

# FAQs

## Frequently Asked Questions About the T<sup>3</sup> Program

### Q: What is the T<sup>3</sup> Program?

**A:** T<sup>3</sup> is a two-year, college-level academic program designed to educate transit workers about new technologies and their application to the NYC transit system. T<sup>3</sup> consists of an introductory course which provides an overview of telecommunications technology in transit, followed by a series of credit-level courses in which students can specialize in telecommunications, electronics, or computer systems. The program is named Telecommunications Technology in Transit (T<sup>3</sup>). Students who complete the T<sup>3</sup> program receive a certificate from the New York City College of Technology (City Tech) in the City University of New York and are eligible to continue on in college, if they choose. Information describing the certificate program is attached.

### Q: How much does this program cost?

**A:** The T<sup>3</sup> program is free of charge to Local 100 members. This program is sponsored by the TWU Local 100 – NYCT Training and Upgrading Fund (TUF).

### Q: What is TUF?

**A:** Under the 2002-2005 collective bargaining agreement, a jointly sponsored fund was created called TUF. TUF pays for the T<sup>3</sup> courses that Local 100 members take at the NYC College of Technology of City University of NY. TUF also pays for Civil Service test prep courses, computer courses, English as a Second Language (ESL) courses, defensive driving workshops, high school equivalency preparation, college preparation and other programs for Local 100 members.

### Q: Who is eligible to sign up for the T<sup>3</sup> program?

**A:** Any Local 100 member can sign up for the T<sup>3</sup> program, including new hires and retirees. Everyone who applies for the program must first take a placement exam. Depending on your score, you will register for the introductory T<sup>3</sup> course or enroll in brush-up math and Technical English courses. If you need to take brush-up courses, you won't need to repeat the placement exam. You will be automatically eligible for the introductory T<sup>3</sup> course after you complete the brush-up courses.

**Q: I don't have any electronics/electrical background. Do I need to take some sort of prep class before going to T<sup>3</sup>?**

**A:** Brush-up courses in math and Technical English are available, if necessary. Whether you need to take brush-up courses depends on your score in the placement exam.

**Q: If someone takes a T<sup>3</sup> course and fails, will he be able to take it again?**

**A:** Yes.

**Q: I'm taking pre-T3 brush-up courses now, but I think I'm ready for T<sup>3</sup>. Can I skip the rest of the brush-up courses and go into the T<sup>3</sup> introductory course now?**

**A:** Your instructor will evaluate your skills and determine whether you can go into T<sup>3</sup>. This will be decided on an individual basis. You will have to pass exams in Technical English and Math before you can take the T<sup>3</sup> introductory course. If you need extra help in a particular subject, take advantage of the Pre-T<sup>3</sup> tutoring program. It will help you move forward faster.

**Q: Can I postpone entering T<sup>3</sup> once I have passed pre-T3 level math and English courses or the T<sup>3</sup> placement test? If so, for how long can I postpone entering T<sup>3</sup>?**

**A:** Yes, you can postpone. Indefinitely.

**Q: What is the value of the T<sup>3</sup> program?**

**A:** The T<sup>3</sup> program gives you a conceptual foundation to understand system changes in both operations and maintenance at NYCT. It will make you better informed about how the latest technologies are transforming the NYCT transit system.

With this information, you will be better equipped to decide on a career path in NYCT and to handle technical jobs that require some knowledge of computer systems, electronics, and telecommunications theories and applications.

The T<sup>3</sup> program will also help give you background information for either promotional or open competitive exams which require knowledge of concepts and applications in transit technology. T<sup>3</sup> and the TUF Civil Service Test Prep

program can also help you brush up on test-taking skills to equip you for a Civil Service exam.

Finally, the T<sup>3</sup> program can give you academic credits towards a college degree.

**Q: What does NYCT think about the T<sup>3</sup> program ? Will participation in this program help me get a better job at NYCT?**

**A:** NYCT has reviewed the T<sup>3</sup> program and has agreed that it provides important background knowledge for the new technologies being used in transit.

Future jobs in NYCT will increasingly require technical knowledge and a college level education. Whether you will qualify for a better job will depend on civil service requirements, the number of available openings, your work experience, etc.

The mission of TUF is to prepare you as much as possible for the increasingly technological future. TUF encourages Local 100 members to get a head start on their education to prepare for new and changing titles.

**Q: Doesn't NYCT provide electronics training?**

**A:** NYCT provides electronics-related training to workers in particular job titles as they see the need, but their electronics courses are not generally available to the workforce at large.

**Q: Will the T<sup>3</sup> program qualify me for upcoming Civil Service tests?**

**A:** When you seek a new job or entrance into some Civil Service exams, the T<sup>3</sup> introductory course and certificate program courses can be listed as part of your educational background.

**Q: Does TUF give courses to prepare for upcoming Civil Service tests?**

**A:** TUF offers test prep courses for many civil service exams. You can call (646) 505-4500 for more information.

**Q: What does the introductory T<sup>3</sup> course cover?**

**A:** The introductory course was designed by the College of Technology (City Tech) of the City University of New York (CUNY). It is a 75-hour course, taught by City Tech faculty.

Each class session of this course consists of three parts: concepts and theories, hands-on demonstration of concepts, and workplace applications. Subjects covered include:

- Basics of Electricity
- DC & AC
- Electronic, Amplifier, Digital
- Telecommunications: Fiber Optics, Networking, Wireless

**Q: When and where are classes for the Introductory T<sup>3</sup> course held?**

**A:** Classes meet twice a week for four hours or once a week for eight hours on the campus of City Tech in downtown Brooklyn. The course is given several times per week, to accommodate Local 100 members' work schedules as much as possible.

**Q: Can I get college credit for the introductory T<sup>3</sup> course?**

**A:** If you complete the introductory course and decide to continue on in the certificate program at City Tech, you will receive two college credits\* for the introductory T<sup>3</sup> course.

**Q: What does the certificate program entail?**

**A:** After finishing the introductory course, you can enroll in one of the certificate programs: telecommunications, electronics, or computer science. Academic advisors at City Tech and the staff of the TUF will help you decide which of the three certificate programs best meets your needs.

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\*contingent on the approval of the Chair of the Department of Electrical Engineering at City Tech

Each certificate program is designed to last three semesters. See the attached document for course descriptions about the T<sup>3</sup> certificate programs.

## **CERTIFICATE TRACKS**

The **Computer Technology** Certificate = **11 credits**

or

The **Telecommunications Technology** Certificate = **10 credits**

or

The **Electronic Technology** Certificate = **14 credits**

Depending on which track you chose, you could earn 12 to 16 credits in total:

**2 intro. course + 10 = 12**

**2 intro. course + 14 = 16**

**Q: Can someone switch tracks if they don't like the track they chose?  
If so, is there a cut-off point after which they cannot switch tracks?**

**A:** Yes, students can switch tracks if they wish. Yes, they can switch at any time, but they must take all the required courses in the track they transfer to. Only the introductory T<sup>3</sup> course and ET162 is accepted in all three certificate program tracks.

**Q: Can someone take all three T<sup>3</sup> certificate programs, one after the other?**

**A:** Yes, after everyone else who has made a choice for one of the program tracks has been accommodated.

**Q: What comes after the certificate program?**

**A:** Successful completion of a certificate program could lead to further college study and a career in engineering technology. Credits from the certificate program could be applied to an associate's or bachelor's degree.

**Q: Would TUF pay for an associate or bachelor degree?**

**A:** Currently, TUF pays for the certificate program (12, 14 or 16 credits) towards a degree. You would have to pay for the rest of your degree.

TUF would like to offer as many free or low-cost educational opportunities as possible to TWU Local 100 members. The results of future contractual negotiations between the MTA and TWU Local 100 will determine which educational programs TUF will provide and how much of these programs will be at no charge.

**Q: Must I continue on with the certificate program after the T<sup>3</sup> introductory course?**

**A:** It depends on your goals. You can take as much or as little of the T<sup>3</sup> program as you like. For example, if you complete the certificate program, and you want to continue on in college, your credits will be applied towards a college degree. If not, you can stop when you have finished the certificate. Or if you decide not to take the certificate program, you can stop after the introductory course. It's up to you.

The more courses you complete, the more background knowledge you will have to compete for a wider range of jobs in the NYCT.

**Q: Which NYCT jobs currently require a technical background?**

**A:** The information learned in the three tracks of the certificate program will provide a good foundation for many NYCT jobs. The list on the next page contains examples of the types of jobs at NYCT which require a technical background in telecommunications, computers or electronics. As technology changes, new jobs may be created which may also utilize the background knowledge provided by the certificate programs.

## NYCT JOBS REQUIRING A TECHNICAL BACKGROUND

Telecommunications	Electronics	Computer Technology
EEM (Electronic Equipment Maintainer)	(EEM) Electronic Equipment Maintainer	Power Electronic Equipment Maintainer
Telephone Maintainer	REM (Revenue Equipment Maintainer)	Signal Maintainer
Telecommunications Specialist	REM Apprentice	Computer Specialist
Computer Specialist	Signal Maintainer	
	Signal Trainee	
	CI (Car Inspector)	
	Power Electrical Helper	
	Ventilation & Drainage Maintainer	
	Electronic Specialist	
	Plant & Equipment Maintainer	
	<ul style="list-style-type: none"> <li>◆ HVAC</li> <li>◆ Electrical</li> </ul>	
	Various at the Rail Control Center (RCC)	

**Q: Is the T<sup>3</sup> certificate program similar to getting Microsoft certifications? Is T<sup>3</sup> certification nationally recognized? Does the T<sup>3</sup> certification mean anything to employers?**

**A:** The goal of the certificate program is to increase your technical knowledge so that you can compete for a range of jobs. T<sup>3</sup> certification shows employers that you have some engineering technology background in electronics, telecommunications, or computer systems. Some employers prefer employees with a general certification from a college or university (such as T<sup>3</sup>) rather than a commercially run program which has more specific goals. Other employers may not.

Some of the knowledge you will get in T<sup>3</sup> can help you prepare for the CISCO and A+ certifications.

**Q: Are the credits for T<sup>3</sup> and the certificate program transferable to other colleges?**

**A:** The courses in the Certificate Programs are typical of courses found in other colleges. They are potentially transferable. If you wanted to transfer from the College of Technology to another college, you would submit a transfer application to the new college. The new college would examine the content of the courses that you took in the Certificate Program and decide the extent to which courses they offer were equivalent. This is a standard practice for transferring to any college, no matter what courses you have taken somewhere else. If the new college had equivalent courses to those you have taken, some or all of your credits would be accepted at the new college.

The introductory T<sup>3</sup> course is a different story. It is a specially designed course by the College of Technology for TWU Local 100 members only. You can receive two credits at the College of Technology of CUNY for taking this course, contingent on the approval of the Chair of the Electrical Engineering Dept. If you decide to matriculate at City Tech, the T<sup>3</sup> credits will become part of your transcript.

**Q: I'd like to hear more about the T<sup>3</sup> program from someone who has taken it. Can someone visit our class?**

**A:** Yes. Ask your campus coordinator to contact TUF to make arrangements.

**Q: What if I decide I'm not interested after all in taking technology courses in transit? Are there other career paths I could take?**

**A:** TUF expects to grow and to be able to offer a variety of opportunities. Currently, TUF offers transit-related courses only.

# T<sup>3</sup>

## TELECOMMUNICATIONS TECHNOLOGY IN TRANSPORTATION

This 75-hour course is designed for the employees of the New York City Transit Authority, members of the TWU Local 100, and will provide the participants with a basic knowledge base of the field of telecommunications and supportive technologies and an overview of their applications to the modern transit system. Through classroom presentations, hands-on lab work demonstrations and fieldtrips to TA facilities, the participants will explore how technology is being applied to various operations and how their workplace has transformed over years because of evolving needs and system improvements. Most significantly, the students will have an opportunity to develop a conceptual foundation for the technology that will continue to change their work environments and explore opportunities for their career paths and educational advancement from a more informed position.

### **Each class in this course consists of three parts:**

- Concepts
- Hands-on / Demonstration of concepts
- Workplace applications

### **Subjects covered include:**

- Basis of Electricity
- DC Circuit Fundamentals
- AC Fundamentals
- AC Circuit Characteristics
- AC Applications
- Electronic Fundamentals – Semiconductor Diodes
- Amplifier Fundamentals and Modulation
- Digital Fundamentals
- Telephony Fundamentals and applications to Wireless Communications
- Networking Fundamentals
- Fiber Optic Fundamentals
- Analysis and Measurement of Losses



# New York City College of Technology

The City University of New York  
Business & Industry Training Center

*Department of Electrical & Telecommunications Engineering Technology  
Department of Computer Engineering Technology*

Semester	<u>TRACK 1</u>	<u>TRACK 2</u>	<u>TRACK 3</u>
	Computer Technology	Telecommunication Technology	Electronic Technology
1 <sup>st</sup>	EET1122/ET162 – Circuit Analysis I	EET1122/ET162 – Circuit Analysis I	EET1122/ET162 – Circuit Analysis I
2 <sup>nd</sup>	EMT1250/EM 250 – Digital Control	EET2261/ET482.1 - Digital II	EET1222/ET242 – Circuit Analysis II
3 <sup>rd</sup>	EMT2370/EM370 – Computer Hardware Systems EMT2390L/EM390L - Computer Operating Systems Laboratory	TCET3142/TC570 - Computer Systems	EET1240/ET212 - Electronics EET1241/ET252 - Electronics Laboratory
	4+4+3 = 11 Credits	4+3+3 = 10 Credits	4 + 5 + 5 = 14 Credits

## Course Descriptions

### **Track 1 Computer Technology Total: 11 Credits**

#### **EET1122/ET162 Circuit Analysis I**

Introduction to direct current circuit theory of series, parallel, and series- parallel circuits, network theorems, equivalent circuits, capacitive and inductive circuits and measuring instruments. Laboratory experiments include bread-boarding taking measurements, solving problems and writing laboratory reports.

3 class hours, 3 lab hours,

4 credits

#### **EM1250/EM 250 Digital Control**

Students learn how to implement and analyze control functions and arithmetic operations using digital IC's. Computer techniques are used to simulate systems and troubleshooting. Laboratory problem solving through the synthesis, bread-boarding and testing of such systems. State of the art integrated circuits are used with students working with their individual trainers.

3 class hours, 3 lab hours,

4 credits

#### **EM2370/EM470 Computer Hardware Systems**

Computer hardware systems are studied to understand the function and relationship of the CPU, memory, and peripheral equipment. The peripheral equipment includes monitors and disk drives. Each student builds, analyzes, and troubleshoots his or her own IBM PC computer.

3 class hours,

2 credits

#### **EM2390L/EM490L Operating Systems Laboratory**

Students study the characteristics of operating systems used in IBM systems. They learn how to install the operating system and set it up to control the computer hardware. They also learn to use features of the operating system to manage the computer system.

3 class hours

1 credit



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## **Track 2                      Telecommunication Technology                      Total: 10 credits**

**EET1122/ET162 Circuit Analysis I** **4 credits**  
**EET2261/ET482.1 Digital II**

This course is designed to train students in the organization, architecture and hardware aspects of a computer system. Topics include microprocessors, operating systems, motherboards, bus structures, memory, disk drives, video displays, and printers. Other topics will include connecting to a network and working within a network. Applications include the interfacing of peripherals, data communications between computers, and a team project.

**3 class hours, 2 lab hours** **3 credits**

### **TCET3142/TC570 Computer Systems**

The skills needed to install, configure, and troubleshoot a computer network are covered. A wide range of materials starting with computer hardware, operating systems, wiring, protocols, and installation are discussed. Troubleshooting various networks, utilizing engineering analysis tools are covered. Discovering practical problems interfacing computer networks, in various configurations, are covered in the laboratory.

**3 class hours** **3 credits**

## **Track 3                      Electronic Technology                      Total: 14 Credits**

**EET1122/ET162 Circuit Analysis I** **4 credits**

### **EET1222/ET242 Circuit Analysis II**

Analysis of AC circuits with sine-wave and square-wave sources and R,L,C circuit components covering phase shift , frequency response, series and parallel resonance, and three phase wye and delta circuits. Laboratory exercises are included.

**4 class hours, 2 lab hours** **5 credits**

### **EET1240/ET212 Electronics**

Characteristics and applications of semiconductor elements such as diodes, bipolar junction transistors and field effect transistors are covered. Applications include dc power supplies, voltage regulators, small signal amplifiers, (single and multi stage), operational amplifiers, negative feedback, and frequency response.

**4 class hours** **4 credits**

### **EET1241/ET252 Electronics Laboratory**

Experiments based on material in ET 212 give the students experience in operating the oscilloscope, voltmeter, multimeter, and signal generator for testing electronic circuits.

**3 lab hours** **1 credit**

If you have further questions about the T<sup>3</sup> program or about other courses that TUF offers please contact:



***TWU LOCAL 100-NYC Transit***

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Upgrading  
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