



# Health Science Cluster

## Comprehensive Career Cluster Review (C3R)

College, Career & Technical Education | Spring 2024

# Comprehensive Career Cluster Review (C3R)

The comprehensive career cluster review (C3R) is the intentional review of career and technical education (CTE) programs and the course standards within each program to ensure students have up-to-date course standards aligned to postsecondary and career needs. Each career cluster is reviewed annually with input from the state-wide advisory councils comprised of postsecondary partners, industry partners, and secondary CTE teachers. Advisory council meetings allow the stakeholders to engage in dialogue and discuss current needs, emerging trends, and necessary course revisions to course standards. Advisory council input could potentially lead to new or retired programs of study, new courses or retired courses, or revised course standards within existing courses, if necessary. The collaborative engagement ensures students receive instruction on the most up-to-date and relevant course standards, so they are prepared for postsecondary and the workforce.

## Health Science

The Health Science career cluster in CTE offers students a comprehensive pathway to careers in the healthcare industry. This cluster focuses on preparing students for a wide range of roles, from clinical positions like nurses and medical technicians to administrative roles such as health information managers and medical office assistants. Through a combination of classroom instruction and hands-on experiences, students gain essential knowledge in areas such as anatomy, physiology, medical terminology, and patient care. Programs often include internships and partnerships with local healthcare facilities, providing real-world experience and networking opportunities. By participating in the Health Science career cluster, students are equipped with the skills and certifications necessary to enter the workforce directly after graduation or to continue their education in postsecondary institutions, contributing to a well-prepared and versatile healthcare workforce. This career cluster contains six programs of study: Diagnostic Services, Emergency Services, Nursing Services, Sport and Human Performance, Therapeutic Services, and Behavioral Health.

School Year	Health Science Concentrators
2020-21	16,451
2021-22	15,971
2022-23	17,967

# Diagnostic Services

2023-024 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Diagnostic Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Diagnostic Medicine (C14H12) -or- <b>Dual Enrollment</b> Diagnostic Services I (C14H02) -or- <b>Dual Enrollment</b> Diagnostic Services II (C14H26) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Cardiovascular Services (C14H18) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Diagnostic Services III (C14H37) -or- <b>Dual Enrollment</b> Diagnostic Services IV (C14H38) -or- <b>WBL</b> Diagnostic Services Career Practicum (C14H19)

## Description

*Diagnostic Services* program of study (POS) comprises of careers that use tests to detect, diagnose, and treat diseases, injuries, or other physical conditions. The pathway is designed to prepare students for careers in the fields of radiology, medical laboratory, optometry, and other patient diagnostic procedures. Upon completion of this program, proficient students will be able to describe new and evolving diagnostic technologies, compare the features of healthcare systems, explain the legal and ethical ramifications of the healthcare setting, and begin to perform foundational healthcare skills. In the fourth-year course, students will have the option to take Cardiovascular Services, Clinical Internship, or Work-Based Learning (WBL) Diagnostic Services Career Practicum. The capstone practicum course provides students with opportunities to learn from industry professionals in a working environment, learn specialized knowledge in cardiovascular services in both invasive and non-invasive procedures, apply real-world application of acquired healthcare skills, and explore career options in diagnostic services.

Dual credit and dual enrollment opportunities may be established with local postsecondary institutions.

This POS is aligned with the [Health Occupation Students of America \(HOSA\)](#) career technical student organization (CTSO).

## Job Outlook

According to the Bureau of Labor Statistics, overall employment in healthcare occupations is projected to grow much faster than the average for all occupations from 2022 to 2032. Due to employment growth and the need to replace workers who are leaving or retiring, healthcare is projecting approximately 1.8 million job openings within the next ten years<sup>1</sup>. In a recent article published by Tennessee Health Workforce, the projected growth for medical lab technicians and technologists is expected to increase by 13 percent by 2035<sup>2</sup>. As shown in Figure 3, the projected employment growth for cardiovascular technologists and technicians in Tennessee is reflected through 2030. An increase in the aging population is expected to lead to a greater need to diagnose medical conditions through laboratory procedures, medical imaging, and electrocardiography. All careers in Diagnostic Services are considered to have a bright outlook in Tennessee. Students in the Diagnostic Services cluster can take the Certified Electrocardiogram (EKG) Technician Exam upon completion of the required courses.

**Figure 1.** Tennessee employment projections for Diagnostic Services related occupations with positive job openings projected 2020-2030 according to the Tennessee Higher Education Commission, [Supply and Demand Report](#).<sup>3</sup>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Medical and Health Services Manager</b>	11-9111	10,500	14,990	43%	1,420
<b>Dental Assistants</b>	31-9091	5,590	6,380	14%	770
<b>Physical Therapists</b>	29-1123	5,180	6,130	18%	320
<b>Radiologic Technologists and Technicians</b>	29-2034	3,980	4,600	16%	360

<sup>1</sup> U.S. Bureau of Labor Statistics. (2024e, April 17). *Healthcare occupations: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <https://www.bls.gov/ooh/healthcare/home.htm>.

<sup>2</sup> Tennessee Hospital Association. (2022, October). *Tennessee-health-workforce-projections- ...* THA.com. <https://secure.tha.com/files/workforce/Tennessee-Health-Workforce-Projections-Report.pdf>.

<sup>3</sup> Tennessee Higher Education Commission, Supply and Demand Report, Retrieved March 1, 2024, from <https://www.tn.gov/thec/research/supply-and-demand.html>.

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Respiratory Therapists</b>	29-1126	3,510	4,580	31%	290
<b>Speech-Language Pathologists</b>	29-1127	3,250	4,260	31%	320
<b>Veterinary Assistants and Laboratory Animal Caretakers</b>	31-9096	2,680	3,470	30%	570
<b>Surgical Technicians</b>	29-2055	2,720	3,200	18%	260
<b>Phlebotomists</b>	31-9097	2,410	3,090	28%	390
<b>Physician's Assistant</b>	29-1071	2,080	2,820	36%	210

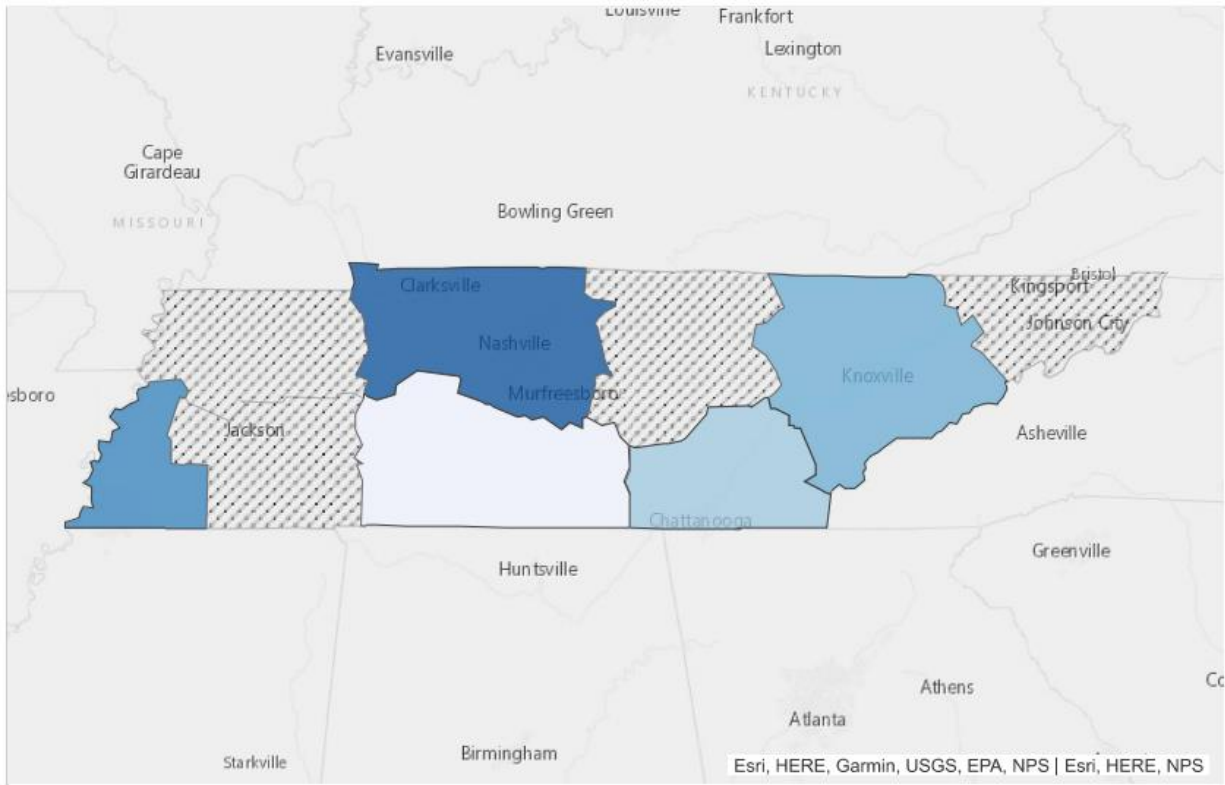
Figure 2. National employment projections for Diagnostic Services related occupations with positive job openings projected 2022-2032.<sup>4</sup>

Occupation	SOC Code	Employment (2022)	Projected Employment (2032)	Projected Growth (2022-2032)	Projected Job Openings (2022-2032)
<b>Phlebotomists</b>	31-9097	139,400	150,200	8%	19,500
<b>Speech-Language Pathologists</b>	29-1127	171,400	204,500	19%	13,200
<b>Radiologic Technologists &amp; Technician</b>	29-2034	222,280	235,000	5-8%	13,100

<sup>4</sup> Bureau of Labor Statistics, U.S. Department of Labor, O\*NET Online, Retrieved February 1, 2024, from <https://www.onetonline.org>.

**Figure 3.** National employment projections for Diagnostic Services related occupations with positive job openings projected 2022-2032.<sup>5</sup>

The map below shows the distribution of the 2030 projected employment for Cardiovascular Technologists and Technicians in Tennessee by local workforce development areas.



Source: TN Dept of Labor & Workforce Dev, Div Emp Sec, LMI

<sup>5</sup> Jobs4Tn.gov. Occupation Profile. Retrieved (February 1, 2024), from <https://jobs4tnwfs.tn.gov/vosnet/Default.aspx>.

## ***Program of Study Level***

The Tennessee Investment in Student Achievement (TISA) provides direct funding for student participation in CTE programs to drive college and career readiness outcomes. Pursuant to [T.C.A. § 49-3-105\(c\)\(2\)](#), a direct allocation amount will be generated for each student membership in a CTE program based on the rule:

1. The level of the program
  - Programs shall be designated into one (1) of three (3) levels.
  - Programs will be classified into three (3) levels based on alignment to wage-earning potential indicators and additional resources required to support the program if aligned to wage-earning potential occupational pathways.
2. The student progression in coursework through the program

\*The state budget keeps all programs funded at \$5,000 for 2024-25 school year funding. See the [CTE TISA Programs of Study Leveling Guide 2024-25](#) for the TISA funding formula for program of study levels.

### **Diagnostic Services Program: Level 3**

## ***Postsecondary Pathways***

Most of Tennessee's in-demand health sciences occupations are in local healthcare services industries, such as hospitals, clinics, doctor's offices, nursing homes, and ambulatory services. These occupations will typically require a degree, certificate, or license to practice.

Growing expertise in healthcare fields also supports research and development activity in physical, engineering, and life sciences, which encompasses nearly all types of life sciences research. Institutions across Tennessee offer academic programs in the health sciences that provide completers with general and specialized training to fulfill in-demand occupations in the state. Chattanooga State Community College (ChSCC) offers a Magnetic Resonance Imaging certificate. Degree completers in Magnetic Resonance Imaging (MRI) Technology/Technician earned over \$60,000 in their first year.

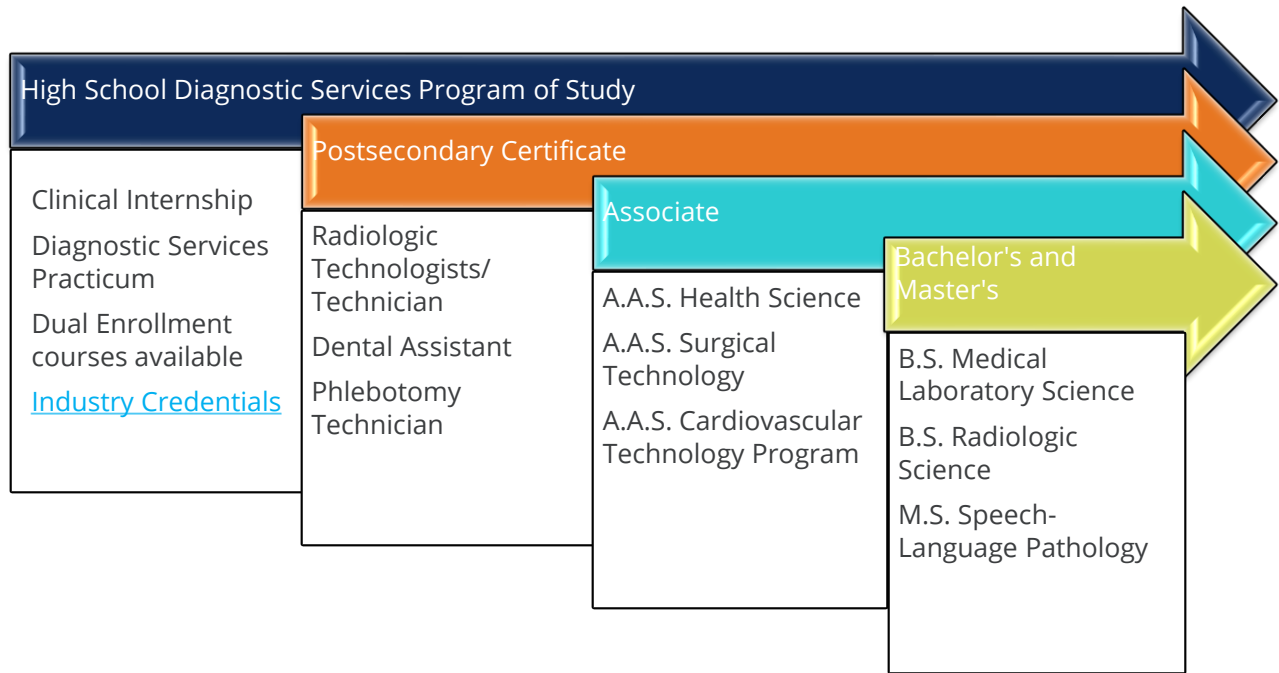
In July 2022, the Pathologists' Assistant Program, Master of Health Science (MHS) at the University of Tennessee, Health Science Center (UTHSC) was designed to educate individuals to become Pathologists' Assistants that provide surgical, autopsy, and forensic pathology professional services under the guidance of a board-certified pathologist. The program will prepare students to complete the American Society for Clinical Pathology Board of Certification examination for Pathologists' Assistant. The Pathologists' Assistant program is the first of its kind in the state and is one of few in the country.

Nashville State Community College and Walters State Community College currently offer a two-year program for obtaining an Associate of Applied Science (AAS) degree in Surgical Technology. Students who complete this program will build a solid foundation in the knowledge of anatomy, medical terminology, and

microbiology. Students will receive both classroom time and practical clinical experience. After program completion, students are qualified to sit for the National Certifying Examination.

The University of Tennessee at Knoxville offers a degree in Speech Pathology and Audiology. The bachelor's program at the University of Tennessee at Knoxville was ranked number 78 on [College Factual's Best Schools for Audiology](#). During the 2020-21 academic year, 61 students graduated with a bachelor's degree in audiology from UT Knoxville. In addition, Austin Peay State University (APSU) offers a Master of Speech-Language Pathology (MSLP) degree through the Department of Health and Human Performance. Graduates of the APSU MSLP degree program will be able to practice professionally as entry-level speech-language pathologists and will be prepared for a successful fellowship.

**Figure 4.** Outlines the related career opportunities and training necessary for each program of study. Students may acquire hours transferable to a postsecondary institution for the completion of a degree.



Additional opportunities are offered at multiple postsecondary institutions as indicated in the [Tennessee Department of Labor and Workforce Dashboard](#).

High School Diploma	Certificate	Associate	Bachelor's and Master's
<ul style="list-style-type: none"> <li>• Certified EKG Technician <b>(\$33,950)</b></li> <li>• Healthcare Support Workers, all others <b>(\$26,002)</b></li> <li>• Opticians <b>(\$29,024)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Magnetic Resonance Imaging Technician <b>(\$61,413)</b></li> <li>• Dental Assistant <b>(\$44,820)</b></li> <li>• Phlebotomist <b>(\$38,530)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Dental Assistant <b>(\$44,820)</b></li> <li>• Surgical Technician <b>(\$55,960)</b></li> <li>• Cardiovascular Technologists and Technicians <b>(\$33,216)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Laboratory Science/Med. Technologists <b>(\$61,559)</b></li> <li>• Radiographer <b>(\$47,732)</b></li> <li>• Speech-Language Pathologists <b>(\$84,140)</b></li> </ul>

## Current Secondary Landscape

In the 2022-23 school year, 82 schools in Tennessee offered courses in the Diagnostic Services program of study. Over the past three years, the number of schools offering the program has remained stable across the state. Diagnostic Services had approximately 26,562 students enrolled in the 2022-23 school year. Figure 5 shows the number of schools offering the Diagnostic Services POS for the 2020-21 to 2022-23 school years and student enrollment for the 2020-21 through 2022-23 school years in the Diagnostic Services POS.

Figure 5. Open Enrollment Analysis

School Year	Schools Offering Diagnostic Services
2020-21	83
2021-22	72
2022-23	82

Figure 5a. Student Enrollment

School Year	Health Science Edu.	Anatomy & Physiology	Diagnostic Medicine	Cardiovascular Services	Clinical Internship	Dual Enrollment
2020-21	16,623	6,426	2,345	336	1,428	76
2021-22	16,718	6,116	2,024	191	1,662	80
2022-23	16,609	6,196	1,758	212	1,648	139

# Emergency Services

2023-24 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Emergency Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Medical Therapeutics (C14H15) -or- <b>Dual Enrollment</b> Emergency Services I (C14H04) -or- <b>Dual Enrollment</b> Emergency Services II (C14H29) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Emergency Medical Services (C14H13) -or- Emergency Medical Services Practicum (C14H24) -or- <b>Dual Enrollment</b> Emergency Services III (C14H35) -or- <b>Dual Enrollment</b> Emergency Services IV (C14H36) -or- <b>WBL</b> Emergency Services Career Practicum (C14H45)

## Description

The *Emergency Services* POS is designed to prepare students to pursue careers in emergency medicine. Upon completion, proficient students will be able to identify careers and features of the Emergency Medical Services (EMS) system, define the importance of workforce safety and wellness, maintain legal and ethical guidelines, correlate anatomy and physiology concepts to the patient with a medical or traumatic injury, and perform EMS skills with a high level of proficiency. In the fourth year of this program of study, students have the option of taking the Emergency Medical Services Practicum or the Work-Based Learning Emergency Services Career Practicum. The capstone practicum course provides students with opportunities to learn from industry professionals in a working environment, assess patients of all ages, develop an understanding of professional and ethical issues, and develop proficiency in communication and critical thinking skills while strengthening their problem-solving skills.

If taught by an emergency medical technician (EMT) instructor, students will be allowed to sit for the National Emergency Medical Responder certification.

Dual credit and dual enrollment opportunities may be established with local postsecondary institutions.

This POS is aligned with the [HOSA CTSO](#).

## ***Job Outlook***

According to the Bureau of Labor Statistics, United States jobs related to Emergency Medical Technician and Paramedics are projected to grow five percent from 2022 to 2032, faster than the average for all other occupations.<sup>6</sup> Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire. Emergencies such as car crashes, natural disasters, and acts of violence will continue to create demand for EMTs and paramedics with more favorable employment opportunities around large cities. In addition, growth in the middle-aged and older population will lead to an increase in age-related health emergencies, such as falls, heart attacks, and strokes. This increase, in turn, will support demand for EMT and paramedic services. EMTs and paramedics typically complete a postsecondary educational program and must be licensed within their state.

Another job within this program that has a bright outlook is Public Safety Telecommunicator<sup>7</sup>. This job is expected to grow three percent from 2022 to 2032 due to population growth, and the commensurate increase in 9-1-1 call volume is expected to create demand for these workers.

In addition, Medical Equipment Preparers has a bright outlook across the state and is expected to grow by 19 percent from 2020-2030. This career allows on-the-job training with a high-school diploma or General Educational Development (GED) required.

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<sup>6</sup> U.S. Bureau of Labor Statistics. (2024c, April 17). *EMTs and paramedics: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm#tab-6>.

<sup>7</sup> U.S. Bureau of Labor Statistics. (2024i, April 17). *Public safety telecommunicators: Occupational Outlook Handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/ooh/office-and-administrative-support/police-fire-and-ambulance-dispatchers.htm#tab-6>

**Figure 1.** Tennessee employment projections for Emergency Service-related occupations with positive job openings projected for 2020-2030 according to the Tennessee Higher Education Commission, [Supply and Demand Report](#).<sup>8</sup>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Medical and Health Services Manager</b>	11-9111	10,500	14,990	43%	1,420
<b>Healthcare Support Workers, All Other</b>	31-9099	1,870	2,230	19%	280
<b>Medical Equipment Preparers</b>	31-9093	1,100	1,310	19%	170
<b>Health Education Specialists</b>	21-1091	790	950	20%	110

**Figure 2.** National employment projections for Emergency Service-related occupations with positive job openings projected 2022-2032.<sup>9</sup>

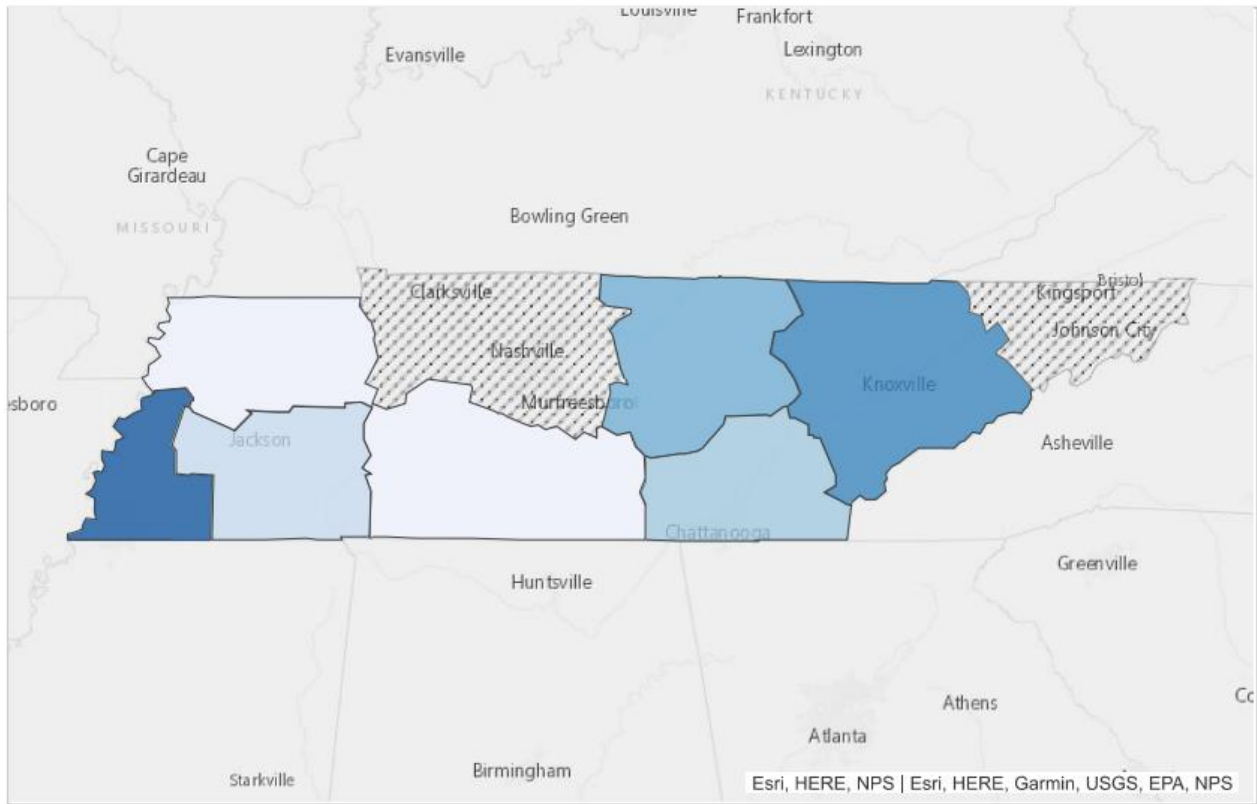
Occupation	SOC Code	Employment (2022)	Projected Employment (2032)	Projected Growth (2022-2032)	Projected Job Openings (2022-2032)
<b>Paramedic</b>	29-2043	98,300	103,600	5-8%	5,100
<b>Emergency Medical Technician</b>	29-2042	170,700	180,000	5-8%	13,100

<sup>8</sup> Tennessee Higher Education Commission, Supply and Demand Report, Retrieved March 1, 2024, from <https://www.tn.gov/thec/research/supply-and-demand.html>.

<sup>9</sup> Bureau of Labor Statistics, U.S. Department of Labor, O\*NET Online, Retrieved February 1, 2024, from <https://www.onetonline.org>.

**Figure 3.** 2024 projected employment for Public Safety Telecommunicator in Tennessee.<sup>10</sup>

The map below shows the distribution of the 2030 projected employment for Public Safety Telecommunicators in Tennessee by local workforce development areas.



**2030 Projected Employment**



Source: TN Dept of Labor & Workforce Dev, Div Emp Sec, LMI

<sup>10</sup> Jobs4Tn.gov. Occupation Profile. Retrieved (February 1, 2024), from <https://jobs4tnwfs.tn.gov/vosnet/Default.aspx>.

## ***Program of Study Level***

TISA provides direct funding for student participation in CTE programs to drive college and career readiness outcomes. Pursuant to [T.C.A. § 49-3-105\(c\)\(2\)](#), a direct allocation amount will be generated for each student membership in a CTE program based on the rule:

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2. The student progression in coursework through the program

\*The state budget keeps all programs funded at \$5,000 for 2024-25 school year funding. See the [CTE TISA Programs of Study Leveling Guide 2024-25](#) for the TISA funding formula for program of study levels.

### **Emergency Medical Services Program: Level 1**

## ***Postsecondary Opportunities***

In Tennessee, although 99 schools are public and private not-for-profit, only 12 of them have paramedic programs and courses<sup>11</sup>. 'Paramedic' is the highest level of training for emergency medical technicians (EMTs); as such, individuals must complete basic and intermediate training before pursuing a career as a paramedic. Paramedicine educational programs include training, certificate, and associate degree programs, all of which include practicum or clinical requirements before graduation.

Upon completion of the chosen certificate program, students must take and pass a certification exam. The National Registry of Emergency Medical Technicians (NREMT) certifies EMTs and paramedics. All levels of NREMT certification require completing a certified education program and passing the national exam. The national exam has both written and practical parts.

Nashville State Community College currently offers an Associate of Applied Science in Healthcare Management, teaching the students the fundamentals of healthcare administration. They will gain the practical hands-on experience needed for a successful career. After degree completion, students have the

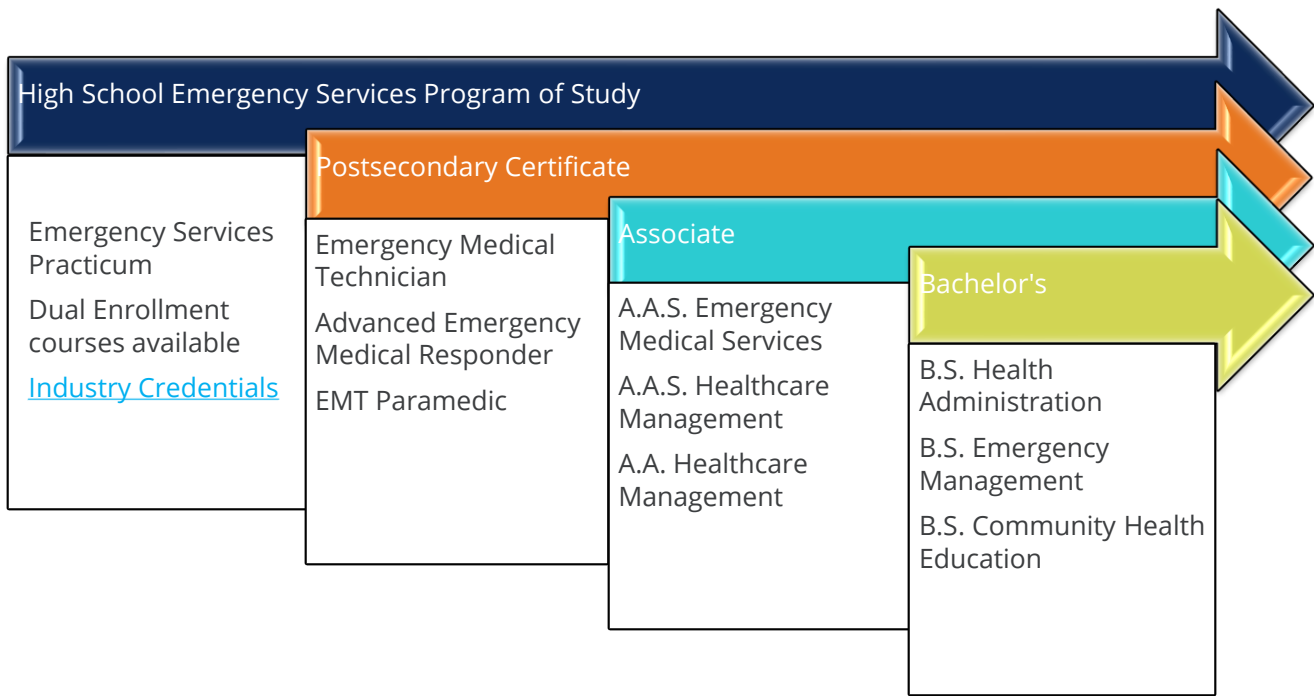
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<sup>11</sup> Paramedic school. (2024, April 23). <https://www.columbiastate.edu/academics/health-sciences-division/emt/paramedic/paramedic-school.html>

option to further their education through the Tennessee Transfer Pathways, transferring to a partnered four-year university to complete a bachelor's degree.

Healthcare Administration bachelor's degrees are the first step in obtaining a career in Medical and Health Service Management. Tennessee Tech currently offers a bachelor's degree in health administration that prepares students interested in entering the healthcare field in administrative careers. In addition, the Department of Public Health, Health Administration and Health Sciences at Tennessee State University has the only approved four-year Bachelor of Science Degree Program in the State of Tennessee and the southeast region and is one of the 29 programs nationwide.

**Figure 4.** Outlines the related career opportunities and training necessary for each program of study. Students may acquire hours transferable to a postsecondary institution for the completion of a degree.



Additional opportunities are offered at multiple postsecondary institutions as indicated in the [Tennessee Department of Labor and Workforce Dashboard](#).

High School Diploma	Certificate	Associate	Bachelor's
<ul style="list-style-type: none"> <li>• Emergency Medical Responder (<b>\$30,380</b>)</li> <li>• Dispatcher (<b>\$38,480</b>)</li> <li>• Medical Equipment Preparers (<b>\$41,480</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Medical Technician (<b>\$26,766</b>)</li> <li>• Endoscopy Technician (<b>\$40,420</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Paramedic (<b>\$49,090</b>)</li> <li>• Healthcare Administration (<b>\$54,000</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Service Manager (<b>\$79,180</b>)</li> <li>• Healthcare Administration (<b>\$104,830</b>)</li> <li>• Health Education Specialists (<b>\$59,990</b>)</li> </ul>

## Current Secondary Landscape

In the 2022-23 school year, 54 schools in Tennessee offered courses in the Emergency Services program of study. The offered courses have decreased over the past three years; however, the demand for the job continues to rise. Emergency Services had approximately 30,596 students enrolled in the 2022-23 school year. Figure 5 indicates the number of schools offering the Emergency Services POS for the 2020-21 to 2022-23 school years and student enrollment for the 2020-21 through 2022-23 school years in the Emergency Services POS.

Figure 5. Open Enrollment Analysis

School Year	Schools Offering Emergency Services
2020-21	68
2021-22	58
2022-23	54

Figure 5a. Student Enrollment

School Year	Health Science Education	Anatomy & Physiology	Medical Therapeutics	Emergency Medical Practicum	Emergency Medical Services	Dual Enrollment
2020-21	16,623	6,426	7,615	17	1,012	171
2021-22	16,718	6,116	7,644	36	805	223
2022-23	16,609	6,196	6,909	16	630	236

# Nursing Services

2023-2024 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Nursing Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Medical Therapeutics (C14H15) -or- <b>Dual Enrollment</b> Nursing Services I (C14H03) -or- <b>Dual Enrollment</b> Nursing Services II (C14H27) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Nursing Education (C14H16) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Nursing Services III (C14H33) -or- <b>Dual Enrollment</b> Nursing Services IV (C14H34) -or- <b>WBL</b> Nursing Services Career Practicum (C14H46)

## Description

The *Nursing Services* POS is designed to prepare students to pursue nursing careers. Upon completion of this program, a proficient student will be able to implement communication and interpersonal skills, maintain residents' rights and independence, provide care safely, prevent emergency situations, prevent infection through infection control, and perform the skills required of a nursing assistant. In the fourth year of this POS, students have the option of taking Nursing Education, Clinical Internship, or the Work-Based Learning Nursing Services Career Practicum. The capstone practicum course provides students with the opportunities to learn from real-life scenarios, advancing student knowledge in medical skills and terminology. Students will log 40 hours of site-based clinical work with at least 24 of those hours spent in a long-term care facility as part of the year four course.

Successful completion of the course and certification exam allows the student to seek immediate employment as a Certified Nursing Aide or Patient Care Technician.

Although this POS leads students to a certified nursing assistant or patient care technician industry certification, students seeking a degree in medicine who plan to enter medical school will find this POS to be beneficial. The emphasis on anatomy and physiology, along with patient care content and skills, makes this POS the perfect adjunct to a focus on science and math for the student who is bound for medical school.

Dual credit and dual enrollment opportunities may be established with local postsecondary institutions.

This POS is aligned with the [HOSA](#) CTSO.

## Job Outlook

The outlook is bright for all levels of nursing in Tennessee and the nation. According to the Bureau of Labor Statistics, employment for all nursing assistants is projected to grow faster than average from 2022-2032, projected to grow 22 percent<sup>12</sup>. Even though the certified nursing assistant and home health aide professions are not high-wage careers, they are certainly high-skill and high-demand.

Registered nurses are expected to grow six percent from 2022-2032, faster than the average for all occupations.<sup>13</sup> Demand for healthcare services will increase because of the large number of older people, who typically have more medical problems than younger people. Job growth is expected across most types of healthcare settings, including hospitals and outpatient care centers that provide same-day services, such as chemotherapy, rehabilitation, and surgery. In addition, because many older people prefer to be treated at home or in residential care facilities, registered nurses will be in demand in those settings.

**Figure 1.** Tennessee employment projections for Nursing Services related occupations with positive job openings projected for 2020-2030 according to the Tennessee Higher Education Commission, [Supply and Demand Report](#).<sup>14</sup>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Medical Assistants</b>	31-9092	15,540	18,800	21%	2,310
<b>Medical and Health Services Manager</b>	11-9111	10,500	14,990	43%	1,420
<b>Registered Nurse</b>	29-1141	64,280	75,150	17%	4,700
<b>Nurse Practitioners</b>	29-1171	8,180	12,860	57%	1,020
<b>Licensed Practical Nurse</b>	29-2061	25,620	29,860	17%	2,520

<sup>12</sup> U.S. Bureau of Labor Statistics. (2024g, April 17). *Home Health and Personal Care Aides: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/ooh/healthcare/home-health-aides-and-personal-care-aides.htm#tab-6>

<sup>13</sup> U.S. Bureau of Labor Statistics. (2024k, April 17). *Registered nurses: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/OOH/healthcare/registered-nurses.htm#tab-6>

<sup>14</sup> Tennessee Higher Education Commission, Supply and Demand Report, Retrieved March 1, 2024, from <https://www.tn.gov/thec/research/supply-and-demand.html>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Nurse Anesthetists</b>	29-1151	2,820	3,220	14%	190
<b>Nursing Assistant</b>	31-1131	29,570	34,090	15%	4,290
<b>Physician's Assistant</b>	29-1071	2,080	2,820	36%	210
<b>Psychiatric Aides</b>	31-1133	1,860	2,390	29%	310
<b>Healthcare Support Workers, All Other</b>	31-9099	1,870	2,230	19%	280

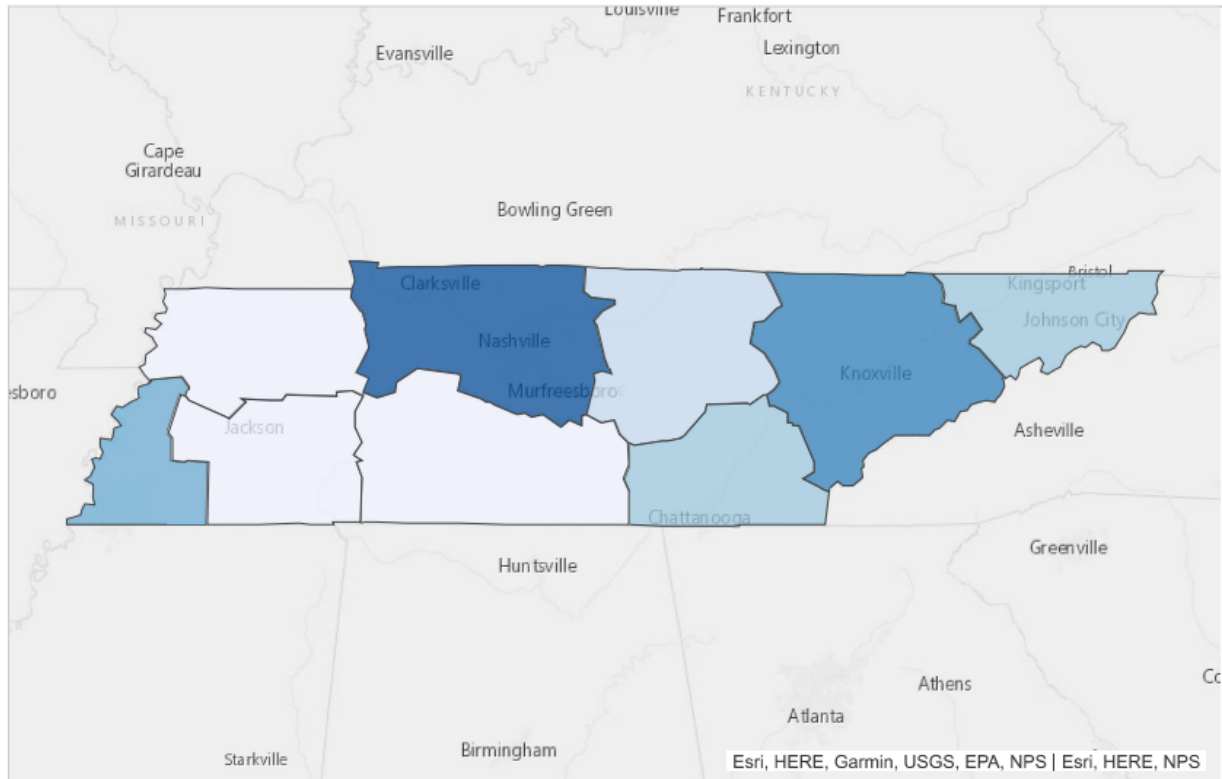
**Figure 2.** National employment projections for Nursing Services related occupations with positive job openings projected for 2022-2032. <sup>15</sup>

Occupation	SOC Code	Employment (2022)	Projected Employment (2032)	Projected Growth (2022-2032)	Projected Job Openings (2022-2032)
<b>Licensed Practical Nurse</b>	29-2061	655,500	689,900	5-8%	54,400
<b>Surgical Assistant</b>	29-9093	19,700	20,700	5-8%	1,300
<b>Registered Nurse</b>	29-1141	3,172,500	3,349,900	5-8%	193,100

<sup>15</sup> Bureau of Labor Statistics, U.S. Department of Labor, O\*NET Online, Retrieved February 1, 2024, from <https://www.onetonline.org>.

**Figure 3.** 2030 projected employment for Nursing Assistants in Tennessee.<sup>16</sup>

The map below shows the distribution of the 2030 projected employment for Nursing Assistants in Tennessee by local workforce development areas.



Source: TN Dept of Labor & Workforce Dev, Div Emp Sec, LMI

<sup>16</sup> Jobs4Tn.gov. Occupation Profile. Retrieved (February 1, 2024), from <https://jobs4tnwfs.tn.gov/vosnet/Default.aspx>.

## ***Program of Study Level***

TISA provides direct funding for student participation in CTE programs to drive college and career readiness outcomes. Pursuant to [T.C.A. § 49-3-105\(c\)\(2\)](#), a direct allocation amount will be generated for each student membership in a CTE program based on the rule:

1. The level of the program
  - Programs shall be designated into one (1) of three (3) levels.
  - Programs will be classified into three (3) levels based on alignment to wage-earning potential indicators and additional resources required to support the program if aligned to wage-earning potential occupational pathways.
2. The student progression in coursework through the program

\*The state budget keeps all programs funded at \$5,000 for 2024-25 school year funding. See the [CTE TISA Programs of Study Leveling Guide 2024-25](#) for the TISA funding formula for program of study levels.

### **Nursing Services Program: Level 3**

## ***Postsecondary Opportunities***

Nursing programs at the postsecondary level are growing each year to meet the demand of replenishing retiring and aging nursing staff. There are over 64,000 nurses employed in Tennessee, and that number is projected to increase<sup>17</sup>. Completion of the Nursing Services program of study and subsequent certification as a CNA allows the student to pursue this experience and prepare for nursing school admission.

With just over 2,000 students, Union University offers a small, private university experience. Union's main campus is based in Jackson, though it has additional campuses in Hendersonville, Germantown, and Memphis. While earning a Bachelor of Science in Nursing from Union, students will first complete 65 credit hours of core courses, followed by 64 nursing credit hours. This is generally split evenly over the four-year degree, so students take most of their nursing courses during their junior and senior years. Upon graduation, nurses either enter the workforce or continue their education and earn a Master of Science in Nursing (MSN) or Doctor of Nursing Practice (DNP).

The University of Tennessee (UT) at Knoxville is one of the oldest universities in the nation, founded over 200 years ago. Since its establishment, UT Knoxville, often referred to as "Tennessee", has grown into the flagship university in the University of Tennessee System and one of the top universities in the nation. The College of Nursing matches the academic excellence of UT Knoxville, and undergraduate students can

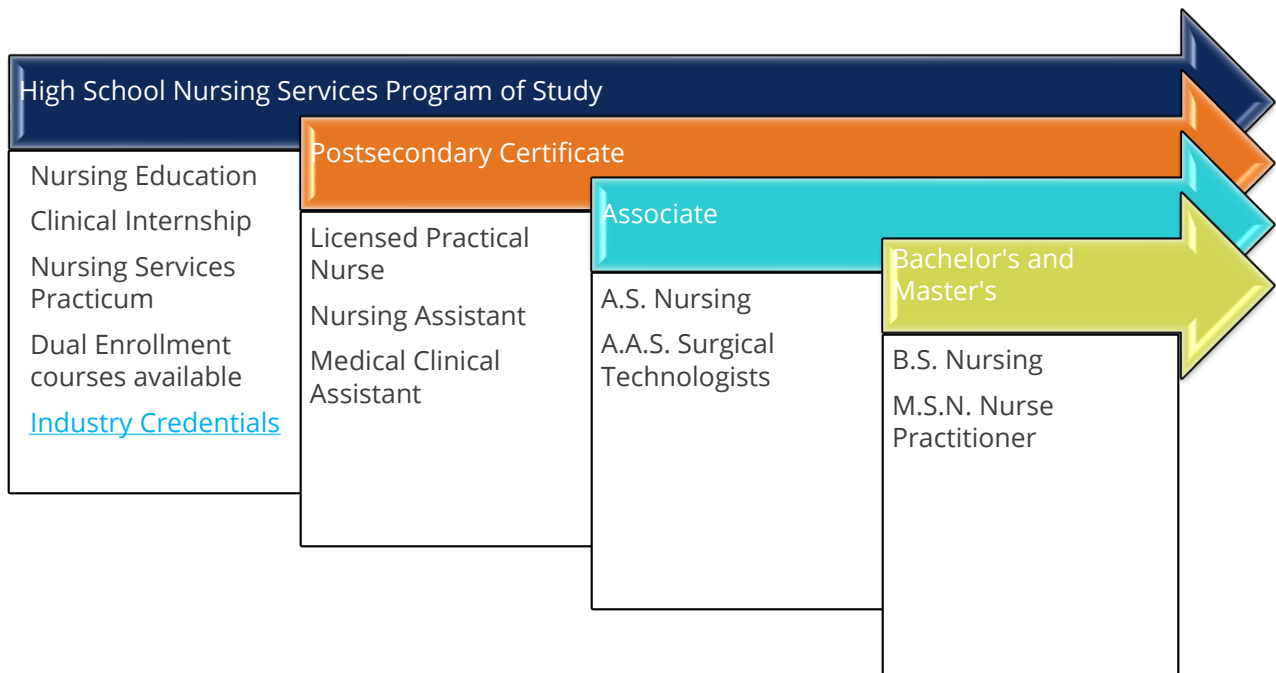
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<sup>17</sup> *O\*Net online*. O\*NET OnLine. (2024). <https://www.onetonline.org/>

choose from the traditional BSN, an online RN-BSN, an accelerated BSN, or the Honors Program. UT Knoxville is highly competitive despite admitting 100 BSN students annually.

Middle Tennessee State University (MTSU) is a large, public research school based in Murfreesboro. MTSU has a reputation for being an affordable, quality school for Tennessee residents, though students from out-of-state can take advantage of its excellent programs. The School of Nursing offers two programs: a traditional, four-year Bachelor of Science in Nursing and a Master of Science in Nursing (MSN) with a concentration in family nurse practitioner (FNP). The MSN leads to a high-paying and high-demand field, so current or future nurses looking to specialize in their practice may be interested in the program.

**Figure 4.** Outlines the related career opportunities and training necessary for each program of study. Students may acquire hours transferable to a postsecondary institution for the completion of a degree.



Additional opportunities are offered at multiple postsecondary institutions as indicated in the [Tennessee Department of Labor and Workforce Dashboard](#).

High School Diploma	Certificate	Associate	Bachelor's and Master's
<ul style="list-style-type: none"> <li>• Certified Nursing Aide (<b>\$35,760</b>)</li> <li>• Home Health Aide (<b>\$30,180</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Licensed Practical Nurse (<b>\$54,620</b>)</li> <li>• Medical Assistant (<b>\$38,270</b>)</li> <li>• Psychiatric Aide (<b>\$37,160</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Registered Nurse (<b>\$81,220</b>)</li> <li>• Surgical Technologists (<b>\$55,960</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Registered Nurse (<b>\$81,220</b>)</li> <li>• Nurse Practitioner (<b>\$121,610</b>)</li> </ul>

## Current Secondary Landscape

In the 2022-23 school year, 142 schools in Tennessee offered courses in the Nursing Services program of study. Over the past three years, the number of schools offering the program has remained stable across the state. Nursing Services had approximately 34,189 students enrolled in the 2022-23 school year. Figure 5 indicates the number of schools offering the Nursing Services POS for the 2020-21 to 2022-23 school years and student enrollment for the 2020-21 through 2022-23 school years in the Nursing Services POS.

Figure 5. Open Enrollment Analysis

School Year	Schools Offering Nursing Services
2020-21	145
2021-22	139
2022-23	142

Figure 5a. Student Enrollment

School Year	Health Science Education	Anatomy & Physiology	Medical Therapeutics	Nursing Education	Clinical Internship	Dual Enrollment
2020-21	16,623	6,426	7,615	1,194	1,428	1,078
2021-22	16,718	6,116	7,644	1,215	1,662	1,239
2022-23	16,609	6,196	6,909	1,074	1,648	1,753

# Sports and Human Performance

2023-24 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Sports and Human Performance</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology <sup>1</sup> (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Rehabilitation Careers (C14H08) -or- <b>Dual Enrollment</b> Sport and Human Performance I (C14H39) -or- <b>Dual Enrollment</b> Sport and Human Performance II (C14H40) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44) -or- <b>IB</b> Sports, Exercise, & Health Science I SL/HL (G03H39)	Exercise Science (C14H22) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Sport and Human Performance III (C14H41) -or- <b>Dual Enrollment</b> Sport and Human Performance IV (C14H42) -or- <b>IB</b> Sports, Exercise, & Health Science II SL/HL (G03H40) -or- <b>WBL</b> Sport and Human Performance Career Practicum (C14H47)

## Description

The *Sport and Human Performance* POS is designed to prepare students to pursue careers in kinesiology and exercise physiology services. Upon completion, proficient students can apply concepts of anatomy and physiology, physics, chemistry, bioenergetics, and kinesiology to specific exercise science contexts. Through these connections, students will understand the importance that exercise, nutrition, and rehabilitation play in athletes or patients with debilitating or acute metabolic, orthopedic, neurological, psychological, and cardiovascular disorders. In addition, students have the opportunity to incorporate communication, goal setting, and information collection skills in their coursework in preparation for future success in the workplace. In the fourth year of this POS, students have the option of taking Exercise Science, Clinical Internship, or the WBL Sport and Human Performance Career Practicum. The capstone practicum course provides students with opportunities to learn from industry professionals, gaining valuable experiences and knowledge to strengthen their skills to increase their proficiency in sports medicine.

Dual credit and dual enrollment opportunities may be established with local postsecondary institutions.

This POS is aligned with the [HOSA](#) CTSO.

## ***Job Outlook***

According to the Bureau of Labor Statistics, employment of athletic trainers is projected to grow 14 percent from 2022 to 2032, much faster than the average for all occupations<sup>18</sup>. Sports programs for all ages and all experience levels will continue to create demand for athletic trainers. With high levels of participation by children and youth in individual and team sports, athletics trainers will be needed to manage emergency and non-emergency situations that may arise. Growing numbers of middle-aged and older people are remaining physically active. Their continuous activity will likely lead to an increase in athletics-related injuries, such as sprains. Athletic trainers will be needed to provide sophisticated treatments in injury prevention and detection.

In addition, physical therapist employment is projected to grow 15 percent from 2022 to 2032<sup>19</sup>. This demand is in part due to the large number of aging baby boomers, who are staying more active later in life than their counterparts of previous generations. Older people are more likely to experience heart attacks, strokes, and mobility-related injuries that require physical therapy for rehabilitation. Many chronic conditions, such as diabetes and obesity, have become prevalent. More physical therapists will be needed to help people with these conditions maintain their mobility and manage their disease or illness. A greater emphasis on non-opioid approaches to manage pain also is expected to support employment growth.

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<sup>18</sup> U.S. Bureau of Labor Statistics. (2024a, April 17). *Athletic Trainers: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/ooh/healthcare/athletic-trainers.htm#tab-6>

<sup>19</sup> U.S. Bureau of Labor Statistics. (2024k, April 17). *Physical therapists: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. <http://www.bls.gov/ooh/healthcare/physical-therapists.htm#tab-6>.

**Figure 1.** Tennessee employment projections for Sports and Human Performance related occupations with positive job openings projected for 2020-2030 according to the Tennessee Higher Education Commission, [Supply and Demand Report](#).<sup>20</sup>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Medical and Health Services Manager</b>	11-9111	10,500	14,990	43%	1,420
<b>Physical Therapy Aide</b>	31-2022	1,530	1,860	22%	230
<b>Physical Therapist</b>	29-1123	5,180	6,130	18%	320
<b>Physical Therapy Assistants</b>	31-2021	3,230	4,370	35%	560
<b>Exercise Trainer &amp; Fitness Instructor</b>	39-9031	3,690	5,500	49%	890
<b>Massage Therapist</b>	31-9011	3,330	4,400	32%	540
<b>Physician Assistant</b>	29-1071	2,080	2,820	36%	210
<b>Occupational Therapists</b>	29-1122	2,460	2,810	14%	180
<b>Healthcare Support Workers, All Other</b>	31-9099	1,870	2,230	19%	280
<b>Dietitians and Nutritionists</b>	29-1031	1,170	1,320	13%	100

**Figure 2.** National employment projections for Sport and Human Performance related occupations with positive job openings projected 2022-2032.<sup>21</sup>

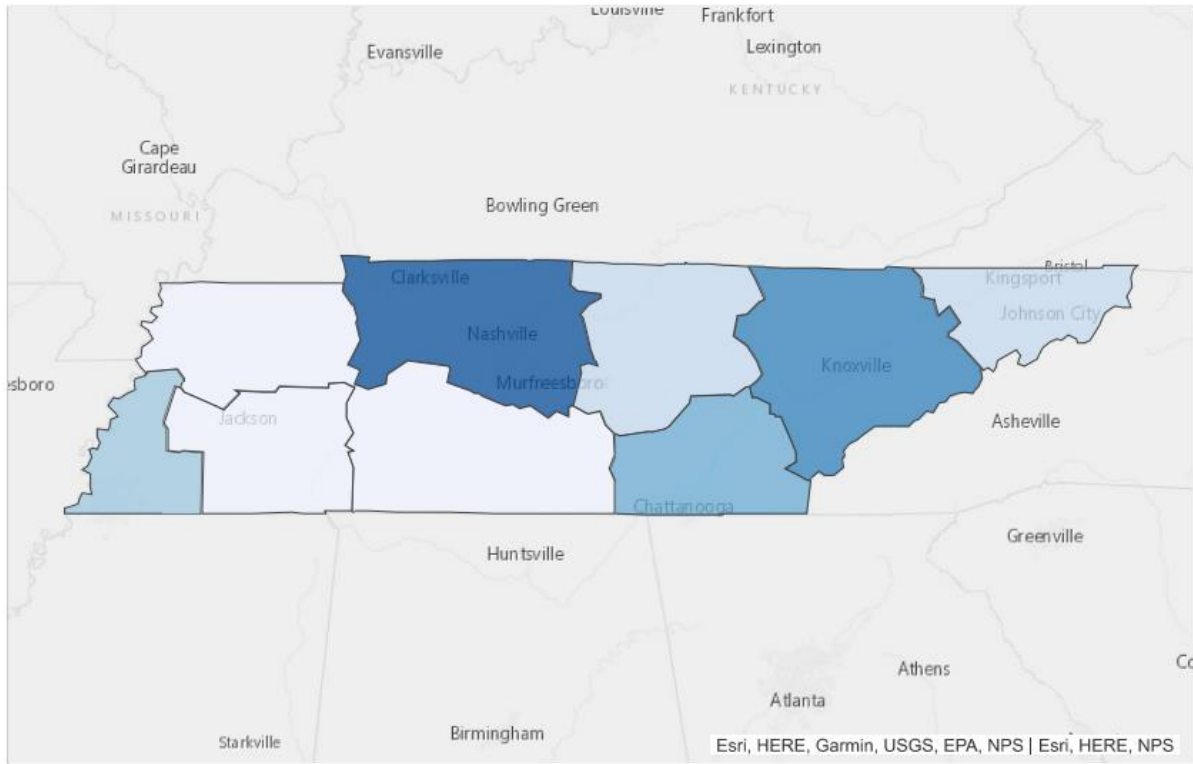
Occupation	SOC Code	Employment (2022)	Projected Employment (2032)	Projected Growth (2022-2032)	Projected Job Openings (2022-2032)
<b>Athletic Trainer</b>	29-9091	33,800	38,500	9%	2,700
<b>Physical Therapy Assistant</b>	31-2021	100,700	126,900	9%	18,100
<b>Physical Therapist</b>	29-1123	246,800	284,100	9%	13,900

<sup>20</sup> Tennessee Higher Education Commission, Supply and Demand Report, Retrieved March 1, 2024, from <https://www.tn.gov/thec/research/supply-and-demand.html>.

<sup>21</sup> Bureau of Labor Statistics, U.S. Department of Labor, O\*NET Online, Retrieved February 1, 2024, from <https://www.onetonline.org>.

**Figure 3.** 2030 projected employment for Physical Therapy Assistants in Tennessee.<sup>22</sup>

The map below shows the distribution of the 2030 projected employment for Physical Therapist Assistants in Tennessee by local workforce development areas.



**2030 Projected Employment**



Source: TN Dept of Labor & Workforce Dev, Div Emp Sec, LMI

<sup>22</sup> Jobs4Tn.gov. Occupation Profile. Retrieved (February 1, 2024), from <https://jobs4tnwfs.tn.gov/vosnet/Default.aspx>.

## ***Program of Study Level***

TISA provides direct funding for student participation in CTE programs to drive college and career readiness outcomes. Pursuant to [T.C.A. § 49-3-105\(c\)\(2\)](#), a direct allocation amount will be generated for each student membership in a CTE program based on the rule:

1. The level of the program
  - Programs shall be designated into one (1) of three (3) levels.
  - Programs will be classified into three (3) levels based on alignment to wage-earning potential indicators and additional resources required to support the program if aligned to wage-earning potential occupational pathways.
2. The student progression in coursework through the program

\*The state budget keeps all programs funded at \$5,000 for 2024-25 school year funding. See the [CTE TISA Programs of Study Leveling Guide 2024-25](#) for the TISA funding formula for program of study levels.

### **Sports and Human Performance Services Program: Level 3**

## ***Postsecondary Opportunities***

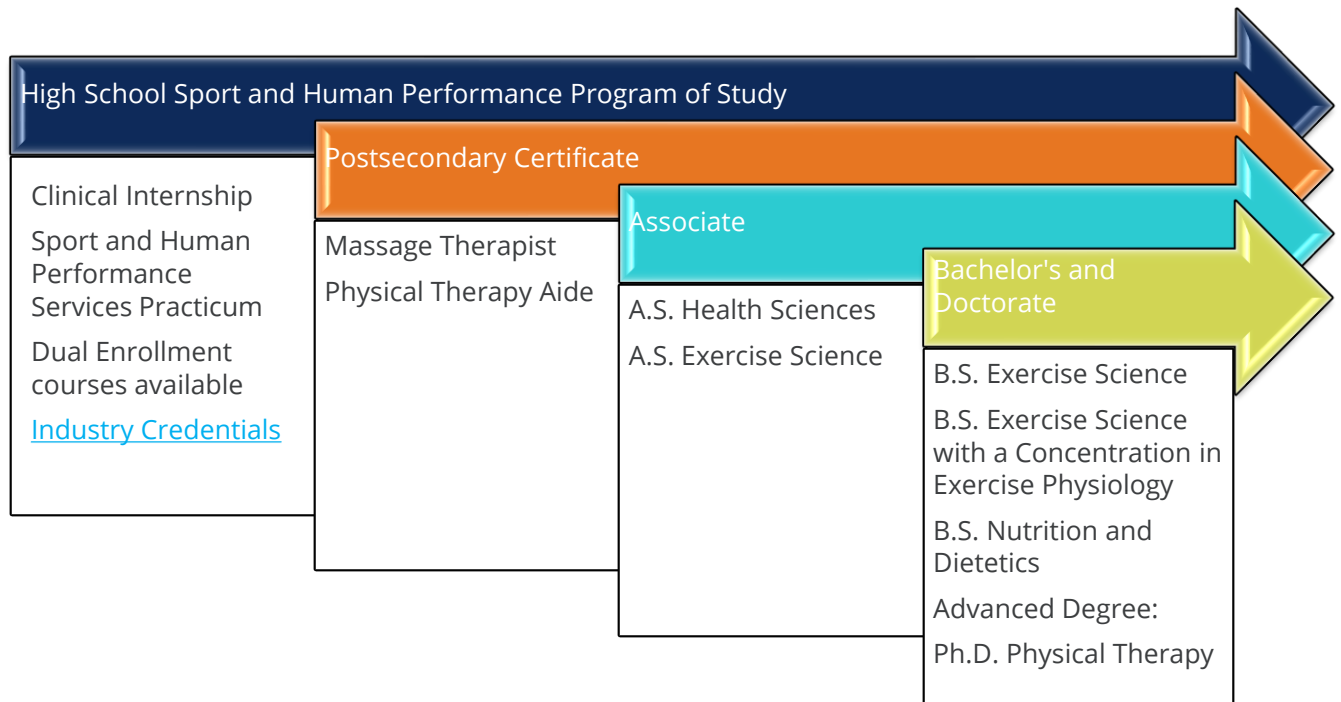
Upon completion of this POS, students will be prepared to further their training at community colleges and universities in clinical exercise physiology. Figure 4 outlines the related career opportunities and the training necessary for each. While clinical exercise physiologists require a minimum of a bachelor's degree, physical therapy assistants require an associate degree, massage therapists require a certification, and physical therapy aides can be trained on the job. Also, through the Tennessee Department of Education promoted industry credentials, students may become certified personal trainers. The student's portfolio can be used to add credibility to a postsecondary application and would be especially helpful should a student choose to enter the workforce upon graduation from high school.

South College of Nashville offers an Associate of Science in Physical Therapy Assistant. This program offers classroom and in-the-field clinical training to help develop the skills needed to assist physical therapists in delivering treatment plans that help patients from athletes to military veterans regain function, strength, and control.

Physician Assistant (PA) programs are challenging with the few schools that offer successful graduates. Currently, in Tennessee, five schools offer the PA program including Lipscomb University in Nashville, Bethel University in McKenzie, South College of Knoxville, Trevecca Nazarene University in Nashville, and the University of Tennessee Health Science Center in Memphis. These programs provide a high-quality education with professional standards and expectations, preparing the students with a comprehensive background in primary and specialty care medicine such that they improve access to healthcare.

With expected occupational growth of over 30 percent in the next ten years, massage therapy is an in-demand certification. Roane State Community College offers the necessary certification for future massage therapists. The program is an 11-month certificate program that prepares students for entry-level careers in the growing field of massage, bodywork, and somatic therapies. Graduates will be eligible to sit for the Massage and Bodywork Licensing Exam (MBLEx) and, upon successful passage of the exam, be eligible for a Tennessee Massage Therapy License.

**Figure 4** Outlines the related career opportunities and training necessary for each program of study. Students may acquire hours transferable to a postsecondary institution for the completion of a degree.



Additional opportunities are offered at multiple postsecondary institutions as indicated in the [Tennessee Department of Labor and Workforce Dashboard](#).

High School Diploma	Certificate	Associate	Bachelor's and Doctorate
<ul style="list-style-type: none"> <li>Physical Therapy Aide (<b>\$31,410</b>)</li> </ul>	<ul style="list-style-type: none"> <li>Massage Therapist (<b>\$49,860</b>)</li> <li>Physical Therapy Aide (<b>\$31,410</b>)</li> <li>Exercise Trainers &amp; Fitness Instructors (<b>\$45,380</b>)</li> </ul>	<ul style="list-style-type: none"> <li>Physical Therapy Assistant (<b>\$62,770</b>)</li> </ul>	<ul style="list-style-type: none"> <li>Exercise Physiologist (<b>\$51,350</b>)</li> <li>Dietitian &amp; Nutritionists (<b>\$66,450</b>)</li> <li>Physical Therapist, PhD (<b>\$97,720</b>)</li> </ul>

## Current Secondary Landscape

In the 2022-23 school year, 87 schools in Tennessee offered courses in the Sports and Human Performance program of study. Over the past three years, the number of schools offering the program has remained stable across the state. Sports and Human Performance had approximately 34,042 students enrolled in the 2022-2023 school year. Figure 5 indicates the number of schools offering the Sports and Human Performance POS for the 2020-21 to 2022-23 school years and student enrollment for the 2020-21 through 2022-23 school years in the Sports and Human Performance POS.

Figure 5. Open Enrollment Analysis

School Year	Schools Offering Sports and Human Performance
2020-21	87
2021-22	80
2022-23	87

Figure 5a. Student Enrollment

School Year	Health Science Education	Anatomy and Physiology	Rehabilitation Services	Exercise Science	Clinical Internships	Dual Enrollment
2020-21	16,623	6,426	2,686	456	1,428	23
2021-22	16,718	6,116	2,277	508	1,662	74
2022-23	16,609	6,196	2,117	382	1,648	181

# Therapeutic Services

2023-24 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Therapeutic Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Dental Science (C14H21) -or- Pharmacological Sciences (C14H20) -or- Nutrition Science & Diet Therapy (C19H16) -or- Medical Therapeutics (C14H15) -or- Medical Assisting (C14H10) -or- Public Health & Epidemiology (C14H17) -or- <b>Dual Enrollment</b> Therapeutic Services I (C14H05) -or- <b>Dual Enrollment</b> Therapeutic Services II (C14H28) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Therapeutic Services III (C14H43) -or- <b>Dual Enrollment</b> Therapeutic Services IV (C14H44) -or- <b>Dual Enrollment</b> Medical Assisting (C14H32) -or- <b>WBL</b> Therapeutic Services Career Practicum (C14H48)

## Description

*Therapeutic Services* POS is designed to prepare students to pursue careers in therapeutic service careers. Therapeutic careers are focused primarily on changing the health status of the patient over time explaining that health professionals in this pathway work directly with patients; they may provide care, treatment, counseling, and health education information. Upon completion of this program, a proficient student will identify careers in the therapeutic services pathway; assess, monitor, evaluate, and report patient and client health status; and identify the purpose and components of treatments. In addition, students have the

opportunity to incorporate communication, problem-solving, and information-collection skills in their coursework for future success in the workplace. In the fourth year of this POS, students have the option of taking the Clinical Internship or Work-Based Learning Therapeutic Services Career Practicum. The capstone practicum course provides students with opportunities to learn from industry professionals in a working environment, providing exposure to various therapeutic services, strengthening their patient-care skills, and developing moral and ethical standards through medical practices.

Dual credit and dual enrollment opportunities may be established with local postsecondary institutions.

This POS is aligned with the [HOSA](#) CTSO.

### ***Job Outlook***

Nationally, employment in healthcare occupations is projected to grow 13 percent from 2021 to 2031, primarily due to the need to care for an aging population. Tennessee's and the nation's aging population will continue to generate demand for healthcare. Healthcare and social assistance are expected to be the largest industry in Tennessee by 2030, with employment of healthcare practitioners and support workers expected to increase by more than 64,000. Occupations that are in demand in the therapeutic service POS are physical therapy assistants, dental assistants, medical assistants, pharmacy technicians, speech-language pathologists, and medical record specialists.

Occupational therapy will continue to be an important part of treatment for people with various illnesses with disabilities, such as Alzheimer's disease, cerebral palsy, autism, or the loss of a limb. The need for occupational therapists is expected to increase by 12 percent from 2022 to 2032 as the large baby-boom generation ages and people remain active later in life. Individuals continue to seek noninvasive outpatient treatment for long-term disabilities and illnesses, and they may need occupational therapy to become more independent.

In addition, speech-language pathologists are projected to increase by 19 percent by 2032. Increased awareness of speech and language disorders, such as stuttering, in younger children should lead to a need for more speech-language pathologists who specialize in treating that age group. Additionally, medical advances are improving the survival rate of premature infants and victims of trauma and strokes, many of whom need help from speech-language pathologists.

**Figure 1.** Tennessee employment projections for Therapeutic Services related occupations with positive job openings projected for 2020-2030 according to the Tennessee Higher Education Commission, [Supply and Demand Report](#).<sup>23</sup>

Occupation	SOC Code	Employment (2020)	Projected Employment (2030)	Projected Growth (2020-2030)	Projected Annual Job Openings (2020-2030)
<b>Registered Nurse</b>	29-1141	64,280	75,150	17%	4,700
<b>Medical and Health Services Manager</b>	11-9111	10,500	14,990	43%	1,420
<b>Clinical Laboratory Technologists and Technicians</b>	29-2011	9,642	11,597	20%	864
<b>Pharmacy Technician</b>	29-2052	10,100	11,350	12%	880
<b>Medical Assistant</b>	31-9092	15,540	18,800	21%	2,310
<b>Pharmacists</b>	29-1051	7,370	7,740	5%	320
<b>Healthcare Social Workers</b>	21-1022	5,400	6,640	23%	670
<b>Dental Assistants</b>	31-9091	5,590	6,380	14%	770
<b>Physical Therapists</b>	29-1123	5,180	6,130	18%	320
<b>Dental Hygienists</b>	29-1292	4,090	4,670	14%	330

**Figure 2.** National employment projections for Therapeutic Services related occupations with positive job openings projected for 2022-2032.<sup>24</sup>

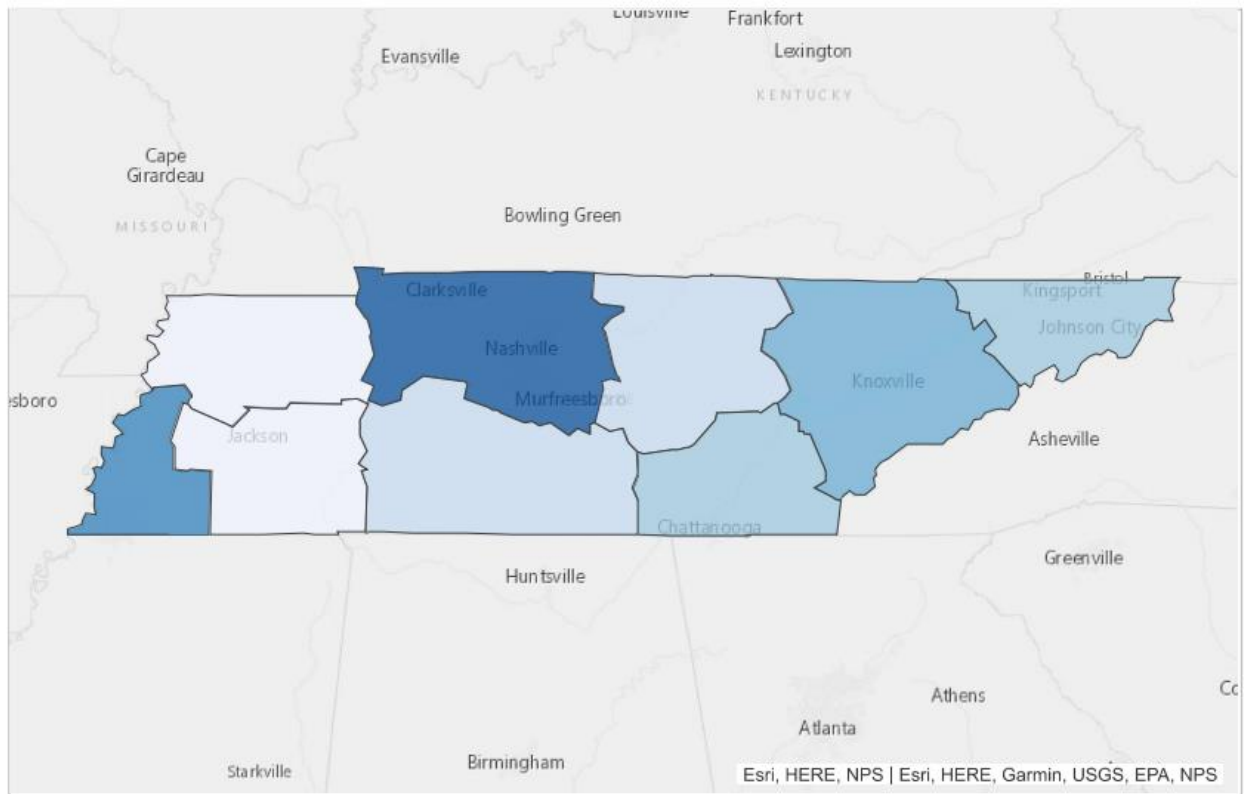
Occupation	SOC Code	Employment (2022)	Projected Employment (2032)	Projected Growth (2022-2032)	Projected Annual Job Openings (2022-2032)
<b>Dental Hygienist</b>	29-1292	219,400	235,700	5-8%	16,400
<b>Pharmacy Technician</b>	29-2052	459,600	485,500	5-8%	44,900
<b>Speech-Language Pathologist</b>	29-1127	171,400	204,500	9%	13,200

<sup>23</sup> Tennessee Higher Education Commission, Supply and Demand Report, Retrieved March 1, 2024, from <https://www.tn.gov/thec/research/supply-and-demand.html>.

<sup>24</sup> Bureau of Labor Statistics, U.S. Department of Labor, O\*NET Online, Retrieved February 1, 2024, from <https://www.onetonline.org>.

**Figure 3.** 2023 projected employment for Pharmacy Technicians in Tennessee.<sup>25</sup>

The map below shows the distribution of the 2030 projected employment for Pharmacy Technicians in Tennessee by local workforce development areas.



Source: TN Dept of Labor & Workforce Dev, Div Emp Sec, LMI

<sup>25</sup> Jobs4Tn.gov. Occupation Profile. Retrieved (February 1, 2024), from <https://jobs4tnwfs.tn.gov/vosnet/Default.aspx>.

## ***Program of Study Level***

TISA provides direct funding for student participation in CTE programs to drive college and career readiness outcomes. Pursuant to [T.C.A. § 49-3-105\(c\)\(2\)](#), a direct allocation amount will be generated for each student membership in a CTE program based on the rule:

1. The level of the program
  - Programs shall be designated into one (1) of three (3) levels.
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2. The student progression in coursework through the program

\*The state budget keeps all programs funded at \$5,000 for 2024-25 school year funding. See the [CTE TISA Programs of Study Leveling Guide 2024-25](#) for the TISA funding formula for program of study levels.

### **Therapeutic Services Program: Level 3**

## ***Postsecondary Opportunities***

Institutions across Tennessee offer academic programs in the health sciences that provide completers with general and specialized training to fulfill in-demand occupations in the state. Dental Assisting and Licensed Practical Nursing are two programs offered by the Tennessee College of Applied Technology (TCAT) yielding many graduates in 2020-21.

South College Nashville offers three opportunities for acquiring certificates or degrees in the dental field. The first is a Certificate in Dental Assisting. In this program, the student works to develop the skills to become a valued member of the dental care team. In this program, students focus on building a strong foundation for clinical and administrative work in the dental field. As a graduate, they will have worked to be ready to take the Dental Assisting National Board (DANB) exam and to help dentists efficiently and effectively deliver oral health care.

The second opportunity is an Associate of Science in Dental Hygiene. This program is designed to prepare students for working as a dental hygiene healthcare provider with a strong foundation of skills in dental science and clinical knowledge. As a graduate, they will have worked to be ready to become a dental hygienist and valued member of a healthcare team, providing patient education, care, and outreach in support of oral health.

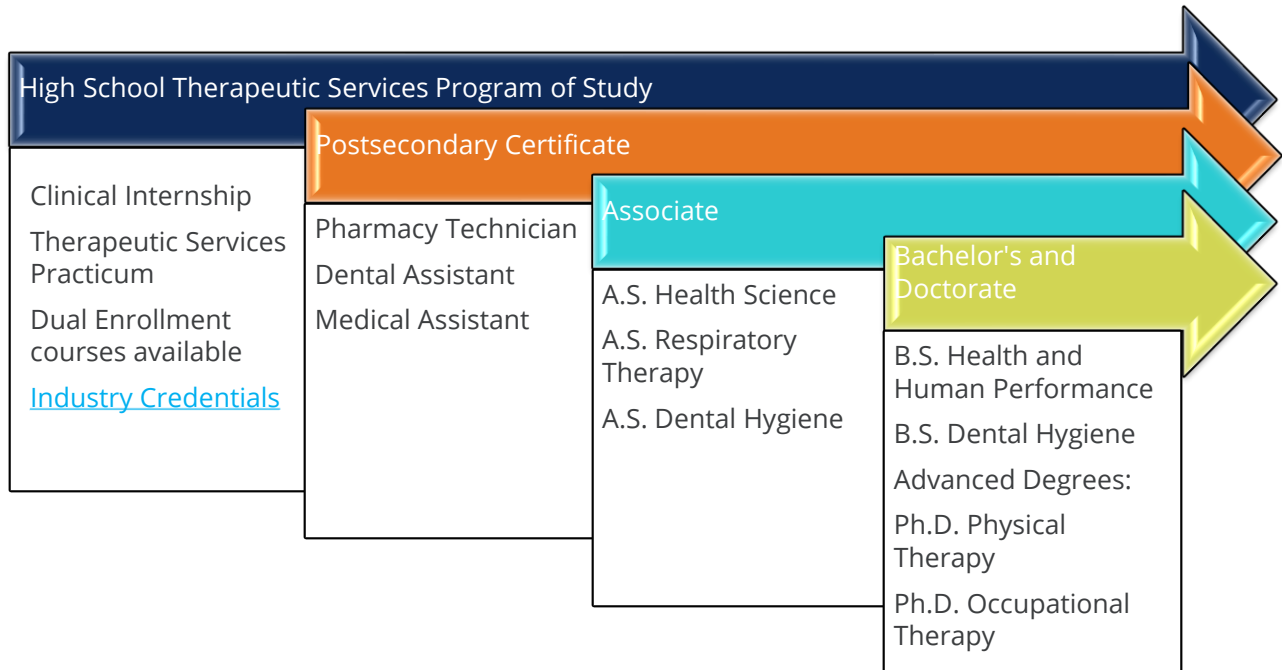
The third offering at South College Nashville is a Bachelor of Science in Dental Hygiene. This program allows students from the associate program and others to continue their education and professional development.

Volunteer State in Gallatin currently offers the Pharmacy Technician program at 100 percent online availability. Coursework for the program can be completed in one year or less. This program prepares potential Pharmacy Technicians for the Pharmacy Technician Certification Board National Certification and helps the candidate complete the required externship.

The University of Tennessee (UT) at Knoxville offers a degree in Speech Pathology and Audiology. The bachelor's program at the UT at Knoxville was ranked number 78 on College Factual's Best Schools for Audiology. During the 2020-21 academic year, 61 students graduated with a bachelor's degree in audiology from UT Knoxville.

In addition, Middle Tennessee State University (MTSU) offers an undergraduate degree for becoming a Speech-Language Pathologist Assistant (SLPA). The program offers coursework and some clinical hours that will allow the student to seek certification as an SLPA.

**Figure 4.** Outlines the related career opportunities and training necessary for each program of study. Students may acquire hours transferable to a postsecondary institution for the completion of a degree.



Additional opportunities are offered at multiple postsecondary institutions as indicated in the [Tennessee Department of Labor and Workforce Dashboard](#).

High School Diploma	Certificate	Associate	Bachelor's and Doctorate
<ul style="list-style-type: none"> <li>• Certified Dental Assistant (<b>\$23,989</b>)</li> <li>• Certified Nursing Assistant (<b>\$35,760</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Pharmacy Technician (<b>\$27,829</b>)</li> <li>• Dental Assistant (<b>\$30,696</b>)</li> <li>• Medical Assistant (<b>\$28,169</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Physical Therapy Assistant (<b>\$44,705</b>)</li> <li>• Respiratory Therapist (<b>\$44,724</b>)</li> <li>• Dental Hygienist (<b>\$49,582</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare Social Worker (<b>\$60,280</b>)</li> <li>• Dental Hygienist (<b>\$51,136</b>)</li> <li>• Physical Therapist (<b>\$68,578</b>)</li> </ul>

## Current Secondary Landscape

In the 2022-23 school year, 173 schools in Tennessee offered courses in the Therapeutic Services program of study. Over the past three years, the number of schools offering the program has increased by six percent, adding ten programs across the state. Therapeutic Services had approximately 34,222 students enrolled in the 2022-23 school year. Figure 5 shows the number of schools that offered the Therapeutic Services POS for the 2020-21 to 2022-23 school years and student enrollment for the 2020-21 through 2022-23 school years in the Therapeutic Services POS.

Figure 5. Open Enrollment Analysis

School Year	Schools Offering Therapeutic Services
2020-21	163
2021-22	167
2022-23	173

Figure 5a. Student Enrollment for Therapeutic Services

School Year	2020-21	2021-22	2022-23
Health Science Education	16,623	16,718	16,609
Anatomy & Physiology	6,426	6,116	6,196
Medical Assisting	612	841	1,051
Medical Therapeutics	7,615	7,644	6,909
Pharmacological Sciences	451	563	510
Dental Science	51	58	42
Nutrition Science & Diet Therapy	1,433	1,192	1,067
Public Health & Epidemiology	140	69	22
Clinical Internship	1,428	1,662	1,648
Dual Enrollment	150	116	162

# References

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Tennessee Health Association, Tennessee-health-workforce-projections (2024), <https://secure.tha.com/files/workforce/Tennessee-Health-Workforce-Projections-Report.pdf>.

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# Recommendations

The following includes recommendations for course standards changes to be presented to the State Board of Education (SBE) for consideration in August 2024.

Program of Study	Course	Recommendations
<ul style="list-style-type: none"> <li>• Diagnostic Services</li> <li>• Emergency Services</li> <li>• Nursing Services</li> <li>• Sports and Human Performance</li> <li>• Therapeutic Services</li> </ul>	Health Science Education	<ul style="list-style-type: none"> <li>• Incorporate a standard in Introduction to Health Science Education for the foundation of the aligned CTSO, purposes, and pathway alignment.</li> <li>• As part of the revised Tennessee Perkins State Plan, we will add standards to include STEM/PBL and Data Science to all programs of study.</li> </ul>
<ul style="list-style-type: none"> <li>• Diagnostic Services</li> <li>• Emergency Services</li> <li>• Nursing Services</li> <li>• Sports and Human Performance</li> <li>• Therapeutic Services</li> </ul>	Anatomy & Physiology	New employment projections suggest that data analysis is needed in all year 2 courses for career clusters.
<ul style="list-style-type: none"> <li>• Nursing Services</li> <li>• Sports and Human Performance</li> </ul>	<ul style="list-style-type: none"> <li>• Medical Therapeutics</li> <li>• Nursing Education</li> <li>• Clinical Internship</li> </ul>	Recommend wording changes within the standards to reflect Certified Nursing Aide, Nursing Home, and Health Facilities Commission to be compliant with state verbiage.
Therapeutic Services	<ul style="list-style-type: none"> <li>• Public Health &amp; Epidemiology</li> <li>• Medical Terminology</li> </ul>	In response to a continual decline in student enrollment, recommend embedding the standards of Public Health and Epidemiology and Medical Terminology into the other Health Science courses. Recommend the retirement of both courses.

## 2025-26 Proposed Programs and Courses

### Diagnostic Services

Program of Study 2025-26	Year 1	Year 2	Year 3	Year 4
<b>Diagnostic Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Diagnostic Medicine (C14H12) -or- <b>Dual Enrollment</b> Diagnostic Services I (C14H02) -or- <b>Dual Enrollment</b> Diagnostic Services II (C14H26) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Cardiovascular Services (C14H18) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Diagnostic Services III (C14H37) -or- <b>Dual Enrollment</b> Diagnostic Services IV (C14H38) -or- <b>Dual Enrollment</b> Diagnostic Services V (C14H49) -or- <b>Dual Enrollment</b> Diagnostic Services VI (C14H50) -or- <b>Dual Enrollment</b> Diagnostic Services VII (C14H51) -or- <b>Dual Enrollment</b> Diagnostic Services VIII (C14H52) -or- <b>Dual Enrollment</b> Diagnostic Services VIII (C14H53) -or- <b>Dual Enrollment</b> Diagnostic Services X (C14H54) -or- <b>WBL</b>

				Diagnostic Services Career Practicum (C14H19)
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**Emergency Services**

2025-26 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Emergency Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Medical Therapeutics (C14H15) -or- <b>Dual Enrollment</b> Emergency Services I (C14H04) -or- <b>Dual Enrollment</b> Emergency Services II (C14H29) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Emergency Medical Services (C14H13) -or- Emergency Medical Services (C14H24) -or- <b>Dual Enrollment</b> Emergency Services III (C14H35) -or- <b>Dual Enrollment</b> Emergency Services IV (C14H36) -or- <b>Dual Enrollment</b> Emergency Services V (C14H55) -or- <b>Dual Enrollment</b> Emergency Services VI (C14H56) -or- <b>Dual Enrollment</b> Emergency Services VII (C14H57) -or- <b>Dual Enrollment</b> Emergency Services VIII (C14H58) -or- <b>Dual Enrollment</b> Emergency Services IX (C14H59) -or- <b>Dual Enrollment</b>

				Emergency Services X (C14H60) -or- <b>WBL</b> Emergency Services Career Practicum (C14H45)
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### Nursing Services

2025-26 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Nursing Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Medical Therapeutics (C14H15) -or- <b>Dual Enrollment</b> Nursing Services I (C14H03) -or- <b>Dual Enrollment</b> Nursing Services II (C14H27) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Nursing Education (C14H16) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Nursing Services III (C14H33) -or- <b>Dual Enrollment</b> Nursing Services IV (C14H34) -or- <b>Dual Enrollment</b> Nursing Services V (C14H61) -or- <b>Dual Enrollment</b> Nursing Services VI (C14H62) -or- <b>Dual Enrollment</b> Nursing Services VII (C14H63) -or- <b>Dual Enrollment</b> Nursing Services VIII (C14H64) -or- <b>Dual Enrollment</b> Nursing Services IX (C14H65) -or- <b>Dual Enrollment</b> Nursing Services X (C14H66) -or- <b>WBL</b>

				Nursing Services Career Practicum (C14H46)
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**Sports and Human Performance**

2025-26 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Sports and Human Performance</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Rehabilitation Careers (C14H08) -or- <b>Dual Enrollment</b> Sport and Human Performance I (C14H39) -or- <b>Dual Enrollment</b> Sport and Human Performance II (C14H40) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44) -or- <b>IB</b> Sports, Exercise, & Health Science I SL/HL (G03H39)	Exercise Science (C14H22) -or- Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Sport and Human Performance III (C14H41) -or- <b>Dual Enrollment</b> Sport and Human Performance IV (C14H42) -or- <b>Dual Enrollment</b> Sport and Human Performance V (C14H67) -or- <b>Dual Enrollment</b> Sport and Human Performance VI (C14H68) -or- <b>Dual Enrollment</b> Sport and Human Performance VII (C14H69) -or- <b>Dual Enrollment</b> Sport and Human Performance VIII (C14H70) -or- <b>Dual Enrollment</b> Sport and Human Performance IX (C14H71) -or- <b>Dual Enrollment</b> Sport and Human Performance X

				(C14H72) -or- <b>IB</b> Sports, Exercise, & Health Science II SL/HL (G03H40) -or- <b>WBL</b> Sport and Human Performance Career Practicum (C14H47)
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### Therapeutic Services

2025-26 Program of Study	Year 1	Year 2	Year 3	Year 4
<b>Therapeutic Services</b>	Health Science Education (C14H14)	Human Anatomy & Physiology (G03H31) -or- Anatomy & Physiology (C14H09) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology I (G03H43)	Dental Science (C14H21) -or- Pharmacological Sciences (C14H20) -or- Nutrition Science & Diet Therapy (C19H16) -or- Medical Therapeutics (C14H15) -or- Medical Assisting (C14H10) -or- <b>Dual Enrollment</b> Therapeutic Services I (C14H05) -or- <b>Dual Enrollment</b> Therapeutic Services II (C14H28) -or- <b>Dual Enrollment</b> Human Anatomy & Physiology II (G03H44)	Clinical Internship (C14H11) -or- <b>Dual Enrollment</b> Therapeutic Services III (C14H43) -or- <b>Dual Enrollment</b> Therapeutic Services IV (C14H44) -or- <b>Dual Enrollment</b> Therapeutic Services V (C14H73) -or- <b>Dual Enrollment</b> Therapeutic Services VI (C14H74) -or- <b>Dual Enrollment</b> Therapeutic Services VII (C14H75) -or- <b>Dual Enrollment</b> Therapeutic Services VIII (C14H76) -or- <b>Dual Enrollment</b>

				Therapeutic Services IX (C14H77) -or- <b>Dual Enrollment</b> Therapeutic Services X (C14H78) <b>Dual Enrollment</b> Medical Assisting (C14H32) -or- <b>WBL</b> Therapeutic Services Career Practicum (C14H48)
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In 2025-26, students will have the option to add courses from Business, Marketing, and Digital Technology programs to supplement their learning.