ENERGYTECH
An Early College and Career High School

GRADES 9-14

Course of Study Guide
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Dear Students & Families,

I am delighted to welcome you to another academic year at Energy Tech High School. The following guide has been created with input from teachers, students, families, and staff in order to provide more information and support related to our unique school model. I hope that you spend some time reviewing its contents together, marking it up, and using it as you make your plans and set goals for the year ahead.

This Course of Study guide is intended to supplement our other handbooks and policies to help our students and families make decisions and plans related to academics, college pathways, and life after grades 12, 13, and 14. This text is intended to be used not only at home but also in advisement sessions, in College and Career Foundations coursework, and in parent workshops. I hope that it is useful as you look for answers to your questions, and that it helps you as you create even more questions to bring into advising conversations throughout the year.

I wish you all an intellectually exciting, rigorous, and fulfilling school year ahead. I hope that this guide is helpful as you navigate new classes, fill out Early College applications, communicate with your professors, apply for internships, add work to your ePortfolios, and embark upon new clubs and activities. Onward!

Sincerely,

Hope Barter

Founding Principal
Energy Tech is an Early College Initiative (ECI) and Career and Technical Education (CTE) school serving students in grades 9-14 and focusing on building a skilled workforce for the fast-growing local energy industry. The school opened in the fall of 2013 in Long Island City, Queens, and was developed in partnership with the City University of New York, LaGuardia Community College, National Grid, Con Edison, the Early College Initiative at CUNY, and the New York City Department of Education. Energy Tech provides students with the skills and understandings to earn a high school diploma, an associate degree, and technical credentials over the course of a six-year program.

CORE VALUES

Programs at Energy Tech are planned backwards from a set of core values that we believe should be seen, heard, and felt in all that we do.

Safe — Students, teachers, staff, families and community members should not only feel physically safe, but also safe to take intellectual risks, ask questions, and share new ideas. Each classroom works to nurture a safe community promoting inclusivity, valuing persistence, and encouraging collegiality.

Known & Valued — Each student is a valued member of our school community and deserves to feel that way. We aim to learn the individual needs of our students—both academic and social—as well as areas of strength. It is important for us to know our students both inside and outside of the classroom, and to incorporate their voices into decision-making in our community.

Challenged & Supported — Teachers, professors, supervisors, and staff maintain high expectations for students. It is also important for students to challenge themselves and others around them. Knowing that being a student in a school like ours presents many academic and other challenges, we offer a broad range of supports to both students and families.

Accountable — We hold ourselves responsible for our own success—it’s empowering to know that our successes are the results of our actions. Additionally, we hold one another responsible for the persistence, preparation, and quality of work that we do each day.

Empowered — Our community equips students with the skills, knowledge, and opportunities needed to be successful in high school, college, and career. Through industry experience and college coursework, Energy Tech students develop the confidence and self-advocacy skills needed to complete postsecondary programs, attain career goals, and go on to impact our community in positive ways.

SCHOOL MODEL

Energy Tech is a “9-14 Early College and Career High School”, and belongs to a small group of schools in New York City that include both “early college” and career and technical programming. The Energy Tech model was developed starting in 2012, with partners from Con Edison, National Grid, LaGuardia Community College, and the New York City Department of Education coming together to identify in-demand career pathways in our local energy and utility industry, along with the appropriate college degrees and other experiences to prepare students for a range of these engineering and technology jobs. There are three major strands in schools like ours—high school classes, rigorous college courses and collegiate experiences, and a robust career-readiness sequence. During each year of our 6-year model, students participate in all three strands. Each year, the strands become more challenging—high school and college classes intensify, and students acquire more technical skills and move from visiting work sites to having paid internships in real work settings. Over time, they spend less time at high school and more time on the college campus and at work.

MISSION & VISION

Our mission is to prepare students for the rigorous demands of college and work, and for a range of competitive careers in engineering and technology. In collaboration with local university and industry partners, we seek to close achievement gaps, to improve access to in-demand career pathways and competitive postsecondary programs, and to build a strong pipeline of STEM talent for a thriving local workforce and economy. Ultimately, our students leave us as skilled candidates for jobs on a ladder of career growth in STEM fields, or as competitive applicants for four-year colleges and postsecondary programs.
directly into a 4-year college, or pursue another postsecondary option. Some of these have included competitive trade and apprenticeship programs, a Gas Technician Academy, the military, and more. We encourage all students to avail themselves of all of the opportunities that our 6-year experience has to offer, all free of cost—college tuition, textbooks and lab materials, MetroCards, dedicated advisors to support with college transfers and job placement, continued industry mentoring, a wide range of academic and emotional supports, a vibrant alumni association and Years 5 & 6 student life, internship and co-op opportunities, and more.

**EARLY COLLEGE**

The Early College program at Energy Tech gives students the opportunity to take college classes while still in high school and earn credits toward an associate degree—free of cost. Students begin taking college classes as early as 10th grade, and they begin their sequence with HUP 102: Critical Thinking, which is generally taught by an adjunct professor at our campus after the regular high school day. After meeting specific program requirements, students may take English, mathematics, and introductory-level engineering college classes on the LaGuardia Community College campus in the following year. In each year after that, students work with advisors and Early College program staff to register for courses in our AAS—Energy Technology sequence, and determine by the end of their 12th grade year if they would like to take the electrical or mechanical concentration pathway.

Energy Tech offers its unique Early College program through the intermediary support of The Early College Initiative at CUNY (ECI). ECI designs, develops, and supports schools that make earning a college degree more accessible, affordable, and attainable. ECI promotes social and economic mobility by restructuring the educational experience for students who are traditionally underrepresented in higher education. Early College programs go beyond the traditional Advanced Placement (AP) trajectory that many schools offer—it is an invaluable experience to take actual college courses on college campuses taught by college faculty. Students have an authentic college experience while still in high school, better preparing them for what is to come and allowing them to earn a full associate degree while still in high school. For more information, please visit earlycollege.cuny.edu.

**DUAL CREDIT/ENROLLMENT**

Almost all college courses at Energy Tech offer students both high school and college credit. Grades for these courses appear on both the high school and college transcripts and are factored into students’ grade point averages (GPAs). Because many of our courses are offered before or after the regular high school day, students also have the opportunity to earn more high school credits per semester than is typical. Some courses are even offered on Saturdays!

**CAREER AND TECHNICAL EDUCATION**

Career and Technical Education (CTE) schools prepare students to go directly into work upon graduation. Our 9-14 model school blends a college degree pathway with technical classes and career-readiness activities in order to prepare students for in-demand STEM careers on a ladder of growth in our local energy and utility industry. Our CTE program requires that students participate in both high school and college-level technical coursework, such as Introduction to Mechanical and Electrical Engineering, Electromechanical Devices and Instrumentation, Computer Electronics, Circuit Analysis, Materials Science, Fluid Dynamics, Project Management, and more.

Students are also expected to participate in career-readiness instruction and activities, such as job shadowing, networking events, project teams, and internships. Our partners have planned our program backwards from jobs that are fast-growing right here in New York City and we are confident that our graduates will be well prepared for these and other careers, or to continue their studies in four-year programs. To learn more about CTE in New York City, please visit cte.nyc.

**SCHOOL PARTNERSHIPS**

Energy Tech was developed in partnership with the New York City Department of Education, LaGuardia Community College, Con Edison, National Grid, and the Early College Initiative at CUNY. Our industry and college partners worked together to create a new degree pathway, advise on high school and college courses, design career-ready experiences, and develop innovative programs for students.

Today, our partners continue to work on school model development at quarterly planning meetings, and representatives from our partnerships participate in many of our school teams. Our partners are a part of the fabric of everyday life at Energy Tech—from giving their time as mentors, to advising on curriculum and lab spaces, to funding special programs and new facilities, to hosting trips and connecting our students to outside organizations. Our partners host students in college classes and in paid internships, send guest speakers to our events, host our students and staff for trips and externships, and provide job shadowing and other special college and career awareness activities for our community. The ways in which our partners contribute to the Energy Tech community are unparalleled, and we are, as always, grateful for their support.

We hope—and anticipate—that many of our students will apply for jobs at our partner companies as they finish their degree programs.
The companies offer highly competitive benefit packages, including up to 100% tuition reimbursement for workers to complete their college studies. This means that students can finish our program, apply for a job with one of the companies, and—if accepted—earn a competitive wage in a fast-growing sector at a great company—and receive the support to complete a bachelor degree and continue to advance in their careers.

**COLLEGE DEGREE PATHWAYS**

The primary focus of Energy Tech’s college degree program is the AAS in Energy Technology pathway, which has 2 concentrations—electrical and mechanical.

**Notable differences between the two concentrations are the level of mathematics that are expected and the specific content of the engineering core classes. The two concentrations share the same “general education” courses—classes like ENG 101: Introduction to Composition, SCP 101: Topics in Physical Science, and MAT 115: College Algebra. The two concentrations only share a few engineering core classes—for example, MAE 100: AutoCAD and MAE 109: Introduction to Engineering. Students are expected to select a concentration after taking these general education and introductory-level classes. The AAS programs are in close alignment with jobs in our local energy industry—such as electrical technician and designer positions.**

**Beginning in 2017, select students are able to demonstrate eligibility for the AS programs in Electrical, Civil, and Mechanical Engineering. This program at LaGuardia has an existing articulation agreement with City College, Grove School of Engineering. Students who successfully complete the AS program at LaGuardia may matriculate into the 4-year BS programs at City College to finish their engineering degrees. There is a rigorous screening process for these programs, as they include higher-level general education and engineering courses—such as Calculus III, Linear Algebra, Differential Equations, Physics, Chemistry, Thermodynamics, and C++ Programming.**

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**Energy Technician, AAS Degree**

**Pathways Common Core: 22 Credits**

**A. Required Core: 12 credits**

**English: 6 credits**

ENG101 English Composition I (ENA101 or ENC101, depending on placement scores)

ENG259 Technical Writing

**Mathematical and Quantitative Reasoning: 3 credits**

Select one course from the following:

MAT115 College Algebra and Trigonometry

MAT117 Algebra and Trigonometry (depending on placement scores)

**Life and Physical Sciences: 3 credits**

SCP101 Topics in Physics

**B. Flexible Core: 10 credits**

Select one course from three of the five flexible core categories:

World Cultures and Global Issues

U.S. Experience in its Diversity

Creative Expression

Individual and Society

Scientific World—Pre-Calculus (4 credits)

**Note: Student can select only one courses from any one discipline. Students are advised to select one Urban Study course to complete college requirement. To complete the degree requirements from the Flexible Core, students are advised to select courses from the recommended course selections listed on the program website.**

**Program Core: 38 Credits**

**Math, Engineering and Computer Science**

MAT201 Calculus I (4 credits)

**Concentration Area**

**MECHANICAL**

**Math, Engineering and Computer Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE100 Introduction to Auto CAD</td>
<td>4</td>
</tr>
<tr>
<td>MAE107 Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>MAE109 Introduction to Engineering</td>
<td>2</td>
</tr>
<tr>
<td>MAE110 Circuits Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MAE111 Circuits Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MAE121 Instrumentation</td>
<td>2</td>
</tr>
<tr>
<td>MAE190 Material Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MAE191 Statics and Strength of Materials</td>
<td>3</td>
</tr>
<tr>
<td>MAE201 HVAC Systems</td>
<td>3</td>
</tr>
<tr>
<td>MAE207 Introduction to Thermodynamics for Technology</td>
<td>3</td>
</tr>
<tr>
<td>MAE208 Electromechanical Devices</td>
<td>3</td>
</tr>
<tr>
<td>MAE230 Senior Design Project</td>
<td>2</td>
</tr>
</tbody>
</table>

**ELECTRICAL**

**Math, Engineering and Computer Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC241 Computer Electronics I</td>
<td>4</td>
</tr>
<tr>
<td>MAC242 Computer Electronics II</td>
<td>3</td>
</tr>
<tr>
<td>MAC281 Discrete Structures (Prerequisites: MAC101, MAC231)</td>
<td>4</td>
</tr>
<tr>
<td>MAC291 Computer Logic, Design and Implementation I</td>
<td>4</td>
</tr>
<tr>
<td>MAC292 Computer Logic, Design and Implementation II</td>
<td>4</td>
</tr>
<tr>
<td>MAE100 Introduction to Auto CAD</td>
<td>4</td>
</tr>
<tr>
<td>MAE102 Electrical Drafting and Blue Print Reading</td>
<td>2</td>
</tr>
<tr>
<td>MAE109 Introduction to Engineering</td>
<td>2</td>
</tr>
<tr>
<td>MAE110 Circuits Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MAE111 Circuits Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MAE208 Electromechanical Devices</td>
<td>3</td>
</tr>
<tr>
<td>Unrestricted Elective</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL CREDITS: 60**

Please refer to our Student and Family Handbook for AS and other degree offerings.
There are three different types of high school diplomas awarded by New York State—a local diploma, a Regents diploma, and an Advanced Regents diploma. Diploma requirements for each are divided into two categories—credits earned and exams passed. For all three diplomas, students must earn at least 44 high school credits in specific categories. The exam requirements for each diploma vary, and there are some special notes and exceptions that may apply to students with IEPs, 504 plans, and students transferring in with international diplomas. For more details, refer to the High School Graduation Requirements cards which are included in our new student packets, or request more information from an advisor.

**CORE VS. ELECTIVE COURSES**

In each department, core courses are defined as those that are required for graduation—such as the English courses you take each year, Regents-level mathematics and science courses, your required health and physical education classes, etc. Elective courses include your engineering courses and any other that you choose outside of your basic diploma requirements. You need both core and elective courses to graduate, and all count toward your grade point average (GPA) and appear on your transcript. If you have questions about core and elective courses, you should schedule an appointment with your counselor.

**HIGH SCHOOL CREDITS**

In general, one high school credit is equivalent to 54 seat hours—a course that meets 4-5 times per week for 45 minutes, or 2-3 times per week for 90 minutes. At Energy Tech, credits are awarded at the end of each semester. On our academic calendar, the fall semester spans September through January, and the spring semester spans February to June. At the end of each marking period—3 per semester—you will receive a report card that provides you with a progress update. The final grade takes into account how you performed for the whole semester and sometimes also how you did on a final exam or project. One final grade is entered for each course at the end of each semester, and this grade determines whether or not you passed and earned the credit for the semester. If you fail any course in high school, you can expect to repeat it in the following semester or over the summer, which may prevent you from graduating on time.

**REGENTS EXAMS**

Some high school courses culminate in a Regents examination—English, Algebra I, Geometry, Algebra II, Living Environment, Earth Science, Chemistry, Physics, Global Studies, U.S. History, and Spanish (LOTE). The courses will prepare you to take the exams, but it is expected that you are studying on your own and attending test prep sessions during Saturday Academy and/or after school in the months leading up to the test. Energy Tech can provide you with practice tests, review books, websites, and other tools to help you prepare, and it is important that you strive for high scores in order to meet certain diploma and college requirements. Note that Advanced Placement (AP) exams are an expectation, as well, for certain courses offered at Energy Tech—which are usually offered free of cost to students. These exams also require a good amount of independent study and practice. Finally, it is required that students have earned at least 1,200 laboratory minutes and a designated number of satisfactory lab reports in order to sit for any science Regents exam.

**ONLINE LEARNING AND COMMUNICATION**

In Energy Tech high school classes and college classes at LaGuardia, students can expect to complete some of their classwork online. We expect students to activate and make use of their Energy Tech and LaGuardia email accounts, and to use these accounts for all academic and professional communication. These accounts should be checked daily for emails from teachers and professors, announcements about special events, information about programs and applications, etc.

Students in high school are expected to complete online assignments in tools such as Google Classroom and Castle Learning—there are no excuses for not having this work complete. Computers and other technology are available to use or borrow at Energy Tech and on the LaGuardia campus. It is also the responsibility of college-going Energy Tech students to pick up access codes and install appropriate software on their technology to complete assignments like math problem sets—these are not optional, and you can fall behind quickly if you do not complete online tasks. Students in college classes should be logging into Blackboard daily, and students should be checking high school progress in PupilPath weekly.
HIGH SCHOOL VS. COLLEGE CREDITS

Though students earn credits for both high school and college courses, the system for assigning a number of credits per course varies from high school to college. It is important that students understand the distinction between the two types of credit.

Seat Time Requirements
At the high school campus, students generally earn 1 credit per semester (or 2 credits per year) for classes that meet for 180 minutes weekly over the course of one academic year. At the college, credit values are calculated as hours per week that the course meets. In general, 3-credit classes meet for 3 hours per week, 4-credit classes meet for 4 hours per week, etc. Please note that LaGuardia runs on a trimester schedule and there are some shorter terms in the mid-winter and summer—during this time, courses meet for approximately double the usual time due to the time constraints.

Work Expectations
It is important to understand that in college, if your course meets for 3 hours each week, you can expect to be spending 3 hours per week outside of class working on assignments, reading, and studying. This is very different from high school, and you will receive fewer reminders from professors about what is due and when. For many classes, you will receive fewer progress updates from professors, and it is your responsibility to track your grades, participation, and attendance on your own. You will not earn any credit for any course grades below a D, and you may be required to additionally retake classes in your major with a grade below a C.

HIGH SCHOOL DEPARTMENTS

**Course descriptions, texts, prerequisites, credit values, culminating tasks, and sequences are subject to change.

ENGLISH

The English department vision is to help students develop the skills and habits of mind they need to be ready for the rigor and challenges of the college curriculum. Students will develop close reading skills and strengthen vocabulary across all grades through analysis of complex fiction and nonfiction texts. Students demonstrate these skills by meeting the CUNY benchmark on the ELA Common Core Regents exam and by participating in upper level Advanced Placement (AP) and early college courses centered around public speaking, the study of literature, composition, and technical writing. Our goal is for students to be articulate speakers, analytical readers, and persuasive and insightful writers in the college classroom and in the workplace.

CULMINATING ASSESSMENT: Common Core ELA Regents
REGENTS BENCHMARK: The Common Core ELA Regents exam is taken in January and/or June. The minimum passing score is 65%, however the CUNY benchmark for college-readiness is 75% or higher.

English VII & VIII: AP English Language

11th grade students engage in AP English curriculum to better bridge their transition to taking ENG101 Introduction to Composition and ENG259 Technical Writing at the LaGuardia Community College Campus. The AP English Language and Composition course aligns to an introductory college-level rhetoric and writing curriculum, which requires students to develop evidence-based analytic and argumentative essays that proceed through several stages or drafts. Students evaluate, synthesize, and cite research to support their arguments. Throughout the course, students develop a personal style by making appropriate grammatical choices. Additionally, students read and analyze the rhetorical elements and their effects in non-fiction texts, including graphic images as forms of text, from many disciplines and historical periods.

2 High School Credits
PREREQUISITES: English I–VI
CULMINATING ASSESSMENT: AP English Language and Composition exam is taken in the spring

Additional Courses:
LINCT English: This is a course offered to students who have completed the English sequence above but who have not yet met CUNY benchmarks to take English college coursework. It is a two semester sequence which offers students 1 high school credit each semester, and which culminates in the LaGuardia Reading and Writing Placement Tests and a retake of the Common Core English Language Arts Regents examination.

*See College Degree Pathways for English courses (note that all following college courses earn 1 high school credit—college credit, exam, and prerequisite information is found in the college degree pathways that follow):
ENG101 Introduction to Composition
ENG259 Technical Writing
The mathematics department builds a solid algebraic foundation in grade 9 with intensive coursework with a sharp focus on mathematical modeling. Students move through a traditional sequence of coursework in Geometry and Algebra II in the years that follow, and have the opportunity to engage with demanding college courses in grades 11 and 12—starting with college-level Algebra and progressing through either Calculus I or Technical Mathematics, depending on their chosen college degree pathway. Eligible students taking the AS degrees will continue on through Calculus III, Linear Algebra, and Differential Equations. All coursework will guide students toward improved problem-solving skills and real world applications.

### Algebra I Intensive

In Algebra I, students will solve a variety of equation types using appropriate methods based on the problem. Students will also graph and interpret data using both physical methods and technological methods, including the use of graphing calculators. They will model real-world situations with algebraic equations and will use algebraic understanding to derive solutions to problems. Students may be assigned problem sets and online challenges in preparation for future early college classes.

**4 High School Credits**
**PREREQUISITE:** None

**CULMINATING ASSESSMENT:** The Algebra I Regents exam is taken at the end of the year in June. The minimum passing score is 65%. Note that a score of 70% or higher on any Regents exam in mathematics is required for students to meet the CUNY benchmark for college readiness in mathematics, which is a required prerequisite for mathematics and engineering courses offered through the LaGuardia Early College program. Though only 1 mathematics Regents exam is required for high school graduation with a Regents diploma, students are strongly encouraged to strive for all 3 Regents exams in order to be college-ready.

### Algebra II

This third-year mathematics course includes topics such as number systems and their properties, rational expressions and quadratic equations, irrational numbers, complex numbers, relations, and functions. The second semester focuses on trigonometry, covering trigonometric functions, identities, equations, and their graphs. Success in this course is an indicator of college readiness. Students take the Algebra II/Trigonometry Regents exam in June.

**2 High School Credits**
**PREREQUISITES:** Passing scores in Algebra I and Geometry courses; passing scores on Algebra I and Geometry Regents exams recommended.

**CULMINATING ASSESSMENT:** Common Core Algebra II Regents exam will be taken in June. Note that a score of 70 or higher on any Regents exam in mathematics is required for students to meet the CUNY benchmark for college readiness in mathematics, which is a required prerequisite for mathematics and engineering courses offered through the LaGuardia Early College program. Though only 1 mathematics Regents exam is required for high school graduation with a Regents diploma, students are strongly encouraged to strive for all 3 Regents exams in order to be college-ready.

### Geometry

Geometry is the branch of mathematics focused on shape, size, and the measurement of space. Students enrolled in Geometry will take the Common Core Geometry Regents Exam in June. The topics include congruence, proof and constructions, similarity, proof and trigonometry, connecting Algebra and Geometry through coordinates and circles with and without coordinates. Students can expect online assignments and problem sets for this course.

**2 High School Credits**

**PREREQUISITE:** Passing grade in Algebra I required; Algebra I Regents score of 65 or higher strongly recommended

**CULMINATING ASSESSMENT:** The Geometry Regents exam is taken at the end of the year in June. The minimum passing score is 65%. Note that a score of 70 or higher on any Regents exam in mathematics is required for students to meet the CUNY benchmark for college readiness in mathematics, which is a required prerequisite for mathematics and engineering courses offered through the LaGuardia Early College program. Though only 1 mathematics Regents exam is required for high school graduation with a Regents diploma, students are strongly encouraged to strive for all 3 Regents exams in order to be college-ready.

### Additional Courses:

**LINECT Mathematics:** This is a course offered to students who have completed the mathematics sequence above but who have not yet met CUNY benchmarks to take mathematics and engineering college coursework. It is a two semester sequence which offers students 1 high school credit during the second semester only, and which culminates in the Accuplacer Mathematics Placement Test and a retake of the Common Core Algebra I Regents examination.

**Precalculus:** This course is offered to students in preparation for or in lieu of the MAT115 + MAT200 sequence. Extending their understanding of complex numbers to points in the complex plane, students come to understand that multiplying a given set of points by a complex number amounts to rotating and dilating those points in the complex plane about zero. Matrices are studied as tools for performing rotations and reflections of the coordinate plane, as well as for solving systems of linear equations. Inverse functions are explored as students study the relationship between exponential and logarithmic functions and restrict the domain of the trigonometric functions to allow for their inverses. The year concludes with a capstone module on modeling with probability and statistics.

*See College Degree Pathways for mathematics courses (note that all following classes earn 1 high school credit—college credit values, prerequisites, and exam information may be found in the college degree pathways that follow):

All ETHS students who meet CUNY benchmark:
- MAT115 College Algebra
- MAT200 Precalculus

AAS – Electrical sequence only:
- MAT241 Technical Mathematics

AAS – Mechanical sequence and all AS sequences:
- MAT201 Calculus I

AS students only:
- MAT202 Calculus II
- MAT203 Calculus III
- MAT204 Differential Equations
- MAT212 Linear Algebra & Vector Analysis

*MAT115 + MAT200 sequence.*
**HISTORY**

The History department fosters the development of justice-oriented citizens of a global democracy. Students engage in critical historical investigations through close readings of primary and secondary sources. With an emphasis on writing tasks—both in class and longer research projects—students advance their writing skills in preparation for the demands of college level writing. Through critical analysis of primary sources students engage in evidence-based class discussion, debate, and socratic seminars. The completion of collaborative projects ensures that students will be prepared for the demands of the 21st century workforce.

**Global History I, II, III, IV**

Global History at ETHS starts in the prehistoric times and moves over the course of a demanding year of study into modern issues. It is an accelerated course that compact two years' worth of rigorous content into one year. The course is divided by topic chronologically, in order to follow the New York State Curriculum for Global Studies. The purpose of the class is to help students understand world events and themes from a global context. During the course, students explore changes in ideas, cultures, attitudes, religions, and technology throughout history. Students learn about historical development and contemporary issues facing the Middle East, Russia, China, Europe and Latin America. This course culminates in the Global History Regents exam in June and requires extensive reading and writing both inside and outside of class and in an online community. This is an accelerated class offered in one year primarily to 10th grade students.

*4 High School Credits*

**PREREQUISITES:** Global History I, II, III, IV

**CULMINATING ASSESSMENT:** Participation in Government

**Participation in Government**

This semester class prepares students to be responsible citizens and strengthens analytical and critical thinking skills. Students engage in historical and current event debates on the evolving role of the government. Students investigate, observe, question, debate, and draw conclusions about the events and decisions that have shaped households, local communities, state, and federal government. Through the study of government, students become critical media consumers and informed voters in our democratic society.

*1 High School Credit*

**PREREQUISITES:** Global History I, II, III, IV, and U.S. History

**Economics**

This semester class prepares students to be responsible consumers, entrepreneurs, and economic decision makers. Students examine the foundations of American capitalism economy, explore contemporary economic policy questions through analysis of monetary and fiscal policy, and engage with entrepreneurship case studies. Through the completion of both individual and group projects, students develop a broad understanding of our economic system and history.

*1 High School Credit*

**PREREQUISITES:** Global History I, II, III, IV, and U.S. History

**Additional Courses:**

*See College Degree Pathways for social sciences courses (note that HUP102 earns .5 high school credit and SSN 187 earns 1 high school credit—college credit values, prerequisites, and exam information may be found in the college degree pathways that follow):*

HUP102 Critical Thinking

SSN187 Urban Sociology

**U.S. History**

U.S. History is a one-year course that covers topics in American History from Colonial America to Modern America. There is a strong emphasis on Constitutional Foundations and the effectiveness of government at the federal, state, and local levels. Students will continue to develop complex claims and find textual evidence to further develop their historical writing skills. This course is primarily offered to 11th grade students.

*2 High School Credits*

**PREREQUISITES:** Global I, II, III, IV

**CULMINATING ASSESSMENT:** U.S. History Regents exam is taken in June

**SCIENCE**

The science department aims to develop curious and scientific thinkers, who seek to answer questions about the world around them. By the end of their time at Energy Tech, students should have a broad understanding of the physical and biological sciences. Students should strive to take all 4 science courses throughout their high school experience and complete the laboratory requirements for all Regents exams to attain college readiness indicators. They will be prepared for college-level coursework in science, and will have an understanding of laboratory techniques and skills.

**The Living Environment**

The Living Environment is a required 9th grade core course, which culminates in a Regents exam at the end of the academic year. The course explores life science and covers molecules, cell theory, human systems, genetics, evolution, and ecology. This class includes a laboratory component, which requires a minimum of 1,200 lab minutes with a corresponding lab handout and/or lab report to sit for the Regents exam. Students will have the opportunity to carry out experiments in our recently renovated lab facility and to use current lab technology. They will be prepared for the Living Environment Regents exam, and for further study in life sciences.

*2 High School Credits*

**PREREQUISITE:** None

**CULMINATING ASSESSMENT:** None

**Chemistry**

In this class, students learn the science of matter, especially its properties, structure, composition, behavior, reactions, interactions, and how it changes. Students investigate the ways in which chemistry is part of our everyday lives and learn to think and act like a scientist. The concepts and skills learned in chemistry will not only prepare students to take the Regents exam in June, but they will also help students develop the critical thinking skills and techniques to become true scientific thinkers. The course includes a lab component; students must complete a minimum of 1,200 lab minutes with
a corresponding lab handout and/or lab report in order to take the Chemistry Regents.

2 High School Credits
PREREQUISITE: Passing score in Living Environment course
CULMINATING ASSESSMENT: Chemistry Regents exam is taken in June

Earth Science

In this course students explore different aspects of the physical Earth. Students focus on geology, meteorology, and astronomy as the three overarching topics for the year. Within these topics, students explore and analyze mapping skills, rocks and minerals, plate tectonics, erosion, Earth’s geological history, and climate. As a lab-based science course, students spend time in the classroom and in the laboratory, working directly with lab materials and equipment. Students must complete a minimum of 1,200 minutes of laboratory work to be eligible to take the Regents exam, which involves both a practical laboratory component and a written component.

2 High School Credits
PREREQUISITE: None; passing score on Living Environment Regents exam recommended
CULMINATING ASSESSMENT: Earth Science Regents exam is taken in June

Additional Courses:
*See College Degree Pathways for science courses (note that the following courses earn 1 high school credit—college credit values, prerequisites, and exam information may be found in the college degree pathways that follow):

All ETHS students:
- SCP101 Topics in Physical Science
- SCC201 Chemistry I
- SCC202 Chemistry II
- SCP231 General Physics I
- SCP232 General Physics II

Practical Physics

This course introduces students to the physical world around them through a combination of physics, engineering, and computer programming. Students construct miniature roller coasters, learn how to wire circuits, and create their own music through computer programming. This high-interest course provides strong preparation for later STEM coursework at both the high school and college levels.

2 High School Credits
PREREQUISITES: None

Regents Physics

This course is open to students who have exhibited mastery in science and math. Honors Physics takes students through several centuries of physics discoveries and knowledge, providing an introduction to the main principles of physics. Students learn the fundamental physical concepts and principles concerning matter and energy through the laboratory study of motion, forces, electricity, wave motion, light, and modern physics. In order to be eligible for the exam, students must complete a minimum of 1,200 lab minutes with a corresponding lab handout and/or lab report.

2 High School Credits
PREREQUISITE: None
CULMINATING ASSESSMENT: Physics Regents is taken in June

Additional Courses:
*See College Degree Pathways for science courses (note that the following courses earn 1 high school credit—college credit values, prerequisites, and exam information may be found in the college degree pathways that follow):

All ETHS students:
- SCP101 Topics in Physical Science
- SCC201 Chemistry I
- SCC202 Chemistry II
- SCP231 General Physics I
- SCP232 General Physics II

Engineering Design I

This is a 9th grade year-long course in which students are introduced to various engineering majors and disciplines. Students will learn various technical skills relating to engineering and engineering technology. This course will apply core STEM concepts with project and presentation practices, and will support students to develop skills and knowledge that can be applied across various engineering pathways. Students can look forward to designing, building, and testing Rube Goldberg machines, truss bridges, catapults, and a range of robotic devices.

2 High School Credits
PREREQUISITE: None
CULMINATING ASSESSMENT: Engineering Design Project

Engineering Design II

This is a 10th grade two-semester course in which students deepen their understanding of the Engineering Design Process, learn new CAD software, and carry out engineering design projects using more sophisticated technology such as a laser cutter, CNC mill, 3D printers, and more. Students further develop project management skills, carrying out more complex team tasks and holding one another accountable for brainstorming, developing concepts, building prototypes, refining designs, using tools appropriately, and planning professional presentations. This class further prepares students to take MAE100 AutoCAD at the college level.

2 High School Credits
PREREQUISITES: Passing score in Engineering Design I
CULMINATING ASSESSMENT: Engineering Design Project

Additional Courses:
Fabrication Science and Robotics Elective:
These semester courses are offered off-campus on Roosevelt Island at Cornell Tech, in collaboration with NYC FIRST Robotics. Interested students may apply to take these courses, which engage students from a select group of area schools in engineering design challenges. In past classes, students have formed teams to design and build tabletop robots through FIRST FTC Robotics—in 2018 even competing in NYC Regionals and bringing home our first trophy! Students also learn to use sophisticated machinery and engage in individual design projects, such as designing and building motorized longboards, film equipment,
and other devices and inventions with electrical, electronic, and mechanical components. Students who take these classes are expected to utilize the school and Roosevelt Island "maker spaces" extensively outside of class times and attend weekend and evening events.

AP Computer Science Principles: This course is offered to interested seniors. AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles will give students the opportunity to use technology to address real-world problems and build relevant solutions. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science. The course culminates in the AP Computer Science Principles exam in May.

College and Career Foundations I and II: In 11th and 12th grade, students are offered coursework that focuses specifically on career preparedness. In these courses, students will develop personal budgets, learn about financial management, practice professional handshakes, build and revise resumes and cover letters, master Microsoft Office Suite, develop and present an "elevator pitch," practice writing professional emails, draft application essays, and more. This course is a practical accompaniment to the college classes and internships that students participate in during the upper grades of their Energy Tech experience.

ECF101 First Year Seminar for Engineering and Computer Science Students: This First Year Seminar is for all new college students intending to major in engineering and computer science at LaGuardia. Students in these programs are required to take this course in order to learn the skills needed to acclimate to campus culture, develop a clear understanding of the learning process, and acquire the skills and habits of mind essential to an informed study of the discipline. This course will be taught primarily to 10th grade students in the semester in which they are not taking HUP102 Critical Thinking. Students will have a "lab hour" at the LaGuardia Campus, during which they will work on building their personal ePortfolios.

*See College Degree Pathways for engineering courses (note that following classes earn 1 high school credit—college credit values, prerequisites, and exam information may be found in the college degree pathways that follow):

All ETHS students that meet CUNY benchmark:
- MAE109 Introduction to Engineering
- MAE100 AutoCAD

AAS – Mechanical sequence only:
- MAE107 Manufacturing Processes
- MAE121 Instrumentation
- MAE190 Material Sciences
- MAE191 Statics and Strength of Materials
- MAE201 HVAC Systems
- MAE207 Introduction to Thermodynamics for Technology

AAS – Electrical sequence only:
- MAC241 Computer Electronics I
- MAC242 Computer Electronics II
- MAC281 Discrete Structures
- MAC291 Computer Logic, Design, and Implementation I
- MAC292 Computer Logic, Design, and Implementation II
- MAE102 Electrical Drafting & Blueprint Reading

AAS students:
- MAE110 Circuit Analysis I
- MAE111 Circuit Analysis II
- MAE208 Electromechanical Devices
- Senior Design Project/Project Management

AS students:
- MAC102 C/C++ Programming
- MAE211 Statics for Mechanical Engineers
- MAE213 Electrical Circuits
- MAE219 Thermodynamics
- MAE101 Engineering Lab I
- MAE209 Structural and Sites Planning

**WORLD LANGUAGES AND CULTURES**

Through the exploration of authentic sources, including music, film, theater, and experiential learning, our goal is for students to not only develop effective Spanish speaking and writing skills, but an appreciation for world languages and cultures. Students learn the grammar and syntax of the Spanish language, and develop the ability to communicate orally and in writing over the course of their studies. Students engage with various cultural materials in order to develop an appreciation for and awareness of cross-cultural content. Students have the opportunity to take classes with other heritage and native speakers of Spanish, and additionally to complete AP Spanish Language and Culture coursework at Energy Tech. Students may also work toward the Seal of Biliteracy for their high school diplomas.

**Spanish I, II**

*(Both foreign language and heritage/native tracks available)*

This introductory Spanish course is designed to expose students to and immerse students in the Spanish language through the four modes of communication: Reading, Writing, Listening, and Speaking. Students study Latin American and Peninsular history, as well as geography throughout the course. After completion of this introductory course, students understand the vocabulary and grammar structures that allow them to communicate in Spanish in the same way they do in English. Note that a heritage/native speaker section moves at a faster pace and explores these topics through study of Spanish-language texts. The heritage/native speaker section affords students who speak some Spanish already with the opportunity to refine their reading, analysis, and writing skills in Spanish.

2 High School Credits

**PREREQUISITES:** None

**Spanish III, IV**

In second-year courses, students continue to develop listening, speaking, reading and writing skills. Emphasis on Spanish comprehension, as well as reading and writing practice in the target language, using a variety of activities incorporating thematic vocabulary, and several new grammatical structures. Cultural and historical aspects of the Spanish-speaking world are introduced through a variety of texts, artworks, music, and film. Students will be expected to be able to communicate their ideas about the various topics studies in the target language.

2 High School Credits

**PREREQUISITES:** Spanish I & II OR successful completing of middle school Spanish I course and passing score on the 8th grade Spanish Proficiency Exam (SPE)
**AP Spanish Language and Culture**

This is a rigorous course taught exclusively in Spanish that requires students to improve their proficiency across the three modes of communication: Interpersonal, Interpretive, and Presentational (written and spoken). The course focuses on the integration of authentic resources including online, print, audio, and audiovisual resources, as well as traditional print resources that include literature, essays, and magazine and newspaper articles. Students communicate using rich, advanced vocabulary and linguistic structures as they build proficiency in all modes of communication toward the pre-advanced level. Course culminates in the College Board Advanced Placement Exam. Some Saturday study sessions will be required.

4 High School Credits

**PREREQUISITES:** Spanish I–IV OR Spanish I & II Native/Heritage Section OR by special permission

**CULMINATING ASSESSMENT:** AP Spanish Language and Culture Exam is taken in May

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**ARTS DEPARTMENT**

Students participate in at least 2 Arts courses before graduation from grade 12 at Energy Tech, choosing from a variety of studio, graphic design, and theater electives—which often change on an annual basis. Below is a sampling of coursework in the Arts that students may participate in. Students are also encouraged to participate in special programs like Shakespeare Festival, an extracurricular Digital Photography class, elective field trips, and more.

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**Studio I**

In this course, students learn the Elements of Art and Principles of Design, and they explore common mediums and techniques in order to create a portfolio of projects. Some specific projects and topics include contour drawings, value shading, understanding color and color schemes, perspective, printmaking, painting with watercolors and acrylics, pencil and charcoal sketching, sculpture, etc. Students also learn about a survey of “masters” and movements in art, and engage in art talk protocols and a series of trips to venues in the community.

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**Introduction to Graphic Design**

In this course, students learn the basics of Adobe Creative Suite, and apply this software to their learning about personal branding and marketing. Students develop personal logos, letterhead, business cards, and other print media before moving into a digital project focused on building a personal website. By the end of the course, students design their own projects and the course culminates in professional presentations of their works.

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**Advanced Studio**

This course is offered to students who have mastered Studio I and who wish to extend their studio experience and continue to build their art portfolios. Student will explore more sophisticated mediums and techniques, and will be given more freedom to develop their own projects and work plans, and will be expected to periodically present their works and engage in art critique protocols. Students in Advanced Studio will also participate in field trips to local museums, galleries, and studios.

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**Introduction to Theater**

Through the lens of theater disciplines and concepts such as ensemble, voice, acting, movement, improvisation, script analysis, directing, and technical production, students will engage in project-based tasks. In collaborative settings, students will engage in creative problem-solving, making interpretive choices, and meeting performance-based deadlines. Public speaking and interpersonal skills will be honed through a daily class vocal warm-up and other theater activities. Students will also learn the basics of “tech theater”, and will experience a variety of shows and performances outside of class time.

*See College Degree Pathways for Arts courses (note that all following college courses earn 1 high school credit—college credit, exam, and prerequisite information is found in the college degree pathways that follow):

AS students:

- HUM101 Introduction to Music
- HUA101 Introduction to Art

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**PHYSICAL & HEALTH EDUCATION**

We aim to create a safe environment where students can explore movement in both sports-related skills and fitness activities. Our goal is to provide students with the information and skills needed to live long and healthy lives emotionally, physically, socially, and environmentally. In addition to regularly scheduled physical education classes and a 1-credit health course, there are opportunities for morning sports, such as volleyball, ultimate frisbee, and basketball; and afternoon fitness, such as yoga, running, and soccer. Students are encouraged to participate in PSAL sports and health and wellness campaigns. This is a thriving department with a commitment to exposing students to a wide range of sports and fitness activities—including some student favorites like floor hockey, cricket, table tennis, kanjam, and more. Students set goals for and participate in the FITNESSGRAM each year.

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**THE IMPORTANCE OF ATTENDANCE IN AN EARLY COLLEGE PROGRAM**

In any high school, attendance is important. However at Energy Tech, where we offer an accelerated sequence and college courses while still in high school, being in school every day is especially critical. In most college classes, you are permitted 2-3 absences before automatically failing the class. In college classes at ETHS, this same rule applies, and multiple latenesses can add up to an absence. If you have missed too many classes, your professor may remove you from the class with a failing or WU (a negative withdrawal code) grade, and this may disqualify you from taking any college classes in the following term. Also, this may delay high school graduation or prevent you from completing the free associate degree within the two years beyond grade 12. A poor attendance record can prevent you from being referred for college classes and paid internships, and can also result in your removal from internships and extracurricular activities. At ETHS, we are preparing you for the real world by applying authentic consequences when you fall short of attendance expectations. Strong attendance puts you at an academic advantage, and helps you earn more privileges—such as taking classes at the college campus, being allowed to go out for lunch, and earning special awards for your resume.
What does it mean to be ready for college?

We use the term “college ready” all the time, but what does it really mean? How do you know that you are ready to take college classes? Here are some ideas:

**MEETING CUNY BENCHMARKS**

- You have earned at least a 75 on the English Regents examination. Alternately, you earned at least a 480 on the EWR section of the new SAT or a 20 or higher on the verbal section of the ACT. If you have not met these benchmarks, you are required to prepare for and pass the CUNY Reading and Writing placement exams.
- You have earned at least a 70 on at least one Common Core mathematics Regents examination, and you have successfully passed the Algebra I, Geometry, and Algebra II classes.

**EARLY COLLEGE APPLICATION PROCESS**

- You have reviewed your transcript each year and filled out the Early College Application for the courses that you are eligible for. You have your meningitis booster (3rd in series) form on file and you returned all required consent forms by the deadline.
- You have attended all required orientation sessions and picked up your schedule and textbooks when you were supposed to.

**NAVIGATING A COLLEGE CAMPUS**

- You have participated in field trips to the college, such as to tour the campus and to learn how to use the library. You know where to find the Early College office and how to read your schedule to find:
  1) your EMPL ID,
  2) the building and room where your class meets,
  3) the times your classes meet, and
  4) the titles of your courses.
- You have your paperwork on file to use the fitness center.
- You have successfully gone to have your ID printed.
- You know where the Math Lab, College Writing Center, and Wellness Center are located.
- You know how to get to LaGuardia by public transportation and on foot.
- You remember to pick up your college MetroCards on a weekly basis.

**STUDY HABITS**

- You have proven in high school classes that you complete required readings and assignments for homework outside of class.
- You have maintained a good average in your high school classes and are on track to graduate on time.
- You know when to ask for help, and you seek out support and resources.
- You set aside time in your schedule to study, and find places where you are comfortable studying and have the resources you need.
- You turn in major assignments on time and you take assessments seriously.
- You take notes even when you are not told to.
- You form study groups with your friends without prompting.

**ATTENDANCE**

- You regularly use your Energy Tech and LaGuardia calendars.
- You schedule vacations and appointments for days when you do not have college classes.
- If an emergency comes up, you email your teachers and professors directly to let them know that you need to miss class and to get information about missed assignments and office hours—and you can correctly identify what kinds situations are emergencies and what kinds of situations are not emergencies.
- You attend class consistently and on time.

Taking college classes while still in high school is a privilege, and will give you a strong advantage in whatever you choose to do after Energy Tech.
TAKING COLLEGE CLASSES

Taking college classes while still in high school is a privilege, and will give you a strong advantage in whatever you choose to do after Energy Tech.

Course Registration

In general, advisors and Early College staff will register you for your classes. As you get into grades 13 and 14, you will participate more actively in this process. Because of the limited scope of our program, it is not possible for students to select courses in the way they might in a larger high school or in college. Students should log into CUNYFirst each term to track registration and to view posted grades. There is a very short Add/Drop Period at the start of each semester, and we expect students to schedule an appointment with an advisor immediately if they have questions or concerns.

What to Expect

Our college classes are often smaller than high school classes, and professors expect students to behave like college students and to participate in class. In each course, you will be given a syllabus, and the professor will advise what textbooks you will need. These will need to be picked up immediately from the Early College office, along with any access codes, software, and other required materials. You should not expect the professor to give as many reminders about work and due dates as in high school—you must follow the syllabus, listen carefully for tasks, take a lot of notes, and ask questions. At times you will not understand during class and a professor cannot stop the class to help you. In these instances, you are expected to email the professor, stay after class to talk, or attend your professor’s office hours—posted times that they are available in their office for extra help.

At first, the workload in your college class will be lighter, and you should not use this as an indication for how difficult the class will be. In general, you should expect to spend one to two hours outside of class studying, reading, and completing work for every hour that you have class. For example, if your class meets for four hours per week, you should expect to spend at least four hours per week completing reading assignments, making notes about readings, working on problem sets, revising essays, and attending tutoring/office hours. Your professors will not micromanage your time—they expect that you will keep up with the syllabus, complete assignments even without prompting and reminders, seek out support when you need it, and put in a collegiate level of effort.

- All assignments should be typed with a heading that includes your full name, the date, the course code, and the section that you are in—all of this information appears on your LaGuardia schedule.
- All assignments should be your own work—any incidences of plagiarism may result in immediate failure and/or removal from our early college program.
- It is imperative that you complete all homework assignments on time—homework assignments carry a different weight at the college level, and professors expect that every assignment is turned in on time as classes meet less frequently. Failure to complete assignments in college almost certainly will result in a failing or below C grade—meaning that you would likely need to repeat the course.
- Grades below a C in college are often considered “failing” grades by other colleges and employers. Many colleges expect As and Bs to be in good standing, and lower grades may not transfer your credits to other institutions. You may need to repeat courses with grades below a C in order to graduate from your degree program. You may also be placed on academic probation, which will limit your opportunities for internships, jobs, or additional college classes.

The First Day of Class

On the first day of the term, it is important to arrive at class early to find the building/room, and to make note of any announcements posted, like room or professor changes. You should have at least one notebook or binder for your college classes per term—in general, your professor will not tell you what kind to get, and you should use what is comfortable for you. For the majority of classes, most of the first class will be devoted to reviewing the syllabus—you should take lots of notes, ask questions, and be sure you find out about office hours and your professor’s email address. If you are not on the roster, you will need to contact the Early College Office immediately.

In addition, many of your high school graduation requirements define how “ready” you are for college—for example, taking four years of challenging mathematics and science courses and Regents exams. At times, students want to drop classes in the later years of high school or not sit for exams that they do not “need” for graduation or that they feel might not transfer as credits to another college. It is important to understand that in order to be academically ready for college-level coursework, you will need to fulfill more than the minimum requirements. The vast majority of 4-year college programs expect that you will have taken four years of mathematics—at least through Precalculus, four years of science, and often 2 or more years of world languages. And even though a college that you are considering may not give you credit for some of the college coursework that you have taken, they will expect that you have taken a similar course as a high school student. Dropping or failing to take upper level early college coursework can put you at a great disadvantage when transferring after 12th or 14th grades.
Reading a Syllabus

In every high school and college course that you take, your instructor will provide you with a syllabus during the first few days of class. A syllabus is a written overview of the course, and generally includes information about how you will be graded, expectations for your work and behavior, contact information for the instructor, guidelines for attendance and participation, and an outline of assignments. In college classes, professors expect you to follow the syllabus on your own and keep track of assignments—even when they do not provide you with reminders and instructions to do so. In general, you should review your syllabi at least once per week. You should also read them thoroughly and stay after class to ask questions about anything that is unclear.

Communicating with Professors

In college classes, you are expected to address your professors professionally, using “Professor” or “Doctor” as their title. Should you need to miss class for an important reason (e.g. serious illness, a death in your family, or other extenuating circumstance), you are expected to reach out to your professor as soon as possible in a professional email. An example of this is found below:

Dear Professor Exe,

Unfortunately I will not be able to attend your 3:45pm MAE117 class this evening as I have the flu. I will bring you a note from my doctor at our next class, and I will get the missed work and assignments from one of my fellow students. Attached is the homework that was due today. I am sorry to miss class, and please let me know if there is any other important information that I missed.

Thank you,

If you have a question about your progress, you are expected to arrive early, stay late, or attend office hours to speak with your professor in person. You may also do this in the form of a professional email. In general, you should communicate with your professors even more formally than you would with a high school teacher. During the first few classes, you should pay close attention to what your professor is looking for and how they prefer for students to communicate in class—for example, some professors may take few questions in class and others are more focused on involving all students in classroom discussions.

DOs

- Read your syllabus carefully—if the professor does not provide their email address, ask for it and write it down on the first day.
- Listen and observe carefully on the first few days of class—make note of how your professor introduces themselves (e.g. Professor Watson, Dr. Smith, etc.), the routines of the class, what the professor expects of your participation, etc.
- Make eye contact with your professor while they are talking, take notes, and say “thank you” as you leave class. You may also use a professional handshake if they are at the door when you arrive or exit.
- If an emergency situation comes up and you need an extension, you are expected to ask professionally and courteously in advance if this is a possibility—this should be reserved for very special situations, and not all requests may be honored.
- You should use professional language at all times in class, and be on your best behavior. “Please”, “thank you”, “pardon me”, etc. go a long way!
- If you need to step out for a restroom break, you are expected to do so sparingly, quickly, and without disrupting the class. You do not need to ask for permission for this in college. You should do this during an official break or at a point in the lesson where you will miss less content.

DON'Ts

- Do not use any slang terms, profanity, or overly casual phrases with your professor OR your classmates. College and work environments have a professional tone.
- Do not engage in any side conversations with your peers.
- Do not have your cell phone out or on during the class—professors frown upon this, and you will set a poor impression.
- Do not have your head down, yawn, or look disinterested. You are expected to be fully engaged even during very long classes.
- Do not eat during class or chew gum loudly.
- Do not miss class or ask for extensions for non-emergency reasons—picking up a younger sibling, going home to run an errand, making a scheduled doctor/dentist appointment for non-emergency reasons, or missing class to work on another class or go to work are NOT acceptable excuses.

MIDTERMS AND FINALS

Midterm and final dates are often provided in the syllabus. If they are not, ask about these well in advance so that you can prepare for and work your schedule around them accordingly. In general, your midterms and finals will make up a large percentage of your final grade, and it is important that you are clear on the expectations, that you study hard outside of class, and that you ask for opportunities for extra support outside of class time. Many professors offer optional study sessions before these exams, which you should make every effort to attend. You must arrive on time and in the correct location (which is often not the same classroom where you had class), or you may be turned away and not allowed to take or make up the exam. This almost certainly will result in a failing grade.

GRADE POINT AVERAGE

The grade-point average (GPA) is an ongoing measure of student performance in college courses. It is calculated by the Registrar’s Office upon completion of each semester. The following grades are included in the GPA computation: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, F, WU, and FIN grades are not included. A cumulative GPA is an average of the grades a student has earned throughout their time in a given college or program and is recorded on his/her official college transcript. A semester GPA is an average of the grades a student has earned in a single semester.

DEAN’S LIST

Dean’s List is an incentive program each semester in which students are recognized for earning high GPAs. If you make Dean’s List, this is an award that you can include on your resume. Energy Tech will offer special awards, prizes, and opportunities for students who achieve Dean’s List each term of Years 5 and 6.
GRADUATION AND TRANSFER TO OTHER COLLEGES
It is important for students within Early College programs to maintain a cumulative GPA of 2.0, which is the equivalent of a “C” average.

- Each college within the City University of New York has established policies for academic probation. Students at Energy Tech are placed on academic probation when their cumulative GPA has fallen below the requirements established for good academic standing (see above). Energy Tech Early College students are subject to these policies:

  - Students placed on academic probation must demonstrate improved academic achievement at the end of the probationary semester. They will be required to meet with counseling staff, Early College staff, and preferably with their parents in order to develop a plan for improvement. Students on probation will be required to attend additional weekly advisement sessions, and may be scheduled for additional support classes. Students may also be suspended from internships or work experiences. Failure to follow through with probation plans may result in being dismissed from the Energy Tech program in Years 5 and 6.

  - Students on academic probation who earn a semester GPA above a 2.0 may risk being dismissed from the Early College program in Years 5 and 6. Early College students who have a cumulative GPA below 2.0 may be placed on academic warning.

  - Students who have excessive absences or latenesses in either their college classes or high school courses, independent study, workforce learning programs, etc.). Students should also explain how they plan to improve their performance when readmitted.

GOOD ACADEMIC STANDING
Given the importance of maintaining a satisfactory GPA, each college within the City University of New York has established standards required for students to remain in Good Academic Standing. Students in Early College schools must comply with these requirements. Generally, students maintain Good Academic Standing by meeting the standards for an acceptable GPA as shown in the chart below.

<table>
<thead>
<tr>
<th>Cumulative # of Credits Attempted</th>
<th>Minimum Required GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 12.5</td>
<td>1.50</td>
</tr>
<tr>
<td>13 – 24</td>
<td>1.75</td>
</tr>
<tr>
<td>25 or more</td>
<td>2.00</td>
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</tbody>
</table>

ACADEMIC PROBATION
Should your GPA fall below a certain level, you will be placed on academic probation, which may prevent you from taking further college courses, and which may result in mandatory interventions that are scheduled into your program. Should you neglect to fulfill your responsibilities on academic probation, you could be dismissed from the Energy Tech program. Please review the following policies and notes that may result in placement on academic probation:

- Students placed on academic probation must demonstrate improved academic achievement at the end of the probationary semester. They will be required to meet with counseling staff, Early College staff, and preferably with their parents in order to develop a plan for improvement. Students on probation will be required to attend additional weekly advisement sessions, and may be scheduled for additional support classes. Students may also be suspended from internships or work experiences. Failure to follow through with probation plans may result in being dismissed from the Energy Tech program in Years 5 and 6.

- Students on academic probation who earn a semester GPA above a 2.0 may risk being dismissed from the Early College program in Years 5 and 6. Early College students who have a cumulative GPA below 2.0 may be placed on academic warning.

- Students who have excessive absences or latenesses in either their college classes or high school courses, independent study, workforce learning programs, etc.). Students should also explain how they plan to improve their performance when readmitted.

ACADEMIC WARNING
Academic warning is another designation that may be assigned to students if their performance in a given semester is problematic for any of the following reasons:

- Students who have a cumulative GPA of below 2.0 may be placed on academic warning.

- Students who earn a W, WU or WN will be placed on academic warning.

- Students who have a cumulative GPA of above 2.0 but have a term GPA of below a 2.0 will be placed on academic warning.

- Students who have a cumulative GPA of above 2.0 but have a term GPA of below a 2.0 will be placed on academic warning.

On academic warning:

- You may be limited in the number of classes you are allowed to take in a semester.

- You may be required to have weekly check ins with a designated staff member.

- You may be required to participate in extra academic support, including tutoring, study groups or support classes at LaGuardia or at Energy Tech.

GRADE APPEALS (APPEALING INDIVIDUAL COURSE GRADES)
In order to appeal a final course grade, the student must first discuss the grade with the instructor. If, after discussion with the instructor, the student wishes to appeal further, or if the student is unable to meet with the instructor, the student may then arrange to meet with the department chairperson. If, after meeting with the chairperson, the student still wishes to appeal the grade, the student must consult with a counselor about appealing
The maximum number of failing credits that can be deleted from the GPA shall be limited to the first 12 credits earned throughout the Early College Program.

- The maximum number of failing credits can be deleted from the GPA below 24 attempted credits.
- This policy is effective as of Spring 2018.

EARNING A COLLEGE DEGREE

Earning a college degree is similar to the process of earning a high school diploma. A degree in college is made up of a sequence of credits in “general studies”—courses like English, mathematics, and sciences—along with “program core” courses—courses that are specific to your major, such as Circuit Analysis, Thermodynamics, and AutoCAD. Every major has a specific sequence of courses that you must successfully complete in order to earn the degree. For some program requirements, you must also pass specific courses with a grade of C or better—a grade lower than a C will not be accepted and you must retake that class.

Prerequisites

Prerequisites, or “pre-reqs” are courses that you must take before you are allowed to take a certain course. For example, MAT115 is a prerequisite for MAT200—you cannot take MAT200 until you have successfully completed MAT115. The CUNY benchmark score for literacy—a 75 on the ELA Regents exam—is a prerequisite for ENG101. A student may not take ENG101 until they have met the prerequisite criteria.

Corequisites

Corequisites are courses that you are required to take at the same time as another course. For example, when you take HUP102, a writing-intensive class is a corequisite, or “co-req”. This is your high school English course. If you have questions about any courses that are listed online as having a “pre-req” or “co-req”, you should ask a college liaison or advisor for guidance.

Degree audit

Degree audit is the process that a student goes through with an advisor as they get closer to graduation. A college advisor will closely review a student’s college transcript to check the courses that they have successfully completed against the criteria for the major. You can look up the degree requirements for any degree on the college website and track your progress on your own. Advisors will flag any courses that need to be retaken for a higher grade, and will help students identify what courses they have left until they are eligible to apply for graduation. Degrees are not conferred until all credits are earned and all graduation requirements are met. When this is complete, a college official will recommend a student for graduation. It is important to note that a student must formally apply for graduation early in the term that they are scheduled to finish their degree.

COLLEGE TEXTBOOKS AND MATERIALS

Energy Tech provides all college textbooks and materials for students in our degree pathway programs. In general college students can expect to pay several hundred dollars on textbooks per term when in college. Engineering textbooks and software are particularly expensive and can cost over $1,000 per term. In general, your professors will let you know what books should be brought to and from class. In terms of purchasing school supplies, most professors simply expect that you take your notes and organize your materials in whichever style notebook you are most comfortable using. It would be rare for a professor to tell you what kind of notebook or binder you should use, so you should not ask this question in class. If your professor would like you to use something specific, they will make that announcement in class or in the syllabus. So, you should think about your high school experience and what is best for you, and make that decision on your own.

At Energy Tech, you are expected to pick up your books and return them at specific times before and after each term. If you do not do this, you can incur large bills—some of your books cost over $100 each. You should also expect to get to campus early or stay late during the first weeks of class to pick up the materials that you need—often in E115, the College Liaison office. You will need your books to complete assignments, and no excuses will be made for you if you do not take the initiative to pick up your materials on time—in fact, failure to pick up your materials may result in your removal from the course.

UNDERSTANDING TRANSCRIPTS

There are two kind of college transcripts—official and unofficial copies. When you apply for some internships and for transfer to other college programs, offices will request official copies of your transcript. While at Energy Tech, you can request these directly from the College Liaison or your college advisor. They will most often be given to you sealed and stamped, or sent directly to the office that requires them. If you need an unofficial copy, you may log into CUNYFirst at any time to view your transcript. On both versions of your transcript, you will see a listing of every course you took and attempted along with your grade—please note that withdrawals will show up, and that your transcript will show your current GPA and total number of credits both earned and attempted.

You should monitor your transcript each term to view your GPA, credits earned, achievements like Dean’s List, etc. Internships will almost always ask for your college transcript, and maintaining a certain level of GPA and number of credits may qualify you for a higher rate of pay.

AAS VS. AS DEGREES

Associate of Applied Science (AAS) degrees are programs that prepare students for careers upon completion. Our two AAS pathways are “Energy Technology—Mechanical” and “Energy Technology—Electrical”. The Energy Technician program at LaGuardia is administered by...
Department of Mathematics, Engineering and Computer Science (MEC). Energy technicians work in high-demand, growing fields related to computers, cellular phones, and global positioning systems (GPS) technologies. These degree pathways were developed in collaboration with content specialists at Con Edison and National Grid, and faculty from LaGuardia Community College. Upon completing these degrees, candidates will be well positioned to apply for entry level Electrical Technician and Designer jobs in our local industry. Candidates also could go on to pursue 4-year degrees in STEM or other disciplines. It is important to note that pursuing a different area of study after this 2-year program would likely require a student to take more “general studies” coursework—additional English, mathematics, science, and social science classes.

Associate of Science (AS) degrees are programs that prepare students to transfer directly into 4-year colleges. Some students at Energy Tech are also eligible to pursue AS pathways in Electrical, Civil, and Mechanical Engineering at LaGuardia. These students take additional and more demanding mathematics and science coursework than the AAS degrees and fewer though very challenging engineering courses. The AAS degrees require more technical and hands-on classes, as they are preparing you to transition directly into a career. Taking the AS route will not prevent you from pursuing a career upon graduation, but you may need to take some technical workshops and seminars through ETHS or additional internship experiences so that you are more prepared for work.

In general, making a decision about the degree pathway you pursue should take time and should be made in consultation with school counselors and liaisons. There are opportunities for older students to connect with our Years 5 and 6 programs in all of the pathways, and this should also be a topic of conversation that you have with your mentors and internship supervisors. As you get to know all of the different career pathways in our partner companies and in other industries, you will develop a clearer sense of what course of study and preparation is best for you. And you should take comfort in the fact that no matter what pathway you pursue, you can always change your mind, and we will be happy to support you to develop new plans and take next steps.

**TRANSFERRING COLLEGE CREDITS**

If you are looking into transferring into a 4-year program after grade 12 or 14, it is important that you meet with a counselor to explore your options by the end of 11th or 13th grades. Your counselors can help steer you toward programs that will accept many if not all of your college credits, depending upon the college, the courses that you have taken, and the new pathway that you are hoping to pursue. Determining which classes will transfer is a case-by-case process that will likely involve contacting individual colleges and possibly submitting a syllabus for review. In general, your “general education” courses in English, mathematics, science, and social sciences will transfer to most CUNY programs. Many colleges award advanced standing in lieu of credit—for example, even if your ENG 101 course does not transfer for credit, a college may give you an exemption from taking a beginning English seminar and may allow you to register right away for more advanced classes in that discipline.

It is very important to understand that you should not make decisions about the college courses that you take at Energy Tech based solely on what you think will transfer after your time at Energy Tech. Many of our classes—particularly upper level mathematics and science classes—are dual credit, meaning that they will award you both high school and college credit. Even if a college will not give you credit for MAT 201 (Calculus I), they will expect that you have taken four years of high school mathematics coursework if you are transferring into a competitive STEM program. Therefore, you should strive to take as many college courses as you can while still in high school in order to be competitive in your career or college pursuits after Energy Tech.

Below are important notes about transferring credits to other CUNY institutions:

- Any student who earns 16.5 or more credits while enrolled in a 9-14 Early College & Career school shall be considered a Transfer Applicant when applying to a CUNY college upon graduation from Energy Tech.
- Transfer applications will be evaluated based on a review of students’ performance in all attempted and completed courses, including credits and grades earned. For students who have earned 30 or fewer college credits, high school performance will also be considered as part of the Transfer Application process.

- As stated above, a cumulative GPA of at least 2.0 is a requirement for transfer to four-year (baccalaureate degree) programs within CUNY.
- College credits and associated cumulative GPA earned at Energy Tech will be maintained for students who enroll at LaGuardia Community College. If students transfer to a different CUNY college, the credits will transfer, but the cumulative GPA will be calculated only based on courses taken at the new college. However, the student’s transcript will display the GPA of courses taken at the initial college.

**ADD/DROP PERIOD**

Add/Drop Period is a very short period of time at the beginning of each semester—generally only a few days—in which one can add new classes or drop classes without an unfavorable W-code (see below). It is of utmost importance for students to review the LaGuardia academic calendar carefully in order to keep track of these deadlines. Requests after the official period may not be honored by Energy Tech. In general, Energy Tech will not honor requests that will result in an incomplete high school program or that may put you off-track for high school graduation or preparedness for your post-secondary plans.

In college, you can receive grade penalties and even lose tuition that you paid when you drop classes after these deadlines. You should meet with a counselor as soon as possible to discuss any concerns that you may have and to develop a support plan if you feel that you are falling behind.

**W, WA, WU, WN, AND IN AND FIN GRADES**

**IN (Incomplete)**

The Incomplete grade may be awarded to students who have not completed all of the required course work but for whom there is a reasonable expectation of satisfactory completion. A student who is otherwise in good standing in a course—defined as complying with the college attendance policy and maintaining a passing average—but who has not completed at most two major assignments or examinations by the end of the course may request an Incomplete Grade.
FIN (Failure from Incomplete)
The incomplete grade which has been converted to a failing grade will appear as a FIN grade. This grade is given to a student who does not fulfill course requirements by the deadline.

W (Withdrawal)
This grade is given when a student officially withdraws from a course after the change of program period, but prior to the official withdrawal deadline.

WA (Administrative Withdrawal)
This grade is given when a student does not complete registration requirements, such as failing to complete immunization requirements by the deadline.

WU (Withdrawal Unofficially)
This grade is assigned to a student who has attended at least one class or for whom there is documented evidence of the student’s participation in a course prior to the official withdrawal date. If the student stopped attending after the official withdrawal date, a grade of F is given. The WU grade has a numerical value of 0. This is highly unfavorable to have on a transcript and would reflect negatively when attempting transfer to another institution.

WN (Unofficial Withdrawal)
Is assigned to a student who has never attended a class or for whom there is no documented evidence of the student’s participation in a course prior to the official withdrawal date. As above, this is an unfavorable grade to appear on a transcript.

**It is important to note that failing and withdrawing from college classes after the official add/drop period can reflect negatively in the future, can jeopardize your ability to graduate on time, can result in lower-preference high school course placements, and can even impact your ability to receive financial aid from other institutions in the future. Please contact your counselor or early college staff for more information.**

**ACADEMIC CALENDARS**

Energy Tech will provide you with NYCDoe and CUNY—LaGuardia academic calendars each year, which are also available online at each organization’s website. You should carefully review each calendar, placing important dates on your own personal calendar, and making particular notes for NYCDoe and LaGuardia calendar events that are different. For example, it is common for there to be a day in which NYCDoe schools are not in session, but LaGuardia classes take place. Also, CUNY schools occasionally run a day of the week differently due to holidays. For example, the schedule might indicate that “LaGuardia is operating on a Monday schedule” on a Tuesday—this means that you are expected on a Tuesday to report to the classes that you have on Mondays at those scheduled times. Energy Tech will make accommodations for this.

College academic calendars also provide you with vital information about the windows for adding and dropping classes, withdrawing with a W/WU/WN, etc. You will receive fewer reminders about these dates as you get older and progress through the program, and it is important that you take responsibility for these deadlines on your own. In other colleges, if you miss a deadline, you run the risk of losing your tuition funding, receiving failing grades, or being dropped from your classes.

**INTERSESSION**

LaGuardia Community College runs on a trimester schedule, whereas Energy Tech runs on a semester schedule. This means that fall college classes end about a month before the high school fall term ends, and spring college classes begin about a month after the high school spring term begins. During these periods at the end of fall and beginning of spring, high school students who have finished or not yet started their college classes will be scheduled for something that we call “Intersession”—the time between the two main college semesters.

Older students can expect to take 1-2 college classes during Intersession—they are scheduled for more hours per week since Intersession is shorter than a typical semester, and the workload is more intense. Students may also work additional hours in their internships. Younger students may be scheduled for elective classes like Microsoft Excel, Tool Skills, Dance, etc. They may also be required to attend financial aid and college exploration seminars, study sessions, etc. More information about Intersession requirements will be provided each term. Failure to complete Intersession requirements may result in students being withdrawn from their college classes in the next term.

**TESTING**

There are many different forms of testing that students are required to participate in to fulfill high school, college, and work requirements. Below is an overview of the kinds of tests that students typically take:

**Regents Examinations**

Students are required to complete a range of high school Regents examinations in order to graduate—the specific number of scores being dependent on the type of diploma that a student is aiming for, their specific learning needs, etc. For more information, please refer to the high school graduate requirements card for your cohort (the year that you entered high school as a 9th grader).

Regents examinations are one way that students can demonstrate CUNY proficiency in literacy and mathematics and begin taking college classes—in general, students need to complete the high school English sequence and earn a 75 on the ELA Regents exam. In mathematics, students must complete Algebra I, Geometry, and Algebra II and earn at least a 70 on one of these exams.

**Accuplacer & CAT-W**

The Accuplacer and CAT-W are tests in mathematics and literacy that students can take at LaGuardia to demonstrate proficiency if they have not done so on the Regents examinations. It is important for students to study hard and take intervention courses like CUNY LINCT before taking the tests, because they cannot retake the exams until taking another semester of remedial courses if they fail. For example, if you take the Accuplacer for mathematics and fail, you will be enrolled in Math Start (over the summer), CUNY Start (fall or spring), or LINCT. These programs will take a full day, and you will likely not be able to work or have an internship at this time.
**PSAT, SAT, ACT**
The PSAT, SAT, and ACT are not required to participate in the Energy Tech college program. If applying for a transfer to a 4-year college after the 6-year Energy Tech program, these exams also will not likely be required. If students are planning to leave after grade 12 in order to attend a 4-year college, they will most likely need to take the SAT or ACT for admissions. As students research potential college programs, they can find information readily on college websites and in college information sessions about which exams and scores are most desirable. They also should work with counselors to enroll in preparation courses to improve scores and to identify college matches based on performance. The PSAT is offered to students in grades 10 and 11 to help students identify where their performance currently falls and what they should study before taking the SAT. Strong performance on the PSAT taken in the fall of grade 11 can qualify students for a National Merit Scholarship. More information is available at www.collegeboard.org and www.act.org.

**SAT II Subject Tests**
Many competitive 4-year colleges will also require students to take and submit scores for SAT Subject Tests. Students should research college admissions requirements for programs that they are interested in early in their high school experience to determine how many and which tests are preferred along with target score ranges. Many students prefer to prepare for and take these exams immediately following high school coursework—for example taking the Physics Subject Test following the Physics Regents course. Study books for all of these exams and fee waivers are available in the Energy Tech guidance office. Taking these tests early also gives students time to retake exams as needed to achieve the target scores.

**Industry Entry Examinations**
Upon completing the 6-year Energy Tech program, many students will apply for relevant jobs at Con Edison and National Grid. In addition to formally applying for a job by submitting a resume and cover letter and online application, eligible applicants will need to take placement testing and participate in a demanding interview process. Preparation for these exams and processes will be provided to Grades 13 and 14 students, and more information is available in advising offices.

**GUIDANCE AND ADVICE**
In college, students are assigned (or may request) academic advisors, and in many workplaces you can expect to have formal and informal mentors. At Energy Tech, we try to replicate these supports so that you are more comfortable and savvy about utilizing them in your future pursuits. Throughout your Energy Tech career, you will be assigned to various counseling staff who will help you track your progress and access academic and other supports as needed. We have several full-time counselors on staff as well as an onsite clinic where you can receive counseling through Western Queens Consultation. In addition, Energy Tech has several early college staff members who are present on both the high school and college campuses, and a team of staff members who are focused on your career readiness.

See staff directories for information about where, when, and how you can access these staff members.

As you get older, we will expect that you come prepared to advising meetings, having reviewed your transcript and high school and college graduation requirements on your own, and having generated a list of questions, concerns, or requests on your own. We also expect that by grade 11, you will proactively email your advisors to schedule an appointment in advance rather than showing up unannounced at their door. This will help them prepare to better answer any of your questions, and will help you to be more prepared for how you will be expected to interact with advisors and mentors at college and in the workplace in the future. In turn, you should also be checking your email each day, as this is how guidance and advisement staff will most often reach out to you about both issues and opportunities.

You can expect to be provided with an advisement packet to review on your own or with your parents each year, and you should be making use of your yearly checklists to stay on track.
What does it mean to be ready for a career?

Being ready for a career entails much more than being strong academically. Being career-ready means that you have both the academic and technical skills in order to do your job properly, but you also have mastered the communication, teamwork, and personal skills needed to find, interview for, and successfully navigate a new career and a new workplace.

Throughout your Energy Tech experience, you will start by learning about different career pathways and the studies that you will need to follow for each. For example, you will learn in 9th and 10th grade about engineering careers in our partner utility companies, and you will do projects in class and visit workplaces to interact with professionals and get an overview of the kind of work that they do. You will also learn some skills across all of your classes like group collaboration strategies, presentation and speech skills, Microsoft Office Suite, etc. As time goes on, you will be assigned an industry mentor, and you will take upper-level career readiness classes that will help you to develop a resume, to look at sample job postings to practice revising your resume and cover letter, to master a job interview, and to dress appropriately for different environments. You will practice a professional handshake, navigating salary and benefits packages, personal budgeting and finance, and more.

Being a good candidate for a new career means that you are confident, self-aware, proactive, hardworking, and so much more.

COLLEGE AND CAREER FOUNDATIONS SEQUENCE

At Energy Tech, you will be provided with career readiness classes and activities during each year of the 6-year sequence. There are also multiple opportunities along the way to participate in more intensive experiences outside of the school day. Please see below for more in-depth information:

WORK-BASED LEARNING

All students participate in a work-based learning sequence that includes guest speakers in 9th grade, industry mentoring and field trips beginning in 10th grade, and paid internships beginning the summer after 11th grade and increasing in number in 12th grade and beyond. There are a variety of other work-based learning and industry activities that take place during school, after school, and on weekends. Some are open to all students while others with limited availability are open to select students.

INDUSTRY MENTORING

Once a month, professionals from Con Edison and National Grid come to Energy Tech to meet with small groups of four to five students in grades 10-12. Monthly topics cover career exploration and soft skill acquisition—such as learning how to interview, navigating difficult situations at work, working on a team, etc. Students are assigned to mentoring groups within their grade and meet with the same mentor every month for a year. Many mentors return each year and continue to work with their student group. For mentors who cannot return, student groups are assigned a new mentor. For Years 5 and 6 of our program, students meet with their mentors either on the college campus or in the workplace according to their college schedules and mentor availability. Mentoring sessions in the final years of the program will require students to take more responsibility for scheduling their own mentoring sessions, choosing mentoring topics they want to discuss, and maintaining the relationship. Many students may choose to ask their mentor for a letter of recommendation or to serve as a reference, having built a close relationship with them over time.

JOB SHADOWING

There are various opportunities for students to participate in job shadowing—one-time or series of visits to different work sites—to observe people in everyday work environments and situations. A select group of 10th graders is chosen each year to participate in a 10-week series at Con Edison to explore careers in the local utility industry ranging from engineering and technician positions to law and policy and even public affairs. Students participate in weekly after-school sessions with energy professionals, and it has been one of our most popular after-school career activities among students. Energy Tech also partners with an organization called NY Exploring, and
Information is regularly shared with students and parents about opportunities for one-day and multi-day job shadowing visits to a wide range of businesses and industries in the New York City area.

**NETWORKING OPPORTUNITIES**

There are many opportunities throughout the year for students at every grade level to connect with professionals and potential employers. Energy Tech hosts an annual Networking Fair, at which representatives from businesses and organizations from the Queens area and all over New York City set up booths and speed networking stations. Students are expected to come in their best business casual and business professional attire, and should bring copies of their resumes if they are actively seeking internships and part-time jobs. In classes by grade level, students will prepare questions to ask, practice making conversation and maintaining eye contact, and will get feedback on resumes so that they are ready to connect with professionals. Students attend this fair by grade, and have the opportunity to learn more about the world of work and the range of jobs particularly in engineering and STEM fields that are available. Many students have found work and internship opportunities as a result of this annual event. More opportunities like this are offered to students in grades 12-14 through our school partnerships.

**INTERNSHIP PROGRAMS**

Internships can be the best way to explore whether a particular career, work setting, and industry is right for you. They are also a way to meet potential mentors, gain career advice, learn essential workplace skills that will apply to any career, and practice technical skills learned in classes. All students can apply for internships offered through the school in the summers. While most internships are looking for students in 11th grade and above, select 9th and 10th graders have secured internships as well. Once in 12th grade, students have the option of participating in an academic year internship during either fall or spring semester in addition to or instead of during the summer. Academic year internships are part-time typically from 10-15 hours per week. Each opportunity and program has different eligibility requirements. Some require a certain high school or college grade average. Others want to see that students have consistent attendance and a clean discipline record. More technical internships will require that students have passed particular college courses such as AutoCAD, Blueprints, and Manufacturing.

The following is a sample of internships that Energy Tech recommends within the engineering field. Students will be made aware of opportunities that they are eligible for, and should regularly keep their resumes and working papers up to date. Energy Tech encourages students to also do their own additional research on internship and job opportunities that interest them. As these are competitive opportunities with limited slots available, students are highly encouraged to apply to three to four opportunities in order to secure one for a given time period.

**Con Edison**

**AGE:** Be at least 16 years of age by July 1  
**GRADE:** Rising 12th grade students and above  
**ACADEMICS:** High cumulative average, somewhat flexible in combination with other factors  
**ATTENDANCE AND DISCIPLINE:** Must have consistent attendance and no major discipline issues  
**OTHER:** Summer internships require students to be available full time for at least six weeks in July and August. Vacations during this time are highly discouraged and could disqualify a student from participation. The daily work schedule is typically 7:00am–3:30pm. If interning over the summer, students must be enrolling in Energy Tech the following fall. 12th grade students not returning for year five are not eligible to apply.  
**HOW TO APPLY:** Students will be nominated by staff committee. Nominated students are invited to apply. The application requires a resume, short essay, and two practice interviews. Pending internship availability, students with outstanding applications and interviews are then invited for final interviews with managers at Con Edison worksites.

**National Grid**

**AGE:** Be at least 17 years of age by May 1  
**ACADEMICS:** Applicant must have accumulated 12 or more credits by January of the year they apply  
**HOW TO APPLY:** Eligible students must complete the online application available at the National Grid website. Students who will be invited to interviews are contacted directly by National Grid hiring managers.

**CTE Industry Scholars**

(Placements at engineering, architecture, construction, and tech companies)  
**AGE:** Be at least 16 years of age  
**GRADE:** 12th grade students during the academic year, rising 11th grade students and up during the summer; If interning over the summer, students must be enrolling in Energy Tech the following fall. 12th grade students not returning for year five are not eligible to apply.  
**ACADEMICS:** No minimum requirement, however students with more technical college courses will be stronger applicants.  
**HOW TO APPLY:** Eligible students must complete the online application and will be contacted for program interviews. Students that pass the interview will either be directly matched to an internship host or invited to an interview with a hiring manager.

**Scholars at Work**

(Placements at manufacturing and transportation companies)  
**AGE:** Be at least 16 years of age  
**GRADE:** 12th grade students; internship occurs during the spring semester  
**ACADEMICS:** No minimum requirement, however students with more technical college courses, a history of strong academic performance, and consistent attendance will be stronger applicants. Students must be on track to graduate in June.  
**HOW TO APPLY:** Eligible students must complete the paper application and will be contacted for program interviews. Students that pass the interview will be directly matched to an internship host.
**INTERNSHIPS IN OTHER CAREER FIELDS**

Students not interested in engineering can apply for more general internship programs or for programs that are specific to their career interests. The Industry Liaison keeps a database of high quality internship programs in STEM-related career fields, and students may make an appointment to review options. For students who are more open to a variety of opportunities, the following programs listed place students in a range of fields according to student interest and availability.

**Futures and Options**  
*Placement at law, media, finance, arts, and other companies*

**AGE:** 11th and 12th grade students; internship occurs during the spring semester or summer  
**ACADEMICS:** No minimum requirement, however students with a history of strong academic performance will be more competitive.

**HOW TO APPLY:** Eligible students must complete the online application and be contacted for group program interviews. Students who pass the group interview will be referred to interviews with potential internship hosts.

**Ladders for Leaders**  
*Placement at law, media, finance, arts, and other companies*

**AGE:** 16 years of age or older by February application deadline  
**ACADEMICS:** 80% high school cumulative average or higher  
**OTHER:** Prior work or volunteer experience

**HOW TO APPLY:** Eligible students must complete the online application including essays and select a provider. Outstanding applicants will be accepted to the program, required to attend intensive training typically held over a school break, and will be referred to interviews at potential internship hosts.

**School Construction Authority (SCA)**

**AGE:** Be at least 16 years of age  
**ACADEMICS:** 11th and 12th grade students; No minimum requirement, however students with higher grade averages will be stronger candidates.

**HOW TO APPLY:** Eligible students must complete the online application and submit one recommendation letter from a teacher or counselor. High school transcript is required and resume is encouraged. Outstanding applicants will be contacted for program interviews. Students that pass the interview will be placed in a department within SCA.

**OTHER ENGINEERING INTERNSHIPS**

Staff are working hard to secure more engineering-related internship opportunities for Energy Tech students at local companies. As these opportunities become available, they will be posted outside the Career Office. Students who would be a good fit may be contacted to encourage them to apply. Students who are interested in applying for internships should make an appointment with a Work-based Learning staff member to discuss their interests and opportunities that might be a good fit. Any student may make an appointment for interview practice or resume review. These steps will be required to be considered for many of the internships available.

**NYC Department of Design and Construction (DDC)**

**AGE:** Be at least 16 years of age  
**ACADEMICS:** No minimum requirement, however students with higher grade averages will be stronger candidates.

**HOW TO APPLY:** Eligible students must complete either the SYEP or Ladders for Leaders application plus a supplemental application for DDC that includes essay questions. Resume and high school transcript are also required. Outstanding applicants will be contacted for program interviews. Students that pass the interview will be placed in a department within DDC.

**SYEP**  
*Placement at summer camps, day care centers, retail stores, and other companies*

**AGE:** 14 years of age or older by April application deadline

**HOW TO APPLY:** Eligible students must complete the online or paper application and select a provider. Students are accepted via lottery. If chosen by the lottery, students will be notified by their provider and must attend an orientation. Students who accept the opportunity will be matched directly to an internship host. SYEP is a good option particularly for younger students, 9th and 10th graders, before they are eligible for many of the competitive internships. It is also a good backup option for older students when applying to multiple internship opportunities.

**PARTICIPANT EXPECTATIONS**

- Attend school and internships—if you are too sick to attend school, you cannot attend your internship. Similarly, if you are in school, you are expected to be at your internship placement.
- Consistently and accurately record time worked on time sheets or in host organization’s preferred system; submit time sheets before deadlines.
- Attend all required school-related orientations and cohort meetings outside of internship time; complete any related assignments such as weekly logs and end of internship presentations.
- Keep up with all high school and college coursework; seek help from guidance counselor or another staff member if falling behind in any of your work before it becomes an issue requiring you to be removed from a class or an internship.
- Communicate regularly with Industry Liaison and other Work-based Learning staff by email about program requirements and when any issues arise.
- Each program has its own specific requirements that will be shared with students at the time of application.
Check your email at least once per day, and make sure that you are using an Energy Tech or LaGuardia email for communications with potential internship hosts and employers. It looks more professional, and it is important that you respond to any emails about your applications within 24 hours. Failure to check your email can result in losing out on great opportunities.

**COMMUNITY SERVICE**

Students are strongly encouraged to earn at least 100 hours of community service prior to graduating from grade 12. There are many opportunities to be involved in service projects through our thriving Community Service Club and Student Ambassadors Program. If students complete outside service, they are required to bring in a letter signed by a supervising adult from the program on the program’s letterhead. These letters should be given to a guidance counselor for entry into the NYCDOE systems in order to appear on a transcript. Community service should also be listed on students’ resumes. Community service hours help strengthen a student’s resume and applications to internships and jobs.

**OBTAINING LETTERS OF RECOMMENDATION**

Students at Energy Tech will need to request that teachers, staff, professors, work/internship supervisors, and other community members write them letters of recommendation or serve as references throughout and after their high school experience. When students apply for jobs, internships, and for various college programs, they will need to gather two or more letters of recommendation—most commonly from teachers, counselors, and people who have supervised them in work/internship settings. Therefore, it is very important that students form positive relationships with teachers, staff, and supervisors, and that they stay in contact periodically after a class or job has ended. Students should thank each year about the adults who they feel know them the best academically and as a person. It is common for students to stay connected with former teachers and professors by participating in clubs and activities that they lead, seeking out opportunities to take other courses that they teach, or to send an email periodically to share updates, get advisement, etc. Many of our students who have had internships periodically go to lunch with their former supervisors and send them emails to share how things are going with them at school. They also often stop by office hours of former professors when on campus.

When it is time to ask for a letter of recommendation, it is best to give potential recommenders several weeks’ notice, and to send a formal email to make the request. You can ask your advisor to help you write the email, and you should select the people who know you the best to write these letters. Colleges, employers, and other programs who read these letters are expecting the recommender to include lots of details and stories about you that they would not be able to find in your resume. You should not be surprised if a recommender asks to meet with you or to send them information before writing the letter to learn more about the program you are applying for, to whom they should send the letter, and any special information they should include.

In Years 5 and 6 of the Energy Tech program, you will be expected to complete online portfolio requirements as part of your college classes and outside of class time. The ePortfolio is a tool to help you showcase the work that you have completed in classes and to give potential employers or prospective colleges a sense of the skills that you will bring. You will be expected to compile, for example, AutoCAD sketches, research projects, and other samples of work from your LaGuardia courses, as well as some general requirements—letters of recommendation from professors and work/internship supervisors, your most updated resume and cover letter, a plan for life after Energy Tech, etc. More information about this requirement is provided at orientation and advisement sessions. You can expect that in addition to participation in college ceremonies, you will also give a presentation of your portfolio to an audience of family members, ETHS staff, college faculty, and industry professionals upon finishing grade 14.

**THE SOCIAL EXPERIENCE OF YEARS 5 & 6**

In Years 5 and 6, you will be kept informed about campus life at LaGuardia, and your college counselor will encourage you to participate in campus events—such as a weekly campus-wide Club and Activity Hour, intramural sports, college and career fairs, cultural celebrations, shows at the LaGuardia Performing Arts Center, social activism events, networking events, and more. Early college staff will also help you form study groups and take advantage of a wide range of supports and amenities on the college campus—such as the Math Lab, Writing Center, Fitness Center, a newly renovated library center, computer labs, and more. These are great venues to become acclimated to campus life and forge new friendships.

In addition to the vibrant LaGuardia campus offerings, Energy Tech will provide Alumni Association programming for all graduates, and special events for Years 5 and 6 students. Some of these events may include a dinner-cruise with other Queens Early College students, retreats and team-building trips, special treats during midterms and finals, and more.
Over the course of Years 5 and 6, you will be afforded more freedom, but you are at the same time expected to increasingly manage your time and responsibilities independently. Please understand that if you fail to prove that you are able to manage your college and work responsibilities on your own, your freedom may be limited. For example, if you are having trouble at an internship, demonstrating poor attendance, or missing work for classes, you may have a schedule change to provide you with both more support and oversight.

In order to stay updated about important policies, information, and events, you are expected to check both your LaGuardia and Energy Tech email accounts at least once per day.

**ACCESSING ACADEMIC SUPPORT**

Each term, early college staff will post a schedule of all professors’ office hours, as well as information for other tutoring on campus. Energy Tech students have found great success in interactions with the LaGuardia Student Government Tutoring program, the Writing Center, and Math Lab. Energy Tech also provides time for some ETHS teachers to provide tutoring both at ETHS and on campus—information about this is available with any counselor each term. Should you need more support, you should contact early college or counseling staff early in the term so that we may make arrangements. At times, we are able to provide peer tutoring, study groups, and in some cases one-on-one tutors. Many professors will also provide you with more support if you request it, and most offer study sessions before major exams—we expect that you will attend these.

In college, professors expect you to monitor progress on your own, and they may not be directive with you about how and when to study, or what support you might need. As you get older, we expect that you will self-monitor and seek out help when you need it. During the first weeks, you should carefully monitor any grades or feedback given. If you have not received any grades, you should stay after class or send a professional email to your professor to inquire about your progress. Most importantly, you should be proactive about studying and completing readings, problem sets, and written assignments. There are many supports, technologies, and study spaces at your fingertips both at the high school and college campuses. There are no excuses for failing to seek out support as needed.

If you do not have appropriate technology at home, we expect that you stay after school or get to campus early to type or print papers or use required software. You may request to borrow technology from Energy Tech, as well. In Years 4, 5, and 6, there will be unstructured time in your program for this. Failure to do so demonstrates to us that you may not be ready for future classes and/or internships.

It is important for you to understand that putting college-level effort into your coursework is a major determinant for the kinds of letters of recommendation that you receive as well as referrals for future classes, internships, and other special opportunities.
**ENERGY TECHNICIAN: ELECTRICAL TECHNOLOGY, AAS DEGREE**

**PATHWAYS COMMON CORE: 22 CREDITS**

This program has a waiver to require specific courses in the Common Core.

### A: Required Core: 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English</td>
<td>6</td>
</tr>
<tr>
<td>ENG101 English Composition I (ENA101 or ENC101, depending on placement scores)</td>
<td>3</td>
</tr>
<tr>
<td>ENG259 Technical Writing</td>
<td>3</td>
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### Mathematical and Quantitative Reasoning

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MAT115 College Algebra and Trigonometry</td>
<td>3</td>
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</table>

### Life and Physical Sciences

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SCP101 Topics in Physical Sciences</td>
<td>3</td>
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</table>

### B: Flexible Core: 10 credits

Select three courses from the five flexible core. **Note:** Only one course can be selected from a category. Courses selected should be from three different disciplines.

- World Cultures and Global Issues
- U.S. Experience in its Diversity
- Creative Expression
- Individual and Society—HUP102 Critical Thinking (3 credits)
- Scientific World—MAT200 Precalculus (4 credits)

**PROGRAM CORE: 38 CREDITS**

**Math, Engineering and Computer Science:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MAC241 Technical Mathematics I</td>
<td>4</td>
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</table>

**Electrical Concentration Core:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MAE099 Introduction to Engineering</td>
<td>2</td>
</tr>
<tr>
<td>MAE100 Introduction to AutoCAD</td>
<td>4</td>
</tr>
<tr>
<td>MAE102 Electrical Drafting &amp; Blue Print Reading</td>
<td>2</td>
</tr>
<tr>
<td>MAC241 Computer Electronic I</td>
<td>4</td>
</tr>
<tr>
<td>MAC242 Computer Electronic II</td>
<td>3</td>
</tr>
<tr>
<td>MAC291 Computer Logic, Design and Implement. I</td>
<td>4</td>
</tr>
<tr>
<td>MAC292 Computer Logic, Design and Implement. II</td>
<td>4</td>
</tr>
<tr>
<td>MAE110 Circuits Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MAE111 Circuits Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MAE208 Electromechanical Devices</td>
<td>3</td>
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</table>

**Unrestricted Elective:**

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<th>Course</th>
<th>Credits</th>
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**TOTAL CREDITS: 60**

Please refer to our Student and Family Handbook for AS and other degree offerings.

**ENG259 Composition II: Technical Writing**

This course will focus on the role of writing in engineering, mathematics and computer science. Topics will include practical formats within technical writing, expository and periodical writing on scientific and technological subjects, and other compositional and rhetorical strategies that develop and improve students’ abilities in effective written communication. Students will write essays based upon readings in their textbooks and professional essays and articles.

<table>
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<tbody>
<tr>
<td>ENC/G101, MAT096</td>
<td></td>
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<tr>
<td>PRE-COREQUISITE: CSE099</td>
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</table>

**SCCP101 Topics in Physics**

This survey course for non-science majors covers major concepts in physics. Subjects included are Newtonian mechanics, conservation of energy, atomic theory, electrostatics and electricity, wave motion, light, and modern physics. Although mathematical formulas are used when necessary the emphasis is on understanding the concepts. Principles studied are applied to analyze and understand topics ranging from energy conservation and global warming to photocells and optical fibers. Practical exercises are included.

**ENG101 Composition I: An Introduction to Composition and Research**

In this course, students write coherent essays in varied academic formats—both in and out of class—responding to culturally diverse materials and using appropriate technology. Students focus on critical and analytical skills through reading and listening and study aspects of argumentation including formulating theses; researching and identifying sources; evaluating and documenting sources; and communicating persuasively across contexts, purposes, and media. Admission is based on college placement test scores. The course meets in four scheduled classroom hours per week.

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<tr>
<td>ENG101 Composition I: An Introduction to</td>
<td>3</td>
</tr>
<tr>
<td>Composition and Research</td>
<td>4</td>
</tr>
<tr>
<td>ENA/G/X/Z 099, ESA099</td>
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</tbody>
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**PRE-REQUISITE: CSE095/099, ENG101, ENG259**

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*Additional Common Core courses will be required when transferring to a CUNY college*

Students are advised to select one Urban Study course to complete college requirement.

To complete the degree requirements from the Flexible Core, students are advised to select courses from the recommended course selections listed in the program handbook.
MAT241 Technical Mathematics I
This course helps students appreciate the usefulness of mathematics in today’s technical world. The concepts of college algebra and trigonometry are presented with emphasis on their applications in science and technology. Topics include analytic geometry, trigonometry, exponential and logarithmic functions and their graphs, system of linear equations, matrices and complex numbers.

4 credits; 4 hours  
PREREQUISITE: MAT096

HUP102 Critical Thinking
The goal of this course is to help students become thoughtful and effective critical thinkers, applying the intellectual abilities and specialized reasoning skills to themselves and their society. Students will also learn to identify, evaluate, and solve problems on an individual and societal scale. They will gain self-awareness and a deeper knowledge of the ways in which they interact, change, and are changed by society in order to analyze their role as responsible citizens in a globalized world.

3 credits; 3 hours  
COREQUISITE: CSE095 or CSE099, ENA/ENG/ESA099/ENC101, MAT095; This course is closed to students who have taken HUR100.

MAT115 College Algebra and Trigonometry
This course will start with a review of basic algebra (factoring, solving linear equations, and equalities, etc.) and proceed to a study of polynomial, exponential, logarithmic and trigonometric functions. These functions will be used in applications involving simple mathematical modeling where students will engage in inquiry activities aimed at improving critical thinking skills.

3 credits; 4 hours (3 lecture, 1 lab)  
PREREQUISITE: MAT096 or Placement

MAT200 Precalculus
This course is intended as a preparation for the study of calculus. Functions and their graphs are analyzed theoretically within a framework that emphasizes their roles in applied settings. Particular attention will be paid to polynomial, exponential, logarithmic, and trigonometric models. Use of graphing utilities (computer algebra systems, scientific/non-graphing calculators, etc.) as analytical tools will be emphasized; the online learning tool MyMathLab will be used.

4 credits; 5 hours (4 lecture, 1 lab)  
PREREQUISITE: MAT115

MAE100 Computer-Aided Design
This course introduces the student to AutoCAD’s friendly pull-down menus as a tool to create graphical representations of objects. The course covers introduction of dimensioning systems, fundamentals of orthographic views of real-world objects, and basic two-dimensional drafting techniques. The course includes the creation of three-dimensional objects and their modification by changing the rendering options, material and lighting properties. Views of assemblies and animations are also considered.

4 credits; 4 hours  
PRE-OR COREQUISITE: CSE095, ENA/ENG/ESA099/ENC101, MAT096

MAE102 Electrical Drafting and Blue Print Reading
The objective of this course is to provide knowledge of blueprint reading as it relates to the architectural or building construction industry. The course covers the theory of orthographic projections, floor plans and elevation drawings, symbols and notations, scaling and dimensioning practices, reading blueprints for structural information and electrical/mechanical function drawings.

2 credits, 3 hours (1 classroom, 2 lab)  
PREREQUISITE: MAE109

MAE109 Introduction to Engineering
This is an introductory engineering course. Students are introduced to engineering design through hands-on laboratory work using computer applications. They are introduced to programming a robot to perform a specific task and to designing a digital clock. Additionally, they work in groups on design projects and are expected to use computers for documentation, data analysis, and for maneuvering robots.

2 credits, 3 hours (1 classroom, 2 lab)  
PREREQUISITE: CSE099, ENA/ENG/ESA099, MAT096

MAE110 Circuit Analysis I
This course introduces students to DC circuits. Topics include series, parallel, and series-parallel circuits, equivalent circuits, capacitive and inductive circuits, timing circuits, network theorems and measuring instruments. Laboratory experiments include bread boarding, measurement techniques and troubleshooting. The writing of laboratory reports is taught—and required.

3 credits, 4 hours (2 classroom, 2 lab)  
PREREQUISITE: ENG259, MAE109, MAT115

MAE111 Circuit Analysis II
This course introduces students to analysis of AC circuits with sine-wave sources and R L C circuit components, covering phase shift, frequency response, power, and resonance in series and parallel circuits. Three-phase wye and delta circuits are also covered. Hands-on laboratory experiments are included.

3 credits, 4 hours (2 classroom, 2 lab)  
PREREQUISITE: MAE110  
PRE-OR COREQUISITE: MAT200

MAE208 Electromechanical Devices
The goal of this course is to provide upper-level engineering students with the methods of analysis of electrical machines and transformers; this will be achieved by developing equivalent circuits for machines and transformers such as DC generators and motors, alternators, transformers, polyphase induction motors, single-phase motors and synchronous motors.

3 credits, 4 hours (2 classroom, 2 lab)
MAC241 Computer Electronics I

This is a course in the fundamentals of DC and AC electric circuit theory which will provide a basis for further study and concentration in computer repair and telecommunications. Among the topics to be considered are Ohm’s Law, power, Kirchhoff’s Laws, voltage divider rule, RC time constants, measurement techniques, and some basic electronic components such as resistors, capacitors and inductors. The laboratory work will include experiments using voltmeters, ammeters, oscilloscopes and breadboards.

4 credits; 6 hours (4 lecture, 2 lab)
PREREQUISITE: CSE099, ENA/ENG/ESA099/ENC101
PRE- OR COREQUISITE: MAT241

MAC242 Computer Electronics II

This course is a continuation of Computer Electronics I. Topics covered include parallel resonance, high and low passive filter circuits, transformers, semiconductor structure, diodes, BJTs, FETs, integrated circuits, power supply circuits, transistor amplifier circuits, operational amplifiers, oscillators and modulation and receiver circuits. This course will emphasize the laboratory construction and troubleshooting of these circuits.

3 credits; 4 hours (3 lecture, 1 lab)
PREREQUISITE: MAC241

MAC291 Computer Logic, Design and Implementation I

This course will teach students how a computer logic statement is converted into an actual circuit. Using binary notation and Boolean algebra, the student will analyze switching networks of logic gates. The circuits which are mathematically described will then be translated into wiring diagrams and implemented on logic trainers and/or prototype boards.

4 credits; 5 hours (3 lecture, 2 lab)
PREREQUISITE: MAC241, MAT241

MAC292 Computer Logic, Design and Implementation II

Students will learn to analyze sequential networks. The use of flip-flops in circuits, such as binary counters, serial adders, parallel multipliers and code converters will be studied. Wave form analysis will be done in the lab using oscilloscopes and logic devices.

4 credits; 5 hours (3 lecture, 2 lab)
PREREQUISITE: MAC291, MAT241

ENERGY TECHNICIAN: MECHANICAL TECHNOLOGY, AAS DEGREE

PATHWAYS COMMON CORE: 22 CREDITS

This program has a waiver to require specific courses in the Common Core.

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Select three courses from the five flexible core.
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- World Cultures and Global Issues
- U.S. Experience in its Diversity
- Creative Expression
- Individual and Society–HUP102 Critical Thinking (3 credits)
- Scientific World–MAT200 Pre-Calculus (4 credits)

*Additional Common Core courses will be required when transferring to a CUNY college

Students are advised to select one Urban Study course to complete college requirement.

To complete the degree requirements from the Flexible Core, students are advised to select courses from the recommended course selections listed in the program handbook.

PROGRAM CORE: 38 CREDITS

Math, Engineering and Computer Science: 4 credits

| MAT201 Calculus I | 4 credits |

Mechanical Concentration Core: 34 credits

| MAE099 Introduction to Engineering | 2 credits |
| MAE100 Introduction to AutoCAD | 4 credits |
| MAE110 Circuits Analysis I | 3 credits |
| MAE111 Circuits Analysis II | 3 credits |
| MAE190 Material Sciences | 3 credits |
| MAE197 Manufacturing Processes | 3 credits |
| MAE121 Instrumentation | 2 credits |
| MAE191 Statics | 3 credits |
| MAE201 HVAC Systems | 3 credits |
| MAE207 Introduction to Thermodynamics for Tech. | 3 credits |
| MAE208 Electromechanical Devices | 3 credits |
| MAE230 Senior Design Project | 2 credits |

TOTAL CREDITS: 60

ENG101 Composition I: An Introduction to Composition and Research

In this course, students write coherent essays in varied academic formats, both in and out of class, responding to culturally diverse materials and using appropriate technology. Students focus on critical and analytical skills through reading and listening and study aspects of argumentation including formulating theses; researching and identifying sources; evaluating and documenting sources; and communicating persuasively across contexts, purposes, and media. Admission is based on college placement test scores. The course meets in four scheduled classroom hours per week.

3 credits; 4 hours
PREREQUISITE: CSE095/099, ENA/G/X/Z 099, ESA099

Course of Study | 33
ENG259 Composition II: Technical Writing

This course will focus on the role of writing in engineering, mathematics and computer science. Topics will include practical formats within technical writing, expository and periodical writing on scientific and technological subjects, and other compositional and rhetorical strategies that develop and improve students’ abilities in effective written communication. Students will write essays based upon readings in their textbooks and professional essays and articles.

3 credits; 3 hours
PREREQUISITES: ENC/G101, MAT096
PRE- OR COREQUISITE: CSE099

SCP101 Topics in Physics

This survey course for non-science majors covers major concepts in physics. Subjects included are Newtonian mechanics, conservation of energy, atomic theory, electrostatics and electricity, wave motion, light, and modern physics. Although mathematical formulas are used when necessary the emphasis is on understanding the concepts. Principles studied are applied to analyze and understand topics ranging from energy conservation and global warming to photocells and optical fibers. Practical exercises are included.

3 credits; 4 hours (2 lecture, 2 lab)
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HUP102 Critical Thinking

The goal of this course is to help students become thoughtful and effective critical thinkers, applying the intellectual abilities and specialized reasoning skills to themselves and their society. Students will also learn to identify, evaluate, and solve problems on an individual and societal scale. They will gain self-awareness and a deeper knowledge of the ways in which they interact, change, and are changed by society in order to analyze their role as responsible citizens in a globalized world.

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4 credits; 5 hours (4 lecture, 1 lab)
PREREQUISITE: MAT115

MAT201 Calculus I

This course is the first of a three-course sequence designed to provide students with an appreciation of the usefulness and power of calculus. The course covers the fundamentals of the differential calculus of elementary functions and includes an introduction to integral calculus. Among the topics studied are limits, derivatives, applications of the derivative and integrals.

4 credits; 4 hours
PREREQUISITE: MAT200

MAE100 Computer-Aided Design

This course introduces the student to AutoCAD’s friendly pull-down menus as a tool to create graphical representations of objects. The course covers introduction of dimensioning systems, fundamentals of orthographic views of real-world objects, and basic two-dimensional drafting techniques. The course includes the creation of three-dimensional objects and their modification by changing the rendering options, material and lighting properties. Views of assemblies and animations are also considered.

4 credits; 4 hours
PRE- OR COREQUISITE: CSE095, ENC/ENG/ESA099/ENC101, MAT096

MAE107 Manufacturing Processes

The goal of this course is to introduce students to general concepts in manufacturing. Different materials, tools and fabrication processes will be presented, with emphasis on the lathe and drilling, milling and grinding machines. Welding materials, techniques and symbols are introduced. Programming of Computerized Numerical Control (CNC) machines is also included, complemented with robotic programming for flexible manufacturing of components.

3 credits; 2 Classroom hours/3 Lab Hours
PREREQUISITE: HUA104
PRE- OR COREQUISITE: ENC/ENG101, MAE100

MAE109 Introduction to Engineering

This is an introductory engineering course. Students are introduced to engineering design through hands-on laboratory work using computer applications. They are introduced to programming a robot to perform a specific task and to designing a digital clock. Additionally, they work in groups on design projects and are expected to use computers for documentation, data analysis, and for maneuvering robots.

2 credits; 3 hours (1 classroom, 2 lab)
PREREQUISITE: CSE099, ENC/ENG/ESA099, MAT096
MAE110 Circuit Analysis I
This course introduces students to DC circuits. Topics include series, parallel, and series-parallel circuits, equivalent circuits, capacitive and inductive circuits, timing circuits, network theorems and measuring instruments. Laboratory experiments include bread boarding, measurement techniques and troubleshooting. The writing of laboratory reports is taught—and required.

3 credits, 4 hours (2 classroom, 2 lab)
PREREQUISITE: ENG259, MAE109, MAT115

MAE111 Circuit Analysis II
This course introduces students to analysis of AC circuits with sine-wave sources and R L C circuit components, covering phase shift, frequency response, power, and resonance in series and parallel circuits. Three-phase wye and delta circuits are also covered. Hands-on laboratory experiments are included.

3 credits, 4 hours (2 classroom, 2 lab)
PREREQUISITE: MAE110
PRE- OR COREQUISITE: MAT200

MAE121 Instrumentation
The course introduces students to the techniques, equipment, and measurement procedures used by mechanical engineering technologists; they will acquire hands-on experience with electronics and measurement equipment such as oscilloscopes, breadboards, function generators, digital data acquisition systems, integrated circuits, strain gages, displacement meters, thermocouples, tachometers, dynamometers, filters, volume flow meters, velocity meters, pressure probes, and pressure transducers.

2 credits, 3 hours (1 classroom, 2 lab)
PREREQUISITE: MAE109, MAT201

MAE190 Material Science
This course provides a broad introduction to the basic characteristics of engineering materials. The course will focus on the selection of metals, plastics, ceramics, and composites for mechanical design purposes, highlighting the relationships of structure, material properties, and material selection in the design/manufacturing process. Student will perform laboratory experiments with mechanical testing equipment.

3 credits, 4 hours (2 classroom, 2 lab)
PREREQUISITE: ENG259, MAE109, MAT200, SCP101

MAE191 Statics and Strength of Materials
This course presents a theoretical, analytical, and practical approach to the concept of engineering statics and strength of materials—the foundations of machine and structural design. Students will develop basic knowledge and skills in critical thinking and engineering problem solving. Topics include: force and moment analysis, conditions for static equilibrium, properties of materials, stress-strain relationships, thermal stresses, geometric shapes and moments of inertia, and beam analysis.

3 credits, 4 hours (2 lecture, 2 lab)
PREREQUISITE: ENG259, MAE109, MAT201

MAE201 HVAC-Heating/ Ventilating/ Air Conditioning System
This course will train students to read and represent graphical concepts in the heating, ventilating and air conditioning field. They will learn to letter, draw line-work, use drafting instruments and standard HVAC representations, draw orthographic and isometric projections of HVAC equipment, and work with architectural, structural and lighting plans to lay out HVAC systems.

3 credits, 4 hours (2 classroom, 2 lab)
PREREQUISITE: ENG259, MAE109, MAT200

MAE207 Introduction to Thermodynamics for Technicians
This course provides an introduction to the concept of energy and the laws governing transfer and transformation of energy. Emphasis is placed on thermodynamic properties and the first and second law analysis of systems; integration of these concepts into the analysis of basic power cycles is also considered.

3 credits, 4 hours (2 classroom, 2 lab)
Prerequisite: ENG259, MAE109, MAT201

MAE208 Electromechanical Devices
The goal of this course is to provide upper-level engineering students with the methods of analysis of electrical machines and transformers; this will be achieved by developing equivalent circuits for machines and transformers such as DC generators and motors, alternators, transformers, polyphase induction motors, single-phase motors and synchronous motors.

3 credits, 4 hours (2 classroom, 2 lab)
Prerequisite: ENG259, MAE111

MAE230 Senior Design Project
This course will apply the knowledge acquired over the course of the entire engineering technician curriculum in order to solve an engineering problem. Stages include problem identification, engineering design parameters, exploration of solution requirements including development of specific metrics necessary to achieve customer satisfaction, concept generation and refinement and application of engineering knowledge to derive potential solutions to the problem.

2 credits, 2 hours
Prerequisite: MAE208

*Students who are interested in the AS pathways in Electrical, Civil, and Mechanical Engineering can find degree requirements and course descriptions online at the LaGuardia Community College website.
Parent Involvement

There are many ways for families to get involved in our community at Energy Tech and support children in the 9-14 model - from accessing student high school grades online, to attending regularly scheduled open school events, to participating in parent leadership organizations. At Energy Tech, we strongly encourage parents in grades 9-12 to periodically monitor their child’s online grading account to stay updated about progress, and to review weekly Parent Coordinator Newsletters, which provide valuable information about special events, tutoring, and other important programs.

PARENTS ASSOCIATION

All parents/guardians are automatically enrolled in the ETHS Parents Association (PA), and are welcome to attend monthly meetings—on the third Tuesday of each month. Parents/guardians are encouraged to get involved in Grade Parent events each year.

SCHOOL LEADERSHIP TEAM

School Leadership Team (SLT) at Energy Tech is comprised of parents/guardians, students, teachers, and other staff, and the team meets on the first Tuesday evening of each month. SLT looks at data to design school goals each year, and also plans special events and new programs. Though the actual positions on SLT are elected positions, all are invited to attend our monthly meetings.

STUDENT-LED CONFERENCES (SLCS)

Energy Tech uses a Student-Led Conference model to include parents in semi-annual conversations about student performance and progress. Students prepare in their classes to take the lead on conversations about their academic achievements—the highlights, the struggles, and goals for the future.

“Energy Tech High School has proven to be a great match for my son, especially coming from a parochial school. He has made dramatic improvements not only academically, but also in his confidence. The challenging curriculum provides many opportunities for him to hone his leadership skills and to develop new ones. The journey from 9th–12th grade has prepared my son for his full-time college experience. The combination of college classes and work experience will be valuable time-management experience for his future career and life. The supportive and caring faculty and staff are like a second family to the diverse student body. This is one of the main reasons for choosing ETHS as the high school for my second child to attend!”

— Yonette Griffith, Co-President ETHS Parents Association, 2017-2018

COMMUNITY COFFEE HOUR

Energy Tech welcomes parents/guardians, family members, and other community members to our Community Coffee Hours on the first Friday morning of each month. We generally convene in B10—our college lecture hall—to talk about our unique school model, upcoming opportunities and events, and to share “state of the school” updates.

“We encourage students and families to review our year-by-year planning cards together, regularly reviewing checklists for students and parents/guardians. It may be helpful to keep the card for the current year in a very visible place, such as on the refrigerator door or on a bulletin board. In any school, the high school years are very busy, but in a school like Energy Tech there is even more to accomplish each year.”

— Josette Marina Murray, Co-President ETHS Parents Association, 2017-2018
YEAR 1 AT A GLANCE

In their first year, Energy Tech students should expect to take a full schedule of rigorous core classes. Although students do not take Global History in Year 1, they take an accelerated English 9/10 sequence. They also participate in engineering foundations where they are introduced to both mechanical and electrical career pathways, robotics and programming fundamentals, engineering majors, simple machines, and more.

Throughout the year, students are encouraged to participate in after-school clubs and activities, acquire community service hours, attend Saturday Academy, and seek out tutoring and support. Students can also expect to attend field trips and engage with our industry partners—Con Edison and National Grid.

By the end of their first year, students will take their first two high school Regents examinations in mathematics and science with the expectation of meeting the CUNY benchmarks for college and career readiness.

STUDENTS SHOULD:

- Earn at least 10 high school credits in core courses and additional elective credits
- Accumulate at least 25 community service hours, which should be documented and given to a guidance counselor for a transcript update
- Earn at least a 65 on one science Regents exam
- Earn at least a 70 on the Algebra I Regents exam
- Participate in at least one after-school club, sport, or activity consistently throughout the year or season
- Begin thinking about pursuing an electrical or mechanical pathway as you take engineering coursework and visit different workplaces; consider participating in after-school experiences that provide career preparation such as ACE Mentoring, Robotics, etc.
- Earn at least an 80 in ELA coursework to be on track to take HUP102 Critical Thinking in Year 2
- Plan to stay busy in the summer through the Summer Youth (SYEP) program, a city-sponsored STEM program, or other classes and activities—reach out to a counselor, the Industry Liaison, or the College Liaison in early March to start your applications
- Complete college application for HUP102 Critical Thinking by Spring Semester
- Create an initial resume about your work and school life
- Prepare for your child to take the PSAT 10 in Year 2—there are several opportunities for free preparation classes throughout the calendar year—but note that PSAT/SAT are not required to stay in grades 13/14
- Routinely monitor Pupil Path, knowing that colleges and other post-secondary programs look at students’ 9th grade years to predict how well a student will transition from one academic setting to the next

YEAR 2 AT A GLANCE

Energy Tech students often report that Year 2 is one of the most academically demanding points in their studies, as they prepare for four Regents examinations and begin college classes. Students begin the history sequence with an accelerated Global History course that covers Global I and II in one year. Students continue their career development through an integrated engineering and work-based learning course, learning the fundamentals of engineering design software, 3-D printing, project management, Microsoft Excel, and more. Students in Year 2 should expect to participate in tutoring and Saturday Academy, especially as they take HUP102 Critical Thinking at the college level, which is taught by an adjunct professor at Energy Tech after high school hours.

In Year 2, students explore career pathways more thoroughly through a mentoring program with Con Edison and National Grid as well as job shadowing opportunities.

By the end of their second year, students will take four high school Regents examinations with the expectation of meeting the CUNY benchmarks for college and career readiness on both Mathematics and ELA assessments.
STUDENTS SHOULD:

- Earn at least 20 high school credits in core courses and additional elective credits
- Earn at least 3 college credits through HUP102 Critical Thinking
- Accumulate at least 50 community service hours
- Earn at least a 65 on science and history Regents exams
- Earn at least a 70 on Common Core mathematics exam
- Earn at least a 75 on the ELA Regents to meet the CUNY benchmark in order to take ENG101 Introduction to Composition and Research in Year 3

PARENTS SHOULD:

- Review PSAT scores with your child and make a plan for PSAT/SAT preparation for these Year 3 exams; contact a school counselor for support and fee waivers
- Ensure that your child attends Saturday Academy and after-school tutoring to prepare for Regents exams
- Attend at least one Community Coffee Hour—on the first Fridays of every month
- Participate in at least one Parent Association-sponsored event during the school year
- Communicate with your child’s teacher to ensure that your child is on track and has accumulated adequate lab minutes to be eligible to take a science Regents exam in June
- Routinely monitor Pupil Path, after-school activity participation, and community service
- Review your child’s resume and talk with them about summer plans, working papers, and college and career pathways they are considering for the future
- Review school emails for information about upcoming summer college and internship opportunities; schedule an appointment with a liaison or counselor for support

YEAR 3 AT A GLANCE

In Year 3, students take their first world language course and have the opportunity to take higher-level mathematics and science courses. At the college, eligible students may take ENG101 An Introduction to Composition and Research, MAE100 Computer Aided Design, and MAE109 Introduction to Engineering.

In Year 3, students can expect to continue industry mentoring with our partners, Con Edison and National Grid, and begin the application and interview process for paid and unpaid internship opportunities. Students in Year 3 take college courses at LaGuardia Community College, traveling independently and beginning to make use of supports like the Math Lab, College Writing Center, Fitness Center, and Student Government Tutoring on their own while on campus.

By the end of Year 3, students will take U.S. history, a science course, and additional mathematics coursework with the expectation of meeting the CUNY benchmark for college and career readiness. Additional diploma requirements—such as health and the arts—should be completed by the end of year three.

STUDENTS SHOULD:

- Accumulate at least 35 high school credits in required areas and pass required Regents exams
- Earn at least 6 college credits through LaGuardia Community College course offerings
- Accumulate at least 75 community service hours
- Participate in at least one after-school club, sport or activity consistently throughout the year or season
- If considering leaving after grade 12, set up a meeting with a counselor by October to start the college application process and review options for future years
- Start researching and planning for summer opportunities to include internships, volunteering, and programs on college campuses in early February
If your child is starting college classes and Routinely monitor Pupil Path to check‰Ensure your child registers for and attends Attend at least one Community Coffee‰Prepare child for interview process by Set up a meeting with counselors to‰Review PSAT scores and set up a plan for satisfactorily, and then have it reviewed and approved by school staff in preparation for applications to internships and jobs

PARENTS SHOULD:

- Review PSAT scores and set up a plan for SAT in March
- Set up a meeting with counselors to review student transcript, credits and post-secondary options
- Prepare child for interview process by securing two or more professional dress outfits and identifying an adult family member or friend who can practice with child
- If your child is applying to non-engineering colleges after grade 12, consider visiting at least one college campus—the school provides multiple opportunities and can also provide recommendations for trips you can take on your own
- Attend at least one Community Coffee Hour—on the first Friday of every month
- Ensure your child registers for and attends Saturday Academy in preparation for the U.S. History, Chemistry, and Algebra II exams
- Routinely monitor Pupil Path to check student progress and communicate with teachers—as the 11th grade year is often viewed as critical in the college application process
- If your child is starting college classes and has a disability, contact the school to set up a meeting with the Office of Student Disabilities

YEAR 4 AT A GLANCE

In Year 4, students should be finished with almost all of their high school requirements and should be engaged in college coursework. Students will declare their concentration—electrical or mechanical—by the end of the year. At the college, eligible students will take a variety of college courses that will help them make a decision. Students will spend a majority of the time on the college campus, utilizing a variety of academic programs, library, and facilities such as the gymnasium, weight room, and pool.

Students can expect to continue industry mentoring with our partners, Con Edison and National Grid, and begin the application and interview process for paid and unpaid internship opportunities. Each should have completed an application and gone through the interview process for an internship or other competitive summer program.

Throughout Year 4, Students will have the opportunity to participate in senior activities such as prom, senior awards, senior breakfast, senior trip and graduation commencement ceremony.

STUDENTS SHOULD:

- Fulfill all credit and exam requirements for diploma
- FAFSA: Apply for student loans by October if planning to leave for another college program—this is not required for our pathways
- Review required assessments and coursework if applying to outside colleges—such as SAT II tests
- Earn at least 9 college credits through LaGuardia
- Meet the community service hours requirement of 100 hours, which should be documented and given to a guidance counselor

- Ensure that you have secured at least two letters of recommendation
- Finalize your personal statement and have it reviewed by a teacher, counselor, or writing center
- Register for driver’s education and work towards attaining a driver’s license as many internship and work opportunities require it
- Pay senior dues—this covers all senior activities including prom, graduation cap and gown, senior breakfast, yearbook, senior apparel, and senior trip
- Participate in at least one after-school club, sport or activity consistently through the year or season
- Set up meeting for college and career advisement from a counselor, advisor, Industry Liaison, or College Liaison by October and review resume and internship opportunities
- Identify career interests and attend a job shadow with a professional in that field either through school, internship co-workers, or NY Exploring program
- Determine college pathway and complete application for LaGuardia Community College coursework (Mechanical, Electrical, ASAP, etc.)

PARENTS SHOULD:

- Review your child’s transcripts to ensure that all high school requirements have been met including eight semesters of physical education
- Prepare child for interview process by securing two or more professional dress outfits and identifying an adult family member or friend who can practice with child
- Attend at least one Community Coffee Hour—on the first Friday of every month
- Attend at least two Parent Association meetings to gather information and provide input for senior class activities
- Connect with Parent Association to find out ways you can support and fundraise for Senior class activities
STUDENTS SHOULD:

- Attend at least two college information sessions at Energy Tech to address any questions or concerns about topics such as financial aid and the transition to college.
- Help your child prepare to enjoy their Senior activities and graduation ceremony.

YEARS 5 & 6
AT A GLANCE

In Years 5 and 6, students will be immersed in college courses on the LaGuardia Community College campus. Students will have declared their concentration—electrical or mechanical—and begin their coursework for their chosen pathway. Although students will have access to Energy Tech advisement and a Year 5 student lounge located on the high school campus, students should seek out academic supports at the college including their professors’ office hours, library, and tutoring. Students should meet with Industry Liaison and Career Services staff to discuss career pathway and secure both paid and unpaid internship opportunities with our various partnerships.

Throughout the year, students will have opportunities to give back to their Energy Tech community through peer mentoring, advisement, and by attending community events.

PARENTS SHOULD:

- Review course syllabus with child and track deadlines for major assessments.
- Communicate with your child about classes and work experiences that they have enjoyed the most to help them make a decision about life after Energy Tech.
- Consider purchasing a graphing calculator and laptop for your child to use on campus. If this is not possible, encourage your child to make arrangements with Energy Tech to borrow any technology or equipment that they need each semester.
- Support your child in setting up their own banking accounts.
- Remind your child to meet with Transfer Services and their advisor as they finish up the last courses needed for the degree. If your child is transferring to a four-year college, ensure that they are meeting with an advisor to complete any applications and the FAFSA. If they are applying for jobs, ensure that they are taking preparation classes for company entry assessments.
- Stay involved in Parent Association events to keep up to date with opportunities for students.

LIFE AFTER ENERGY TECH

At Energy Tech, we are preparing you to go directly into competitive STEM careers upon graduation from our 6-year program or to transition into 4-year colleges. We will support you along the way with the academic, technical, leadership, and social skills that you will need to be successful. At times, students decide that these trajectories do not fully align with their goals and interests. If this is the case for you, you should contact a counselor or early college/industry staff as soon as possible so that we can connect you with organizations that may support your plans. Energy Tech has supported students as they make the transition into skilled trades and directly into work through strategic partnerships with programs such as:

- Co-op Tech (www.co-optech.org)
- ACCES-VR (www.acces.nysed.gov/vr)
- NPower (www.npower.org)
- Adult and Continuing Education at LaGuardia (www.laguardia.edu/ace/)
- The Edward J. Molloy Initiative for Construction Skills, Inc. (www.constructionskills.org)

No matter which pathway you pursue, Energy Tech will continue to support you after grade 12 through our Alumni Association. When you graduate, we will collect contact information from you and will stay in touch to keep you informed about social events, networking opportunities, seminars and workshops, and other forms of support to keep you connected to the Energy Tech community. Former students have even been known to return to Energy Tech for tutoring, help with applications, career advice, and more.
THE IMPORTANCE OF A WELL-ROUNDED EXPERIENCE

There is more to success at Energy Tech than just getting good grades. Grades are, without a doubt, important. They tell us what content and skills you have mastered, what you need more help with, and they are a fairly strong indicator of the effort that you are putting in. It goes without saying that we expect you to work hard and strive for excellent marks in all of your classes.

However, grades are not the only things we look at to measure success. When recommending students for college classes, internships, and special programs, we look at attendance, extracurriculars, community citizenship, and leadership skills—like persisting through challenging situations, promoting teamwork, treating others fairly, and holding yourself to high standards. Colleges and employers look for these things, too. They want to know that you have healthy outlets outside of class, hobbies and interests, causes that you are passionate about, respect for others, and the motivation and work ethic to meet your goals.

Will you find your love for troubleshooting technical problems or building strategic alliances with other schools on the robotics team? Will these skills land you a spot in a competitive summer college program?

Will you develop strong communication and networking skills as a School Ambassador, leading to a passion for public speaking? Will a moving speech earn you a Student Government leadership position and the opportunity to change something or build something new at Energy Tech?

Will your participation in a sport or club lead you down the path to a lifelong hobby? A scholarship? A paid summer job and the chance to give something back to your community?

Will your community service hours and internship experiences shape your career goals?

What lasting friendships will you make?

What will you learn about yourself along the way?
Energy Tech student and Con Edison intern, Dane, center, with Con Edison team members.
Students Voices

**INTERN TESTIMONIALS**

**DANE, CLASS OF ’18**

**Internship**
Con Edison, East 74th Street Station, Instrumentation and Controls (I&C), Steam Operations

**Project summary**
Dane assisted the Instrumentation and Controls Department at the East 74th Street Station with a new boiler pump installation. By creating a feed loop spreadsheet to display the plan for installation and testing, Dane provided technicians with instructions for how to sequence the work. His spreadsheet of technicians’ calibrations and other data documented required testing of the new system and was submitted as part of the official project information package. On his final day, Dane presented his work to ten members of his department.

**Team Members**
In addition to his supervisor, Dane was assigned to work with three employees at different points in their career. Dane’s desk was in the same room with the college summer interns.

**Student Perspective**
“Knowledge of electrical engineering really improved. I got to shadow a technician installing control panels to see electrical engineering operations up close.”

“I don’t learn this stuff in school. Working in the field, technicians use a lot of terminology. There’s lots of new vocabulary to master.”

**Advice to future interns:**
“Always ask questions, you won’t know what’s going on at first, and that’s ok. Take lots of notes.”

**Supervisor Perspective**
“Dane’s technical skills were always strong. He really grew in terms of emotional intelligence. He sought out the other engineers’ assistance and demonstrated that he is a self starter.”

“This was our first time having a high school intern. We learned what to expect. We thought we would need to dial down our expectations, and we were wrong.”

**GABBY, CLASS OF ’17**

**Internship**
National Grid, Community & Customer Management Department (CCM) Melville, NY

**Student Perspective**
**Tasks and Projects at National Grid**
In her time at National Grid, Gabby worked on various projects, such as studying maps of its underground facilities, enabling her to effectively compare old and new maps and assisting the mapping and engineering departments in maintaining accurate records of National Grid’s underground infrastructure. Gabby also assisted in notifying several neighborhoods on Long Island of National Grid’s impending road pavement project. This project involved potential road interruptions as it involved ripping up old pavement to make the necessary improvements to National Grid’s underground infrastructure, and subsequently laying down new pavement.

Gabby also had the opportunity to shadow employees at various power and steam plants across National Grid’s Downstate New York’s service territory. At the end of her internship, she delivered a presentation about her experience at the New York MetroTech Center headquarters in front of an audience that included many of National Grid business areas, the human resources and recruitment team, and many other fellow summer interns.

**Major Takeaways from the Internship**
Gabby says the part she liked the most was the opportunity to job shadow.

“The job shadowing, and site visits helped expose me to more jobs within the field, and helped me decide what path I want to take in life. The visits and tours opened my mind to different opportunities, and I now know that I want to intern at a power plant next year. I would recommend this site for future students.”

**Future Career Plans**
Gabby would like to eventually work at National Grid’s Gas Control Room at Melville, Long Island. There she would be able to assist in monitoring Down State New York’s Gas transmission from computers alongside other qualified and dedicated engineers and utility operators. The control room operates on rotating 24-hour shifts, and requires precise attention to detail and a commitment to teamwork.
PAMELA, CLASS OF ’17

Summer Internship:
SunPower by Empower

Project summary:
Pamela worked a total of thirty hours per week, four days per week over a span of eight weeks during her summer internship. Working with both the Marketing and Engineering departments, Pamela was able to develop technical as well as soft skills.

Pamela assisted the sales design team with preliminary solar rooftop drawings by using state-of-the-art programs to create custom solar arrays. Pamela worked with the Marketing department to generate content for the company's website, blog and social media accounts. She also represented SunPower at events and seminars and helped to organized client events.

Supervisor Perspective
“Trust in your interns. Don’t be reluctant to give them tasks because you may be surprised by how much they are capable of.”

“Pamela was able to adapt easily, and successfully complete all of her assignments. She was really useful and helped a lot around the office.”

ALUMNI TESTIMONIALS

JEVON, CLASS OF ’17
AAS Pathway—Electrical Technology

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?

I benefited greatly from Energy Tech's program. It allowed me to accumulate college credits while attending high school which has allowed me to be ahead when I graduated high school with almost 40 college credits. It prepared me to adapt to how college works in the final two years of the program. Through taking various college classes and internships earlier than most, I am well positioned for future studies and a career upon graduation from the 6-year program.

What do you hope to do after you finish your current program?

After I finish the program, I hope to most likely continue on to obtain my bachelor's degree. I hope to continue on to be hired where I currently have a paid internship at Con Edison, and to take advantage of their competitive tuition reimbursement program. I would like to become a trusted employee at this company.

What are the benefits of the program that you are doing right now?

I'm benefitting from the program since if I continue on with my college degree, I'm already ahead of many individuals and can most likely obtain a job within the engineering field, having already had some exposure. Energy Tech helped me to obtain my Con Edison internship, and they kept me on after the summer program ended. This is a great asset, and with me being way ahead compared to others my age, I really am lucky to be where I am now.

Any advice for younger students as they make their way through grades 9-14?

My advice to other students who seek the same standing that I have is to continue on with the program since you will reap many benefits, especially in this day and age. These days, there is a great deal of competition with other people as you seek college and career opportunities.

SIDRA, CLASS OF ’17
AAS Pathway—Electrical Technology

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?

The Energy Tech program has benefited me in many ways. First and most importantly, I did not have to pay for my education—it was free. Also, it is a great program to start your career with. I took college classes during high school and it made me think about what I wanted to do in the future.

What do you hope to do after you finish your current program?

I hope to go to a 4-year college and continue with my education in electrical engineering.

What are the benefits of the program that you are doing right now?

I am benefitting from the free education and internship that was offered to me at a New York City agency called DCAS.

Any advice for younger students as they make their way through grades 9-14?

My advice to younger kids would be that you should at least give it a try and see if you like the classes that you are taking. But, if you are not interested, then you should do something that you like. Also, internship opportunities are really beneficial as they are a great source of meeting new people who are experienced in your field and from whom you can gain more knowledge about what you are learning in your classes.
ASHISH, CLASS OF ’17
AS Pathway–Mechanical Engineering

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?
From the Energy Tech program, I was able to get a feel of the college experience. Taking college classes during high school really challenged me and a lot of other E-Tech students to work harder and better ourselves socially and academically. The program helped me to see that in order to succeed in my college classes, I would have to take time out of my schedule to study or go to tutoring.

What do you hope to do after you finish your current program?
After I finish my two years, I hope to continue on to a 4-year college. I am thinking about going to City College, but I am also looking into other colleges.

What are the benefits of the program that you are doing right now?
I enjoy math and science. I am able to benefit personally and academically from my current college courses. I am also getting the same education that almost every other college student is getting in a different college at no cost at all.

Any advice for younger students as they make their way through grades 9-14?
As younger students are making their way through grades 9-14, I would advise them to not take things for granted and to always study. You can’t really keep finding excuses for things that you can control. We receive free textbooks and free tutoring that we can take advantage of because of this program and LaGuardia.

NICOLAS, CLASS OF ’17
AS Pathway–Mechanical Engineering

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?
The transition from high school to college was difficult for me and I was struggling, which was something I never went through in high school. Being in the Energy Tech program, I was continuously offered help and tutoring in order to get back on track as well as weekly sessions to see how I was doing. Thanks to this, I was able to develop better habits such as studying and using my time in a proactive manner. I soon began to notice an increase in grades from my first semester to my second semester that the Energy Tech program has supported me in.

What do you hope to do after you finish your current program?
Once I finish the Energy Tech program, I hope to attend a four-year university and complete a bachelor’s degree in Mechanical Engineering.

What are the benefits of the program that you are doing right now?
The way I am benefiting from what I am doing now is that I am learning to be more independent. This is an important skill for me to gain because once I leave for a four-year university, I will be all on my own and life would be extremely difficult if I didn’t work on this. Not only is the program helping me with being a better version of myself, but by taking classes towards my degree free of charge I am able to save the money I earn in order to decrease the amount of loans I need to pay off my tuition in the future.

Any advice for younger students as they make their way through grades 9-14?
The advice I would give younger students is to try to manage your time correctly. Many people have probably told you this but it can not be stressed enough. You do not want to wait until the last minute to do work because it removes time from potential studying and stresses you out much more. Studying last minute also is not a good idea. Study in short sessions throughout the week rather than just studying all in one long session the night before the test. You will get mentally drained and not receive the sleep you need. Know that if you are struggling, you may not be able to solve it on your own, and it’s okay to ask for help.

There are many internships for every season throughout the year and if you are interested don’t be afraid to ask your counselor—but, make sure to have the right mentality going into it. If you are offered an internship through the Energy Tech program, remember that you are representing the school and you should be as professional as possible—be on time and do the work that is given to you. The more you do this, the more internships you’ll be offered, which is always a big plus when building your resume.

CHRISTIAN, CLASS OF ’17
BS degree program in Civil Engineering, New York University

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?
The Energy Tech program is what put me on the path that I’m on to begin with. It provided me with a basic understanding of what engineering is and what exactly it is that engineers do. Also, it gave me my first taste of a college experience and while LaGuardia is different from NYU in a lot of ways, having taken classes at that level gave me a better idea of what to expect from a 4-year university.

What do you hope to do after you finish your current program?
As of now, I am a Civil Engineering major with a slight preference towards structural or transportation engineering, which are both subsets of the larger Civil field.

What are the benefits of the program that you are doing right now?
I’m working harder in school than I’ve ever had to before, so I believe that I am becoming a much more determined and capable student than I ever have been in years past. But with that work came the opportunity of a fresh start to meet a lot of new people who I have become close with over the course of the past year.
Any advice for younger students as they make their way through grades 9-14?
Whether you’re just starting out at Energy Tech or if you have been here for a while, the best piece of advice I can give is to figure out whether or not engineering is the career you want to pursue. At the university level, the classes that you will have to take will be rigorous enough to make even the best of students struggle. It will require everything that you have to get through so take the opportunities that Energy Tech gives you (math classes at the college level, engineering internships etc.) to see if you believe engineering to be a career worth the time and effort.

PAMELA, CLASS OF ‘17
ASAP Program—Journalism

How did you benefit from the Energy Tech program and how did it prepare you for what you are doing right now?
The Energy Tech program helped me decide what I wanted to do with the rest of my life and put me on a straight path.

What do you hope to do after you finish your current program?
I hope to attend a 4-year college after LaGuardia. I am planning to go to SUNY–Oswego and major in social sciences, where I could do both journalism and learn more about people in general.

What are the benefits of the program that you are doing right now?
Because of the brilliant [College Liaison] Kat, I learned about the ASAP program that has majors in a lot of categories such as early childhood education, the arts, sciences, and more. I realized that math and engineering are not my strong suits but with the help of Energy Tech and Kat, I transitioned into the ASAP program very effortlessly after graduation. The ASAP program provided me with Metro cards, textbook allowance, and free tutoring and career advice for when I’m moving on to the rest of my life. ASAP does their very best to make sure we all graduate on time and go on to the right college.

Any advice for younger students as they make their way through grades 9-14?
Take your time enjoying high school. It can be very difficult taking classes and having a job at the same time. Also, make sure to take advantage of the opportunities you have at your school. Although some things may not seem right for you, they will show you what you are into and what you are not into. And that automatically will help you decide on what you want to do with your life.