

Mechanics Institute

*An Educational Program of
The General Society of Mechanics and Tradesmen*

Course Catalog 2017



**20 West 44th Street
New York, NY 10036
212.840.1840
www.generalsociety.org**

**OFFICERS OF
THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN**

THE MECHANICS INSTITUTE WAS FOUNDED IN 1858 BY THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK. THE OFFICERS OF THE GENERAL SOCIETY FOR THE YEAR 2017 ARE:

**GERARD DROHAN, JR., PRESIDENT
GERARD A. DENGEL, VICE PRESIDENT
NILI OLAY, TREASURER
GOTTFRIED WEISSGERBER, SECRETARY**

**MECHANICS INSTITUTE
SCHOOL COMMITTEE**

MECHANICS INSTITUTE'S SCHOOL COMMITTEE IS COMPRISED OF ONE CHAIRPERSON AND SELECTED MEMBERS OF THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN. THE SCHOOL COMMITTEE MEETS TEN TIMES PER YEAR TO REVIEW SCHOOL OPERATIONS, FORMULATE POLICY, DETERMINE BUDGETS, AND PROVIDE DIRECTION. THE MEMBERS OF THE SCHOOL COMMITTEE'S FOR THE YEAR 2017 ARE:

**VICTORIA A. DENGEL, P.P.
GERARD DROHAN, JR., P.P.
P.P. ELLEN FISCH
JOHN L. FLYNN
JAMES HENNELLY
ANDREW SCHON
THOMAS STEIN
GOTTFRIED WEISSGERBER, P.P.
LISA WOLF
ANDIS WOODLIEF**

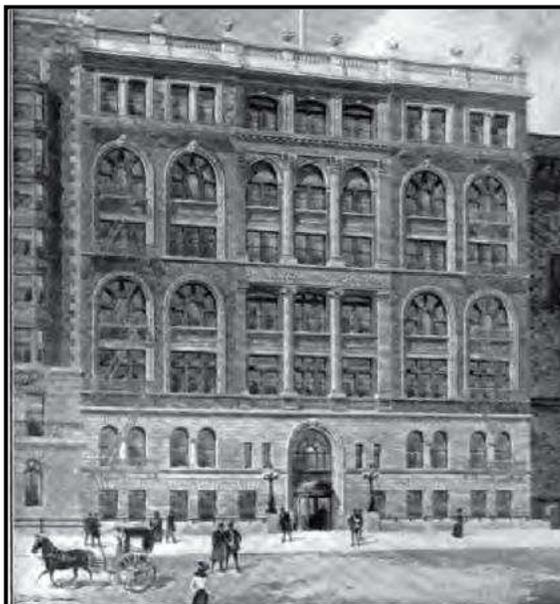
MECHANICS INSTITUTE

It is obvious from the leather bound certificates on display and the number of students milling about the stair well that this is a Mechanics Institute in the traditional sense – a place of learning for trades people.

~ Cathy Milward-Bason

A Great Tradition: The Mechanics Institute of New York City
Australian researcher of existing Mechanics Institute still in operation

Among the many resplendent flags unfurling in the midtown Manhattan breeze is the gold and royal blue emblem of the General Society of Mechanics and Tradesmen. Beneath that flag, which flies above 20 West 44th Street, is the entrance to the stately landmark building that has been the General Society's historic home for over a century. Housed within the oak and marble walls, beneath the subdued glow of polished antique lamps, is New York City's oldest technical school – the **Mechanics Institute**.



A Proud Tradition of Training Working Adults

The **General Society of Mechanics and Tradesmen of the City of New York** was founded on November 17, 1785, by twenty-two skilled tradesmen and craftsmen who gathered in Walter Heyer's public-house on Pine Street in lower Manhattan. The aims of the General Society were to provide cultural, educational, and social services to families of skilled craftsmen. During this early period, The General Society celebrated the mutuality and centrality of the craft community. Apart from its charitable activities, the Society played a prominent role in



the festivities that marked patriotic holidays, carrying banners emblazoned with its slogan “*By Hammer and Hand all Arts do Stand.*”

In 1820, The General Society opened one of the city's first schools that was free to members. There was no public school system in New York at the time, and only two other free schools were to be found in the entire city – one in the almshouse, and the other open only to the children of freed slaves. Our school opened with seventy students. Children of members were admitted free of charge, and a small fee was required from all others. (Later that same year the Society added a separate school for girls.) The school, which became the Mechanics Institute in 1858, continues to provide tuition-free evening instruction in trades-related education.

In 1858, after the New York City public school system had been sufficiently developed and daytime instruction became widely available, The General Society elected to convert its school into a Mechanics Institute that would provide training to those citizens whose work obligations prevented their pursuit of a formal technical education.

Historically, Mechanics Institutes were educational establishments formed to provide adult education, particularly in technical subjects, to working men and, later, women. As such, they were often funded by local industrialists on the grounds that they would ultimately benefit from having more knowledgeable and skilled employees. The Mechanics Institutes also served as “libraries” for the adult working class.



The first Mechanics Institute was incorporated in Glasgow in November 1823, founded on work begun at the turn of the previous century by George Birkbeck. Through the auspices of the Andersonian University, Birkbeck first offered free lectures on arts, science, and technical subjects in 1800.

This Mechanics Class continued to

meet after he moved to London in 1804, and in 1823 they decided to formalize their organization by incorporating themselves as the **Mechanics Institute**. The London Mechanics Institute (later Birkbeck College) followed in December 1823, and by the mid-19th century, there were over 700 institutes in towns and cities across the UK, the United States, and Australia, some of which became the early roots of other colleges and universities.

Small tradesmen and workers could not afford subscription libraries, so benevolent groups and individuals created "Mechanics Institutes" that contained inspirational and vocational reading matter, for a small rental fee. Later, popular non-fiction and fiction books were added to these collections. Beyond lending books, Mechanics Institutes, also provided lecture courses, laboratories, and in some cases contained a museum for the members' entertainment and education.

Our new Mechanics Institute's focus was revised to provide "*privately-endowed free evening instruction to respectable young men and women to improve themselves in their daily vocations,*" and to assist those who were obliged to become wage earners before completing their desired education.

Many of the Institute's early alumni, such as Andrew H. Dykes of Dykes Lumber, Harry S. Weller of the L.J. Wing Manufacturing Co., and Andrew G. Hagstrom, of the Hagstrom Map Company, became renowned and respected members of industry and society.

Between 1898 and 1903, Andrew Carnegie, a member, contributed over half a million dollars to The General Society. Generous gifts to create our present school came in from other members as well, and by 1913 enrollment at Mechanics Institute had reached 2,300.



Today, The General Society is located at 20 West 44th Street, across from the Harvard Club of New York, and is listed on the National Register of Historic Places.

Institutional Philosophy

The Mechanics Institute is firmly committed to the belief that by optimizing students' skills in their respective trades, we provide a tangible benefit to the students and their employers and enhance their roles as productive members of society.

Instructors at Mechanics Institute are inspired to teach out of personal pride in their trades and a sincere desire to pass on their experience and knowledge to others. It is for this reason that our Mechanics Institute has long been recognized as a traditional meeting ground where motivated men and women can develop and enhance their abilities under the guidance of accomplished instructors who work in the field.

In achieving these goals, we gain the satisfaction of helping fill the critical needs of those who directly and indirectly reap the rewards of our programs — the graduates, industry, and New York City, of which we are all a part.

Mission Statement

Mechanics Institute's historic existence is founded on the belief that education is the key to life's success. Our steadfast conviction is built on our commitment to help those who are willing to help themselves. To this end, we are dedicated to:

- *preparing the foundation for those willing to rise;*
- *providing the ladder for those willing to climb; and*
- *fueling the spirits of those willing to soar.*

Statement of Ownership

Mechanics Institute is a tuition-free coeducational evening technical program founded and supported by The General Society of Mechanics and Tradesmen of the City of New York. The program was established in 1858 to provide instruction in technical trades to qualified individuals who would benefit from learning skills that lead to gainful employment.

MECHANICS INSTITUTE TODAY

The Mechanics Institute offers tuition-free instruction to individuals who are currently employed in industries related to the disciplines we offer. The Institute provides such qualified individuals with the technical knowledge necessary to advance in their chosen fields. While Mechanics Institute is not a trade school, it does offer comprehensive instruction in a wide variety of subject areas related to the building and construction industry and has trained more skilled workers than any other institution in the nation.

A multi-tiered curriculum effectively establishes Mechanics Institute as a unique educational program.

- The *technical programs* offer construction programs, which are expanded and updated on an ongoing basis.
- The *professional school* offers programs for tradespeople, business owners, general contractors, and construction managers in areas relevant to growing and enhancing their small businesses.
- The *school of continuing education* offers stand-alone courses and short-term programs to individuals seeking personal development.

General Facilities and Equipment

When you first visit the Mechanics Institute, your attention is immediately drawn to the building's landmark façade, which was built in 1891 and has been well-preserved over the years. Entering the building, you find yourself facing our Library's oak, brass, and glass doors.

To the right is an elevator, which provides visitors with access to the building's six floors. To the left is a sweeping marble staircase, fitted with polished brass handrails and amber-shaded lamps.

The school's administrative offices are located on the first floor, which also houses one computer labs and four drafting classrooms. The fourth floor has two lecture classrooms, one lecture hall, and a faculty lounge.

ADMISSIONS POLICIES

...the main consideration should be to help those who will help themselves; to provide part of the means by which those who desire to improve may do so; to give those who desire to rise the aids by which they may rise; to assist, but rarely or never to do it all. Neither the individual nor the race is improved by alms giving...

~Andrew Carnegie
Benefactor of the Mechanics Institute

Entrance Requirements

Mechanics Institute offers tuition-free technical programs in the following building and construction trades:

Electrical Technology

HVAC/R Systems

Plumbing Design

AutoCAD and BIM

Construction Project Management

Applicants may only enroll in the program that is most related to their current, or recent, field of employment. While two programs may not be taken concurrently, a student who has completed one program may subsequently enroll in another program unrelated to his/her current field.

To qualify for admission, applicants must present the following items:

- college transcript, high school diploma, or GED
- Social Security card
- letter of employment describing the nature of their work
- recent pay stub from their place of employment

In addition to the above items, applicants must

- possess a working knowledge of English
- submit a formal Letter of Application to the school
- submit their registration fee at the time they register

Credit for Prior Instruction

To satisfy the graduation standards in their respective programs, students should take the required core and elective courses in the sequence prescribed. Credit toward Mechanics Institute's certificate of completion is only awarded for instruction received at the Institute. Because of the specific course content of our programs, credit cannot be awarded for training acquired at other institutions.

Returning Students

Mechanics Institute provides updates on its policies, procedures, and requirements with each new edition of the catalog. For this reason, returning students are encouraged to carefully review the most current catalog and become familiar with changes that may be in effect.

Alumni are welcome to return to the Institute to pursue other disciplines. Alumni returning for continuing education may take AutoCAD, mathematics, or elective courses from within the various disciplines we offer (*see page 50*). Alumni returning to enroll in a comprehensive program *must* take their courses in the *sequence* prescribed by that program.

Former students who did not graduate but who wish to continue instruction after an extended leave *not exceeding four (4) years* must begin as new students, unless they are within one hundred (100) hours of program completion.

REGISTRATION, LAB, AND MATERIALS FEES

Registration Fee

The registration fee is \$100 per semester. Please note that the registration fee is non-refundable once your courses have been scheduled.

Annual Membership Fee

The annual membership fee, which qualifies the applicant for enrollment in Mechanics Institute's courses and programs, is \$75.

Note: All fees are due at the time of registration.

INSTITUTIONAL STANDARDS

Attendance

Mechanics Institute has a mandatory attendance policy. Attendance is taken by instructors and submitted to the registrar. In order to receive credit, students must be in their assigned classrooms at the start of class and attend the entire session.

Make-Up Hours

A student's **first** and **second** absences are documented but excused. Students with more than two absences are required to make up hours as an alternative to having their enrollment terminated. Make-up requirements will be determined and assigned by the instructor and approved by the Director.

Dress Code

Students are expected to present a dignified appearance at all times. Attire should reflect maturity and must not be distracting or disruptive. Attire containing offensive words, logos, or political content is regarded as inappropriate and unacceptable. Headwear, including hats, baseball caps, and headphones may *not* be worn within the premises of The General Society.

Exams, Tests, Quizzes, and Assignments

Written exams, tests, quizzes, and/or assignments are given throughout the semester *in addition* to the final exam. Oral exams are not used to assess student progress. Frequent testing allows instructors to assess student progress in a consistent manner and provides students with feedback on their progress.

Make-Up Exams

There are no make-up exams for missed quizzes, tests, or midterms. Make-up exams are *only* given for missed finals. A student who *for good cause* is compelled to miss a final exam must formally notify the instructor *in advance* of the scheduled exam date. A copy of this notification *must* be presented to the registrar. The student will then be informed of an alternate exam date for a make-up final. All such students taking a make-up final must test on the same date.

A student who fails to take either the original or the make-up final will receive a 0 (zero) score and his /her final grade will be determined on the basis of prior work and tests completed in that semester.

Exam Scheduling and Final Grade Disclosure

Instructors will inform students of their final exam date at least two weeks in advance of the date. The final exam date must be at least one session earlier than the final day of classes. The final day of classes is reserved for review of the final exam (or assignment.) Instructors must also inform students of their final grade for the course on the final class day.

Textbooks

Instructors will inform students of the textbooks required for their courses at the start of each semester. All course work and tests, and subsequently grades, are based on textbook material.

Course or Schedule Adjustment

When feasible, changes in courses or schedules may be requested up until the second week of the semester. A service fee will be charged for all course or schedule adjustments. No course or schedule adjustments will be allowed after the third week of the semester.

Course Withdrawal

A student wishing to drop a course must formally notify the Institute within the first three weeks of the semester by completing a *Withdrawal*

Request form. Such students are considered to have officially withdrawn and may return and re-enroll in the course in a future semester.

A student who stops attending classes *without* formally withdrawing from classes will be considered to have failed the class for poor attendance and issued a 0 grade. In the event that such a student wishes to return in a future semester, there will be a processing fee for revising the status from “failed” to “withdrew” and allowing the student to repeat the course.

Course Drops

A student who withdraws after the third week of the semester, or who stops attending without formally withdrawing from classes, will be considered to have dropped the course. *Any student who withdraws or is terminated during two consecutive semesters will be ineligible for readmission into the program.*

Grade Weightings

All written quizzes, tests, exams, and/or student assignments must be completed in a timely manner, and all final grades *without exception* must be turned in by instructors before the last day of the semester.

<i>Written Quizzes, Test, Exams, or Assignments</i>	50%
<i>Punctuality, Attentiveness, Classroom Participation</i>	10%
<i>Final Exam</i>	40%

Grade Equivalents

95 – 100	Excellent
85 – 94	Very Good
75 – 84	Good
70 – 74	Passing
Below 70	Failed

Grade Disputes

If a student believes there is justification for disputing a grade, he/she must do so within one week of the grade’s posting by meeting with the registrar. A conference will then be scheduled with the Director, the student, and the instructor. Both the student and the instructor will be afforded the opportunity to express their views, and allowed to present

material (work, assignments, exams, etc.) to substantiate their positions. The Director will make a determination regarding the disputed grade within one week of the conference. The decision of the Director will be final.

Report Cards

Report Cards will reflect the course taken and grades received for the semester. Report Cards are *not* mailed to students, but may be picked up in person. Alternatively, grades may be requested by phone three weeks after the end of a given semester.

ACADEMIC CALENDAR

Mechanics Institute's academic year consists of a fall and a spring semester, with a break between the Christmas and New Year holidays. Each semester is thirteen (13) weeks in duration. The fall semester begins the first Monday after Labor Day and ends around the second week in December. The spring semester begins the third Monday after New Year's Day and ends around the third week in April.

Since the exact starting and ending dates of each semester will vary from year to year, applicants should see the catalog addendum for the specific year or speak with an Institute administrator. Enrollment applications are not accepted after the final date of registration, and no late registration will take place after the start of the new semester.

Institute's Hours of Operation

From September to April, hours of operation are Monday through Thursday, from 1:00 pm. to 9:00 pm, and Friday, from 10:00 am to 6:00 pm. From April to September, hours of operation are Monday through Thursday, from 10:00 am to 6:00 pm, and Friday, from 10:00 am to 6:00 pm. The Institute does not close over the summer.

Class Schedules

To accommodate the student work schedules, instruction is conducted throughout four different evening sessions. Each session meets for two

hours per evening, two days per week, for a total of thirteen (13) weeks as indicated below:

Monday and Wednesday from 5:00 pm to 7:00 pm, and 7:00 pm to 9:00 pm. Tuesday and Thursday from 5:00 pm to 7:00 pm, and 7:00 pm to 9:00 pm.

Holidays Observed

Mechanics Institute is closed during the following holidays on the dates they are officially observed during the Academic Year:

<i>New Year's Day</i>	<i>Martin Luther King Day</i>	<i>Presidents' Day</i>
<i>Good Friday</i>	<i>Memorial Day</i>	<i>Independence Day</i>
<i>Labor Day</i>	<i>Columbus Day</i>	<i>Veterans Day</i>
<i>Thanksgiving Day</i>	<i>Christmas Day</i>	

STUDENT SERVICES

The Family Education Rights and Privacy Act of 1974

In this day of concern over privacy in every form, the Mechanics Institute ensures the confidentiality of student educational records in accordance with the Family Education Rights and Privacy Act of 1974 (aka the *Buckley Amendment*.)

In essence, the Buckley Amendment states that access to confidential information, beyond that required for normal business of the Mechanics Institute, may be granted only to the student. As stipulated by this Act, the only information that may be publicly released is directory information, which includes items such as name, class, college, major, and telephone number.

The institute may also disclose information from a student's educational records without a student's consent to either individuals or entities permitted such access under applicable federal and state law. Currently enrolled students must contact the Registrar to restrict release of directory information.

Non-directory information, such as grades or disciplinary records, will not be released to a third party without express written consent of the student.

Students have the right to review their own educational records for information and to determine accuracy. A photo I.D. or other equivalent documentation or personal recognition by the custodian of record will be required before access is granted.

Official Transcripts

Transcripts listing a student's courses and grades, and bearing the seal of Mechanics Institute, are issued to employers, potential employers, and other educational / instructional institutions. Transcripts must be requested on business letterhead and accompanied by a signed release from the student or graduate.

Alternatively, students or graduates may complete and sign a Transcript Request Form available from the registrar, and provide the name and address of third party (business or school) to whom the transcript should be sent. Transcripts are not provided to students, nor to third parties lacking the student's signed release.

Student Identification Cards

Identification cards are provided to students at the start of each semester and are valid only for the semester in which they are issued. The ID cards must be presented in order to enter the Institute's premises. Students who lose or forget their ID cards must see the registrar to have them replaced in order to be allowed access to the classrooms.

Drafting Lockers

Lockers for storing course-related supplies are available for the convenience of students on a first come-first served basis. Students using them do so at their own discretion as the Institute disclaims any responsibility for their security. Mechanics Institute is not responsible for loss of personal property.

Students acknowledge Mechanics Institute's policy of removing locks and discarding the contents of lockers after the end of each semester and should therefore remove their lock and locker's contents by the last day of classes.

STANDARDS OF CONDUCT

Termination of Enrollment

Mechanics Institute was established in 1858 to provide instruction in technical and building trades to qualified but under-served individuals who benefit from learning these skills that lead to gainful employment. Students are expected to conduct themselves as mature and responsible working professionals while on Institute premises. The Institute reserves the right to immediately terminate the enrollment of any student for any of the following, or similar, actions:

- ☑ *Implicitly or explicitly threatening another student, an instructor, or other employee of the Mechanics Institute*
- ☑ *Cheating, stealing, plagiarizing, or similar fraudulent behavior*
- ☑ *Disrespectful, abusive, and disruptive behavior*
- ☑ *Defacing or damaging Institute property or equipment*
- ☑ *Using cell phones anywhere on the Institute premises*
- ☑ *Eating anywhere on the Institute premises*
- ☑ *Failing to comply with Institute policies or directives as communicated by administrative or instructional staff.*

Harassment Policy

It is the policy of the Mechanics Institute to maintain a professional environment and a workplace that is free from harassment or intimidation of either a verbal or physical nature. This is not limited to sexual harassment, but includes *any* harassment based on age, race, national origin, color, handicap, veteran status, sexual preference, or religion.

Administrative staff, faculty, and students have the responsibility for adhering to acceptable standards of personal behavior and for ensuring

that others have the opportunity to carry out their work and assignments in a professional atmosphere, free from harassment.

Sexual advances and other verbal or physical conduct of a sexual or discriminatory nature are considered illegal harassment and will not be tolerated. Sexual harassment is defined as:

- *an expressed statement or implication that an employee, instructor, or student is expected to comply with sexual demands as a condition of employment or receipt of a satisfactory grade;*
- *any instance where a sexual demand is used as the basis for business or employment decisions, or in student registrations or evaluations;*
- *any occasion where an employee, instructor, or student finds that sexual demands, references, or the atmosphere regarding sex significantly interferes with his/her performance at work or in the Institute, or creates an unfriendly, threatening, or offensive work area or learning environment.*

Any violation of the Harassment Policy will result in disciplinary actions, up to and including termination of enrollment or employment.

Drug Awareness/Substance Abuse Policy

In compliance with the Drug-Free Schools and Communities Amendment Act of 1989 (Public Law 101-226,) Mechanics Institute, as a matter of policy, prohibits the manufacture and unlawful possession, use, or distribution of illicit drugs and alcohol by students on its property and at any school activity. Any violation of this policy will result in appropriate disciplinary actions, up to and including termination of enrollment. Where it is apparent that a violation of law has occurred, the appropriate law enforcement authorities will be notified.

Cell Phones

Mechanics Institute's policies on disruptive behavior extend to the use of cellular phones that can disrupt instruction within the Institute's environment. Such disruption may subject the student to dismissal.

Students are required to turn off their cell phones upon entering the building.

Commencement Exercises

Commencement exercises celebrating the motivations, efforts, and accomplishments of our graduates are held within the traditional and historic setting at the General Society's Library, located on the ground floor of the building.

Eligibility for Graduation

Students are eligible for graduation when they have successfully:

- completed the attendance requirements of the program**
- completed the course requirements of the program**
- maintained a final grade of 70% or better in all courses, and**
- satisfied all financial obligations to the Institute, including payment of the graduation fee.**

Institute policies prevent the issuing of transcripts, report cards, and/or certificates of completion to any student who has not fully satisfied all financial obligations, or who owes homework, assignments, books, or other materials to the Mechanics Institute or General Society. There is a \$100 graduation fee to cover the costs associated with documenting records, grades, and certificates. Once all graduation requirements are met, the student will be eligible to receive his/her certificate of completion.

Awards and Scholarships

Since 1882 the Society has maintained scholarships for the benefit of students of Mechanics Institute. Among these are:

The **George E. Hoe** medal and scholarship, funded by this past president of the Society, are awarded to graduates who have demonstrated significant achievement during their enrollment at Mechanics Institute.

The **Albert A. Cuneo Scholarship Fund** is awarded to graduates who demonstrate excellence in their work and diligence in their attendance throughout their years of study at Mechanics Institute. This award provides funding for a course of study at a school of the student's choosing.

The **Thomas S. DeNapoli Award**, sponsored by KND Licensed Electrical Contracting & Services Corp., is presented to one outstanding graduate from the Electrical Technology program.

The **MBA Scholarship Awards**, sponsored by the Mortgage Bankers Association of New York, is presented to one outstanding student from each program.

The **Alan Senzer Award**, sponsored by Alan Senzer, is presented to one outstanding graduate from the Construction Project Management program.

Technical Book Awards, funded by **Leon F. Munier** and **Frank E. Cass**, are presented to deserving HVAC and Plumbing graduates respectively.

The **American Society of Sanitary Engineering** also funds an annual award to one outstanding graduate from the Plumbing Technology program.

The **Penguin, an EMCOR Company, Achievement Award** for excellence in HVAC/R.

DISCLAIMERS

Course Schedules

Mechanics Institute makes every effort to schedule courses so that, a) introductory courses are available for beginning students, b) core courses are available for active students, and c) elective courses are available for those who desire them. Students should understand, however, that constraints with personnel and facilities availability may prevent the Institute from offering every one of our courses during every semester.

It is conceivable that a given semester's course schedule may not accommodate the needs of every one of our students. Similarly, the Institute may, at its discretion, postpone or cancel specific courses for lack of enrollment or like circumstances.

Students whose outside responsibilities conflict with the course schedule are advised to explore all possible options before deciding to withdraw from a course.

Credential

The Mechanics Institute is an educational program of The General Society of Mechanics and Tradesmen. The Mechanics Institute's certificate of completion is a professional credential awarded to students who successfully complete the courses required for a given program. The certificate has no degree equivalence and is not recognized by other degree-granting institutions.

Policies and Procedures

The purpose of this catalog is to provide students of Mechanics Institute, as well as applicants to the school, with general information regarding the program's policies and procedures. At its discretion, the program reserves the right to review these policies and procedures and change or modify them, from time to time, as it deems necessary.

EDUCATIONAL PROGRAMS



Mechanics Institute offers tuition-free instruction to individuals who are employed in the building and construction trades and provides them with the technical knowledge necessary to advance in their respective fields. While Mechanics Institute is not a trade school, it does offer comprehensive instruction in a wide variety of subject areas related to the building and construction industry.

A multi-tiered curriculum effectively establishes Mechanics Institute as a unique educational facility where the learning needs of every applicant can be satisfied, if not in whole, at least in part. The **Electrical Technology**, **HVAC Systems**, and **Plumbing Design** disciplines that comprise our **technical programs** are expanded and updated on an ongoing basis to ensure their viability and real-world relevance of our program offerings.

ELECTRICAL TECHNOLOGY PROGRAM

The **Electrical Technology** program is a three-year discipline designed to provide students with a practical understanding of electrical work as it applies to the field of construction. The core courses for the first year of the program focus on Direct Current circuits, where students revisit the rudiments of electrical theory, including Kirchoff's Law, Ohm's Law, and the technical mathematics required for electrical design.

Subsequent courses provide a thorough exposure to alternating circuit theory, electrical motors, electronics, and cost estimating. The program is rounded out with rigorous course work in commercial and industrial wiring. Throughout the program, students are able to "personalize" their instruction by choosing elective courses that they find relevant to their current employment and future career objectives.

Who should enroll in the Electrical Technology program?

Individuals employed as electrician's helpers, as well as those working in any of the diverse fields that rely on an integral understanding of electricity. Those working in these areas in a managerial or supervisory capacity will also benefit from the thorough understanding of electrical code and compliance issues provided by this program.

Please note: The chart below represents a sample course sequence and may not reflect the order in which actual courses are completed.

Year	Semester	Code	Course Name
First	First	MA VOC EL 101	Vocational Mathematics Introduction to DC Circuits I
First	Second	MA TEC EL 102	Technical Mathematics Introduction to DC Circuits II
Second	First	MA ELE EL 201	Electrical Mathematics Alternating Current Theory I
Second	Second	PH PRAC EL 202	Practical Physics Alternating Current Theory II
Third	First	EL CON EL 301	Electrical Motor Controls Commercial Wiring
Third	Second	PD 101 EL 302	Professional Development Industrial Wiring

MA VOC Vocational Mathematics

This course is a prerequisite for students entering the Electrical Technology or HVAC Systems Technology programs. The educational objective of this course is to enable those employed in said trades to solve the problem that may arise in their daily work. The basics of arithmetic, the use of formulas, and the simple applications of algebra and geometry, form the basis of the work in this course.

EL 101 Introduction to DC Circuits I

The educational objective of this course is to introduce the student to the Fundamentals of Direct Current (DC) theory. Ohms Law and its applications are examined, and combinations are studied.

Prerequisite: MA VOC – Vocational Mathematics

MA TEC Technical Mathematics

The educational objective of this course is to aid those who are interested in electrical mechanical and engineering work to solve the problems and use the formulas pertaining thereto. The course includes all the algebraic processes involved, with special attention given to solving all forms of equations, use of scientific notation, geometry, and trigonometry.

EL 102 Introduction to DC Circuits II

The educational objective of this course is to build upon the understanding of Direct Current (DC) theory presented in EL 101. The student will study the application of series, parallel and combination circuits. Topics such as Kirchoff's Law, wire sizing, and magnetism are covered in detail.

MA ELE Electrical Mathematics

The educational objective of this course is to provide electrical students who have completed E2 with advanced formulas and problem-solving skills required in Industrial Electricity. The course builds on topics taught in Technical Math, and proceeds to cover the more advanced elements of scientific notation, geometry, and trigonometry.

EI 201 Alternating Current Theory I

The educational objective of this course is to introduce the student to the fundamentals of Alternating Current (AC) theory. Topics will include trigonometry for AC electricity, generation of alternating current, introduction to vectors, and circuit analysis with resistors, capacitors, and inductors.

Prerequisites: EL 102 – Introduction to DC Circuits II; MA ELE – Electrical Mathematics

PH PRAC Practical Physics

This course is a prerequisite for students entering the Electrical Technology or Plumbing Design programs. The educational objective of this course is to re-familiarize students with the principles of physics which govern the processes of their industries. Course topics include lectures and experiments in energy, pressure, heat, fluids, and motion.

EI 202 Alternating Current Theory II

The educational objective of this course is to build upon the understanding of the AC theory presented in EL 201. The course will cover the principles of series and parallel resonance and

filters, followed by a study of alternating current power, two- and three-phase systems, transformer connections, three-phase Wyes and Delta circuits, and power factor correction.

Prerequisite: EL 201 – Alternating Current Theory I

EL 301 Commercial Wiring

The educational objective of this course is to introduce the student to commercial wiring. The course covers the fundamentals used in wiring modern commercial buildings for power, light and heat. Topics include computing building loads, switches and receptacles selection, conductor and branch circuit selection, feeder sizing, over-current protection, short circuit calculations, and electric service for buildings followed by the basics of building lighting, heating and cooling (HVAC) systems.

EL 302 Industrial Wiring

The educational objective of this course is to introduce the student to industrial wiring. The course builds upon the knowledge gained from the commercial wiring course and applies it to wiring of industrial buildings. Topics include electric service from the generator to the unit substation followed by topics on feeder systems, panel board sizing and selection, busway and, underground systems, grounding, lightning protection on through wiring of hazardous locations. Additional topics include sections on fiber optics and basic wiring and installation methods for motors and lighting systems as well as application of power factor correction for industrial facilities.

Prerequisite: EL 301 – Commercial Wiring

H.V.A.C. SYSTEMS DESIGN PROGRAM

The **HVAC Systems Design** program is a three-year discipline designed to provide students with a practical understanding of heating, ventilation, and air conditioning concepts as they apply to the field of construction. The core courses for the first year of the program focus on fundamental refrigeration concepts, where students revisit the mechanical functions of condensers, evaporators, compressors, and expansion valves.

Subsequent courses provide a thorough exposure to heat load calculations, electric power supply, and psychometrics and humidification. The program is rounded out with rigorous course work in control systems and applications. Throughout the program, students are able to “personalize” their instruction by choosing elective courses that they find relevant to their current employment and future career objectives.

Who should enroll in the HVAC Systems Design program?

Individuals employed as HVAC mechanics, as well as engineers working in any of the diverse fields that rely on an integral understanding of heating, cooling, and boilers. Those working in the HVAC field in a managerial or supervisory capacity will also benefit from the thorough understanding of refrigeration theory provided by this program.

Please note: The chart below represents a sample course sequence and may not reflect the order in which actual courses are completed.

Year	Semester	Code	Course Name
First	First	MA VOC RF INT	Vocational Mathematics Fundamentals of Refrigeration
First	Second	PH PRA RF HLC	Practical Physics Heat Load Calculations
Second	First	VC 101 RF EPS	Visual Communication Electric Power Supply
Second	Second	RF PSY RF CYC	Psychometrics & Humidification Refrigeration Cycle (w/Ph Charts)
Third	First	RF DFE RF CEN	Ducts, Fans, & HVAC Equipment Centrifugal & Absorption Machines
	Second	PD 101 RF SYS	Professional Development Control Systems & Applications

MA VOC Vocational Mathematics

This course is a prerequisite for students entering the Electrical Technology or HVAC Systems Technology programs. The educational objective of this course is to enable those employed in said trades to solve the problem that may arise in their daily work. The basics of arithmetic, the use of formulas, and the simple applications of algebra and geometry, form the basis of the work in this course.

RF INT Fundamentals of Refrigeration

The educational objective of this course is to provide the student with a detailed understanding of refrigeration components. Students will be given a working familiarity with condensers, evaporators, compressors, and expansion valves.

PH PRAC Practical Physics

This course is a prerequisite for students entering the Electrical Technology, Plumbing Design , or HVAC Systems programs. The educational objective of this course is to re-familiarize students with the principles of physics which govern the processes of their industries. Course topics include lectures and experiments in energy, pressure, heat, fluids, and motion.

RF HLC Heat Load Calculations

The educational objective of this course is to build upon the fundamentals covered in RF 101. Instructional topics include fundamentals of thermodynamics heat transfer, heat loss and heat gain calculation, ventilation, and infiltration.

VC 101 Visual Communication

This course is a requisite for students entering the Plumbing Technology and HVAC Systems programs. The educational objective of this course is to provide students with a working familiarity with drafting tools and their use. They will learn the use of equipment such as T-squares, triangles, scales, and compasses. Students will enhance their understanding of their trade by assignments in rendering art, plans, and visual concepts that communicate the architect's or contractor's perception.

RF EPS Electric Power Supply for Refrigeration Systems

The educational objective of this course is to provide the student with a detailed understanding of the types of utility electric supply, electric motors, and basic electric control circuits that are used in refrigeration systems.

RF PSY Psychometrics and Humidification

The educational objective of this course is to introduce the student to the properties of air changes in volume and temperatures, and gas laws. Students will be given a working familiarity with psychometric charts, which are used extensively to study humidification and washers.

RF CYC Refrigeration Cycle with pH Charts

The educational objective of this course is to provide the student with a detailed understanding of the refrigeration cycle. Students will work extensively with the Pressure Enthalpy (pH) Chart and saturated and superheated tables of refrigerants, refrigerant pipe sizing, including single and double risers.

RF DFE Ducts & Fans, and HVAC Equipment

The educational objective of this course is to provide the student with a detailed understanding of the fundamentals of HVAC air distribution systems including, fan laws, fan curves and pressure losses. The student will be required to design air distribution systems using the equal friction and velocity method. This course will also include review and analysis of an existing air distribution system of a high-rise building.

RF CEN Centrifugal and Absorption Machines

The educational objective of this course is to introduce the student to the components of centrifugal systems and capacity controls. Students will be given a working familiarity with the fundamentals of absorption systems including absorber, absorbent, solutions, and operating techniques.

RF SYS Control Systems & Applications for HVAC

The educational objective of this course is to introduce the student to the control theory including control loop components and configurations. Students will be given a working familiarity with the operational details of control devices, and applications including mixing dampers, heating and cooling strategies.

PLUMBING DESIGN PROGRAM

The **Plumbing Design** program is a three-year discipline intended to provide students with a practical understanding of the NYC Plumbing Code, advanced plumbing theory, and plumbing design concepts as they apply to the field of construction. The core courses for the first year of the program focus on NYC code compliance, where the students are exposed to technical requirements mandated by the Department of Buildings.

Subsequent courses provide a thorough exposure to plumbing estimating, technical drafting, and blueprint reading. The program is rounded out with rigorous course work in plumbing design. Throughout the program, students are able to “personalize” their instruction by choosing elective courses that they find relevant to their current employment and future career objectives.

Who should enroll in the Plumbing Design program?

Individuals employed as plumbers’ helpers, as well as those working in any of the diverse fields that rely on an integral understanding of plumbing, heating, and sanitary systems. Those working in the plumbing field in a managerial or supervisory capacity will also benefit from the thorough understanding of plumbing theory provided by this program.

Please note: The chart below represents a sample course sequence and may not reflect the order in which actual courses are completed.

Year	Semester	Code	Course Name
First	First	MA VOC PL 101	Vocational Mathematics Introduction to NYC Plumbing Code I
First	Second	VC 101 PL 102	Visual Communication Intro to NYC Plumbing Code II
Second	First	PH PRAC PL 201	Practical Physics Plumbing Theory I
Second	Second	PL 202 PL BPR	Plumbing Theory II Blueprint Reading for Plumbers
Third	First	PL 301 PD 101	Plumbing Design I Professional Development
Third	Second	PL 302 CD 101	Plumbing Design II Intro to AutoCAD

MA VOC Vocational Mathematics

This course is a prerequisite for students entering the Electrical Technology or HVAC Systems Technology programs. The educational objective of this course is to enable those employed in said trades to solve the problems that may arise in their daily work. The basics of arithmetic, the use of formulas, and the simple applications of algebra and geometry, form the basis of the work in this course.

Co-requisite: PL 101 – Introduction to NYC Plumbing Code

PL 101 Introduction to NYC Plumbing Code I

The course covers the fundamentals of sanitary and wastewater drainage and vent systems, domestic hot and cold water systems and natural gas systems. The students will be introduced to drafting procedures as applied to the preparation of plumbing floor plans and elevation drawings as a means of understanding and reading contract documents and shop drawings. The course includes an overview of the Plumbing Code with respect to location and content of the various disciplinary requirements.

Co-requisite: MA VOC – Vocational Mathematics, or VC 101 Visual Communication

VC 101 Visual Communication

This course is a requisite for students entering the Plumbing Technology and HVAC Systems programs. The educational objective of this course is to provide students with a working familiarity with drafting tools and their use. They will learn the use of equipment such as T-squares, triangles, scales, and compasses. Students will enhance their understanding of their trade by assignments in rendering art, plans, and visual concepts that communicate the architect's or contractor's perception.

Co-requisite: PL 102 – Introduction to NYC Plumbing Code II

PL 102 Introduction to NYC Plumbing Code II

This course continues with subjects on the fundamentals of the plumbing systems. The students will be required to prepare plumbing floor plans and elevation drawings of a low rise building in order to visualize and understand the various components of the systems.

Prerequisite: PL 101 – Introduction to NYC Plumbing Code I

VC PL1 Visual Communication

PH PRAC Practical Physics

This course is a prerequisite for students entering the Electrical Technology or Plumbing Design Programs. The educational objective of this course is to re-familiarize students with the principles of physics which govern the processes of their industries. Course topics include lectures and experiments in energy, pressure, heat, fluids, and motion.

PL 201 Plumbing Theory I

This course introduces the student to the design of the plumbing and fire standpipe systems, including drafting layouts, application of the New York City Plumbing Code, with special emphasis on sizing, system perimeters and regulatory requirements, and lectures on the basic principles of hydraulics as applied to the flow of liquids and gases in a piping system.

Prerequisite: PL 102 – Introduction to NYC Plumbing Code II

PL 202 Plumbing Theory II

This course is a continuation of second year design and layout of plumbing and fire standpipe systems. The course will examine more detail in the design of high-rise multi-zone building with special emphasis on equipment selection for fire pumps, booster pumps, water heaters, and storm water drainage system design including site and roof retention and detention.

Prerequisite: PL 201 – Plumbing Theory I

PL BPR Blueprint Reading for Plumbers (alternatively students may take AR BPR, below.)

The educational objective of this course is to introduce the plumbing student to the skills of understanding and reading plumbing-related blueprints and construction drawings, and to coordinate the information represented by each type of drawing.

PL 301 Plumbing Design I

An advanced third year in design of plumbing and fire standpipe systems, including shop-drawing layouts with slot and sleeve placement, and location and elevations with respect to benchmarks and building axis lines. The course will cover pressure ratings concerning the gravity and pneumatic pressure tanks for domestic water and fire protection systems.

Prerequisite: PL 202 – Plumbing Theory II

PL 302 Plumbing Design II

This course continues with the focus on plumbing layout and fire protection systems. The course will cover the minimum code requirements for the design of low and high rise buildings and will explore and compare the cost implications of designing plumbing systems in excess of such minimum requirements, and the potential for any long term savings as a result of the implementation of more stringent construction procedures with respect to such systems.

Prerequisite: PL 301 – Plumbing Design I

CD 101 Introduction to AutoCAD

The educational objective of this course is to teach the student with a working knowledge of computers the fundamentals of Computer Aided Design (CAD), utilizing AutoCAD. The course focuses on the principles and conventions of CAD as used by the drafting/engineering professional, including Drawing Tools, Polylines, Layers, Text and Dimensioning.

CONSTRUCTION PROJECT MANAGEMENT

Project Management is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete a project within defined scope, quality, time, and cost constraints. As a discipline, Project Management developed from different fields of application including architecture, construction, and engineering. The forefather of project management is considered to be Henry Gantt, who is acknowledged as the father of planning and control techniques.

Year	Semester	Code	Course Name
First	First	PM INT PM MDS	Construction Administration Construction Methods & Materials
First	Second	PM BPR PM EST	Blueprint Reading Construction Cost Estimating
Second	First	PM SUS PM CNT	Sustainable Architecture Contract Administration
Second	Second	PM SCH PM PHO	Project Scheduling Architectural Photography

Please note: The above chart represents a sample course sequence and may not reflect the order in which actual courses are offered or completed.

PM INT Construction Administration

The educational objective of this survey course is to provide the student with an overview of the skills required in the field of construction project management. The course includes a preliminary exposure to the practices used by the industry in such areas as construction technology, plan reading, cost estimating, project scheduling, and contract administration.

PM MDS Construction Methods and Materials

The educational objective of this course is to introduce the student to the various materials used in construction, along with the methods in which they are used. The course includes a review of the complete job cycle from preliminary design and budget, through estimating, purchasing, scheduling, project management, to final competitive details.

PM BPR Blueprint Reading

The educational objective of this course is to introduce the student to the skills of understanding and reading architectural, structural, mechanical and electrical construction drawings, and to coordinate the information represented by each type of drawing.

PM EST Estimating For Building Construction

The educational objective of this course is to introduce the student to estimating for the general construction trades. Major trades covered in class work are excavating, concrete, masonry, carpentry and plastering. Construction Procedures and trade practices are reviewed. Methods of taking off quantities from Construction Document Drawing and of organizing data are described. Typical problems and homework are analyzed in class. The general approach emphasizes the logical separation of material quantities and work operation, and is applicable to all construction trades.

PM SUS Sustainability

The educational objective of this course is to provide the student with a detailed overview of sustainable, or "green", architecture, allowing him to understand the roles of the designer, builder, and manager in the process. The course balances the theoretical with the practical and presents its topics in a manner that is equally relevant to architects, engineers, interior designers, and construction project managers.

PM CNT Contract Documents

The educational objective of this course is to introduce the student to an understanding of the Nature of Contracts. Course includes lectures on the bidding for and negotiating of construction contracts, contract administration, as well as handling claims and disputes, changes in the work of contracts, and completion of contracts and payments.

PM SCH Project Scheduling

The educational objective of this course is to introduce the student to the scheduling aspects of a construction project. The student will learn how to create the initial timing schedule. Topics include scheduling of resources, costs, and personnel/labor. Using manual calculations to develop the schedule will provide the student with background and analysis prior to devoting time and effort to the actual scheduling.

PM IBC International Building Code

The educational objective of this course is to provide the student with a fundamental understanding of the 2000 International Building Code of New York City. Students will learn how the code was developed and how it is used, as well as how it applies to design an construction. Upon course completion, students will have an understanding of the relationship between codes and practice in areas of design and construction.

PM SPL Introduction to Space Planning

The educational objective of this course is to provide students with an introduction to the world of space planning utilizing the basics for creating workspaces in the corporate and commercial fields. The lectures and assignments will also introduce the student to interior space planning and the basic requirements for drawing and reading space and partition plans.

PM SUP Building Construction Superintendence

The educational objective of this course is to introduce the student to the superintending of general construction for small and large operations. Instructional topics include staff organization and preparatory arrangements, it then treats in detail: excavations, foundations, wood, concrete and steel constructions brick and stone masonry, plumbing, heating and electrical work. Course includes discussions on material, handling equipment, construction schedules and more.

VIRTUAL DESIGN & CONSTRUCTION

The Virtual Design & Construction program is a two-year discipline intended to provide the student with a practical understanding of the drafting methods and applications that are used in the field of construction. Core courses focus on the rudiments of conceptualizing and drafting, as the student learns the principles for putting designs on paper and giving expression to concept.

Subsequent courses teach the practical aspects of computer-assisted design, or AutoCAD, while exposing the student to the construction and interpretation of blueprints from an industry-wide perspective. Throughout the program, students are able to “personalize” their instruction by choosing elective courses that they find relevant to their current employment and future career objectives.

Year	Semester	Code	Course Name
First	First	CD CAD1 CD VSL	Introduction to CAD Applications Visual Literacy
First	Second	CD CAD 2 CD DWG	Intermediate CAD Applications Principles of Manual Drafting
Second	First	CD CAD 3 CD SPL	Advanced CAD Applications Space Planning
Second	Second	CD BPR CD PHO	Blueprint Reading Architectural Photography

Please note: The above chart represents a sample course sequence and may not reflect the order in which actual courses are offered or completed.

CD CAD 1 Introduction to CAD

The educational objective of this course is to teach the student with a working knowledge of computers the fundamentals of Computer-Assisted Design (CAD), utilizing AutoCAD. The course focuses on the principles and conventions of CAD as used by the drafting/engineering professional, including Drawing Tools, Poly-lines, Layers, Text, and Dimensioning.

CD VSL Visual Literacy

The educational objective of this course is to provide the student with a hands-on understanding of the process of creation. Class sessions and work assignments allow the student to express on paper the tangible and abstract concepts related to the built environment. Upon satisfactory completion of this course, the student will be familiar with the basic processes that drive visual perception and expression, incorporating observation, memory, and rendering into a creative whole.

CD CAD 2 Intermediate CAD Applications

The educational objective of this course is to assist the student who has successfully completed CD I in acquiring intermediate skills in CAD. The course will cover all areas required for the student to produce professional quality two-dimensional drawings. Topics covered include Drawing Setup, Customizing AutoCAD, Scripts, Menus, Diesel, and Auto LISP Basics.

CD DWG Principles of Manual Drafting

The educational objective of this course is to introduce students to the fundamental principles of drafting. The student will acquire a practical understanding of manual drafting through the use of assignments in rendering art, plans, and visual concepts that communicate the designer's perception. Emphasis is placed on the quality of the line work, lettering, and scale accuracy.

CD CAD 3 Advanced CAD Applications

The educational objective of this course is to provide advanced instruction to the student who has successfully completed CD 02 and a requisite course in drafting (or equivalent work experience). This course includes three-dimensional drawing, advanced dimensioning, data & image exchange, shading, rendering and solid modeling.

CD SPL Introduction to Facilities Space Planning

The educational objective of this course is to provide students with an introduction to the world of space planning utilizing the basics for creating workspaces in the corporate and commercial fields. The lectures and assignments will also introduce the student to interior space planning and the basic requirements for drawing and reading space and partition plans.

CD BPR Blueprint Reading

The educational objective of this course is to introduce the student to the skills of understanding and reading architectural, structural, mechanical and electrical construction drawings, and to coordinate the information represented by each type of drawing.

Intro to Building Information Modeling / CD BIM

A fall program is being planned and developed to introduce students to Building Information Modeling (BIM) – the industry's state-of-the-art imaging program. This new course will expose the student to the various existing BIM platforms, what they do, and how they interact with a construction project. Please inquire with a school administrator for further information.

THE GENERAL SOCIETY OF MECHANICS & TRADESMEN
OF THE CITY OF NEW YORK

Founded 1785



Celebrating Over Two Centuries of Service to the People of the City of New York
ABOUT THE GENERAL SOCIETY OF MECHANICS & TRADESMEN

The General Society of Mechanics & Tradesmen of the City of New York was founded in 1785 by the skilled craftsmen of the City. Today, this 231-year old organization continues to serve and improve the quality of life of the people of the City of New York through its educational, philanthropic and cultural programs including its **tuition-free Mechanics Institute, The General Society Library and its nearly two-century old Lecture Series.**

In 1820, The General Society opened one of the City's first free schools as well as the Apprentices Library. The school, which became the Mechanics Institute in 1858, continues to provide tuition-free evening instruction in trades-related education and provides a critical service to improve job opportunities for New Yorkers in the building and construction industry. **Without a tuition-free education, many of our students would be unable to get the technical education needed to advance in today's environment. Each fall, over 350 students enroll in the Mechanics Institute's programs including Electrical Technology, HVAC/R Systems Design, Plumbing Design and Construction Project Management and AutoCAD and BIM.**

Founded in 1820, **The General Society Library** is the second oldest library in New York City and one of three remaining membership circulating libraries. It serves the educational programs of The General Society. It also makes its extensive collections available to other institutions and the public. The book and periodical collections of the Library span two centuries and are suited to both scholarly research and recreational reading. Its archives date back to 1785. Library members also enjoy access to current fiction, biography, and non-fiction.

The Labor, Literature and Landmarks Series continues a tradition of public lectures that started at the Society in 1837. The Series brings people of diverse interests from the entire New York area into our Library space. Now in its seventh season, the Artisan Lecture Series pays tribute to the art of craftsmanship by featuring master artisans who lecture about the intricacies of their specialized crafts. **The Artisan Lecture Series** promotes the work and art of skilled craftsmen to assist in ensuring their unique knowledge is understood and carried forth for future generations. The building at 20 West 44th Street is the fifth home of The General Society. **The Society also houses the unique John M. Mossman Lock Collection which has more than 370 locks, keys and tools, dating from 4000 B.C. to the early 20th-century.** The General Society of Mechanics & Tradesmen is listed on the National Register of Historic Places and the façade of the building is a New York City landmark.

The General Society is a 501(c)(3) nonprofit organization.

The General Society of Mechanics & Tradesmen of the City of New York

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