask parents and family members not to call their children on cell phones during the day, but to contact the office instead.

## STUDENT TRANSPORTATION

SEED Academy does not provide transportation; however, MIT is accessible by MBTA trains and buses. If students experience significant travel delays, they should contact the office as soon as possible.

Also, some of our students have their driver's licenses and may drive to the program; however, they are not allowed to drive with students in the program without the passengers' parents' or guardians' permission. The SEED Academy staff is not able to drive students either. In an emergency, the program will arrange with parents for students to take taxis home.

Please note that parking at MIT is in high demand on Saturdays. Students who drive should allow extra time to find parking.

## **STUDENT EMERGENCIES**

We take every precaution to keep SEED students safe. However, in the case of an emergency, we need to contact parents and guardians as soon as possible. Please keep us apprised of any changes to your home, work, and cell phone numbers.

## **MEDICATION**

SEED Academy faculty and staff are not allowed to dispense medication of any kind. Students must be responsible for any medications they require. We recommend that families provide students with aspirin or ibuprofen in case they become ill.

# **Performance Standards**

The SEED Academy admissions process is rigorous and we believe that all accepted students are capable of excellence, academically and personally. Therefore, we maintain high expectations for their performance and behavior, and work closely with families to ensure that those expectations are met.

## **CULTURE OF LEARNING**

SEED Academy offers participants the chance to explore a range of new concepts and ideas. In order for the learning experience to be satisfying for everyone, all students must show respect for others' differences in opinion, learning styles, and perspectives.

## **STUDENT BEHAVIOR**

It is important for all SEED Academy students to understand that we expect their active participation and a positive attitude about learning; it is not enough just to show up. Also, we expect participants to show respect to the faculty, the administration, their peers, and themselves at all times. Abusive and/or disrespectful behavior or language (including profanity) is unacceptable.

The SEED Academy staff will address any behavioral problems immediately. Students whose behavior is judged to be disruptive to the program or inappropriate will be sent home, and his or her parents will be notified. If the problems persist, the student's stipend will be withdrawn and a meeting will be set up with program staff, the student and his or her parent(s) or guardian(s) to consider the family's continuance in the program.

## **ATTENDANCE AND TIMELINESS**

Please consult the calendar, where you will find the Saturday sessions scheduled for this fall. Participants are expected to attend all ten sessions. Students are allowed a maximum of two excused absences per semester (with parental permission) for illness, standardized testing and personal emergencies. Our students cover a lot of material in the ten, six-hour Saturday sessions during the term, so it is difficult for them to miss any of them. **Students who miss more than two sessions will not be invited to return in the spring.**

The program begins promptly at 9:00 a.m. and continues until 3:00 p.m. We expect students to arrive on time and participate in the full day of classes. Students will not be permitted to leave SEED Academy before 3:00 PM without written parent or guardian permission. If a student will be absent or late for any reason, parents (not students) are asked to contact SEED Academy before 9:00 AM.

**Participation in orientation/kickoff events and final presentations is mandatory.**

## **HOMEWORK**

In order to encourage students' learning, and to help them to identify their strengths and weaknesses, SEED Academy assigns homework weekly. All activities, academic and non-academic, including attendance, active class participation, and completion of homework assignments are required.

Students will be given mid-term and final progress reports each semester to help them guide their learning process.

All of our students were selected because of their potential to achieve, so if a student is not meeting the minimum expectations of the program his or her instructor will address the situation with the student, and his or her parent or guardian in person and in writing. If the problem persists, the student will not be invited back for the fall term.

## **ACADEMIC PERFORMANCE**

Although we do not maintain a minimum grade point average (G.P.A.) as an entrance requirement, we expect that our students will maintain grades above a B-. Grades below this level are reason for concern. Free tutoring will be made available to families who register so that students can increase their understanding of the course material as early as possible. (See Tutoring.)

## **TUTORING**

We want to ensure that each student can meet our expectations for academic performance in school and in the program. We provide students with tutoring during the week by our teaching assistants and encourage all families to select at least one day per week when their child will attend. Tutoring is offered at the following times:

**Sunday 3-5      Monday 4-6      Wednesday 4-6      Friday 3-5**

The Lawrence Tutoring Initiative will begin in Spring 2008. There will be one to two SEED teach assistants available at Lawrence High School to provide SEED tutoring for our students.

As additional support, students will meet with the staff individually to address any academic problems that arise. For students with consistent academic problems, we will schedule appointments with the student and his or her parents to develop a specific strategy.

## **AWARDS**

Each semester, we recognize student high achievement in three ways. Students who meet all of the program's stated expectations are eligible for \$100.00 stipends. Those who exceed the standards of the course will be recognized publicly at the Final Presentation ceremony for their outstanding performance. In addition, the instructional teams may identify one student per class who has set a new standard of excellence for his or her peers for the Director's Award, which is announced at the Final Presentation ceremony.

## **STIPENDS**

In recognition of students' high achievement in the program, students are eligible to receive a \$100.00 stipend for every semester that they are in the program. These awards are made at the recommendation of the instructional staff, taking into consideration students' performance in the program and

commitment to their own learning. Stipends are mailed to students following the end of the term.

## **ENROLLMENT**

We work to maintain strong relationships with teachers and administrators in the three public school systems where we recruit students. Therefore, students' enrollment in SEED Academy is contingent on their continued enrollment in Boston, Cambridge and Lawrence public schools. However, if a SEED Academy student has completed two or more semesters in the program and decides to transfer to a non-member school, he or she will still be eligible to participate.

## **WITHDRAWAL FROM SEED ACADEMY**

We look forward to seeing every participant graduate from the program in the twelfth grade. However, if a family decides to withdraw from the program or to enroll in another school that is not affiliated with SEED Academy, they should contact the Program Coordinator directly. We will schedule and exit interview to discuss the students' departure from SEED Academy.

## **Staff**

Along with parents and teachers, SEED Academy administrative and instructional staff members are partners in each student's learning. If your family needs information or assistance, you are welcome to contact staff members directly.

### **ADMINISTRATIVE STAFF**

#### **Dedric Carter, Ph.D.**

Assistant Dean of Development & Strategic Initiative, MIT School of Engineering & Engineering Outreach Programs Executive Director

(w) 617-324-8500

[dedric@mit.edu](mailto:dedric@mit.edu)

Dedric Carter returned to MIT last spring to direct the Office of Engineering Outreach Programs after holding positions in higher education and industry. An alumnus of the Minority Introduction to Technology Engineering and Science (MITES) program, which he now manages, Dr. Carter received his Bachelor of Science degree in Electrical Engineering and Computer Science and Master of Engineering degree in Electrical Engineering at MIT, and his Ph.D. in Information Systems from Nova Southeastern University.

**Julian S. Green**

SEED Academy Program Coordinator  
MIT Engineering Outreach Programs  
(w) 617-253-5063  
[jsgreen@mit.edu](mailto:jsgreen@mit.edu)

Julian Green holds a B.A. degree from Brandeis University, where she double majored in English and American Literature and African/Afro-American Studies, with a minor in Journalism. Also an alumna of Columbia University, she earned a Masters degree in Human Rights Studies with a concentration in Conflict Resolution in May 2006.

Ms. Green transitions to the SEED Academy from the MIT Alumni Association and also a contracted position on the international research team for the International Association for Humanitarian Policy and Conflict Research (HPCR).

Her passionate interest in the development of communities of color on the domestic and international level has led her to volunteerism with non-profit organizations focused on educational and leadership development for students and peacebuilding initiatives for conflict zones on all levels. Her volunteerism ranges from activities at the United Nations, non-profit organizations and a political campaign. Currently, in addition to coordinating SEED Academy, she is in her second year as a Reading Mentor in the Everybody Wins! Metro Boston - Power Lunch Program at the Morse School in Cambridge.

**Sandy Tenorio**

Administrative Assistant  
MIT Engineering Outreach Programs  
(w) 617-253-8052  
[stenorio@mit.edu](mailto:stenorio@mit.edu)

Sandy Tenorio, who is fluent in Spanish, joined the Office of Engineering Outreach Programs in 2002, after working in the Headquarters of the Laboratory for Nuclear Science (LNS). She is no stranger to undergraduate and pre-college student contact. Before joining LNS, she spent four years with the Department of Athletics with responsibility for the Intramural Sports Program and MIT Summer Day Camp.

## INSTRUCTIONAL STAFF

### 9th Grade Mechanical Engineering

#### **Marc Graham, Ph.D.**

Instructor

Mechanical Engineering

polo@mit.edu

<http://www.jotls.com>

Originally from Cleveland, Ohio, Marc specializes in product design, machine design, and engineering design process. He has been a SEED Academy instructor since 2004.

Marc brings experience from both the classroom and industry to SEED Academy. He has served as an instructor for the MITES program and several undergraduate courses and programs at MIT, including Project Interphase, The Second Summer Program, Design and Manufacturing I, Pathways to Peace, NASA RISE, and Poetry in Progress (a writing course started by Marc). In addition, Marc has worked as a Mechanical Design Engineer for Corning, a Thermal Test Engineer for General Motors, a Mechanical Engineer for TRW, and now works as a Senior Design Engineer for Stryker Development. Also, he has written a book, [Journey of the Lost Souls](#), and produced an accompanying audio CD. Marc received his B.S., S.M., and Ph.D. from MIT.

#### **Bao Tran**

Teaching Assistant

Mechanical Engineering

ubaotran@mit.edu

Uyen-Bao Tran is an undergraduate at the Massachusetts Institute of Technology. She is currently a candidate for two B.S. degrees in Urban Studies and Planning and Architecture. A native of New Orleans, Tran is also a Gates Millennium Scholar and a recipient of the Brown Foundation Scholarship Fund.

At MIT, Bao studies the political, legal, social and economic traits of urban systems and the evolution and importance of different forms of media. She hopes to combine both fields to find ways to further use the media to solve urban problems.

Aside from being a student, Tran is also an artist. Her specialties consist of fashion and portrait photography, graphics, web design, abstract

designing and painting. She is also a writer with a goal to one day publish an autobiography and anthology of poems, lyrics, essays, and short writings.

Bao Tran's life work is aimed towards making changes to improve society. She is passionate about making the difference. She hopes to be a leader in this new technology-driven world, helping to rebuild fallen urban systems, to represent a different voice, and to bridge the gap between developed nations and third-world countries.

Aside from teaching SEED, Bao also directs the Massachusetts Academic Games League of America, a non-profit organization dedicated to developing "Thinking Kids" of character, excellence, and integrity. [<http://mit.edu/magloa>]

## **10th Grade Aeronautical and Astronautical Engineering**

### **Christopher Oravetz**

Instructor

Aeronautical and Astronautical Engineering

[coravetz@mit.edu](mailto:coravetz@mit.edu)

Chris is a graduate student at MIT pursuing his Masters Degree in the Department of Aeronautics/Astronautics. He is a recent 2007 graduate of the United States Air Force Academy and is currently a member of the active duty Air Force. Following his graduation in June 2009, Chris will attend Pilot Training in Texas.

Chris holds a passion for both Aeronautical Engineering and the leadership and mentorship of younger students with great potential. As an undergraduate student, he researched parachute deployment strategies for the new NASA CEV spacecraft, and is currently researching the psychophysics behind Astronaut slope estimation on the Moon. He has previously been a parachute instructor for cadets at the Air Force Academy lending to their confidence and knowledge of skydiving, as well as the president of the Catholic Choir and numerous military positions that inspired younger students. He currently spends his free time as a minister at the Catholic Center at Boston University, as well as volunteering within the community

Chris is excited at the opportunity to instruct and lead students at the SEED Academy. He hopes to share the passion he holds for aerospace engineering and to impact the lives and futures of bright, determined individuals.

**Ramon Torres**

Teaching Assistant  
Aeronautical and Astronautical Engineering  
rltorres@mit.edu

Ramón Torres was born and raised in Puerto Rico and is currently a Junior in the Department of Aeronautics and Astronautics at MIT. He like airplanes and things that fly, and is very happy that he will be able to share my interests with younger students. He is a very sociable person and enjoys traveling a lot. He is also a private pilot. He looks forward to having a great Spring Semester with SEED.

**11th Grade Robotics****John Pope**

Instructor  
Robotics  
johnp@mit.edu

John is a graduate student in the Department of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology. He also attended MIT for his undergraduate education. His current work deals with using artificial intelligence to create educational systems for science and math.

**Cameron Allen**

Teaching Assistant  
Robotics  
[Callen18@mit.edu](mailto:Callen18@mit.edu)

Cameron is a member of the Massachusetts Institute of Technology Class of 2011, majoring in Electrical Engineering and Computer Science. He was raised in Dayton, Ohio, and has had a passion for computers since grade school. His goal for life after MIT is to find a job working with either hardware or software, and to continue helping kids through excellent programs like SEED.

**12th Grade Synthetic Biology Biological Engineering****Austin Che**

Synthetic Biology Biological Engineering  
Instructor 1  
[ausche@mit.edu](mailto:ausche@mit.edu)

Austin is currently a PhD student at MIT. Although he is nominally in the department of electrical engineering and computer science, his research mostly involves experimental biology. He has been working at the forefront in the field of synthetic biology ever since this emerging field began to develop. Austin also introduced and has taught the biology course for the MITES program since 2003. He received his MS (2004) from EECS, MIT and BS (2001) in computer science and psychology from Stanford University.

### **Justin Buck**

Synthetic Biology Biological Engineering

Instructor 2

[jbuck@mit.edu](mailto:jbuck@mit.edu)

Justin is a PhD Candidate in Biological Engineering at MIT. Justin's research in the DeLong Lab focuses on engineering of bacterial metabolism and energy physiology. His interests include Synthetic Biology, metabolic engineering, and microbial biotech and bioenergy with the goal of environmental sustainability.

Justin attended Colorado School of Mines in Golden, CO where in 2004 he received his Bachelor of Science degree in the Environmental specialty track of Chemical Engineering with a minor in Computer Science. In the year interim before graduate school, Justin worked at the Washington Group International as a process engineer in the Oil and Gas group.

Justin enjoys being active in several student organizations including student government and athletic groups. As a Graduate Resident Tutor in Simmons Hall, Justin enjoys working with the undergraduate students at MIT. In his free time, Justin likes to play soccer, ski, golf, hike, play guitar, and watch movies.

### **Alia carter**

Synthetic Biology Biological Engineering

Teaching Assistant

[aliac@mit.edu](mailto:aliac@mit.edu)

A home-grown Arizona girl, Alia Carter is a senior in the Biology Department at MIT and an alumna of the MITES 2002 class. Upon graduation, Alia plans to work as a research technician before pursuing at PhD in Biology. Her research interests lie in cancer biology, as it allows her to study and integrate several biological areas while focusing on a major health-risk.

Her ultimate goal is become a faculty member at a cutting-edge research institute that values both research and teaching. One day she would also like to teach high school biology and chemistry and instill students with the same excitement and inspiration from all her teachers and instructors.

## Life Mastery

Shawna Young

Instructor - Learning and Educational Assessment Facilitation Counselor (LEAF)

Life Mastery

[shawna@broad.mit.edu](mailto:shawna@broad.mit.edu)

Shawna Young is a science teacher who joined the Broad Institute of MIT and Harvard in April 2007 as the Administrator for the Diversity Initiative and Educational Outreach Program. Before this position Shawna worked at the Educational Development Center as an online curriculum developer/facilitator and she also taught science for several years in North Carolina. Shawna received a BS in Chemistry from Howard University and MAT in Science Education from the University of North Carolina at Chapel Hill.

Shawna has lots of experience working with students and helping them prepare for college and careers in science. She is really excited to share her expertise with our SEED Academy students. As a LEAF counselor, she will work with all students and take the lead on planning and facilitating the Life Mastery course for our juniors and seniors.

Michelle Ryan

Teaching Assistant - Learning and Educational Assessment Facilitation Counselor (LEAF)

Life Mastery

[mryan@mit.edu](mailto:mryan@mit.edu)

[mjaslyn@yahoo.com](mailto:mjaslyn@yahoo.com)

Currently, Michelle is pursuing her Masters of Education at the University of Massachusetts/Lowell, where she earned her Bachelor of Art degree in History in 2006. Michelle has been a member of the SEED Academy family since 2005.

Michelle hopes to teach secondary education, and has a long term goal of becoming a principal. In addition to serving as a Teaching Assistant for SEED Academy, she has been a Teaching Assistant for the Citizen Schools program of Boston and the University of Massachusetts Lowell. Also, she directed a sports camp at the Reggie Lewis Track and Athletic Center in Roxbury.

Michelle is an alumna of the Boston Latin Academy. When she is not teaching or studying, she enjoys building her faith in God, spending time with loved ones, relaxing, and exercising.

# Community

## **PROGRAMMING FOR PARENTS**

Parents are critically important to SEED Academy's success. Not only do they set the standards for students' achievement, but they help to shape the content of our programming.

Twice a year, we host a Parent Luncheon Series that invites leaders in educational research and practice to introduce their findings. These are opportunities for parents to meet and discuss approaches to increasing student performance.

Also, we have a Parent Organization that will help to design new programming for parents and families. We will provide more information on upcoming activities this spring.

## **COLLABORATION WITH SCHOOLS**

SEED Academy will communicate with participants' teachers and parents regularly to gauge their progress. Grades and standardized test scores (MCAS, Stanford 9, PSAT, and SAT) will be used as two of several assessment tools. We ask that families report this information to SEED Academy as soon as it becomes available.