W.E.B. DuBois
Scholars Institute

ACCELERATED LEARNING ACADEMY (ALA)

3 WEEKENDS OF INTERACTIVE WORKSHOPS FOR STEM FIELDS FOR 10TH AND 11TH GRADERS*

Choose from 3 Tracks

Medical Science
Biomedical Engineering & Technology
Applied Mathematics

Fridays 6pm to Sundays 2pm

December 8th-10th
March 2nd-4th
April 27th-29th

Good at math and science?
GPA of 3.0 or better?
Want a STEM major in college?
Want a career in the STEM fields?

If so, apply to ALA and:

learn from other youth and top scientists to explore career options

take STEM workshops on the campus of Princeton University

strengthen your college application

Applications will be reviewed on a rolling basis to select 25 students for each track, so apply as early as possible!

At Princeton University

174 Nassau Street, Suite 360, Princeton, NJ 08542
Phone: 609.955.0666 Email: admissions@duboisscholars.org
Application: www.duboisscholars.org

*All weekend workshops will occur on the campus of Princeton University. Student overnight stay will occur off-campus at the Princeton Hyatt Hotel. Round trip transportation can be arranged for out-of-state participants traveling from Newark International Airport to the Princeton Hyatt Hotel.

ABOUT THE ACCELERATED LEARNING ACADEMY (ALA)

DATES

DEC 8-9, 2017 | MAR 2-4, 2018 | APR 27-29, 2018

LOCATION

Princeton University & The Princeton Hyatt Hotel

ACADEMY GOAL

The ALA prepares high-achieving 10th and 11th graders for professional careers in Medical Science, Biomedical Engineering & Technology, and Applied Mathematics. Students will explore new STEM content with group activities, lectures, hands-on demonstrations and real world applications taught by experienced scientists.

ELIGIBILITY

Currently in 10th or 11th grade
Minimum overall GPA: 3.0
Minimum overall average for STEM courses: B

REQUIREMENTS

Applications must be received no later than November 10, 2017 by mail or online at duboisscholars.org including (a) 300 word essay of your interest in the program and a description of your education and career goals, (b) 2 Letters of Recommendations, (c) Transcript & (d) Virtual Interview

SCHOLARSHIPS

The complete cost of the program, which covers room/ board & tuition, is $2,600. Scholarship assistance is available ranging from $1,400 to $2,200 based on economic need and academic merit.

WEEKEND THEMES*

	Dec 8th-10th	Mar 2nd-4th	Apr 27th-29th
Medical Science	Cellular & Molecular Biology	Cardiovascular & Lymphatic Biology	Clinical & Translational Science
Biomedical Engineering & Technology	Engineering Design & Information Technology	Electrical Engineering	Biomechanics
Applied Mathematics	Combining Combinatorics	The Algebra of Fractions	Finding Functions & Querying Quadrilaterals

*Themes may be subject to change.

Special thanks to our sponsor/ partner,
Bristol-Myers Squibb Company.

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2017-2018 Accelerated Learning Academy
Request for Applications
Announcement

Greetings:

It is a pleasure to invite applicants to participate in the Accelerated Learning Academy (ALA). Under the auspices of the W.E.B. DuBois Scholars Institute, the ALA will be held on the campus of Princeton University on the following weekends during the 2017-18 school year: December 8th–10th, March 2nd–4th, and April 27th–29th. Since its inception in 1988, the W.E.B. DuBois Scholars Institute has provided scholarship and leadership training for high-achieving youth. Through rigorous preparation and nurturance, The Institute seeks to develop a cadre of brilliant young scholars with a commitment to creating a more just and humane society. Participants are expected to embrace the belief that "giving back" to help people in need is a duty.

As a subsidiary of the Institute, the Accelerated Learning Academy prepares bright young minds attending secondary schools for leadership roles in three tracks: *Medical Science*, *Biomedical Engineering & Technology*, and *Applied Mathematics*. Led by world-class scientists from leading medical/research institutions, this academy will offer STEM enrichment workshops and seminars in each of the previously-mentioned tracks. It aims to increase the pool of high-achievers with aspirations for careers in medical science, technology, engineering, and mathematics. Students currently enrolled in the Tenth or Eleventh grade by September 2017 are eligible to participate.

During their stay in Princeton, student participants will be able to explore Princeton University. The workshops are designed to provide opportunities for participants to immerse themselves in team-oriented learning with like-minded students. After the workshops on each Saturday, a reception will be held that includes student participants, faculty and staff members as well as other scientists and professionals. The receptions will provide opportunities for students to "network" and interact with those in attendance. On Saturday evening, students will have fun-oriented activities at the Hyatt Place Princeton Hotel.

On each Sunday morning, student participants will attend workshops on "new thinking." During the last session in April 2017, they will be inducted into the ALA's *Society of New Thinking*, an organization comprised of W.E.B. Du Bois Scholars with interest in original thinking and problem-solving. To submit applications and get information about requirements, cost, scholarships, curriculum, residential living, and deadlines click on the link www.duboisscholars.org.

Sincerely,

Sherle L Boone, Ed.D., Founder/Chief Executive Officer/President
W.E.B. Du Bois Scholars Institute at Princeton University
Professor Emeritus of Psychology, William Paterson University, Wayne, New Jersey
Phone: 609-955-0666

W.E.B. DuBois Scholars Institute

Introducing the

ALA students with sponsor and partner, Bristol-Myers Squibb Company.

ACCELERATED LEARNING ACADEMY

There are few fields more important to the future of society than STEM—science, technology, engineering, and math—and few show as much promise for future career opportunities. Many career fields today require a solid foundation in STEM, and thus these are the fastest growing areas of study as STEM professionals are in high demand throughout the world.

To meet this need and bring welcome diversity to STEM studies and industries, especially for African-Americans and others who are underrepresented in these fields yet have a long history of achievement, the **W.E.B. DuBois Scholars Institute** has created the **Accelerated Learning Academy (ALA)**. The ALA provides an opportunity for bright, forward-thinking 10th and 11th graders—students who will evolve into our next generation of engineers, software developers, mathematicians, doctors and physicists—to explore STEM in new and exciting ways.

Housed on the campus of Princeton University, the W.E.B. DuBois Scholars Institute is an intensive academic and leadership program for high-achieving middle and high school students. Through academic rigor, collaborative learning, collective problem solving, supportive nurturance, and exposure to college life and civic engagement, we prepare students for college and career readiness.

The Accelerated Learning Academy equips 10th and 11th graders for leadership roles in three tracks: *Medical Science, Biomedical Engineering & Technology, and Applied Mathematics*. Led by industry experts and renowned professors from major medical and research institutions, the ALA offers career development and academic enrichment activities through a series of weekend workshops throughout the school year

STEM knowledge extends beyond a career

it's knowledge for life!

held on Princeton University's campus. Students will explore STEM through both in-classroom and "real world" opportunities, including group activities, workshops, hands-on demonstrations and real world applications. Across our STEM curriculum, we focus on critical thinking and problem solving, skills that prepare students for life. Participating in this program will not only spark and further students' interest in STEM careers, but will also enhance their profiles and college applications. Additionally, students who complete the program will be inducted into the ALA's Society of *New Thinking*, which provides peer and professional networking opportunities for youth interested in the STEM field.

ALA Leadership Tracks

THE ACCELERATED LEARNING ACADEMY OFFERS THREE TRACKS: Medical Science, Biomedical Engineering and Technology, and Applied Mathematics. See descriptions below.*

Successful program completion requires attendance at all three program sessions for students' selected track. Each session will take place from Friday at 6 p.m. to Sunday at 2 p.m.

Applied Mathematics Track

Combining Combinatorics
December 8 - 10, 2017

Discover combinatorics, the study of enumeration, combination and permutation of collections of objects and their commonalities. Explore the intricacies of visible and tangible mathematical objects and construct mathematical relations among them.

The Algebra of Fractions
March 2-4, 2018

Learn to establish a language describing proportional relations among visible and tangible objects. Then create innovative ways to operate with them algebraically and according to fractional operations.

Finding Functions and Querying Quadrilaterals
April 27-29, 2018

Explore the dynamic mathematics software, GeoGebra, to construct and manipulate objects and represent them as graphs in the Cartesian coordinate system. Then construct quadrilaterals and query the resulting objects for analysis of relations.

Biomedical Engineering & Technology Track

Engineering Design & Information Technology
December 8 - 10, 2017

Experience the engineering design process using hands-on design challenges. Discover how computer science and pervasive computing interact with other STEM disciplines.

Electrical Engineering
March 2-4, 2018

Investigate electrical engineering, electricity, circuitry, and energy conservation. Design a breadboard and other electrical components, such as resistors, motors and thermometers while discovering how to interpret circuit diagrams and identifying the function of different electrical components.

Biomechanics
April 27-29, 2018

Delve into the structure and function of biological systems through mechanics while exploring the wonders of National Biomechanics Day. Explore the mechanical applications of human movement by designing a prosthetic leg for mock patients with amputations.

Medical Science Track

Cell & Molecular Biology
December 8-10, 2017

Investigate a range of biological processes from cell to matrix. Examine the intricacies of cellular mechanisms, molecules controlling complex regulatory pathways and the molecular basis for cancer.

Cardiovascular & Lymphatic Biology
March 2-4, 2018

Explore cardiovascular science and lymphatic biology, mechanisms underlying cardiovascular disease processes and therapeutic strategies. Examine human biology and cardiovascular disease at the leading edge of medical research. Discover modern methods and therapeutic strategies used to investigate normal and abnormal cardiovascular function.

Clinical & Translational Science
April 27-29, 2018

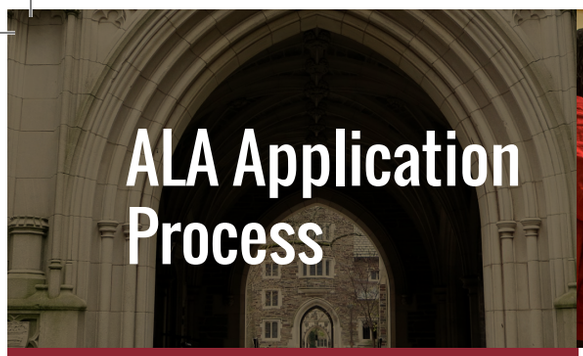
Investigate the genomic and epigenetic basis of human disease. Examine the glandular and hormonal effects of the endocrine system.

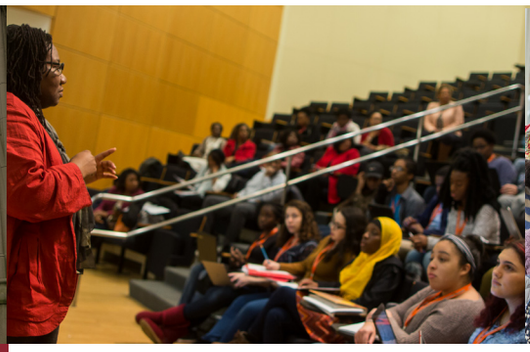
**The above workshop topics for each Track are subject to change.*

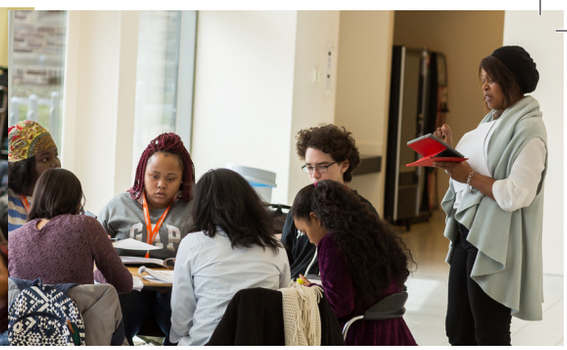
Society of New Thinking Workshops

After completing the Leadership Tracks, students are required to participate in these workshops where they identify major social problems in our society and propose original plans of action to address them. Students are encouraged to brainstorm and "think out of the box." The instructors provide activities and exercises to help students collaborate and combine creative thinking with critical thinking. With this dynamic approach, students can freely imagine limitless possibilities as they generate and analyze new ideas and assumptions. The resulting new ideas can help facilitate insights and solutions to complex problems.

ALA Application Process







80% OF THE FASTEST GROWING JOBS IN THE U.S.

depend upon mastery

OF MATHEMATICS AND SCIENTIFIC KNOWLEDGE AND SKILLS.

Hone these skills in our renowned Accelerated Learning Academy.

APPLY TODAY!

W.E.B. DuBois Scholars Institute

To learn more about the Accelerated Learning Academy and W.E.B. DuBois Scholars Institute

» duboisscholars.org
» 609-955-0666
» admissions@duboisscholars.org

Applicant Requirements

» Currently in 10th or 11th grade
» Minimum Overall GPA: 3.0
» STEM Courses Overall Average: B
» Completed Application and Supplemental Materials

Supplemental Materials

» 300 Word Essay: What is your interest in the program? Describe your education and career goals.
» Two (2) Letters of Recommendation
» School Transcript

Deadlines

» Application and Supplementary Materials Submission Deadline: November 10, 2017
» Virtual Interviews will be held: November 2 - November 16, 2017
» Accepted Student Decision Deadline: November 27, 2017
» Apply online at duboisscholars.org/apply

Cost & Scholarships

The Accelerated Learning Academy is dedicated to ensuring that the program is available and affordable for all families. The program not only includes first-rate room and board accommodations in the Princeton Hyatt Hotel with top notch residential staff supervision, but also provides on-going academic and college preparation, mentoring and interaction with world-class scientists both inside and outside of the classroom throughout the school year for only $2,600. Scholarship assistance is available, ranging from $1,400 to $2,200, based on economic need and academic merit. Please note that scholarship amounts are decided and awarded on a rolling basis upon receipt of application and supporting materials. Early and prompt submission of materials is highly recommended.

If you have any questions, please email admissions@duboisscholars.org or call 609-955-0666.

Get social with us!

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2017-2018 ALA Presenters*

Kendell Ali is a Mathematics Instructional Coach for the Newark Public Schools who specializes in facilitating professional development activities for teachers of students who are traditionally underrepresented in the STEM fields. A Brooklyn, NY native, his interests in mathematics led him to Pennsylvania State University-University Park, where he earned a B.S. in Actuarial Science. He received a master's degree in Mathematics Learning and Teaching from Drexel University and is currently pursuing certification as a school leader at Penn State. Additionally, as a recipient of a doctoral fellowship, Mr. Ali is enrolled in Rutgers, The State University of New Jersey, New Brunswick, pursuing a Ph.D. in Mathematics Education. He has worked as a master teacher for over ten years, teaching and mentoring students, writing curriculum, and facilitating professional development at both the school and district levels. Mr. Ali's research interests include culturally responsive pedagogy and the integration of technology for learning and teaching mathematics.

Hamid Charkhkar, Ph.D received his Ph.D. in Electrical and Computer Engineering in 2015 from George Mason University, Fairfax, VA. He is a Postdoctoral Scholar in the Department of Biomedical Engineering at Case Western Reserve University, Cleveland, OH and an investigator at Advanced Platform Technology (APT) Center at Louis Stokes Cleveland Veterans Affairs Medical Center. His research interests include developing technology for neural applications, assessing the efficacy of neural interfaces, and neuromodulation to restore function. During his graduate and post-graduate training, he has worked closely with multidisciplinary teams in government, academia, and industry. He has published multiple first-author articles and served as a reviewer in several professional journals and conferences. In his most recent project, funded by Defense Advanced Research Projects Agency (DARPA), he is working to restore natural sensation to lower limb amputees by delivering electrical stimulation to the peripheral nervous system.

Khadidiatou Guiro, Ph.D. received her Ph.D. in Biomedical Engineering from New Jersey Institute of Technology and Rutgers the State University in 2015. She is currently a Postdoctoral Research Fellow with Rutgers University New Jersey Medical School at Newark, NJ, in the department of Medicine, within the division of Hematology-Oncology. As a scientist in a translational research laboratory, she is developing collaborations and working alongside professors, clinicians and other scientists to investigate the role of restoration of aging bone marrow. Specifically, she is targeting the declining function of aging Hematopoietic Stem Cells (HSCs) as a means to treat and delay the onset of age-related diseases. Her goal is to develop better therapeutic strategies to improve on closing the gap between engineering and medicine in research. She previously served as an instructor at the W. E. B. Du Bois Scholars Institute, teaching courses in Anatomy and Physiology. She is an Alfred P. Sloan Scholar, a Pressley and Mauise Vinson McPhail/NACME scholar, and a NASA student Ambassador. She is actively engaged in professional organizations including the Biomedical Engineering Society, the Society of Biological Engineering and the American Association of Cancer Research.

Karen Hare, Ph.D. is a computer scientist and entrepreneur who earned her doctorate in Computer and Information Science from New Jersey Institute of Technology. She owns an information technology consultancy practice and is an Adjunct Professor in the Computer Science Department at NJIT, where she teaches Informatics, a hybrid graduate Electronic Medical Records course. Dr. Hare brings an industrial approach to teaching computer science and emphasizes interdisciplinary skills when designing, developing and deploying innovative healthcare initiatives. In her past fellowship as a New Jersey Science and Technology Fellow, as well as now, she bridges the gap between healthcare and information technology communities to develop and deploy new solutions that lead to new applications for secure delivery of patient care. Dr. Hare is a STEM advocate and mentor for underrepresented students. Additionally, she is a proponent for broadening participation, diversity and inclusion for women in the Tech arena, and conducts public speaking engagements in this area.

Matthew D. Morrison, Ph.D a native of Charlotte, NC, is an Assistant Professor in the Clive Davis Institute of Recorded Music at New York University's Tisch School of the Arts. He holds a Ph.D. in Musicology from Columbia University, an. M.A. in Musicology from The Catholic University of America, and was a Presidential music scholar at Morehouse College. Dr. Morrison has served as Editor-in-Chief of the peer-reviewed music journal, Current Musicology, and his published work has appeared in publications, such as the Journal of the American Musicological Society, Women & Performance: A Journal of Feminist Theory, the Grove Dictionary of American Music, and on Oxford University Press's music blog. He is currently a research fellow with the Modern Moves research project at King's College, London, funded by the European Research Council Advanced Grant, and has held fellowships from the American Musicological Society, Mellon Foundation, the Library of Congress, and the Tanglewood Music Center. His current book project is titled, Blacksound: Making Race and Popular Music in the U.S.

Brooke Odle, Ph.D received her doctorate in Biomedical Engineering in 2014 from New Jersey Institute of Technology. She is currently a Postdoctoral Scholar in the Department of Biomedical Engineering at Case Western Reserve University, with an appointment at the Louis Stokes Cleveland VA Medical Center. In her current project, she develops advanced control systems to restore standing balance in people with spinal cord injury. Her research interests include biomechanics, rehabilitation engineering, and computational musculoskeletal modeling. She previously served as an instructor at the W. E. B. Du Bois Scholars Institute, teaching courses in Mathematics and Computer Programming.

Arthur B. Powell, Ph.D. is a Professor of Mathematics and Mathematics Education, chair of the Department of Urban Education at Rutgers University-Newark, New Jersey, and a Faculty Research Scientist and Associate Director of the Robert B. Davis Institute for Learning of the Graduate School of Education in New Brunswick. Dr. Powell's research interests focus in the following areas for which he has published widely in books and articles: writing and mathematics learning; ethnomathematics; development of mathematical ideas, reasoning, and heuristics; teacher professional development in the mathematics for teaching; subordination of teaching to learning in mathematics; and collaborative problem solving in mathematics with technology. He directs the Research Group on Communication, Technology, and Mathematics Learning, which is engaged in an investigative and instructional project, called eMath. To fund his research, Dr. Powell has garnered funding from local, national, and international agencies.

Courtney Shell, Ph.D is currently a Postdoctoral Fellow in the Biomedical Engineering Department at the Cleveland Clinic. She received her doctorate in Mechanical Engineering in 2016 from the University of Texas at Austin. In her current projects, she develops methods of restoring sensation to amputees and investigates associated benefits. Her research interests include human movement, how people move differently during various conditions and after injury, and how the nervous system controls and coordinates motion.

**Additional presentations may include workshops conducted by experienced research scientists from Bristol-Myers Squibb Company.*