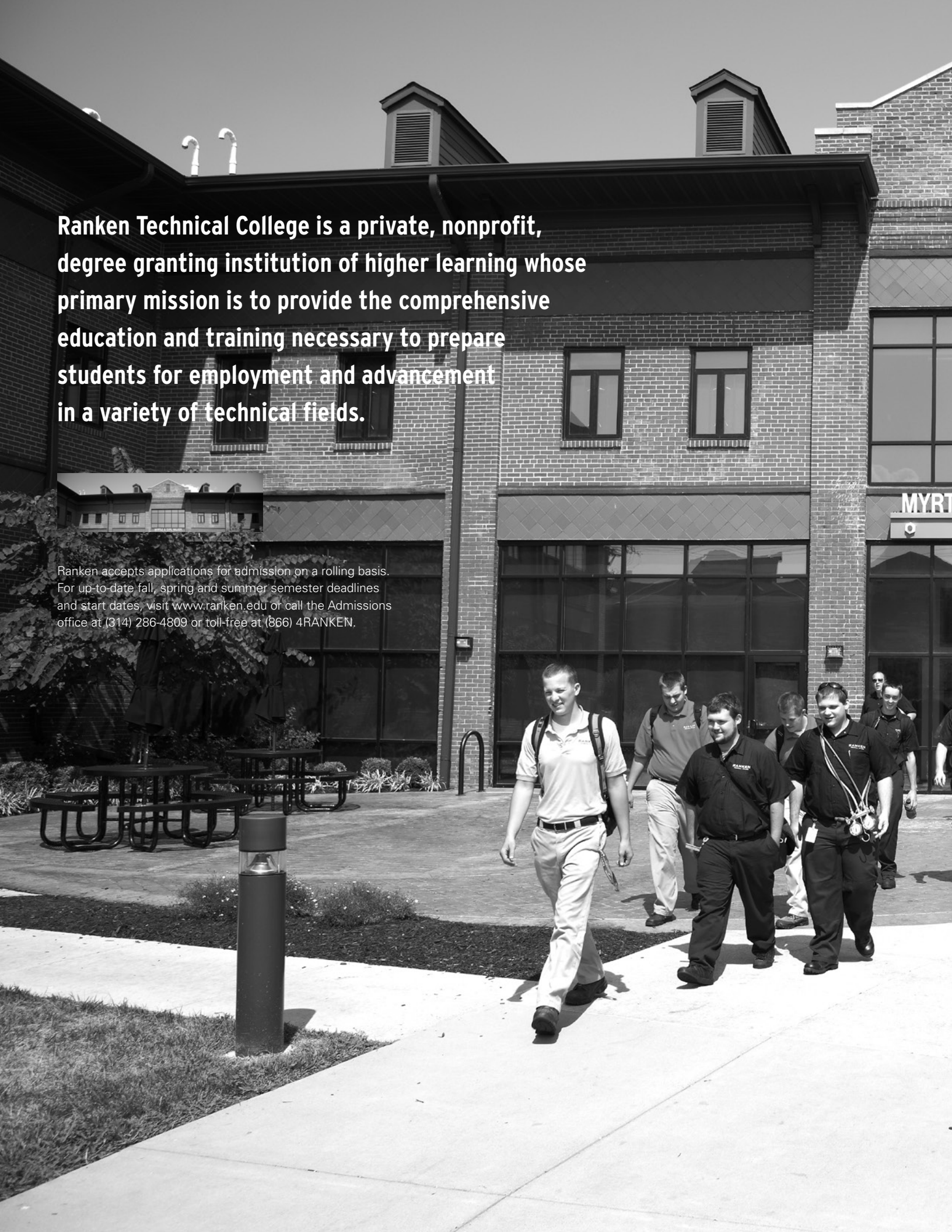
2026-2027

COURSE CATALOG

AUTOMOTIVE | CONSTRUCTION | ELECTRICAL | INFORMATION TECHNOLOGY | MANUFACTURING

RANKEN®

TECHNICAL COLLEGE



Ranken Technical College is a private, nonprofit, degree granting institution of higher learning whose primary mission is to provide the comprehensive education and training necessary to prepare students for employment and advancement in a variety of technical fields.

Ranken accepts applications for admission on a rolling basis. For up-to-date fall, spring and summer semester deadlines and start dates, visit www.ranken.edu or call the Admissions office at (314) 286-4809 or toll-free at (866) 4RANKEN.

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* Ranken reserves the right to change all information appearing in this publication. Please contact us for up-to-date information.

THE COLLEGE

INSTITUTIONAL PURPOSES

The purposes of Ranken Technical College are:

- To provide education in current and leading-edge technology that develops critical thinking and problem solving skills.
- To incorporate general education into all programs to provide students with communication, scientific, mathematical, information technology, human relations, business and life skills along with an appreciation for continuous lifelong learning.
- To instill within Ranken students the work ethic attributes in demand by industry, including honesty, ethical standards, dependability, industriousness, commitment to quality, craftsmanship, courtesy, professionalism, teamwork, professional appearance and safety consciousness.
- To provide continuing education and customized workforce training in various technical careers.

VISION

Vision statements describe what Ranken Technical College aspires to be and sustain over time.

Ranken Technical College envisions an institution that:

1. **Is a leader in innovation and technical education,** preparing a highly skilled 21st century workforce.
2. **Actively engages in workforce development and community partnerships** to address regional and industry needs.
3. **Continuously evolves its academic programs** by exploring new and emerging technologies aligned with industry demand and market conditions.
4. **Pursues strategic growth and expansion,** consistent with the College mission and resources, to serve students, industry, and the community.
5. **Sustains a culture of continuous improvement** focused on educational quality, delivery, student learning, and demonstrated competencies.
6. **Provides holistic student development opportunities,** including experiential learning, service, and engagement beyond the classroom.

CORE VALUES

Core values describe the principles and beliefs that guide daily behavior, decisions, and institutional culture.

Ranken Technical College is guided by the following values:

1. **Respect and Inclusion**
   - Leveraging the unique contributions of all community members and treating all stakeholders with dignity and respect.
2. **Integrity and Ethical Responsibility**
   - Conducting business professionally while managing resources ethically and responsibly.
3. **Excellence and Craftsmanship**
   - Upholding high standards of conduct, professionalism, ethics, and quality in all activities.
4. **Student Success and Support**
   - Providing comprehensive student support services that promote persistence and success from enrollment through employment.
5. **Employee Excellence and Well Being**
   - Ensuring faculty and staff possess the knowledge, experience, and motivation to excel, while fostering a workplace with high job satisfaction.
6. **Community and Professional Engagement**
   - Encouraging involvement in activities that strengthen professional development, service, and community impact.

A COMMITMENT TO EXCELLENCE

Throughout its history, Ranken Technical College has been dedicated to in-depth training in each of its technical specialties. Through a unique combination of classroom education and hands-on instruction, each student is fully educated to be successful in his or her technical field of choice.

EDUCATIONAL FORMULA

Our educational formula is founded on success and career development. Thousands of men and women who have attended Ranken since 1907 have earned certificates, diplomas and degrees. Others have taken advantage of Ranken's courses to update their skills, becoming more valuable employees and personally more marketable. The formula for a student's success is based upon three equal components:

- Technical Education
- General Education
- Work Ethic

The technical component consists of the theoretical and practical application of modern technology in any of the College's programs. The general education component assists students in developing strong communication skills, scientific and mathematical reasoning, computer literacy, an understanding of business and an appreciation of the individual's role in society—all of which prepare students for career advancement. Finally, Ranken treats students as professionals from day one. The work ethic component exposes students to the values, attitudes and behaviors sought by current employers—the qualities that lead to successful careers. These three components are the primary reasons for student success. They explain why employers continue to seek out Ranken graduates year after year.

OUTCOMES ASSESSMENT OF STUDENT LEARNING

Outcomes assessment is an ongoing process of improvement through which the College establishes its individual course, program, and institutional outcomes. A variety of assessment instruments are used to measure whether students have achieved the stated outcomes. The results of these assessments are analyzed to determine what improvements are necessary to achieve the desired outcomes. By using outcomes assessment to improve student learning, the College is able to maintain its position as a leader in the field of providing excellence in technical education.

HISTORY

Ranken Technical College was founded in 1907 by David Ranken, Jr. as a private, non-profit educational institution to train students for employment in a variety of technical and mechanical occupations.

Established with a foundation deed of more than $1 million, Ranken began its first academic year in September 1909. David Ranken, Jr. later added his entire fortune to the school's endowment, which has contributed to the substantial growth of the College and helped to reduce annual operating costs and tuition.

Today, Ranken's endowment fund significantly supplements the cost of student education. With its proud tradition of excellence in education, Ranken has maintained its position as a national leader in technical education. Ranken was the first—and one of the only—non-profit trade and technical schools to be accredited by the North Central Association of Colleges and Schools. Over the years, the small campus of 1907 has grown to provide almost 23 acres of classrooms, labs, shops, administrative offices and grounds—all designed to maximize hands-on learning. To provide high-quality technical education to students beyond the St. Louis metro area, the College opened a second location in Wentzville in 2013 and a third location in Perryville in 2017. In subsequent years, the College further expanded its reach in response to community requests and regional economic development needs. Additional locations were established in Troy, Missouri in 2022, Ashland, Missouri in 2024, and Edwardsville, Illinois beginning in August 2026.

ACCREDITATION AND APPROVALS

Ranken Technical College is accredited by The Higher Learning Commission (hlcommission.org), a regional accreditation agency recognized by the U.S. Department of Education.

For more information, contact:
The Higher Learning Commission
www.hlcommission.org
1-800-621-7440

Ranken Technical College is approved to accept students under the following educational programs:

- Department of Elementary and Secondary Education Division of Vocational Rehabilitation (states of Missouri and Illinois)
- Missouri Department of Elementary and Secondary Education Employment Training Section
- Workforce Innovation and Opportunity Act (WIOA): Division of Employment and Training (states of Missouri and Illinois)
- Department of Veterans Affairs: VA/Vocational Rehabilitation
- Division of Employment Security (states of Missouri and Illinois)

PROGRAMMATIC ACCREDITATION AND INDUSTRY STANDARDS ALIGNMENT

Ranken Technical College aligns the curriculum to industry standards to ensure the institution is delivering the education students need to be prepared for the industry. When at all possible, technical programs will seek programmatic accreditation to add another level of reassurance that the program is meeting industry's standards for producing a quality education to the students.

The following industry standards/specialized accreditations are used in the following areas:

AUTOMOTIVE DIVISION:

- Automotive Service Excellence (ASE) Master Level Accredited
  - Automotive Maintenance Technology (including all Automotive Professional Technician Program and all Certified Dealer Technician Programs)
  - Professional Collision Repair Technology
  - Diesel Technology (Diesel Professional Technician Program only)
- Inter-Industry Conference on Automotive Collision Repair (I-CAR)
  - Automotive Collision Repair (Including Professional Collision Repair Technology)

CONSTRUCTION DIVISION:

- Occupational Safety and Health Administration (OSHA)
  - OSHA 30
    - Carpentry and Building Construction Technology
    - Plumbing Technology
  - OSHA 10
    - Heating, Ventilation, Air Conditioning & Refrigeration Technology
- U.S. Environmental Agency (EPA)
  - EPA Section 608 Technician certification
- RIGID Tool Certification
  - Plumbing Technology

ELECTRICAL DIVISION:

- Occupational Safety and Health Administration (OSHA)
  - OSHA 10
    - Controls Systems Technology
    - Electrical Automation Technology
    - Electrical Systems Design Technology
    - Industrial Automation Technology
- FANUC Robot Certification

INFORMATION TECHNOLOGY DIVISION:

- Computing Technology Industry Association (CompTIA)
  - A+ Certification
  - Security+ Certification
- Cisco
  - Cisco Certified Network Associate
- Amazon Web Services (AWS)
  - AWS Certified Cloud Practitioner

MANUFACTURING DIVISION:

- American Welding Society (AWS)
  - Fabrication and Welding Technology
- National Institute of Metalworking Skills (NIMS)
  - Advanced Precision Machining Technology

Ranken Technical College is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). The ACBSP is a leading specialized accreditation association for business education supporting, celebrating, and rewarding teaching excellence.

For more information, contact:
www.acbsp.org
(913) 339-9356

ACBSP ACCREDITED

RANKEN ST. LOUIS

Ranken Technical College has been serving the St. Louis region for more than a century, providing comprehensive education and training in a variety of technical disciplines. Ranken works closely with St. Louis industry leaders, local businesses, schools, and government officials to develop degree and certification programs that will benefit the region.

Ranken's St. Louis campus is located on an 23-acre complex, spread over three city blocks. The facilities are designed to teach students the most in-demand skills in their fields.

RANKEN ST. LOUIS OFFERINGS

Degree and certification options are available in:

AUTOMOTIVE DIVISION

- Automotive Collision Repair Technology
- Automotive Maintenance Technology
- Certified Dealership Technician Programs
- High Performance Racing Technology
- Professional Collision Repair Technician Program
- Professional Technician Program

CONSTRUCTION DIVISION

- Architectural Technology
- Carpentry and Building Construction Technology
- Heating, Ventilation, Air Conditioning, and Refrigeration Technology
- Major Appliance Technology
- Plumbing Technology
- Plumbing and Pipefitting Technology

ELECTRICAL DIVISION

- Alarm Systems Technology
- Control Systems Technology
- Electrical Automation Technology
- Electrical Systems Design Technology
- Mechanical Automation Technology

INFORMATION TECHNOLOGY DIVISION

- Application & Web Development Technology
- Computer Networking Technology
- Network Architecture & Design Technology
- Network Systems Management Technology
- Cloud Technology

MANUFACTURING DIVISION

- Advanced Precision Machining Technology
- Applied Engineering Technology
- Electrical Maintenance
- Fabrication and Welding Technology
- Facilities Technology
- Industrial Technology
- Stationary Engineering

MANAGEMENT PROGRAM OPTIONS

- Bachelor of Science in Applied Management (Online)
- Supply Chain Management

ST. LOUIS CONTACT INFORMATION

Ranken Technical College
4431 Finney Avenue, MO 63113
Phone: (314) 286-4809
Email: admissions@ranken.edu

ST. LOUIS ADMISSIONS OFFICE HOURS

Monday–Thursday	7:30 a.m.–6 p.m.
Friday	7:30 a.m.–4 p.m.
Saturday	8 a.m.–12 p.m.

CAMPUS DIRECTORY–ST. LOUIS

1. RODENHEISER AUTOMOTIVE CENTER

Automotive Maintenance Technology ..... 1st Floor
Certified Dealership Technician Programs ..... 1st Floor
Fleet Management ..... 1st Floor
Professional Collision Repair Technician Program ..... 1st Floor
Professional Technician Program ..... 1st Floor

2. ALUMNI HALL

3. FINNEY BUILDING

Architectural Technology ..... 2nd Floor
Plumbing Technology ..... Ground Floor
Plumbing and Pipefitting Technology ..... Ground Floor

4. GRAY BUILDING

Carpentry and Building Construction Technology ..... Ground Floor
Information Technology Division ..... 3rd and 4th Floors

5. COOK BUILDING

Alarm Systems Technology ..... 2nd Floor
Control Systems Technology ..... 1st Floor
Electrical Automation Technology ..... 2nd Floor
Electrical Systems Design Technology ..... 3rd Floor

6. COOK WEST BUILDING

Heating, Ventilation, Air-conditioning
and Refrigeration Technology ..... 1st Floor
Major Appliance Technology ..... 1st Floor
Advanced Precision Machining Technology ..... Ground Floor

7. LANGENBERG ELECTRICAL TECHNOLOGY CENTER

First Year Electrical ..... 1st and 2nd Floors

8. MYRTLE AND EARL WALKER RESIDENCE HALL

9. MARY ANN LEE TECHNOLOGY CENTER

Fabrication and Welding Technology ..... Ground Floor
First Year Electrical ..... Ground Floor
High Performance Racing Technology ..... Ground Floor
Industrial Technology ..... Ground Floor
Mechanical Automation Technology ..... Ground Floor

10. ROBERT W. PLASTER FREE ENTERPRISE CENTER

Microenterprises ..... Ground Floor

RANKEN WEST

Wentzville, Missouri, located in St. Charles County, became the site of the College's second location in spring 2013. This location offers students who live west of the St. Louis metro area the opportunity to gain a quality technical education without traveling far from home.

PROGRAMS OFFERED AT RANKEN RANKEN WEST

Ranken West currently offers day and evening courses, and general education courses are offered in a schedule-friendly online format. Classes are a combination of hands-on technical training and theory. Degree and certificate options are available in:

- Application and Web Development (Online)
- Automotive Maintenance Technology
- Building Systems Design Technology
- Control Systems Technology
- Diesel Technology
- Electrical Automation Technology
- Information Technology
- Bachelor of Science in Applied Management (Online)
- Supply Chain Management

STUDENT SERVICES

Students who attend Ranken West have access to the resources offered at the main campus in St. Louis. Most student services are available on site. Others, such as the academic resources from the Student Success Center and professional counseling, may be accessible to Ranken West students by having St. Louis campus staff visit Ranken West.

Ranken West students are able to join the College's student clubs and organizations, and are provided with opportunities to attend meetings through conference calls and video applications.

RANKEN WEST ADMISSIONS CONTACT INFORMATION

Ranken Technical College
751 Parr Road, Wentzville, MO 63385
Phone: (855) RANKENW
Email: wentzvilleadmissions@ranken.edu
Web: www.ranken.edu/wentzville

RANKEN WEST LOCATION ADMISSIONS OFFICE HOURS

Monday–Friday 8 a.m. - 4 p.m.
Saturday By appointment only
By Appointment Only Mon-Thurs after 4 p.m.

LINCOLN COUNTY WORKFORCE DEVELOPMENT CENTER

Troy, Missouri, located in Lincoln Country, became the site of the College's fourth location in August 2022. This location allowed the Ranken West location to expand the programming in the region and also allows neighboring high schools to participate in the College's dual enrollment program.

PROGRAMS OFFERED AT LINCOLN COUNTRY WORKFORCE DEVELOPMENT CENTER

Lincoln Country Workforce Development Center currently offers day and evening courses, and general education courses are offered in a schedule-friendly online format. Classes are a combination of hands-on technical training and theory. Degree and certificate options are available in:

- Advanced Precision Machining Technology
- Agricultural Engineering Technology
- Application and Web Development (Online)
- Applied Engineering Technology
- Heating, Ventilation, AC, and Refrigeration Technology
- Industrial Technology
- Electrical Maintenance
- Precision Machining Technology
- Bachelor of Science in Applied Management (Online)
- Supply Chain Management

STUDENT SERVICES

Students who attend the Lincoln County Workforce Development Center have access to the resources offered at the main campus in St. Louis. Most student services are available on site. Others, such as the academic resources from the Student Success Center and professional counseling, may be accessible to Lincoln County Workforce Development Center students by having St. Louis campus staff visit this location. Lincoln County Workforce Development Center students are able to join the College's student clubs and organizations and are provided with opportunities to attend meetings through conference calls and video applications.

LINCOLN COUNTY WORKFORCE DEVELOPMENT CENTER ADMISSIONS CONTACT INFORMATION

Ranken Technical College
651 John Deere Drive, Troy, MO 63379
Phone: (314) 286-3641
Email: troyadmissions@ranken.edu
Web: www.ranken.edu/wentzville

LINCOLN COUNTY WORKFORCE DEVELOPMENT CENTER LOCATION ADMISSIONS OFFICE HOURS

Monday–Friday 8 a.m. - 4 p.m.
Saturday By appointment only
By Appointment Only Mon-Thurs after 4 p.m.

RANKEN SOUTHEAST

Perryville, Missouri, became the site of the College's third location in 2017. This new location provides quality technical education to Perry County and the surrounding area. This regional investment is the next step in Ranken's effort to evolve and improve technical education in the United States.

Ranken works closely with industry leaders, local businesses, and government officials to develop degree and certification programs that will benefit the region. The Ranken Southeast location will help bring more skilled workers to the region and help fill the rising gap in technology jobs.

PROGRAMS OFFERED AT RANKEN SOUTHEAST

Classes are a combination of hands-on technical training and theory. Degree and certificate options are available in:

- Application and Web Development Technology (Online)
- Commercial Driver's License
- Diesel Technology
- Diesel Truck Maintenance and Service
- Fabrication & Welding Technology
- Heating, Ventilation, Air Conditioning, & Refrigeration Technology
- Mechanical Automation Technology
- Information Technology
- Electrical Automation Technology
- Electrical Maintenance
- Industrial Technology
- Bachelor of Science in Applied Management (Online)
- Supply Chain Management

STUDENT SERVICES

Students who attend Ranken Southeast have access to the resources offered at the main campus in St. Louis. Most student services are available on site. Others, such as the academic resources from the Student Success Center and professional counseling, may be accessible to Southeast students by having St. Louis campus staff visit Ranken Southeast.

Southeast students are able to join the College's student clubs and organizations, and are provided with opportunities to attend meetings through conference calls and video applications.

SOUTHEAST CONTACT INFORMATION

Ranken Technical College
1907 North Perryville Blvd., Perryville, MO 63775
Phone: (314) 286-3382
Email: perryvilleadmissions@ranken.edu
Web: www.ranken.edu/perryville

SOUTHEAST LOCATION ADMISSIONS OFFICE HOURS

Monday–Friday	7:30 a.m. - 3:30 p.m.
Saturday	By appointment only

RANKEN CENTRAL MISSOURI

In 2024, Ashland, Missouri became the fifth location for the College. This location provides quality technical education in the Central Missouri region. This location stemmed out of a partnership with the Southern Boone School District to allow their students, along with local community members, the opportunity to become the trained technicians that area employers are looking for.

PROGRAMS OFFERED AT RANKEN CENTRAL MISSOURI

Ranken Central Missouri offers day and evening courses, while general education courses are offered online. Classes are a combination of hands-on technical training and theory. Degree and certification options are available in:

- Carpentry and Building Construction Technology
- Fabrication and Welding Technology
- Mechanical Automation Technology
- Industrial Technology
- Information Technology
- Electrical Automation Technology
- Carpentry Maintenance
- Electrical Maintenance
- Supply Chain Management

STUDENT SERVICES

Students who attend Ranken Central Missouri have access to the resources offered at the main campus in St. Louis. Most students services are available on site. Others may be accessible to Ranken Central Missouri students by having St. Louis campus staff visit Ranken Central Missouri.

Ranken Central Missouri students are able to join the College's student clubs and organizations, and are provided with opportunities to attend meetings through conference calls and video applications.

RANKEN CENTRAL MISSOURI ADMISSIONS CONTACT INFORMATION

Ranken Technical College
975 Perry Avenue, Ashland, MO 65010
Phone: (314) 286-3390
Email: ashland@ranken.edu
Web: www.ranken.edu/centralmo/

RANKEN CENTRAL MISSOURI ADMISSIONS OFFICE HOURS

Monday-Friday	7:30 a.m. – 3:30 p.m.
Saturday	By appointment only

RANKEN EDWARDSVILLE

Edwardsville, Illinois will become home to the College's sixth location in August 2026, marking an exciting milestone in the institution's continued growth. This expansion was driven by strong interest from regional employers seeking access to Ranken's highly regarded Diesel Technology program. Through a new partnership with Schneider, the College will deliver the four semester program inside the company's truck maintenance facility, giving students the opportunity to learn in a fully operational, real world shop environment while completing their technical coursework.

PROGRAMS OFFERED AT RANKEN EDWARDSVILLE

Ranken Edwardsville offers day courses, while general education courses are offered online. Classes are a combination of hands-on technical training and theory. Degree and certification options are available in:

- Diesel Technology

STUDENT SERVICES

Students who attend Ranken Edwardsville have access to the resources offered at the main campus in St. Louis. Student services will be accessible to Ranken Edwardsville students by having St. Louis campus staff visit Ranken Edwardsville.

Ranken Edwardsville students are able to join the College's student clubs and organizations and are provided with opportunities to attend meetings through conference calls and video applications.

RANKEN EDWARDSVILLE ADMISSIONS CONTACT INFORMATION

Ranken Technical College
141 Enterprise Dr., Edwardsville, IL 62025
Phone: (314) 286-4809
Email: edwardsville@ranken.edu
Web: www.ranken.edu/edwardsville/

RANKEN EDWARDSVILLE ADMISSIONS OFFICE HOURS

By appointment only (Visitors must be registered prior to entering Schneider facility)

ADMISSIONS

Ranken Technical College accepts applications for most programs for fall, spring and summer semesters. Contact the Admissions office for specific program start dates. The College operates on a rolling admission system. All credentials submitted for admission must be on file no later than one week prior to final registration for the semester in which the applicant wishes to begin. The director of enrollment management welcomes inquiries from prospective students, high school and college counselors and academic advisors.

Candidates for admission may begin the application process at any time during the school year. All application/registration materials must be submitted to the Admissions office before a student is authorized to attend class. Early application and registration are encouraged as classes fill very quickly. All correspondence regarding applications for admission and all application credentials should be addressed to:

ADMISSIONS OFFICES

Email: admissions@ranken.edu
Phone: (314) 286-4809
Toll Free: (866) 4RANKEN
Fax: (314)286-3309

MAIN CAMPUS – ST. LOUIS
Ranken Technical College
4431 Finney Avenue, St. Louis, MO 63113
ranken.edu/stlouis

Services Ranken Edwardsville
ranken.edu/edwardsville

RANKEN WEST – WENTZVILLE
Ranken Technical College
751 Parr Road, Wentzville, MO 63385
ranken.edu/west

RANKEN WEST – TROY
Ranken Technical College – West
651 John Deere Drive, Troy, MO 63379
ranken.edu/west

RANKEN SOUTHEAST – PERRYVILLE
Ranken Technical College
1907 North Perryville Blvd., Perryville, MO 63775
ranken.edu/southeast

RANKEN CENTRAL MO – ASHLAND
Ranken Technical College – Central Missouri
975 Perry Avenue, Ashland, MO 65010
ranken.edu/centralmo

RANKEN EDWARDVILLE
Ranken Technical College, 141 Enterprise Dr.
Edwardsville, IL 62025
ranken.edu/edwardsville

CAMPUS VISITS

Choosing the right college is an important decision. We encourage visitors to tour the Ranken campus and speak with an admissions counselor to receive additional information. On the tour, visitors can see Ranken classes in action and view our state-of-the-art facilities. Individual and group tours are given by appointment, Monday through Friday, throughout the year. Campus visits can be scheduled at ranken.edu/visit

MINIMUM STANDARDS FOR ADMISSION

Applicants who possess a high school diploma, GED, or HiSET are considered eligible for admission to the College. Applicants for early college program must be on track to graduate high school.

UNDERGRADUATE DAY AND EVENING PROGRAMS, INCLUDING THE BACHELOR OF SCIENCE IN APPLIED MANAGEMENT (BSAM)

1. Complete an application for enrollment at ranken.edu/apply
2. Complete the Student Registration, including payment of the $95 registration fee at ranken.edu/fee
3. Submit a copy of your high school diploma, final high school transcript or HiSET/GED Certificate.

BACHELOR OF SCIENCE IN APPLIED MANAGEMENT (BSAM)

The Bachelor of Science in Applied Management (BSAM) program is open to current Ranken students, Ranken graduates, and individuals with technical backgrounds.

Prior learning credit may be awarded for work experience in a technical field, apprenticeship, military technical training, industry certifications, or employer training on technical topics. Applications for admission through technical transfer credit will be evaluated on a case-by-case basis. Letters of recommendation providing evidence of the prospective student's work may be required.

CREDIT BY ASSESSMENT

Ranken Technical College participates in several programs designed to evaluate educational experiences obtained through high school programs. These high school programs are designed to assist the College and the student to transcribe previously acquired knowledge into college credit. The Credit by Assessment program is one of the measures used to determine a student's level of proficiency and skill level attained through a high school and/or a technical program. For more information, contact the Admissions office.

CREDIT BY EXAMINATION

Ranken Technical College welcomes students from a wide variety of backgrounds and learning experiences. Many students come to our institution with a firm grounding in some of the areas we teach. We recognize prior learning by accepting and proctoring exams which measure mastery of college-level, introductory course content in a wide range of general education disciplines. For most standard general education areas, students may take the College-Level Examination Program® (CLEP®) exams. Students who obtain the credit-granting score required may earn credits and course exemptions for courses listed in the degree requirements. Anyone interested in taking a CLEP exam should email Testing@ranken.edu.

Students wishing to take an exam to prove mastery of the content may do so by sending an email to registrar@ranken.edu, Students that have attempted, and withdrawn from a general education course, receiving a W Grade on their transcript, may attempt the test out option for that course. Students who have unsuccessfully attempted a general education course, receiving a D, F, or WF on their transcript, will not be able to attempt the test out option for the course. Students are only allowed to attempt the test out exam once for a course.

Career Success Skills (BUS 1001) is a general education course focused on developing job-readiness skills, including professional attitudes, workplace behaviors, and strong work ethic traits essential for employment and career advancement. Students learn the job search process, resume writing, and effective interviewing techniques, while also gaining experience using key features of the College's Learning Management System, Inside Ranken.

TRANSFER ADMISSION

Ranken Technical College welcomes transfer students from two-year and four-year public and private universities and colleges. Transfer applicants are those degree or certificate seeking students who have previously enrolled in a regionally-accredited post-secondary degree program. Transfer applicants should begin application procedures at least one month prior to final registration for the semester in which they seek admission.

Students may use transferable credits to meet the placement criteria. An official transcript should be sent to the Admissions office. Transferability of credits will be evaluated on a case-by-case basis by the Registrar's office.

CREDIT FOR PRIOR LEARNING PROGRAM

Information, skills and accomplishments may be acquired in the community or on the job. To the extent that such prior learning is at a level equivalent to education offered by Ranken Technical College, a student can earn credit for it toward a degree.

The Credit for Prior Learning Program at Ranken Technical College enables a student to receive credit for learning gained outside of educational institutions. The process for demonstrating learning by portfolio is a self-evaluation whereby the student must describe such learning in terms of competencies. The student provides the evaluator with documentation of the competencies, which can then be assessed and validated to determine both a theoretical and practical understanding of the subject matter.

For more information or for eligibility inquiries, contact the Admissions office to schedule an appointment with an admissions counselor.

READMISSION

Students who leave the College prior to completing their course of study, or Ranken graduates seeking further degrees or certificates may apply for readmission. All candidates must submit a separate readmission application. Once accepted for readmission, applicants must submit a non-refundable $95 registration fee to the Business office at the time of registration. Military Service Members that withdraw because of service requirements can readmit without charge at any time and continue their program. Contact the Registrar's office for additional information.

FINANCIAL AID

GOVERNMENT PROGRAMS

Ranken participates in the following federal financial aid programs:

- Pell Grant (need-based)
- Supplemental Educational Opportunity Grant (need-based)
- Federal Work Study program (need-based)
- Direct Loan programs
  - Subsidized Loans (need-based)
  - Unsubsidized Loans (non-need-based)
  - Parent PLUS Loans

MISSOURI STATE PROGRAMS

State grant aid is available to Missouri residents only. Programs include but are not limited to:

- MO Access Grant
- Missouri A+
- Bright Flight Scholarship
- Vietnam Veterans Survivor Grant

For a complete listing of Missouri state financial aid programs please call (800) 473-6757 or visit www.dhe.mo.gov.

Complete information on each of these programs is available at the Financial Aid office.

Students who are interested in participating in any of the federal/state financial aid programs must first complete a Free Application for Federal Student Aid (FAFSA). This application will provide a financial needs analysis or "Expected Family Contribution" (EFC) that is used to determine eligibility for all of the financial aid programs.

INSTITUTIONAL PROGRAMS

Ranken currently offers a variety of institutional aid to students who qualify. Awards may be based on a student's technical major program and/or out-of-state residency. Completion of the FAFSA is a requirement to be considered for any institutional aid.

COST OF ATTENDANCE

All financial aid recipients have a calculated cost of attendance. The cost of attendance comprises tuition, fees, books, tools, housing allowance, travel allowance, loan fees and miscellaneous expenses. The cost of attendance is calculated by the Financial Aid office and is used to determine eligibility for need- and non-need based financial aid.

VERIFICATION PROCESS

Federal regulations require that the U.S. Department of Education selects a certain percentage of financial aid applicants to verify the information they provided on the FAFSA. This process is called "verification." In addition to the government's selection of applicants, the College may also require financial aid applicants to verify their information if there is reason to believe that the information on the FAFSA application is inaccurate. The following process applies to all students who are selected for verification and have officially registered to attend the College:

An initial letter will be sent to the student explaining that he/she has been selected for verification and will describe the necessary documents that must be submitted to fulfill

the verification requirements. Upon receiving the required documents, the Financial Aid office will electronically correct the students' FAFSA application. The request(s) for verification documentation will continue until such time that the student has:

- Successfully completed the verification process and all appropriate corrections have been made by the Financial Aid office.
- OR Notified the Financial Aid office that he/she is not interested in receiving financial aid and will NOT be completing the verification process.

Once the verification process has been completed successfully he/she will be eligible to receive Federal Title IV financial aid and, if applicable, Missouri state aid provided he/she has met the general eligibility requirements for receiving financial aid.

GENERAL STUDENT ELIGIBILITY REQUIREMENTS

1. Must be enrolled as a regular student in an eligible program
2. Must have a high school diploma or the equivalent
3. Must be maintaining standards of academic progress for financial aid
4. Must have resolved any drug conviction issue
5. Must be a U.S. citizen, U.S. permanent resident, citizen of the Freely Associated States, the Federated States of Micronesia and the Republics of Palau and the Marshall Islands or be an eligible non-citizen
6. Must not be in default or owe a repayment of Federal Title IV funds
7. If male and between the ages of 18–25 must have registered with the Selective Service System

DETERMINING FINANCIAL AID AWARDS

Eligibility for aid may be determined by both federal and state authorities in conjunction with the College's Financial Aid office. If approved for federal and/or state aid by those governing agencies the College must determine if the student is eligible to receive aid based on the "General Student Eligibility Requirements" previously outlined. Eligibility for specific loan programs (need- vs. non-need-based) is determined by the Financial Aid office. The determination is made by subtracting the EFC and other financial aid from the calculated cost of attendance.

Additionally, financial aid awards are also determined based on the time period in which a student is enrolled. There are two types of financial aid academic years that are utilized when calculating student loan eligibility. The first type is the typical Scheduled Academic Year (SAY) which is a fixed period of time that begins and ends at the same time each year. The second type is the Borrower-Based Academic Year (BBAY) which does not have fixed beginning and ending dates. The educational programs that fall into either of these categories can vary each year. The financial aid office will use the more appropriate academic year when determining a student's loan eligibility. Finally, some of the educational programs begin or end with the summer semester. In this case, the summer semester can be considered a "header" or "trailer" and may potentially impact the amount of a student's loan eligibility.

DISBURSEMENT OF AWARDS

Financial aid awards are disbursed no sooner than the beginning of the third week of the semester or period of enrollment. Aid is generally received by the College via electronic funds transfer (EFT) and is credited to the student's billing account. In the event that funds are disbursed via check the appropriate endorser is notified by the College. Students must meet the "General Student Eligibility Requirements" in order to receive aid.

STANDARDS OF ACADEMIC PROGRESS FOR FINANCIAL AID

Ranken Technical College has established qualitative and quantitative measures for evaluating the academic progress and efforts of financial aid recipients to achieve an educational goal and degree. An assessment of these efforts will occur after the completion of each semester. Students enrolled in a program of more than two academic years in length must have a career GPA of 2.0 or greater upon completion of the second academic year.

GRADE POINT AVERAGE

All financial aid recipients (e.g. full-time and part-time) must maintain a 2.0 career GPA. Students who fail to meet this requirement will jeopardize their ability to receive financial aid.

COMPLETION RATE

Regulations also require a student to complete a program of study within 150% of the published program length, measured in attempted and transfer hours. Example: Student enrolls in the Professional Collision Repair Technology Program. The published program length is 84 credit hours. Therefore, the student may attempt up to 150% of the required credit hours which equals 126 hours in order to successfully complete the program requirements. Students may calculate the number of hours they can attempt by taking the total hours required for the program completion and multiplying by 150%. The attempted credit hours are then used in the completion rate calculation. The completion rate is calculated by dividing the number of earned hours by the number of attempted hours. Remedial courses are not included in this calculation. In order to abide by this regulation, a student must complete at least 67% of their cumulative attempted hours. Credit hours from another institution that are accepted toward the student's educational program are counted as both attempted and completed hours.

DETERMINING ACADEMIC AND FINANCIAL AID PROBATION/WARNING

Students who do not successfully complete each semester with a career GPA of 2.0 or higher are placed on Academic Probation. If they are federal financial aid recipients, they are also automatically placed on financial aid warning. Students are notified in writing by the Registrar's Office when a determination has been made to place them on Academic Probation & Financial Aid Warning. Students are generally allowed the subsequent semester in which to raise their career GPA. Upon completion of the subsequent (warning) semester a variety of outcomes will occur:

The Financial Aid Office will review the completion rates for all federal financial aid recipients if they have been placed on Academic Probation by the Registrar's Office. If a student's

cumulative completion rate is less than 67%, the student will be placed on financial aid warning for one semester. At the completion of the warning semester, one of the following will occur:

- The student's cumulative completion rate is at least 67% or higher, and the student's career GPA is 2.0 or higher—they will return to "good standing" for academic and financial aid purposes;
- The student's cumulative completion rate is NOT 67% or higher, but their career GPA is 2.0 or higher. The student will be notified that they do not currently meet all of the requirements and will be allowed to submit an appeal request. If the appeal request is approved—the student will be placed on financial aid probation for an additional semester;
- The student's cumulative completion rate is 67% or higher, but their career GPA is NOT 2.0 or higher. The student will be placed on Extended Academic Probation by the Registrar's Office and will be allowed to submit an appeal request. If the appeal request is approved—the student will be placed on financial aid probation for an additional semester;
- At the end of the semester the student's cumulative completion rate is less than 67% and their career GPA is less than 2.0, the students terminated from any additional financial aid. Students who have been terminated from financial aid may still submit an appeal request to the Financial Aid Office. Appeal requests must be submitted to the Financial Aid Office and will be reviewed by Financial Aid, Academic and Administrative staff.

DEFINITIONS

- Financial aid probation: Status assigned by Ranken to a student who fails to make satisfactory academic progress and who has appealed and has had their eligibility for financial aid reinstated.
- Financial aid warning: Status assigned by Ranken to a student who fails to make satisfactory academic progress upon the completion of each semester (payment period).

MAXIMUM TIME FRAME

As stated above, federal regulations require students to complete their program of study within 150% of the published program length. For example, a student enrolled in a program requiring 80 credit hours will lose all financial aid eligibility after the student has attempted 120 (80 + 40) credit hours. Developmental courses are not counted in the 150% maximum time frame calculation, however, accepted transfer hours are counted in the 150% maximum time frame calculation.

APPEAL & REINSTATEMENT

If extenuating circumstances (illness, death in the family, etc.) contributed to the student's lack of Satisfactory Academic Progress, the student may request an appeal to have their financial aid eligibility reinstated. Students may pick up an appeal request form from the Financial Aid Office. They are to complete the form and submit any supporting documents that will substantiate their explanation for non-compliance. Requests for an appeal must be made in writing to the Director of Financial Aid. Once a student submits all required information for an appeal request, the director of Financial Aid will contact any appropriate educational office for supporting information and/or documentation. Students will receive an update regarding their appeal request within two weeks. Incomplete appeal requests will be returned to the student.

If the student does not qualify to file an appeal, the student may pursue reinstatement by attending Ranken without any financial aid until they have attained a career GPA of 2.00 or better and a cumulative completion rate of 67% or better. A student may also request reinstatement if a grade change has improved their academic status to the required minimums.

ADDITIONAL INFORMATION

- This policy applies to all Federal Title IV programs, all state programs, and all alternative (private) loans and most institutional programs.
- Attempted courses are those that remain on the academic transcript after the end of the add/drop period. Courses in which a student receives an incomplete grade, withdraws or repeats are counted as attempted hours and will be used to calculate the completion rate.
- Completed courses are those in which a grade of A, B, C, D, F, P, or NP is received. A course grade of F indicates the student completed the course and will not be considered an "unofficial withdrawal" from the course. Courses in which a WP, WF, or W is received are considered "not" completed; however, will still be counted as attempted hours and used to calculate the completion rate.
- Students must be enrolled in program of study leading toward a degree offered by the college. Students cannot continue receiving financial aid for the same program in which they have already received a degree.
- This policy is cumulative and regulations state very clearly that they apply to any financial aid applicant/recipient regardless of prior financial aid history (or lack thereof).
- Any student who desires to change his/her major should immediately contact the Director of Financial Aid to determine the impact on his/her financial aid eligibility.
- Transfer credit that is accepted toward the educational program will be counted as both attempted and completed hours.
- Non-elective repeated coursework will be counted as both attempted and earned hours, regardless of grade(s) earned. A student repeating multiple coursework classes should review the "Maximum Timeframe" requirement.

Worksheets used to determine the "Return of Title IV Aid" amounts are available upon request from the Financial Aid Office. *For the purpose of this policy "institutional charges refers to charges for tuition, lab fees, certification testing fees, organizational fees, student fees, room and board (if the student has contracted with the institution to live in the Dorm) and the documented costs of non-returnable books, tools, and equipment (as determined by the Bookstore).

RETURN OF TITLE IV AID

In addition to the Institutional Refund Policy, all students receiving Federal Financial Aid, who completely withdraw from the College, will be subject to the "Return of Title IV Aid" (R2T4) formula derived from the 10/7/98 Reauthorization of the Higher Education Act. The federal formula is applicable to any student receiving Title IV Federal Financial Aid, other than Federal Work Study, if that student withdraws on or before the 60th% point in time in the semester. For the purpose of this

section, Title IV aid includes only assistance from the Federal Direct Loan Programs, Federal Pell Grant, and Federal Supplemental Educational Opportunity Grant (FSEOG).

Withdrawal from the College refers to the student's last date of attendance (LDA) as officially recorded in the Registrar's Office. Official Withdrawal–Students desiring to voluntarily withdraw-separate from the College must begin the withdrawal process in the Student Success Department or Registrar's office. Unofficial Withdrawal–Students who exceed attendance are not eligible to voluntarily withdraw from the College. Dismissal from a course for exceeding the allowed number of unexcused absences may result in a separation from the College if the student exceeds attendance in all courses. Once the student has exceeded the maximum amount of excused absences, the instructor will complete a course exceed form and notify the Registrar's Office.

The last day of attendance for both official and unofficial withdrawals is determined by the attendance records maintained by the instructor. Ranken Technical College requires instructors to maintain attendance records for all courses. The last day of attendance (as determined by the instructor) is the last day the student actively participated in the class. Ranken Technical College measures its programs in credit hours; therefore, withdrawal during the semester is considered withdrawal during a "payment period." According to the Return of Title IV Aid formula, students "earn" their financial aid on the basis of the portion of the semester that has been completed in conjunction with the "institutional charges" that have been accrued for that semester. The percentage of "earned" financial aid is determined by the length of time the student attended. If the student attended more than 60% of the enrollment period (based on the beginning and ending dates of the semester), then the student will have "earned" all of their financial aid for the period of enrollment in which they withdrew. If the student does not complete at least 60% of the period of enrollment then they may be eligible for a prorated percentage of their financial aid based on the length of the semester and the number of days that were completed prior to withdrawing. The College also "earns" a portion of the financial aid.

The R2T4 calculation will be completed by the Financial Aid Office within 21 days from the date the institution has determined the student is no longer enrolled. If the total amount of Title IV grant or loan assistance, or both, that the student "earned" is less than the amount of Title IV grant or loan assistance that was disbursed to the student or on behalf of the student if the parent borrowed a Parent PLUS Loan, the difference between these amounts must be returned and the College cannot make any additional disbursements.

Financial Aid that is determined to be "unearned" by the student and/or College must be returned to the appropriate Title IV program(s). The amount of "unearned" aid is calculated as a percentage by taking the number of calendar days competed in the semester and dividing by the total days in the semester. Scheduled vacation periods of more than five days are excluded. All refunds must be made to the Department of Education within 45 days from the date the institution determined the student is no longer enrolled.

If the total amount of Title IV grant or loan assistance, or both, that the student earned is greater than the total amount of Title IV grant or loan assistance, or both, that was disbursed to the student or on behalf of the student in the case of a PLUS loan, as of the date of the College's determination that the student withdrew, the difference between these amounts will be treated as a "post-withdrawal disbursement."

Any post-withdrawal disbursement will be made from available grant funds before loan funds. Post-withdrawal disbursements from grant funds will be disbursed to the student account within 45 days. Post-withdrawal disbursements from loan funds will be disbursed within 30 days; however, require written acceptance by the student. Post-withdrawal disbursements may be used to cover any outstanding charges on the student's account. If the student is due a post-withdrawal disbursement from a loan, the College will require written confirmation from the borrower before making the post-withdrawal disbursement. The College will notify the student and/or parent PLUS loan borrower within 30 days of the date the institution determined that the student withdrew if the student is due a post-withdrawal disbursement. The notification will contain the request to confirm the post-withdrawal disbursement. It will also explain that will occur if the student and/or parent PLUS borrower do not wish to obtain the post-withdrawal disbursement. Any post-withdrawal disbursement will be issued to the appropriate individual via eRefund or paper check.

All students subject to this return formula will have their student billing accounts charged for any refund the College is required to return to the Federal Financial Aid Program(s). Students will be notified in writing by the Business Office of any adjustment that has been made to their student billing account. If funds were released to a student because of a credit balance on the student's account, then the student may be required to repay some of the Federal grant and/or loan proceeds released to them. Any loan funds that the student may be required to return may be repaid in accordance with the terms of the promissory note. Any student responsible for returning grant funds will be notified in writing of the amount of the grant that must be returned/repaid. The student will have 45 days from the date of notification to repay the overpayment of grant funds to the College. The College will then return the money to the Department of Education. Failure to repay grant overpayments may result in the student being turned over to the Department of Education for collection.

The order in which Title IV Funds are to be repaid is as follows:

- Federal Direct Unsubsidized Loan Program
- Federal Direct Subsidized Loan Program
- Federal Direct Parent PLUS Loan Program
- Federal Pell Grant Program
- Federal Supplemental Educational Opportunity Grant (SEOG) Program

<u>Example of R2T4 calculation:</u>
A student attends during the 2024-2025 Spring semester. The semester began on 1/8/25 and ended on 5/2/25. They received a Federal Pell Grant for the semester totaling $2,207.00, Federal Unsubsidized Loan totaling $2,623.00 and a Federal Subsidized Loan totaling $1,732.00. All funds (totaling $6,562.00) were applied to their student account prior to

withdrawing. The College determined that the student "unofficially" withdrew from the College with a recorded LDA of 3/3/25. Based on the R2T4 calculation, they attended 47.82% of the payment period. This is calculated by taking the number of days completed (55) and dividing by the total number of days in the semester (115). The student earned 47.8% of their financial aid totaling $3,136.64. The College is required to return the "unearned" financial aid totaling $3,425.36. The Federal Unsubsidized Loan disbursement totaling $2,623.00 and a portion of the Federal Subsidized Loan disbursement totaling $802.36 are required to be returned to the US Department of Education. If they had completed 60% or more of the semester; the College would not be required to return any of their funds.

RETURN OF UNEARNED TUITION ASSISTANCE

Students who use Tuition Assistance (TA) are expected to remain enrolled in the course throughout the duration of the semester. If a student using TA withdraws from the course, the student may no longer be eligible for the full amount of the benefit that was originally authorized. To remain in compliance with the Department of Defense's Policy, Ranken Technical College will return any unearned TA funds through at least 60% of the semester on a prorated basis. The amount of unearned TA that is returned is based on the date of withdrawal from the course. After 60% of the semester has passed, TA will not be evaluated for a return to the Department of Defense (DOD). As an institution, we will bill the DOD after 60% of the semester has passed to reduce the amount of incorrect TA funds being disbursed by the DOD to Ranken Technical College. Ranken will only bill for the amount the student earned given their enrollment.

FINANCIAL AID WARNING

The Financial Aid office is notified, after the completion of each semester, which students have not met the "Standards of Academic Progress". The Registrar's Office reviews all academic records and determines who has not met the requirements. Students who have not met the academic requirements and who are receiving financial aid are notified via letter that they are being placed on "Financial Aid Warning" and Academic Probation. If a student is placed on financial aid warning—they will be eligible to receive financial aid for an additional semester; however, if they do not meet the academic requirements upon completion of the additional semester they risk losing financial aid eligibility.

ADDITIONAL LOAN PROGRAM

Ranken Technical College offers private (alternative) loans. Eligibility to borrow private loans is determined by the administering agency of the loan. Approval to participate in an alternative loan program generally requires that the borrower and/or co-borrower have good credit. The agencies responsible for administering the loan may require a credit check before approving or denying the loan application. For additional information, contact the Financial Aid office.

SCHOLARSHIP PROGRAM

Ranken Technical College recognizes excellence in achievement. Scholarships may cover partial payment of tuition, books and tools, depending upon the individual's needs. Criteria for awards will vary and all students must complete the FAFSA before being considered an eligible recipient for institutional scholarship(s). Amounts of awards will also vary and are determined by a scholarship committee composed of various faculty and staff members. For a complete listing of the institutional scholarships that are available, please refer to the scholarship guide: http://ranken.edu/tuition-and-financial-aid/available-scholarships.

PART-TIME EMPLOYMENT FOR STUDENTS

Ranken Technical College maintains a part-time employment service for active students who need supplementary income. Approximately 75% of Ranken students work at part-time jobs while maintaining satisfactory grades. Employment opportunities available on campus consist of both federal work study and regular student employment jobs. Federal work study eligibility is determined by the Financial Aid office. Contact Career Services for further information about part-time student employment opportunities available on or off campus.

Students have full responsibility for acquainting themselves with all policies, requirements and procedures pertaining to their academic programs. Ranken reserves the right to change course offerings, course registrations, policies or procedures as it deems necessary. Current policies and procedures can be found in the student handbook.

VETERAN'S BENEFITS

Student's can use VA education benefits for approved, for-credit programs. The amount of funding the VA gives for education for veterans is based on a few factors, like your time of service and the chapter of benefits you receive. The Department of Defense and the Veteran's Administration determine your eligibility, so your first step is to submit your application to the VA.

Ranken Technical College will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries or other institutional facilities, or the requirement that a Chapter 31 or Chapter 33 recipient borrow additional funds to cover the individual's inability to meet his or her financial obligations to the institution due to the delayed disbursement of a payment by the U.S. Department of Veterans Affairs.

TUITION AND FEES

GENERAL TUITION

Registration Fee	$95
Full-Time Day Program (12 or more credits)	$742 / Credit Hour
Evening Program	$742 / Credit Hour
General Education Only	$206 / Credit Hour
Bachelor of Science in Applied Management	$422 / Credit Hour

*All costs are approximate and subject to change. Course and fee order may vary.

All Ranken students enjoy a unique financial benefit. The College's endowment fund and development efforts provide substantial support to the yearly cost of the school operation, which results in lower tuition and fees for Ranken students. This lower tuition rate can be readily verified by comparing Ranken's tuition to that of similar private educational institutions. By providing lower

tuition for all students, the College remains true to its emphasis on student success, quality education and graduate placement in jobs for which they are well-trained. Ranken Technical College reserves the right to change established tuition, fees and services, to add additional fees and services and to determine the effective date of such changes without prior notice.

For all updated tuition costs, please visit www.ranken.edu/tuition.

REGISTRATION FEE

A non-refundable $95 registration/readmission fee is due at the time of course registration.

FINANCIAL AGREEMENT

All students are required to acknowledge and complete the Financial Agreement for Ranken Technical College. This is mandatory for all students who attend the College.

EBILLING

All students may locate their invoices and/or statements of account by logging into insideranken.org. Students who do not have sufficient financial aid to cover all costs (tuition, fees and bookstore charges) will make their payment(s) via CASHNet. Monthly payment plans must be set-up through the CASHNet billing system by logging into insideranken.org and selecting the "Finances" tab. A non-refundable fee, based on the number of payments chosen, will be charged to the student's account. All payments should be made via the CASHNet system.

* Failure to pay tuition and charges will result in being dropped from all courses.

TUITION DUE

- Tuition for the fall semester is due by July 1.
- Tuition for the spring semester is due by December 1.
- Tuition for the summer session is due by April 1.

STUDENT FEES

The student fee will cover costs of student benefits such as an initial Ranken parking tag, Ranken ID card, accidental insurance, official transcripts while in attendance, cap, gown, lab costs, Cengage subscriptions, and diploma.

Day Program	$715 / Semester
Evening Program	$360 / Semester
General Education Only	$360 / Semester
St. Louis Automotive Evening	$490/ Semester
Automotive High Performance Evening	$490 / Semester
Bachelor of Science in Applied Management	No Fee

BOOKS AND TOOLS FEES

Students are required to purchase books and tools, which vary in cost according to the respective technical program. The cost of books may also differ depending on whether students choose to purchase new, used, rental or e-book editions. The College reserves the right to specify tools (brands and types) for required lab and shop assignments. Only approved tools and books may be used. Contact the Admissions office for estimated costs of books and tools.

TOOL POLICY

Students in undergraduate day division programs must purchase their tools from Ranken Technical College. These students are not allowed to bring their own tools or purchase them from an outside vendor. All undergraduate day division students are required to have the same set of tools according to their major and current course of enrollment.

TESTING FEE

In some day and evening programs, students will be required to attempt industry certification exams. Testing fees will be applied to cover the cost of the exams.

LAPTOP FEE POLICY

In order to maintain the level of laptops needed, connect to the College's network, keep them up-to-date, virus-free, and working with the College's printers/plotters, students may lease a laptop from Ranken Technical College. This includes installation of instructional software for Architectural Technology, Electrical Systems Design Technology, Electrical Construction and Design Management Technology, or Building Systems Design Technology programs. The use of the software for non-educational purposes is prohibited.

SPONSORSHIP PROGRAMS

Ranken Technical College will provide a billing service to companies who wish to be invoiced for an employee's training. If the sponsor refuses to reimburse Ranken for any reason, the student is responsible for all costs and expenses for the associated semester. Sponsored students who are authorized to charge bookstore purchases must do so by the end of the first week of class. Students who overcharge or abuse their sponsorships will be reported and will be responsible for paying for any merchandise that the sponsor will not cover. Non-required materials must be approved in writing by the sponsor prior to purchase.

RETURN CHECK AND ACH RETURN POLICY

If a personal check or an ACH payment accepted by any unit of the College is returned unpaid by a financial institution, the student who submitted the check or ACH payment must pay a penalty of $20. In addition, the student could be placed on a checking privilege suspended list and be required to pay future charges in cash or certified funds. The penalty charge is subject to change without prior notice.

DELAYED DISBURSEMENT

Ranken Technical College will not impose penalty, including the assessment of late fees, the denial of access to classes, libraries or other institutional facilities, or the requirements that a Chapter 31 or Chapter 33 recipient borrow additional funds to cover the individual's inability to meet his or her financial obligations to the institution due to the delayed disbursement of a payment by the U.S. Department of Veterans Affairs.

REFUND POLICY

All institutional refunds will be credited to the student's billing account within 30 days of official notification of the student's withdrawal. Any student who wishes to withdraw from the College must contact the Registrar's office or the Student Success Department for the appropriate withdrawal procedures.

If an applicant cancels his or her registration prior to the start of classes, money paid in advance toward tuition, lab fees, laptop fees, certification testing fees and organizational fees (if applicable for the program) will be refunded. The $95 registration deposit is non-refundable. If the applicant has purchased items from the bookstore, they must be returned to the bookstore.

Textbooks may not be returned to the Ranken bookstore.

Withdrawal from the College refers to the student's last date of attendance (LDA) as determined by attendance records and reported to the Registrar's office. For the purpose of these policies, "institutional charges" refers to charges for tuition, lab fees, laptop fees, certification testing fees, organizational fees and student activity fees.

For the purpose of these policies, a "week" is defined by a calendar week and does not necessarily assume that there will be five class days within each week. Different withdrawal deadlines may apply to summer semester courses.

INSTITUTIONAL REFUND POLICY

Beginning with the first day of classes, any student who withdraws from his or her technical major coursework but remains in general education classes will receive a credit for coursework attempted according to the schedule below:

1. Withdrawal from technical major coursework and remaining in general education classes during the first full week of the semester = 90% credit for technical coursework attempted and a charge of the current per-credit-hour rate for general education classes.
2. Withdrawal from technical major coursework during the second week of the semester = 60% credit for technical coursework attempted. No additional charge for general education classes.
3. After the end of the second week of the semester, there will be no credit for coursework attempted.

The student may forfeit any Ranken funded scholarship that may have been awarded while enrolled in his or her major. The student may also become ineligible to receive a tuition credit that was previously awarded. Eligibility for tuition credits and/or Ranken funded scholarships will be determined by the Business office or the Financial Aid Office.

WITHDRAWAL FROM THE COLLEGE

Beginning with the first day of classes, any student who withdraws from the College will receive a credit of institutional charges according to the schedule below:

1. Withdrawal from the College during the first week of the semester = 90% credit of institutional charges.
2. Withdrawal from the College during the second week of the semester = 60% credit of institutional charges.
3. After the end of the second week of the semester there will be no refund of institutional charges due to withdrawal from Ranken.

The student may also become ineligible to receive a tuition credit and/or any appropriation scholarship that was previously awarded. Eligibility for tuition credits and/or appropriation scholarships will be determined by the Business office or a financial aid counselor on a case-by-case basis. The student will be notified by the Business office and/ or a financial aid counselor accordingly. Beginning with the first day of class, any student attempting eight weeks of coursework who withdraws from the College will receive a refund of institutional charges according to the following schedule:

1. Withdrawal from the College during the first week = 60% credit of institutional charges;
2. After the end of the first week of the semester there will be no credit for coursework attempted.

Different withdrawal deadlines may apply to summer semester courses if the courses are less than sixteen weeks in duration.

WITHDRAWAL DUE TO MILITARY LEAVE

When withdrawing from the College due to military training:

1. College will not assess a financial penalty due to receiving orders for service.
2. College will refund all tuition and fees for the academic term in which the student is withdrawing to the appropriate party.
3. College will refund all payments made for residential housing at the institution. Monthly house allowance (MHA) for Post 9/11 GI Bill® is not included. (GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at http://www.benefits.va.gov/gibill)

CREDIT BALANCE AND REFUND POLICY

During the semester, a credit balance may be created in a student's account from excess Title IV financial aid funds. If this occurs, the student may be entitled to a refund. The refund must be paid to the student or parent (Parent PLUS Loan only) within 14 calendar days after the funds have been applied to the student's billing account. In order to expedite the refund, students should participate in the eRefund process. Students may find information regarding this process by logging into their insideranken.org account and selecting the "Finances" tab. The student may become ineligible to receive a tuition credit and/or any Ranken funded scholarship that was previously awarded, if the student withdraws or is dismissed from the College. Eligibility for tuition credits and/or Ranken scholarships will be determined by the Business office or the financial aid counselor on a case-by-case basis. The student will be notified by the Business office and/or the financial aid counselor accordingly.

Through the administration of various financial aid programs, Ranken Technical College assists qualified students who demonstrate financial need. The College will make every effort to assist all students in meeting their financial obligations through part-time employment, scholarships, institutional and/ or private loans, state financial aid or federal financial aid. Since the College is dedicated to helping those who help themselves, every financial consideration will be made.

BOOKSTORE REFUNDS

Items returned must be accompanied by a receipt. Tools are returnable for a full refund within 30 days of purchase if they are deemed resalable by bookstore management. Resalable tools are tools that have not been used, engraved, marked on, damaged or abused in any way. Defective tools may be returned for an even exchange with bookstore management approval. Used tools are not returnable except in special circumstances as determined by bookstore management. Students withdrawing from the College have 30 days from the Last Date of Attendance (LDA) in which to retrieve tools. If tools are not retrieved after 30 days, they become the property of Ranken Technical College.

STUDENT SERVICES

BOOKSTORE

Ranken Technical College operates an on-campus bookstore at the St. Louis campus that carries apparel, tools and supplies necessary for each course. Ranken's goal is to ensure students pay the lowest possible cost for tools of the highest possible quality. All textbooks will be provided by the bookstore. For information on books, contact the bookstore at (314) 286-4820.

FOOD SERVICE

The College features a full-service dining hall on the St. Louis campus that serves breakfast, lunch and dinner during the school year. The dining hall offers complete meals, sandwiches and snacks at affordable prices.

PARKING

Ranken Technical College provides free, secure parking on campus. Replacement or additional parking tags are available for a fee of $5.

PUBLIC SAFETY

Ranken has 24-hour, full security on campus. Information about Ranken's crime awareness and campus security is posted on the Web at https://ranken.edu/about-us/public-safety/. This report contains the College's policies and procedures for reporting crimes, the law enforcement authority status of security personnel and the actual campus crime statistics. A paper copy is available upon request.

RESIDENTIAL LIFE

On-campus housing is available for students in Ranken's dormitory, Walker Hall located on the St. Louis campus. Opened in 2009, the two-story hall can house more than 200 students, and features a lobby with ping-pong table, vending machines, television and seating areas for studying or socializing, lounges with flat-screen televisions, a seminar room for meetings and events, private study rooms, a small group study room, community kitchens, laundry room, mailroom, exercise equipment, 24/7 security, controlled access doors to residential areas, and an outdoor basketball court, volleyball court, and BBQ grills and picnic tables. The five room types are: single units, single units with a shared bathroom, double units, two-bedroom apartments, and four-bedroom apartments. Each room is furnished with a twin-size bed, wardrobe (two-bedroom apartments have closets), desk, and chest of drawers for each resident. Bathrooms with showers are in each residential unit. Wireless internet, basic cable, and all utilities are included. All residents are required to purchase a meal plan. Financial aid may be available to help students with housing costs.

STUDENT CENTER

The Student Center provides a central location for students to meet outside of class. The Student Center at the St. Louis campus is equipped with fitness and weight equipment, a television lounge, ping-pong tables, and a snack vending area.

STUDENT SUCCESS CENTER

The Student Success Center (SSC) at the St. Louis campus provides a pleasant and inviting space for student learning and socializing. It is a resource area for all customers of the college: students, faculty, and staff. The SSC is an open-access computer lab equipped with a printer and a coin-operated copier and scanner for those who frequent the space. The SSC is also the hub of the College's library functions and academic resources where students and employees can access dozens of local academic libraries as well as the resources at many local libraries. Students can perform research, network, participate in study-communities, meet with tutors or study quietly. All services made available through the SSC are free of charge. For more information, contact ssc@ranken.edu.

ACADEMIC RESOURCES

The SSC offers print, video/DVD, computer-aided and online materials on a variety of study skills topics, including math, reading, and writing, and is equipped with computers and printers for student use. The Student Success Center has more than 100 daily newspapers, professional journals, and periodicals, plus a money-operated copy machine and scanner available for customer use. Access to the catalog detailing the physical collection and to various electronic databases is available online through Inside Ranken. For questions about academic resources at Ranken, email ssc@ranken.edu.

Infopasses and interlibrary loans are also available through the Student Success Center. These programs give Ranken students and employees access to the collections of dozens of academic libraries as well as the resources of many local libraries.

TESTING SERVICES

The Student Success Center operates a testing room and administers tests to specific constituents, i.e., Credit by Examination (CBE), Credit by Assessment (CBA), or College-Level Examination Program® (CLEP), of the college. For more information on testing services, email Testing@ranken.edu.

STUDENT SUCCESS

The Student Success Department works in concert with other departments at the college to coordinate and promote student success outcomes. Members of the Student Success department get involved with all dimensions of the student experience from the classroom and student services to campus operations and partnerships with the broader community to ensure students are supported and experience achievement. For more information about services provided by Student Success, email ssc@ranken.edu or call (314) 286-4891.

The department provides the following services:

- New Student Prep
- New Student Orientation
- Academic support
- Academic Probation/Success Plans
- Assistance with Time Management and Organization
- Coaching/Mentoring
- Counseling
- Disability Accommodations
- Readmissions Plan
- Tutoring

COUNSELING

Ranken is committed to taking a personal approach to student needs and concerns. Counseling services are free and available to all currently enrolled students. These services provide a confidential environment where student can talk with a licensed counselor. to identify ways to deal with difficult life situations, various stressors, time management and academic issues. If additional help is needed, the counselor can provide community referrals or further resources. To contact, call: 314-286-4845.

DISABILITY ACCOMMODATIONS

Students with diagnosed learning, medical or physical disabilities should provide documentation to the director of student success in order to be eligible to receive reasonable accommodations at Ranken Technical College. Written documentation from qualified professionals or agencies includes educational, medical, psychological, and/or other appropriate diagnostic evaluations that define the nature, with recommendations for appropriate accommodations. If you have questions or want to request accommodations, email AcademicAccommodations@ranken.edu.

CAREER SERVICES

LIFETIME JOB PLACEMENT ASSISTANCE

The Career Services office assists students and alumni in developing, evaluating and implementing job search strategies, and partners with employers to connect them with qualified Ranken graduates. Ranken's Career Services office also offers free lifetime placement for current students and alumni seeking full-and part-time technical work. The College's job placement service aids graduates interested in industrial, commercial and residential employment by inviting local and national employers to register job opportunities for skilled personnel. These placement opportunities are made available to graduates to help them succeed in their chosen technical fields. Students may register for job placement assistance in the Career Services office. For more information, please contact the Career Services office at (314) 286-3665 or careerservices@ranken.edu.

RANKEN CONNECTION

Ranken Connection is a Web-based résumé creation and distribution tool. With Ranken Connection, students and alumni can create and edit their résumés and then post them to the database. Through this database, employers can view the résumé and Career Services can help facilitate the career search by referring student and alumni résumés to various companies.

STUDENT ORGANIZATIONS

AMERICAN INSTITUTE OF ARCHITECTURE STUDENTS (AIAS)

The AIAS is an independent, student-run organization dedicated to promoting excellence in architectural education, training and practice. It fosters an appreciation of architecture and related disciplines. The AIAS organizes students to combine their efforts to advance the art and science of architecture.

PHI THETA KAPPA

Phi Theta Kappa is an international honor society that recognizes and encourages scholarship among two-year college students. The society offers a variety of opportunities for scholarship, intellectual enrichment and personal development through programs based on Phi Theta Kappa's four hallmarks: scholarship, leadership, service and fellowship.

RANKEN CAR CLUB

The Ranken Car Club consists of car, truck and motorcycle enthusiasts. Membership is free and open to all Ranken students, faculty and staff. The club organizes an annual car show and participates in related activities throughout the year.

RESIDENCE HALL ASSOCIATION

The Residence Hall Association (RHA) is an organization led by the residents of Walker Hall. Every resident is a member and led by an elected executive board of officers. This group creates programs and events for residents of Walker Residence Hall. The RHA also represents the residents for suggestions on policy change. The RHA is the voice of residents and liaison to the professional staff of Residential Life.

SKILLSUSA

SkillsUSA is a national organization that aims to ensure that America maintains its skilled workforce. Students have the opportunity to participate in regional, state, national and international skills competitions, performing technical jobs and skill tests.

STUDENT GOVERNMENT ASSOCIATION

The Student Government Association is the representative body for students at Ranken. It provides students with a voice to the College administration through active participation in monthly meetings, giving them an avenue of communication to provide input on the decisions that affect them. Each major class nominates a representative and an alternate to attend monthly meetings.

POLICIES AND PROCEDURES

NONDISCRIMINATION POLICY

Ranken Technical College does not discriminate on the basis of race, color, religion, age, gender, sexual preference, national or ethnic origin or disability in the administration of its educational policies, admission policies, scholarship or loan programs and other college programs as required by Title IX of the Educational Amendments of 1972, Title VII of the Civil Rights Act of 1964, and other applicable statutes and college policies.

The College's Title IX Investigator is responsible for addressing and investigating all Title IX inquiries and complaints alleging sexual misconduct of students, faculty, staff and visitors.

The Title IX Investigator will examine reports of misconduct, issue findings of fact, and make recommendations for disposition of complaints.

Inquiries or complaints concerning discrimination, harassment, retaliation or sexual violence should be referred to:

Title IX Investigator
TitleIX@Ranken.edu
(314) 286-3319
Location: St. Louis Location, Finney Building, First Floor

Title IX Coordinator
TitleIX@Ranken.edu
(314) 286-3319
Location: St. Louis Location, Finney Building, First Floor

Some acts of sexual misconduct may also constitute violations of criminal law and require mandatory reporting to local police departments. Inquiries about the application of Title IX may also be directed to the Missouri Commission on Human Rights, the Equal Employment Opportunity Commission (EEOC) or the US Department of Education.

STUDENTS WITH DISABILITIES POLICY

In compliance with the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Ranken Technical College provides access for students with disabilities. The Student Success Department makes every effort to give each student with a disability an equal opportunity to participate in the mainstream of college life at Ranken. Further information on this policy may be found in the student handbook.

SEXUAL MISCONDUCT

In keeping with the College's efforts to treat all members of the Ranken community with dignity and respect, it is the policy of Ranken Technical College that any form of sexual harassment of students or employees at the College is unacceptable and will not be tolerated. Further information on this policy may be found in the student handbook.

SUBSTANCE ABUSE

It is the goal of Ranken Technical College to protect the public health and environment of the College community by promoting an environment free of substance abuse.

DRESS AND APPEARANCE POLICIES

As part of Ranken's commitment to prepare and train students fully for their future careers, the College has policies on appearance, including apparel, jewelry and casual days. Students should refer to the student handbook "Dress and Appearance Policies" section.

GRIEVANCE POLICY

Ranken Technical College recognizes the value of feedback regarding the education and services it provides. The College has a policy in place to allow individuals to submit formal, written complaints when necessary and to use that feedback for continuous improvement.

Ideally, individuals should first attempt to resolve concerns directly with the involved parties. If a satisfactory resolution is not reached, a formal, written complaint may be escalated to a College administrator using the electronic complaint form available on Ranken's website. Complaints will be acknowledged within four working days, with a response and explanation provided within 15 working days.

To begin the formal complaint submission process, please visit: https://ranken.edu/current-students/complaint/

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT OF 1974 (FERPA)

The purpose of the Family Education Rights and Privacy Act of 1974 is to afford certain rights to students concerning their records. The primary rights afforded are the right to inspect and review student records, the right to seek to have the records amended, and the right to have some control over the disclosure of information from the records. Ranken Technical College does not disclose student information (other than directory information) unless a Release of Information Authorization has been completed and signed by student. Student information/records include educational records as well as financial aid and business office account information. Directory information consists of student name, program of study, dates of attendance, and degrees or certificates and honors awarded. Ranken Technical College requires all students to complete and sign a Release of Information Authorization whether they are authorizing release of information or not. Additional information on FERPA or a complete copy of the policy is available from the Registrar's office. The complete policy includes information on the procedure to inspect student records, rights of the College to refuse access, refusal to provide copies of records, type/location/retention length/ custodians of student records, procedure for the disclosure of student records. For more information regarding FERPA:

Family Policy Compliance Office
U.S. Department of Education

Ranken reserves the right to change the rules governing admissions, tuition, and granting of degrees or certificates, or any other regulations affecting its students. Ranken also reserves the right to make changes to curriculum and subject continuity and the right to cancel any course for which there is an insufficient number of applicants.

RELEASE OF STUDENT INFORMATION

Generally, the College will not release any information about a student to outside individuals without having first received written permission from the student. All students should complete a Release of Information Authorization for inclusion in the academic record on file in the Registrar's office. On occasion, the College may provide such information under state or federal laws, to auditors, accreditors or other official reviewers.

The release of certain information is not considered a violation of a student's rights to privacy; the College is permitted to release this information routinely, unless a student specifically asks it not to be released. At Ranken, this general information is considered to be name, program of study, participation in recognized activities, dates of enrollment and academic honors, certificates or degrees earned.

BOOKSTORE REFUNDS

Items returned must be accompanied by a receipt. Tools are returnable for a full refund within 30 days of purchase if they are deemed resalable by bookstore management. Resalable tools are tools that have not been used, engraved, marked on, damaged or abused in any way. Defective tools may be returned for an even exchange with bookstore management approval. Used tools are not returnable except in special circumstances as determined by bookstore management. Students withdrawing from the College have 30 days from the Last Date of Attendance (LDA) in which to retrieve tools. If tools are not retrieved after 30 days, they become the property of Ranken Technical College.

AUTOMOTIVE DIVISION

PROFESSIONAL COLLISION REPAIR TECHNOLOGY

ST. LOUIS

According to the Bureau of Labor Statistics, some employers report difficulty finding workers with the right skills. Ranken's Professional Collision Technician Program provide students with an opportunity to earn while they learn with a unique program featuring paid internships in an approved collision shop.

The Professional Collision Technician Program operates in a large shop space devoted exclusively to student training. Utilizing the Inter-Industry Conference on Automotive Collision Repair (I-CAR) Enhanced Delivery Curriculum, students will receive training from industry leaders such as I-CAR, Sikkens, Chief Automotive Technologies, and Betag North America. Instruction will cover crucial industry topics including cycle time, repair blueprinting, non-invasive repair, and more, giving students an advantage when seeking opportunities in the collision repair industry.

Students will learn to repair late-model, collision-damaged vehicles using modern equipment such as frame machines, computerized electronic measuring systems, MIG welders, resistance spot-welding equipment, downdraft spray booths and prep stations. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation in all four areas of auto body repair: Non-Structural, Structural, Refinishing and Mechanical/Electrical.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY

Based on the tasks established by the Automotive Service Excellence (ASE) Education Foundation and I-CAR, this five-semester program provides students with skills to restore collision-damaged vehicles to industry standards.

The importance of certification and training continues to increase in the industry among collision repair facilities and insurance companies. In response to this demand, a graduate of the program has the potential to receive I--CAR, ASE, SIKKENS, Chief, and Betag Certifications.

This program alternates between eight-week sections of instruction at Ranken and eight-week paid internship blocks at their sponsoring employer. This format allows students to get real-world experience in addition to their hands-on training at Ranken, and collision students who complete internships in this format typically go on to accept full-time positions at their work site after graduation.

Upon completing the program, graduates are qualified for positions such as collision repair technicians and automotive refinish technicians, with the option to pursue careers in management, estimating and sales.

Students interested in earning the certificate of technology will take all Professional Collision Technician Program courses and two general education courses.

Program graduates are trained in:

- Unibody and full frame damage analysis
- Writing estimates manually and electronically
- Making non-structural repairs in metal and plastics
- Performing welding and cutting operations in steel and aluminum
- Straightening structural steel and aluminum
- Replacement of structural components
- Steering and suspension repair and alignments
- Air conditioning systems relating to collision damage
- Diagnosing electrical and electronic problems
- Refinishing systems and the processes to restore the original finish to industry standards

Upon completion of this program, students will be able to:

- Inspect, diagnose, and repair collision damaged vehicles.
- Exhibit career ready professional traits.
- Adapt to emerging technologies in the automotive collision repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	PCT1115	Fundamentals of Collision Repair	10	
	PCT1110	Professional PCT Internship I	5	PCT1115
Second Semester	PCT1215	Non-Structural Collision Repair	10	PCT1115
	PCT1210	Professional PCT Internship II	5	
Third Semester	PCT2015	Collision Mechanical Systems	10	PCT1215
	PCT2010	Professional PCT Internship III	5	
Fourth Semester	PCT2115	Collision Refinishing	10	PCT2015
	PCT2110	Professional PCT Internship IV	5	
Fifth Semester	PCT2215	Advanced Collision Repair	12	PCT2115
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH 1100
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

PCT 1115 Fundamentals of Collision Repair

Students will learn about worker protection and personal safety in the collision repair industry, in addition to completing I-CAR Academy's Collision Fundamental Series and Fusion Safety Training. Students will learn removal and replacement procedures of trim and hardware. This consists of removing and reinstalling bumpers, lamps, door trim panels, movable glass, window regulators, and other fastened parts. They will also receive instruction in reading repair estimates and executing pre and post-scan procedures. Additionally, they will learn how to sand and mask vehicles for the refinishing process, as well as how to detail a vehicle's exterior and interior to industry expectations. *Ten credit hours*

PCT 1215 Non-Structural Collision Repair

Students will learn vehicle identification, estimating systems, and terminology used in the collision repair process. They will learn how to analyze frontal, side, and rear impacts, along with performing a mechanical systems analysis. This course will teach students basic cosmetic straightening of steel, plastic, and aluminum. It will include metal finish and the use of body fillers and other repair materials. Students will learn plastic repair methods, using welding and adhesive procedures to restore today's modern plastic parts. Additionally, students will learn the principles of Metal Active Gas (MAG) setup and tuning, while emphasizing personal and vehicle safety during the welding process, along with preparing for the I-CAR Steel welding certification test. Students will also learn how to select, inspect, clean and spray primer surfacers and primer sealers. *Ten credit hours*

PCT 2015 Collision Mechanical Systems

Students will measure, evaluate, and repair electrical circuits, as well as repair and replace A/C and heat components in preparation for the ASE A/C 609 Certification. They will also learn how to service and repair a vehicle's mechanical components, including suspension components, wheels and tires, and wheel alignments. Students will be introduced to Safety Restraint Systems. *Ten credit hours*

PCT 2115 Collision Refinishing

Students will learn how to apply protective coatings, such as seam sealers, caulking, undercoats, and corrosion protection to repaired areas. Emphasis is placed on the application and blending of waterborne basecoat/clearcoat, as well as the refinishing of plastics. Advanced refinishing processes, such as tri-coat refinishes, blending, and color tinting will be practiced. Students will learn the importance of recognizing surface defects in existing finishes, mixing refinish materials, how to apply automotive finishes, and how to properly perform finish sand and buff techniques. *Ten credit hours*

PCT 2215 Advanced Collision Repair

Students will learn advanced cosmetic straightening of aluminum. The course will cover the principles of Metal Inert Gas (MIG) setup and tuning, while emphasizing personal and vehicle safety during the welding process of aluminum. Students will learn how to remove and install fasteners, such as self-piercing rivets, blind rivets, and other mechanical fasteners used in today's aluminum intensive vehicles. Procedures for anchoring and pulling vehicles structures will be performed. Students will identify and diagnose structural damage using three-dimensional computerized measuring systems. They will learn the different methods of removing structural components for replacement and reinstallation. *Twelve credit hours*

PCT 1110 Professional Internship I, PCT 1210 Professional Internship II, PCT 2010 Professional Internship III, PCT 2110 Professional Internship IV

Students will perform work study in a collision repair facility, applying and practicing skills correlated with Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

EVENING PROGRAM CERTIFICATE IN AUTOMOTIVE COLLISION REPAIR TECHNOLOGY

The Automotive Collision Repair Technology program operates in a large shop space devoted exclusively to student training on current model vehicles with collision damage. In this setting, students use modern equipment such as three types of electronic measuring systems, body and frame machines, downdraft spray booths, computerized mixing systems, prep stations, Metal Inert Gas (MIG) welders and a resistant spot welder.

The department utilizes the Inter-Industry Conference on Automotive Collision Repair (I-CAR) Enhanced Delivery Curriculum.

The following sections are stand-alone and can be taken in any sequence. These classes meet on Monday and Wednesday or Tuesday and Thursday evenings.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be able to:

- Perform basic inspection and repair of collision damaged vehicles.
- Adapt to emerging technologies in the automotive collision repair industry.

EVENING PROGRAM COURSES		HOURS	PREREQUISITES
ACR0110	Non-Structural Repair	6	
ACR0111	Refinishing	6	
ACR0112	Structural	6	
ACR0113	Mechanical Collision Repair	6	
	Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

ACR0110 Non-Structural Repair

This course offers a general overview of repair procedures, surface preparation, straightening minor damage and applying plastic filler. Also included are plastic identification and repair procedures, panel replacement and alignment. This course covers an overview of movable and stationary glass. Students will also complete I-CAR's Intro to Collision Repair. *Six credit hours*

ACR0111 Refinishing

This course teaches students how to properly use refinish equipment, understand and apply the proper undercoat system, determine areas to be refinished, as well as methods of sanding and applying waterborne paint. Students will learn about blending waterborne paint along with removing minor imperfections. The theory and practice involved in the application of tri-coat paint systems, color tinting and plastic refinishing is also covered. *Six credit hours*

ACR0112 Structural

This course covers the Steel Gas Metal Arc (GMA) welding process, preparing the students for the I-CAR Automotive Steel GMA (MIG) Welding qualification test. The emphasis of this class covers the theory and practical applications involved in measuring systems, diagnosing unibody damage and comprehending specification manuals. Students are also given instruction on collision theory, structural damage analysis skills and correction procedures on unibody and body over-frame vehicles. In addition, theory and application of welding procedures when replacing non-structural and structural parts will also be covered. *Six credit hours*

ACR0113 Mechanical Collision Repair

This course covers the theory of steering and suspension as it relates to a collision. Students will learn different types of suspensions and suspension components along with performing four wheel alignments. Emphasis is placed on understanding all alignment angles; this will enable a student to help diagnose damage to the vehicle's structure and suspension parts. This course examines electrical circuit types and circuit theory. Parallel and series circuits and how voltage, amperage and resistance affect each other will also be topics of discussion. Students will understand the theory of automotive air conditioning systems using 134a refrigerants. The function and the design of various restraint systems, including seat belts, seat belt tensioners and air bags will be discussed, and students will perform common collision related diagnosis and repairs in these areas. *Six credit hours*

AUTOMOTIVE MAINTENANCE TECHNOLOGY

RANKEN WEST

Today's vehicles – from gas-powered to hybrid and electric – are high-tech machines packed with 30 to 100 microprocessors controlling everything from safety systems to infotainment. As automotive technology rapidly evolves, the demand for sharp, skilled technicians who can tackle complex, cutting-edge challenges is soaring. Ranken's Automotive Maintenance Technology (AMT) program rises to meet this demand, delivering hands-on training and industry-driven knowledge that prepares students to succeed in top dealerships, repair shops, and advanced service facilities.

The program is accredited by the Automotive Service Excellence (ASE) Education Foundation and an industry benchmark of automotive certification.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Ranken's AMT program provides students with four semesters of hands-on training and instruction in diagnosing and repairing automotive problems in Domestic, Asian and European vehicles. The AMT program is modeled after the Automotive Service Excellence (ASE) Education Foundation certification program, which is the industry standard for technician certification. Students will take two ASE tests while attending the program.

During the last 40 days of the program, students will gain real-world experience as they participate in an internship with an employer or on-site automotive practicum in which they will service and repair customer vehicles.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service and repair vehicle: Advance Level Engines, Computerized Controls, Manual and Automatic Transmissions, Steering and Suspensions, Brakes, Electrical, Heating and Air Conditioning Systems.
- Exhibit career ready professional traits.
- Adapt to emerging technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	AMT1003	Automotive Foundations	12	
Second Semester	AMT1200	Automotive Electronics and Engine Controls	12	AMT1003
Third Semester	AMT2100	Chassis and Climate Control	12	AMT1200
Fourth Semester	AMT2205	Automotive Drivetrain Systems	6	All of the above
	AMT2215	Automotive Line **or**	6	All of the above
	AMT2225	Automotive Professional Internship	6	All of the above
		Total Technical Credit Hours Required	*48*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (Certificate of Technology)		HOURS	PREREQUISITES
COM1080	Technical Communications	3	
BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

AMT1003 Automotive Foundations

The Foundations class is designed to prepare students with the knowledge necessary to start their automotive careers while emphasizing the skills needed to gain entry-level employment. Students will learn how to prepare a repair order and navigate electronic information systems such as Alldata, Mitchell and other factory systems. This class will also cover the use of a digital meter to test electrical circuits and how to operate scan tools to retrieve trouble code information from vehicle computers. Students will be trained to work safely in an automotive shop environment and follow a strategic approach in the repair process. The Automotive Foundations class will also include a section of training on automotive engines. Students will learn how to diagnose and service gasoline engines by removing, disassembling and measuring components; this process will be completed with re-assembly, installation and adjustments. Students will also learn how to properly perform fluid maintenance services on modern automotive vehicles. This course will be taught using hands-on training, lecture and online modules. *Twelve credit hours*

AMT1200 Automotive Electronics and Engine Controls

This course is an in-depth study of the diagnosis and repair of electrical problems. Three main sections of electrical are covered in the curriculum; engine control systems, body electronics and computer networking. The Engine control system portion covers fuel injection, ignition systems and emission systems. The On-board Diagnostic System (OBD) II platform will be taught and students will learn how to use a variety of diagnostic tools such as scan tools, lab scopes, and amp probes. The body electronic section will include all of the power accessories such as windows, seats and door locks. It will also include how to safely diagnose and repair air bag systems. Students will learn how to diagnose and repair computer communication and networking problems and also learn about the proper procedures to replace and program a factory computer on a modern vehicle. This course will be taught using hands-on training, lecture and online modules. *Twelve credit hours*

AMT2100 Chassis and Climate Control

The Chassis portion of this course includes steering, suspension and brakes. The steering and suspension sections include how to identify, diagnose and replace steering and suspension components such as rack and pinion steering, Macpherson struts, shocks, ball joints and tie rod ends. Students will learn essential tire work components, using the latest in road force wheel balancing equipment. Students will also learn how to properly align a vehicle using the latest laser alignment equipment. In the brakes section, students will learn how to complete a proper brake job on both drum and disc systems. Students will use the most up-to-date car brake lathes and true rotors, which are mandatory for most warranty repairs in dealerships. This course will cover how to diagnose and repair ABS and stability control systems. Also covered in this course is Climate Control instruction. Students will learn how to service R134A systems by diagnosing and replacing A/C components, and will use a variety of A/C recovery and refill machines. This course will be taught using hands-on training, lecture and online modules. *Twelve credit hours*

AMT2205 Automotive Drivetrain Systems

This course covers the diagnosis, repair and service of automatic transmissions, as well as manual transmissions and clutches. Additional powertrain designs that will be studied include both four- and all wheel drive transfer cases, which includes the diagnosis and service procedures of U-joints and constant velocity joints. This course will be taught using hands-on training, lecture and on-line modules. *Six credit hours*

AMT2215 Automotive Line

The line shop is a hands-on application of all automotive areas in an actual shop atmosphere with service and repair of customer vehicles, including training in service-writing and parts techniques. *Six credit hours*

AMT2225 Automotive Professional Internship

Students will receive on-the-job experience at a sponsoring dealer or service center under the supervision of a mentor technician. The service manager and the Ranken coordinator evaluate this internship. *Six credit hours*

EVENING PROGRAM CERTIFICATE IN AUTOMOTIVE MAINTENANCE TECHNOLOGY (ST. LOUIS/RANKEN WEST ONLY)

This curriculum emphasizes the most modern diagnostic equipment in the automotive maintenance field. Upon completion of the instruction and hands-on experience in diagnosing and repairing automotive problems and malfunctions, students are prepared to enter the job market as entry-level technicians.

Successful completion of all four semesters is necessary to qualify for a certificate. These classes meet on Monday and Wednesday or Tuesday and Thursday evenings. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

The program develops student proficiencies in the following areas:

- Engine repair
- Automatic transmission/transaxle
- Manual drivetrain and axles
- Suspension, steering and brakes
- Electrical/electronic systems
- Heating and air conditioning
- Engine performance

Upon completion of this program, students will be able to:

- Inspect, service and repair vehicle: Basic Engines, Computerized Engine Controls, Manual and Automatic Transmissions, Steering, Suspensions, Brakes, Electrical, Heating and Air Conditioning Systems.
- Adapt to new technologies in the automotive service and repair industry.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	AMT0100	Maintenance and Light Repair, Brakes, Steering and Suspension	6	
Second Semester	AMT0110	Engines and Automotive Electricity	6	AMT0100
Third or Fourth Semester	AMT0120	Computer Controls and HVAC	6	AMT0110
Third or Fourth Semester	AMT0240	Clutches/Manual Transmissions and Automatic Transmissions	6	AMT0100
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

AMT0100 Maintenance and Light Repair, Brakes, Steering and Suspension

Instruction begins with basic maintenance and light repair by changing oil, rotating tires, and doing multi-point inspections. Students get comprehensive overview of vehicle brake systems. An in-shop emphasis focuses on the hands-on servicing of braking systems, steering systems, suspension systems, and tire and wheel alignment, including two and four wheel adjustments. *Six credit hours*

AMT0110 Engines and Automotive Electricity

Students begin with a detailed study of internal combustion engines, including the theory of operation and basic adjustments. Instruction includes disassembly, component study, component measurement, reassembly and how to make the appropriate mechanical adjustments on an automotive engine. During the second half of the semester, students will focus on electrical foundations and cover the theory of Parallel/Series circuits, Ohm's law, and the testing and servicing of various electrical components. Electrical systems that will be covered include automotive batteries, starters, charging systems, interior/exterior lighting and accessories. *Six credit hours*

AMT0120 Computer Controls and HVAC

The semester begins with automotive body electronics, including the theory and operation of automotive accessories and automotive air conditioning systems. Students will practice hands-on diagnosis and repair of R134A refrigerant systems. The second part of the semester covers the principles of operation, diagnosis and service of computer controlled engines and On-board Diagnostic System (OBD) II technology. The hands-on emphasis includes diagnosis of computer circuitry with a digital automotive scope and various types of scan tools. Computer-related drivability troubleshooting is featured duringthis course. *Six credit hours*

AMT0240 Clutches/Manual and Automatic Transmissions

This course starts with the basic principles of operation for clutches, differentials, manual transmissions and transaxles. The course includes hands-on disassembly, evaluation and reassembly of rear wheel drive differentials, limited slip carriers, transfer cases, rear wheel drive transmissions, transaxles, Constant Velocity (C.V.), driveshafts and clutches. This course finishes up the semester covering automatic transmissions and automatic transaxles commonly used today. Students learn torque converters, planetary gearing, clutches, bands, electronic controls and hydraulic circuitry. The emphasis of this course is the disassembly, evaluation and reassembly of several currently-used transmissions and transaxles. *Six credit hours*

AUTOMOTIVE MAINTENANCE TECHNOLOGY

CERTIFIED DEALERSHIP TECHNICIAN PROGRAMS | ST. LOUIS

Ranken's Certified Dealership Technician Programs provide students with brand-specific training through the following partnerships:

- **Toyota/Lexus: Toyota Technical Education Network (T-TEN)**
- **Honda/Acura: Professional Automotive Career Training (PACT)**
- **Ford: Automotive Student Service Educational Training (ASSET)**
- **General Motors: GM Automotive Service Education Program (ASEP)**

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY (TOYOTA T-TEN)

Students enrolled in Ranken Technical College's Toyota Technical Education Network (T-TEN) program focus on Toyota and Lexus vehicles. The T-TEN program provides Toyota/Lexus-specific training initiatives that assist dealers in educating the next generation of technicians. In this program, students gain valuable hands-on experience by utilizing the same tools, equipment, and vehicles the dealerships see on a day-to-day basis. Students gain real-world experience through a paid internship at a sponsoring dealership. By alternating between, eight-week blocks of instruction and eight-week blocks of fieldwork throughout the five-semester program, students implement their newly learned skills immediately. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

Students must secure employment with an approved Lexus or Toyota dealership prior to beginning the program and maintain that employment for the full duration of the five-semester program.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service, and repair vehicles: Engines, Computerized Engine Controls, Manual and Automatic Transmissions, Steering & Suspensions, Brakes, Electrical, and Heating, Ventilation, and Air Conditioning Systems (HVAC).
- Exhibit career-ready professional traits.
- Adapt to new technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	TOY1100	Maintenance and Light Repair	10	Department Approval
	TOY1110	Professional T-TEN Internship I	5	TOY1100
Second Semester	TOY1200	Engines and Electrical	10	TOY1100
	TOY1210	Professional T-TEN Internship II	5	
Third Semester	TOY2020	Engine Controls and HVAC	10	TOY1200
	TOY2010	Professional T-TEN Internship III	5	
Fourth Semester	TOY2120	Automotive Drivetrain	10	TOY2020
	TOY2110	Professional T-TEN Internship IV	5	
Fifth Semester	TOY2200	Automotive Diagnostics	12	TOY2120
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

COURSE DESCRIPTIONS

TOY1100 Maintenance and Light Repair

This course is an introduction to the automotive service profession and the Toyota/Lexus dealership environment with an emphasis on proper procedures in the express service lane. The studies include overall vehicle inspections, fluid services, brakes, steering & suspensions, service information systems, and basic scan tool functionalities. In addition to completing a proper brake job, in the Brakes section of this course, students learn to use the most up-to-date brake -lathes, which are mandatory for most warranty repairs at dealership shops. The steering and suspension sections include identification, diagnosis, and replacement of steering and suspension components such as rack and pinion steering, Macpherson struts, shock absorbers, ball joints, and tie rod ends. Students learn essential tire work skills, using the latest road-force wheel balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment available. *Ten credit hours*

TOY1200 Engines and Electrical

This course covers principles of operation in a modern automotive engine, including removal and installation procedures, disassembly, diagnosis, repair, re-assembly, and timing of modern Toyota engines. Correct measuring and inspection techniques are critical focal points of this course. During the electrical portion of the course, students learn fundamental concepts regarding batteries, vehicle lighting, starting and charging systems, and practical application of Toyota electrical diagnostic procedures. *Ten credit hours*

TOY2020 Engine Controls and HVAC

The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, amp probes, lab scopes, aftermarket scan tools, and the latest Toyota specific scan tools. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

TOY2120 Automotive Drivetrain

This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of electronic and hydraulic circuits, power-flow through standard and planetary gear sets, diagnosis of shifting concerns, and repair of Toyota transmissions. *Ten credit hours*

TOY2200 Automotive Diagnostics

This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks (CAN), anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Advanced engine controls diagnosis, such as no-code diagnosis and evaporative emission controls, are also covered in this course. An emphasis is placed, throughout this course, on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by the original equipment manufacturer. Lab activities utilize Toyota scan tools, oscilloscopes, and onboard self-diagnostic systems. *Twelve credit hours*

TOY1110, 1210, 2010 and 2110 Professional T-TEN Internships (I, II, III and IV)

This part of the program is a work-study, which takes place at a dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY (HONDA PACT)

Students enrolled in Ranken Technical College's Honda Professional Automotive Career Training (PACT) program focus on Honda and Acura vehicles. The PACT program provides Honda/Acura-specific training initiatives that assist dealers in educating the next generation of technicians. In this program, students gain valuable hands-on experience by utilizing the same tools, equipment, and vehicles the dealerships see on a day-to-day basis. Students gain real-world experience through a paid internship at a sponsoring dealership. By alternating between, eight-week blocks of instruction and eight-week blocks of fieldwork throughout the five-semester program, students implement their newly learned skills immediately. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

Students must secure employment with an approved Acura or Honda dealership prior to beginning the program and maintain that employment for the full duration of the five-semester program.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service, and repair vehicles: Engines, Computerized Engine Controls, Manual and Automatic Transmissions, Steering & Suspensions, Brakes, Electrical, and Heating, Ventilation, and Air Conditioning Systems (HVAC).
- Exhibit career-ready professional traits.
- Adapt to new and changing technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	HON1100	Maintenance and Light Repair	10	Department Approval
	HON1110	Professional PACT Internship I	5	HON1100
Second Semester	HON1200	Engines and Electrical	10	HON1100
	HON1210	Professional PACT Internship II	5	
Third Semester	HON2020	Engine Controls and HVAC	10	HON1200
	HON2010	Professional PACT Internship III	5	
Fourth Semester	HON2120	Automotive Drivetrain	10	HON2020
	HON2110	Professional PACT Internship IV	5	
Fifth Semester	HON2200	Automotive Diagnostics	12	HON2120
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH 1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

HON1100 Maintenance and Light Repair

This course is an introduction to the automotive service profession and the Honda/Acura dealership environment with an emphasis on proper procedures in the express service lane. The studies include overall vehicle inspections, fluid services, brakes, steering & suspensions, service information systems, and basic scan tool functionalities. In addition to completing a proper brake job, in the Brakes section of this course, students learn to use the most up-to-date brake-lathes, which are mandatory for most warranty repairs at dealership shops. The steering and suspension sections include identification, diagnosis, and replacement of steering and suspension components such as rack and pinion steering, Macpherson struts, shock absorbers, ball joints, and tie rod ends. Students learn essential tire work skills, using the latest road-force wheel balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment available. *Ten credit hours*

HON1200 Engines and Electrical

This course covers principles of operation in a modern automotive engine, including removal and installation procedures, disassembly, diagnosis, repair, re-assembly, and timing of modern Honda engines. Correct measuring and inspection techniques are critical focal points of this course. Students learn fundamental concepts regarding battery, starting, and charging systems, vehicle lighting, and practical application of Honda electrical diagnostic procedures during the electrical portion of the course. *Ten credit hours*

HON2020 Engine Controls and HVAC

The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, the latest Honda specific scan tools, aftermarket scan tools, lab scopes, and amp probes. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

HON2120 Automotive Drivetrain

This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of electronic and hydraulic circuits, power-flow through standard and planetary gear sets, diagnosis of shifting concerns, and repair of Honda transmissions. *Ten credit hours*

HON2200 Automotive Diagnostics
This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks (CAN), anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Advanced engine controls diagnosis, such as no-code diagnosis and evaporative emission controls, are also covered in this course. An emphasis is placed, throughout this course, on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by the original equipment manufacturer. Lab activities utilize Honda scan tools, oscilloscopes, and onboard self-diagnostic systems. *Twelve credit hours*

HON1110, 1210, 2010 and 2110 Professional PACT Internships (I, II, III and IV)
This part of the program is a work-study, which takes place at a dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (FORD ASSET)

Students enrolled in Ranken Technical College's Ford Automotive Student Service Education Training (ASSET) Program focus on Ford and Lincoln vehicles. Ford's Technical Career Entry Program (TCEP) network is the foundation of the course curriculum. TCEP provides Ford-specific training initiatives that assist Ford dealers in educating the next generation of Ford technicians. In this program, students gain valuable hands-on experience by utilizing the same tools, equipment, and vehicles the dealerships see on a day-to-day basis. The ASSET program allows students to gain real-world experience through a paid internship at a sponsoring dealership. By alternating between eight-week blocks of instruction and eight-week blocks of fieldwork throughout the five-semester program, students implement their newly learned skills immediately. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

Students must secure employment with an approved Ford or Lincoln dealership prior to beginning the program and maintain that employment for the full duration of the five-semester program.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service and repair vehicle: Engines, Computerized Engine Controls, Manual and Automatic Transmissions, Steering and Suspensions, Brakes, Electrical, Heating, and Air Conditioning Systems.
- Exhibit career-ready professional traits.
- Adapt to new technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	AFA1100	Maintenance and Light Repair	10	Department Approval
	AFA1110	Professional ASSET Internship I	5	AFA1100
Second Semester	AFA1220	Engines and Electrical	10	AFA1100
	AFA1210	Professional ASSET Internship II	5	
Third Semester	AFA2020	Engine Controls and HVAC	10	AFA1200
	AFA2010	Professional ASSET Internship III	5	
Fourth Semester	AFA2120	Automotive Drivetrain	10	AFA2020
	AFA2110	Professional ASSET Internship IV	5	
Fifth Semester	AFA2200	Diagnostics and Diesel Engines	12	AFA2120
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH 1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

AFA1100 Maintenance and Light Repair

This course is an introduction to the automotive service profession and the Ford/Lincoln dealership environment with an emphasis on proper procedures in the express service lane. The studies include overall vehicle inspections, fluid services, brakes, steering & suspensions, service information systems, and basic scan tool functionalities. In addition to completing a proper brake job, in the brakes section of this course, students learn to use the most up-to-date brake lathes, which are mandatory for most warranty repairs at dealership shops. The steering and suspension sections include identification, diagnosis, and replacement of steering and suspension components such as rack and pinion steering, Macpherson struts, shock absorbers, ball joints, and tie rod ends. Students learn essential tire work skills, using the latest road-force wheel balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment available. *Ten credit hours*

AFA1220 Engines and Electrical

This course covers principles of operation in a modern automotive engine, including removal and installation procedures, disassembly, diagnosis, repair, re-assembly, and timing of modern Ford engines. Correct measuring and inspection techniques are critical focal points of this course. Students learn fundamental concepts regarding battery, starting, and charging systems, vehicle lighting, and practical application of Ford electrical diagnostic procedures during the electrical portion of the course. *Ten credit hours*

AFA2020 Engine Controls and HVAC

The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, the latest Ford specific scan tools, aftermarket scan tools, lab scopes, and amp probes. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

AFA2120 Automotive Drivetrain

This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of electronic and hydraulic circuits, power-flow through standard and planetary gear sets, diagnosis of shifting concerns, and repair of Ford transmissions. *Ten credit hours*

AFA2200 Diagnostics and Diesel Engine

This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks, anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Students will learn advanced diagnostic skills needed to diagnose nocode conditions and evaporative emission control systems. The theory, diagnosis, and repair of electronically controlled diesel engines, and diesel emission systems are also covered in this course. Additionally, students will learn to diagnose and repair noise, vibration, and harshness (NVH) concerns. Throughout this course, an emphasis is placed on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by the original equipment manufacturer. Lab activities utilize Ford scan tools, oscilloscopes, and onboard self-diagnostic systems. *Twelve credit hours*

AFA1110, 1210, 2010 and 2110 Professional ASSET Internships (I, II, III and IV)

This part of the program is a workstudy, which takes place at a dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY (GM ASEP)

Students enrolled in Ranken Technical College's General Motors Technology (GMT) program focus on General Motors (GM) vehicles such as Buick, Cadillac, Chevrolet, and GMC. The General Motors Automotive Service Educational Program (ASEP) is the foundation of the course curriculum. ASEP provides GM-specific training initiatives that assist dealers in educating the next generation of technicians. In this program, students gain valuable hands-on experience by utilizing the same tools, equipment, and vehicles the dealerships see on a day-to-day basis. Students gain real-world experience through a paid internship at a sponsoring dealership. By alternating between eight-week blocks of instruction and eight-week blocks of fieldwork throughout the five-semester program, students implement their newly learned skills immediately.

This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

Students must secure employment with an approved Buick, Cadillac, Chevrolet, or GMC dealership prior to beginning the program and maintain that employment for the full duration of the five-semester program.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service, and repair vehicles: Engines, Computerized Engine Controls, Manual and Automatic Transmissions, Steering & Suspensions, Brakes, Electrical, and Heating, Ventilation, and Air Conditioning Systems (HVAC)
- Exhibit career-ready professional traits.
- Adapt to new technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	GMT1106	Maintenance, Brakes and Electrical	10	Department Approval
	GMT1115	Professional ASEP Internship I	5	GMT1106
Second Semester	GMT1206	Steering, Suspension and Engines	10	GMT1106
	GMT1210	Professional ASEP Internship II	5	
Third Semester	GMT2110	Engine Controls and HVAC	10	GMT1206
	GMT2015	Professional ASEP Internship III	5	
Fourth Semester	GMT2020	Automotive Drivetrain	10	GMT2110
	GMT2115	Professional ASEP Internship IV	5	
Fifth Semester	GMT2220	Automotive Diagnostics	12	GMT2020
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH 1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

GMT1106 Maintenance, Brakes and Electrical

This course is an introduction to the automotive service profession and the General Motors dealership environment with an emphasis on proper procedures in the express service lane. Topics include comprehensive multipoint vehicle inspections, fluid services, service information systems, and basic scan tool operation. Students will also learn how to repair, replace, and patch tires in addition to properly servicing brakes. Finally, students will explore foundational automotive electrical systems, vehicle lighting, and the practical application of General Motors–specific electrical diagnostic procedures. *Ten credit hours*

GMT1206 Steering, Suspension, and Engines
This course covers the principles of operation of modern automotive engines, with emphasis on General Motors powertrains. Topics include the removal, installation, disassembly, diagnosis, repair, reassembly, and timing procedures of an engine. Correct measurement and inspection techniques are central to this course. Students will identify, diagnose, and replace key components of a steering and suspension system, including rack-and-pinion steering systems, MacPherson struts, shock absorbers, ball joints, and tie rod ends. Finally, students will perform precise vehicle alignments with modern laser alignment systems. *Ten credit hours*

GMT2110 Engine Controls and HVAC
The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, the latest General Motors specific scan tools, aftermarket scan tools, lab scopes, and amp probes. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

GMT2020 Automotive Drivetrain
This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of electronic and hydraulic circuits, power-flow through standard and planetary gear sets, diagnosis of shifting concerns, and repair of General Motors transmissions. *Ten credit hours*

GMT2220 Automotive Diagnostics
This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks (CAN), anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Advanced engine controls diagnosis such as a no-code condition, evaporative emission controls, the theory of electronically controlled diesel engines, and diesel emission systems are all covered in this course. Additionally, students will learn to diagnose and repair noise, vibration, and harshness (NVH) concerns. An emphasis is placed, throughout this course, on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by the original equipment manufacturer. With a focus on electronic fuel injection, air intake, and diesel engine emission systems and controls, lab activities utilize General Motors scan tools, oscilloscopes, and onboard self-diagnostic systems. *Twelve credit hours*

GMT1115, 1210, 2015 and 2115 Professional ASEP Internships (I, II, III and IV)
This part of the program is a work-study, which takes place at a dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

AUTOMOTIVE MAINTENANCE TECHNOLOGY

PROFESSIONAL TECHNICIAN PROGRAM | ST. LOUIS

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Ranken's Automotive Professional Technician (APT) program is a unique program featuring paid internships at specially selected workplaces, allowing enrolled students to earn while they learn. Starting with their first semester, students alternate between eight-week blocks of instruction and eight-week blocks of fieldwork throughout the five-semester program. This format allows students to gain real-world experience in addition to their hands-on training by implementing their newly learned skills immediately. Automotive students who complete internships in this way typically go on to accept full-time positions at their place of work after graduation. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

- Audi, Hyndai/Genesis, Nissan, Volkswagen, Subaru, or Mercedes Dealerships
- MOPAR Dealerships including Chrysler, Jeep, Dodge, Ram, and Fiat
- DOBBS Tire and Auto Centers
- Firestone Complete Auto Care centers
- Meineke Car Care Centers
- Midas
- NAPA Certified Auto Repair Centers
- Other approved independent repair facilities

Upon completion of this program, students will be able to:

- Inspect, diagnose, service and repair vehicle: Advance Level Engines, Computerized Controls, Manual and Automatic Transmissions, Steering and Suspensions, Brakes, Heating, Ventilation, and Air Conditioning (HVAC) Systems.
- Exhibit career-ready professional traits.
- Adapt to emerging technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	APT1000	Maintenance and Light Repair	10	
	APT1005	Professional Internship I	5	APT1000
Second Semester	APT1100	Engines and Electrical	10	APT1000
	APT1105	Professional Internship II	5	
Third Semester	APT2000	Engine Controls and HVAC	10	APT1100
	APT2005	Professional Internship III	5	
Fourth Semester	APT2300	Automotive Drivetrain	10	APT2000
	APT2305	Professional Internship IV	5	
Fifth Semester	APT3000	Automotive Diagnostics	12	APT2300
		Total Technical Credit Hours Required	*72*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

APT1000 Maintenance and Light Repair

This course is an introduction to the automotive service profession and the dealership environment with an emphasis on proper procedures in the express service lane. The studies include overall vehicle inspections, fluid services, brakes, steering & suspensions, service information systems, and basic scan tool functionalities. In addition to completing a proper brake job, in the Brakes section of this course, students learn to use the most up-to-date brake -lathes, which are mandatory for most warranty repairs at dealership shops. The steering and suspension sections include identification, diagnosis, and replacement of steering and suspension components such as rack and pinion steering, Macpherson struts, shock absorbers, ball joints, and tie rod ends. Students learn essential tire work skills, using the latest road-force wheel balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment available. *Ten credit hours*

APT1100 Engines and Electrical

This course covers principles of operation in a modern automotive engine, including removal and installation procedures, disassembly, diagnosis, repair, re-assembly, and timing of modern engines. Correct measuring and inspection techniques are critical focal points of this course. Students learn fundamental concepts regarding battery, starting, and charging systems, vehicle lighting, and practical application of electrical diagnostic procedures during the electrical portion of the course. *Ten credit hours*

APT2000 Engine Controls and HVAC

The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, the latest original equipment and aftermarket scan tools, lab scopes, and amp probes. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

APT2300 Automotive Drivetrain

This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of electronic and hydraulic circuits, power-flow through standard and planetary gear sets, diagnosis of shifting concerns, and repair of transmissions. *Ten credit hours*

APT3000 Automotive Diagnostics

This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks (CAN), anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Advanced engine controls diagnosis such as a no-code condition, evaporative emission controls, the theory of electronically controlled diesel engines, and diesel emission systems are all covered in this course. Additionally, students will learn to diagnose and repair noise, vibration, and harshness (NVH) concerns. An emphasis is placed, throughout this course, on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by the original equipment manufacturer. With a focus on electronic fuel injection, air intake, and diesel engine emission systems and controls, lab activities utilize scan tools, oscilloscopes, and onboard self-diagnostic systems. *Twelve credit hours*

APT1005, APT1105, APT2005 & APT2305 Professional Internships (I, II, III, IV)

This part of the program is a work-study, which takes place at an independent repair facility or dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

DIESEL TECHNOLOGY

RANKEN WEST, RANKEN SOUTHEAST, AND RANKEN EDWARDSVILLE

Employers prefer diesel technician applicants who have completed postsecondary training programs in diesel repair, according to the U.S. Department of Labor. Ranken's Diesel Technology program, modeled to meet Automotive Service Excellence (ASE) standards, is designed to meet the projected need for heavy-duty service professionals in the transportation industry over the next 10 years.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Diesel technicians must be prepared to work on a variety of systems, including air brakes, hydraulics, and auxiliary units, as well as diagnosing high-end multiplexed computer networks and electronics.

Industry certification for diesel technicians is provided through the National Institute for Automotive Service Excellence (ASE) and Ranken Diesel Technology students take two ASE tests while in the program, in addition to receiving training to take the Class B Commercial Driver's License exam (CDL).

Ranken's Diesel Technology students will become proficient in a range of skills and equipment, including:

- Rebuilding diesel engines
- Servicing transmission assemblies in heavy-duty trucks
- Servicing brake systems, including air brakes and anti-lock systems
- Performing preventative maintenance inspections and services

Upon completion of this program, students will be able to:

- Inspect, diagnose, service, maintain and repair on-highway truck tractor systems.
- Exhibit career ready professional traits.
- Adapt to emerging technologies in the diesel truck service and repair industry.

DAY PROGRAM COURSES (SOUTHEAST DAY AND WEST EVENING ONLY)			HOURS	PREREQUISITES
First Semester	DSL1005	Medium-Heavy Duty Truck Repair Foundations	12	
Second, Third or Fourth Semester	DSL1205	Medium-Heavy Duty Truck Alignment, Electrical, and HVAC Systems	12	DSL1005
Second, Third or Fourth Semester	DSL2105	Medium-Heavy Duty Truck Hydraulic and Gear Train Systems	12	DSL1005
Second, Third or Fourth Semester	DSL2205	Medium-Heavy Duty Truck Engines	12	DSL1005
		Total Technical Credit Hours Required	*48*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

DSL1005 Medium-Heavy Duty Truck Repair Foundations
Students will learn light diesel repair, light fabrication, scan tool operations and connections, brake diagnostic and repair, clutch adjustments, shop safety and proper environmental policies for EPA and OSHA, how to correctly measure components, proper supporting of vehicle, how to perform preventative maintenance inspections, tire change procedures used in the diesel repair industry, and diagnose and repair suspension components. *Twelve credit hours*

DSL1205 Medium Heavy Duty Truck Alignment, Electrical, and HVAC Systems
Students will learn the basics of electrical and how to use a digital voltmeter correctly. Students will diagnose and repair electrical systems for engines, brakes, cab, and transmissions. Students will also diagnose and repair A/C systems, heater systems, and alignments. *Twelve credit hours*

DSL2105 Medium-Heavy Duty Truck Hydraulic and Gear Train Systems
Students will learn how to diagnose, inspect, and repair drivetrain components in the diesel repair industry. Students will perform repair and diagnostics of manual transmissions, automatic transmissions, and differentials. Students will learn hydraulic systems from steering to truck/equipment accessories. *Twelve credit hours*

DSL2205 Medium-Heavy Duty Truck Engines
Students will learn how to diagnose, inspect, and repair engines in the diesel repair industry, diagnose and repair fuel systems, and repair and diagnose aftertreatment systems. T*welve credit hours*

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY (Diesel Professional Technician Program – West Day Only)

Students in the Ranken Technical College Diesel Professional Technician Program (DPT) program focus on heavy duty diesel vehicles gaining real-world experience through a paid internship at a sponsoring repair facility. Alternating between eight-week blocks of instruction and eight-week blocks of field work over the five-semester program, students gain valuable hands-on experience. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation.

Ranken's Diesel Technology students will become proficient in a range of skills and equipment, including:

- Rebuilding diesel engines.
- Servicing transmission assemblies in heavy-duty trucks.
- Servicing brake systems, including air brakes and anti-lock systems.
- Diagnose and repair electrical, HVAC, and emissions systems.
- Performing preventative maintenance inspections and services.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service, maintain and repair on-highway truck/tractor systems.
- Exhibit career ready professional traits.
- Adapt to emerging technologies in the diesel truck service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	DSL1005	Medium-Heavy Duty Truck Repair Foundations	12	
Second Semester	DPT1205	Medium-Heavy Duty Truck Alignment, Electrical, and HVAC Systems	10	DSL1005
	DPT1210	Professional Internship I (or DPT 1211 Diesel Line)	5	DSL1005
Third Semester	DPT2105	Medium-Heavy Duty Truck Hydraulic and Geartrain Systems	10	DSL1005
	DPT2110	Professional Internship II (or DPT 2111 Diesel Line)	5	DSL1005
Fourth Semester	DPT2205	Medium-Heavy Duty Truck Engines	10	DSL1005
	DPT2210	Professional Internship III (or DPT 2211 Diesel Line) **or**	5	DSL1005
	DPT1305	Transport Refrigeration & EPA Compliance	5	
		Total Technical Credit Hours Required	*57*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

DSL 1005 Medium-Heavy Duty Truck Repair Foundations
Students will learn light diesel repair, light fabrication, scan tool operations and connections, brake diagnostic and repair, clutch adjustments, shop safety and proper environmental policies for EPA and OSHA, how to correctly measure components, proper supporting of vehicle, how to perform preventative maintenance inspections, tire change procedures used in the diesel repair industry, and diagnose and repair suspension components. *Twelve credits hours*

DPT 1205 Medium-Heavy Duty Truck Alignment, Electrical, and HVAC Systems
Students will learn the basics of electrical and how to use a digital voltmeter correctly. Students will diagnose and repair electrical systems for engines, brakes, cab, and transmissions. Students will also diagnose and repair A/C systems, heater systems, and alignments. *Ten credit hours*

DPT 2105 Medium-Heavy Duty Truck Hydraulic and Gear Train Systems
Students will learn how to diagnose, inspect, and repair drive train components in the diesel repair industry. Students will perform repair and diagnostics of manual transmissions, automatic transmissions, and differentials. Students will learn hydraulic systems from steering to truck/equipment accessories. *Ten credit hours*

DPT 2205 Medium-Heavy Duty Truck Engines
Students will learn how to diagnose, inspect, and repair engines in the diesel repair industry, diagnose and repair fuel systems, and repair and diagnose aftertreatment systems. *Ten Credit Hours*

DPT 1210/2110/2210 Professional Internships I, II, III
Students will participate in a work study in a service environment during their second, third, and fourth semesters. They will apply and practice skills correlated with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours*

DPT1211/2111/2211 Diesel Line Shop
The Ranken diesel line shop is an in-house repair facility where students perform hands-on service and repair of customer trucks and practice service writing simulating a commercial diesel repair facility. *Five credit hours*

DPT 1305 Transport Refrigeration & EPA Compliance
This comprehensive course provides hands-on training and foundational knowledge in mobile refrigeration systems, with a specific focus on Thermo King transport units. Students will learn to operate, troubleshoot, and service Thermo King unit controls and components while gaining a solid understanding of the refrigeration cycle and system pressure diagnostics. Practical lab work includes brazing, flaring, and soldering techniques essential for creating leak-proof refrigeration connections. In addition to technical training, this course prepares students to successfully pass the EPA 608 Certification Exam (Core, Type I, II, and III), a federal requirement for handling refrigerants. By course completion, students will be equipped with the skills and credentials needed to maintain and service transport refrigeration systems in compliance with environmental standards. *Five credits*

EVENING PROGRAM CERTIFICATE IN DIESEL TRUCK MAINTENANCE AND SERVICE (RANKEN SOUTHEAST ONLY)

The Evening Certificate Program in Diesel Truck Maintenance and Service is designed to provide working professionals and those with flexible schedules the opportunity to gain practical skills in the maintenance and light repair of heavy-duty trucks. The curriculum offers a comprehensive overview of the key systems in heavy-duty trucks, providing students with the hands-on training and technical knowledge needed to become proficient in maintenance, servicing, and performing minor repairs on trucks. By the end of the program, students will be equipped with the core competencies necessary to acquire an entry-level tech position in the field of truck maintenance and repair.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be capable of:

- Perform preventative maintenance on-highway truck systems
- Diagnose, service and repair on-highway truck systems, including air system, brakes, HVAC, general electrical and electronic systems, and general engine and drivetrain systems.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	DSL0100	Medium-Heavy Duty Truck Maintenance Safety and Tire Service	6	
Second, Third or Fourth Semesters	DSL0110	Medium-Heavy Truck Engine, Drivetrain and Brake Systems Inspections and Adjustments	6	DSL0100
	DSL0120	Medium-Heavy Duty Truck Air System Maintenance and Brake System Repair and Replacement	6	DSL0110
	DSL0130	Medium-Heavy Duty Truck Electrical, HVAC, and After-Treatment Systems Maintenance	6	DSL0100
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

DSL0100 Medium-Heavy Duty Truck Maintenance Safety and Tire Service

This comprehensive course focuses on foundational skills necessary for safe and effective truck maintenance. Students will learn to demonstrate proper shop safety practices, ensuring a secure environment for all maintenance activities. Emphasis will be placed on proper tool usage, care, and maintenance, as well as the correct lifting and supporting techniques of trucks. Students will also develop the ability to identify and inspect truck components for wear, ensuring vehicles are kept in safe operating condition. A portion of the course is dedicated to hands-on training in the removal, repair, and installation of tire and wheel assemblies, a crucial skill for maintaining truck performance and safety. By the end of the course, students will have the skills to carry out basic truck maintenance tasks efficiently and safely. *Six credit hours*

DSL0110 Medium-Heavy Duty Engine, Drivetrain, and Brake Systems Inspections and Adjustments

This course provides students with a solid understanding of how truck engines and drivetrains operate, along with the skills necessary for performing effective preventative maintenance. Students will explore the functioning of key systems, including engines, drivetrains, brakes, and clutches, and gain hands-on experience in inspecting, adjusting, and maintaining these critical components. Emphasis will be placed on the importance of preventative maintenance procedures to ensure optimal vehicle performance and longevity. Students will also learn to properly inspect and adjust brake and clutch assemblies to maintain safety and efficiency. In addition, the course will introduce the use of diagnostic tools, equipping students with the ability to troubleshoot and diagnose issues effectively. By the end of the course, students will have the knowledge and practical skills required to maintain and troubleshoot key truck systems. *Six credit hours*

DSL0120Medium Heavy Duty Truck Air System Maintenance and Brake System Repair and Replacement

This course provides students with the knowledge and skills needed to effectively maintain and troubleshoot air systems and brake components in trucks. Students will learn the principles behind air system operations, including how to follow proper maintenance procedures to ensure reliability and performance. The course also covers the essential techniques for replacing foundation and disc brake systems, focusing on correct procedures to guarantee safe and efficient operation. In addition, students will gain the ability to diagnose common brake system issues, learning how to identify and address potential problems to maintain vehicle safety and performance. Through hands-on practice and expert instruction, students will be prepared to manage air system and brake maintenance tasks with confidence and precision. *Six credit hours*

DSL0130 Medium/Heavy Duty Truck Electrical, HVAC, and After-Treatment Systems Maintenance

This course provides students with the essential knowledge and practical skills required to maintain and repair key systems in modern trucks. Students will gain hands-on experience in maintaining electrical systems, focusing on diagnostics, repair, and ensuring optimal performance of vehicle electrical components. The course also covers the maintenance and repair of HVAC (Heating, Ventilation, and Air Conditioning) systems, teaching students how to troubleshoot and fix issues to maintain comfort and functionality within the vehicle. Additionally, students will learn the operation and upkeep of after-treatment systems, which are vital for meeting environmental regulations and ensuring emissions compliance. By the end of the course, students will be equipped with the skills needed to effectively manage and repair these critical truck systems. *Six credit hours*

HIGH PERFORMANCE RACING TECHNOLOGY

ST. LOUIS

The High-Performance Racing Technology (HPRT) program adds the excitement of aftermarket engine performance improvement to our standard automotive training program. Specialized training allows students to design, machine, assemble, and calibrate (tune) a high-performance engine utilizing a wide variety of aftermarket engine components and control systems. Students learn to calibrate (tune) engine controls for proper fueling and maximum power output, using various data acquisition tools and dynamometers.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Students in our HPRT day program are part of our Automotive Service Excellence (ASE) Education Foundation accredited APT program; ensuring a strong foundation of automotive skills along with the excitement of the high-performance industry. Instructional segments are designed and sequenced to maximize learning potential in each course. Ranken's HPRT program provides students with five semesters of hands-on training and instruction in diagnosing and repairing automotive problems and malfunctions. In addition to the positions offered to APT graduates, HPRT graduates accept gainful employment in automotive careers with an emphasis in engines and tuning.

Upon completion of this program, students will be able to:

- Inspect, diagnose, service and repair vehicle: Advance Level Engines, Computerized Controls, Manual and Automatic Transmissions, Steering and Suspensions, Brakes, Heating, Ventilation, and Air Conditioning (HVAC) Systems.
- Inspect, machine, diagnose, and calibrate (tune) for high-performance applications.
- Exhibit career-ready professional traits.
- Adapt to emerging technologies in the automotive performance industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	APT1000	Maintenance and Light Repair	10	
	APT1005	Professional Internship I or AHP1005 Retro Tech I	5	APT1000
Second Semester	APT1100	Engines and Electrical	10	APT1000
	AHP1105	Advanced High-Performance Engines	10	APT1100
Third Semester	APT2000	Engine Controls and HVAC	10	APT1100
	AHP2005	Advanced High-Performance Tuning	10	APT2000
Fourth Semester	APT2300	Automotive Drivetrain	10	APT2000
	APT2305	Professional Internship IV or AHP 2305 Retro Tech II	5	APT2300
Fifth Semester	APT3000	Automotive Diagnostics	12	APT2305
		Total Technical Credit Hours Required	*82*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1224	Automotive Service Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)		HOURS	PREREQUISITES
COM1080	Technical Communications	3	
BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

APT1000 Maintenance and Light Repair

This course is an introduction to the automotive service profession and environment with an emphasis on proper procedures in the express service lane. The studies include overall vehicle inspections, fluid services, brakes, steering & suspensions, service information systems, and basic scan tool functionalities. In addition to completing a proper brake job, in the Brakes section of this course, students learn to use the most up-to-date brake-lathes, which are mandatory for most warranty repairs at dealership shops. The steering and suspension sections include identification, diagnosis, and replacement of steering and suspension components such as rack and pinion steering, Macpherson struts, shock absorbers, ball joints, and tie rod ends. Students learn essential tire work skills, using the latest road-force wheel balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment available. *Ten credit hours*

APT1100 Engines and Electrical

This course covers principles of operation in a modern automotive engine, including removal and installation procedures, disassembly, diagnosis, repair, re-assembly, and timing of modern engines. Correct measuring and inspection techniques are critical focal points of this course. Students learn fundamental concepts regarding battery, starting, and charging systems, vehicle lighting, and practical application of electrical diagnostic procedures during the electrical portion of the course. *Ten credit hours*

AHP1105 Advanced High-Performance Engines

In this course, students learn the math and science behind the development of a proper, high-performing power plant, while learning to assemble a high-performance engine. Students learn all required machining processes for rebuilding a stock-type engine. The course also covers intake and cylinder head airflow improvements, such as increasing valve size, unshrouding the valves, and porting and polishing the runners. Students will learn to balance internal components and blueprint all the necessary measurements of a high-performance engine through engine tear-down, assembly, and dynamometer performance verification. By combining in-class lectures and hands-on training, students gain valuable knowledge and experience from their instructors. *Ten credit hours*

APT2000 Engine Controls and HVAC

The engine controls section of this course covers the diagnosis of issues found in the ignition, fuel, emissions, and check engine light systems. Students work with the OBDII platform along with a variety of diagnostic tools including, the latest aftermarket scan tools, lab scopes, and amp probes. Students will learn to diagnose engine concerns using inputs, outputs, and scan tool data lists. The Heating, Ventilation, and Air Conditioning (HVAC) section includes the diagnosis and repair of HVAC problems with an emphasis on component replacement using proper procedures. *Ten credit hours*

AHP2005 Advanced High-Performance Tuning

This course offers a highly interactive experience with a strong focus on the application of fundamental engine calibration strategies (tuning) for adjusting air/fuel ratios and optimizing ignition timing to manage various engine operating conditions. Students work to develop a universal tuning process applicable to all four-stroke gasoline engines. Students learn to troubleshoot and manage typical tuning challenges that are characteristic of high-performance engines. Students learn to tune on carburetors, OEM Electronic Fuel Injection (EFI), and aftermarket EFI platforms with programmable ignition control systems. Students learn to calculate air and fuel requirements for various combinations to help in performance component selection and modification. Students learn specific tuning strategies for handling changes in operating conditions such as: load, weather, fuel type, and forced induction including, nitrous oxide, superchargers, and turbochargers. Shop-time is designated for engine setup, swapping components, and live dyno tuning of various engine control systems and performance parts combinations. As a team-building approach is encouraged in this course, any challenges encountered, such as repairs, maintenance, and workstation development, are incorporated into the lesson and managed the same as in a commercial performance shop environment. *Ten credit hours*

APT2300 Automotive Drivetrain

This course studies the theory, operation, and diagnosis of power-flow issues from the engine to the wheels. The course covers the components in manual and automatic transmission assemblies, clutch assemblies, drive axles, driveshafts, and four-wheel-drive systems. Students study the theory and operation of modern electronic and hydraulic circuits, power flow through standard and planetary gear sets, the diagnosis of shifting concerns, and repair of transmissions. *Ten credit hours*

APT3000 Automotive Diagnostics

This course focuses on specialized body-electronic systems including, instrumentation, audio and entertainment systems, advanced airbag systems, data communication networks (CAN), anti-theft systems, collision avoidance, traction control, vehicle stability, and hybrid/electric vehicle technologies. Advanced engine controls diagnosis such as a no-code condition, evaporative emission controls, the theory of electronically controlled diesel engines, and diesel emission systems are all covered in this course. An emphasis is placed, throughout this course, on diagnostic strategies, current and developing technologies, and diagnostic strategies implemented by original equipment manufacturers. Lab activities utilize modern scan tools, oscilloscopes, vibration analyzers, and onboard self-diagnostic systems. *Twelve credit hours*

APT1005, APT2305 Professional Internships (I, IV)
This part of the program is a work-study, which takes place at an independent repair facility, or dealership service department. Students apply and practice skills correlating with the Automotive Service Excellence (ASE) Education Foundation task list. *Five credit hours each*

AHP 1005, AHP 2305 Retro Tech (I & II)
This specially designed work-study for high-performance students allows for the utilization of their studies to work on hot rods and custom cars in the Ranken Retro Tech Shop. Projects in the Ranken Retro Tech Shop can range from a complete frame-off restoration on a classic car to performance or appearance upgrades on modern vehicles. Students in this course will be working as a team to complete different parts of the project vehicle correctly and on time. An exhibition of teamwork, communication, attention to detail, and the ability to follow instructions is a strong emphasis in this course. *Five credit hours*

EVENING PROGRAM CERTIFICATE IN HIGH-PERFORMANCE RACING TECHNOLOGY ST. LOUIS

This hands-on course covers the complete process of building and tuning high-performance engines. Students disassemble and reassemble engines, perform precision measurements, and use modern diagnostic software to analyze sensor data. The curriculum blends math and science with practical skills in engine machining—including boring, stroking, porting, and surfacing. Students learn to modify cylinder heads, manifolds, and accessories to meet racing standards. The course also covers the assembly and optimization of performance systems, including turbochargers, superchargers, nitrous, and control systems. Tuning using engine and chassis dynamometers is emphasized, preparing students for careers in the aftermarket and racing industries.

Classes typically meet in the evenings, Monday/ Wednesday or Tuesday/Thursday. HPRT graduates accept gainful employment in automotive machine shops/race shops, automotive tuner/ repair shops, aftermarket part manufacturers/suppliers, professional racing teams, and aftermarket tool manufacturers/ suppliers. Successful completion of four semesters is necessary to qualify for a certificate. Students who are interested in furthering their education can credit these courses toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be capable of:
- Performing fundamental inspections, machining, and tuning of high-performance applications.
- Adapt to emerging technologies in the automotive performance industry.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	AHP0100	High Performance Engines and Tuning Foundations	6	
Second, Third or Fourth Semester	AHP0110	High Performance Engines Machining	6	AHP0100
Second, Third or Fourth Semester	AHP0200	High Performance Engine Assembly, Boost Systems & Control Systems	6	AHP0100
Second, Third or Fourth Semester	AHP0210	High Performance Engines Tuning	6	AHP0100
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

AHP 0100 High Performance Engines and Tuning Foundations
Students tear down engines, perform precision measuring, inspect and clean parts, re-assemble, and use modern factory and aftermarket software to access and understand sensor data. Throughout the course, students learn the math and science behind the development and assembly of high-performance engines. Students analyze data to understand the function of systems used to operate race cars. *Six credit hours*

AHP 0110 High Performance Engines Machining
This course encompasses all aspects of machining engines and engine components, starting with boring, clearance for increased stroke, and perfecting engine geometry. Students will be able to make improvements in cylinder head airflow such as increased valve size, porting, surfacing. They will also machine engine components such as intake manifolds, exhaust manifolds, and custom accessories. All machining done will help students understand racing engine standards. *Six credit hours*

AHP 0200 High Performance Engine Assembly Boost Systems, Control Systems
This course focuses on the assembly and preparation of performance engine systems including the engine itself, intake and exhaust components, and control systems. Students will start with engine assembly and setting tolerances and clearances for the use case and then move on to selecting components and building boost systems: Nitrous, supercharger, turbocharger, or compressed air charging. Control systems, such as boost solenoids and engine control systems, are also a focal point in this course. *Six credit hours*

AHP0210 High Performance Engine Tuning
This course offers a highly interactive look at many of the engine performance and control systems used in the high-performance industry. Tuning engines to run optimally using engine and chassis dynamometers. From Turbos the size of your head to carburetor tuning this course prepares you for the aftermarket industry. *Six credit hours*

COMMERCIAL DRIVER'S LICENSE (NON-CREDIT)

RANKEN SOUTHEAST

CERTIFICATE OF COMPLETION

The Commercial Driver's License Program is certified by the Federal Motor Carrier Safety Administration (FMCSA). Entry-level truck drivers must complete an FMCSA certified driver training program to take the driving portion of the Commercial Driver's License (CDL) Class A test. Students will attend classroom training to prepare them to take the Missouri State CDL permit test. Students will progress to a practice driving range for an introduction to basic maneuvers. As students acquire skills, they will drive on public roads, both in-town and highway driving. Upon completion of the program, students will be able to take the driving portion of the CDL test.

Program Length:
8 weeks (Max of 2 weeks of classroom and max of 6 weeks of driving)

Program Cost:
- Tuition: $4,500

Qualifications:
- At least 18 years of age for intrastate; at least 21 years of age for interstate
- Ability to drive interstate
- Holds a valid Missouri Driver's License
- Participate in an interview to verify eligibility to take classes (acceptable driving record and background check) and to discuss truck driving as a career

TRANSPORT REFRIGERATION & EPA COMPLIANCE

RANKEN WEST

CERTIFICATE OF COMPLETION
DPT 1305 TRANSPORT REFRIGERATION & EPA COMPLIANCE

This comprehensive course provides hands-on training and foundational knowledge in mobile refrigeration systems, with a specific focus on Thermo King transport units. Students will learn to operate, troubleshoot, and service Thermo King unit controls and components while gaining a solid understanding of the refrigeration cycle and system pressure diagnostics. Practical lab work includes brazing, flaring, and soldering techniques essential for creating leak-proof refrigeration connections. In addition to technical training, this course prepares students to successfully pass the EPA 608 Certification Exam (Core, Type I, II, and III), a federal requirement for handling refrigerants. By course completion, students will be equipped with the skills and credentials needed to maintain and service transport refrigeration systems in compliance with environmental standards.

Program Length: 8 Weeks /132 hours

Schedule: 5.5 hours per day/24 sessions or 4 hours per day/32 sessions

Semester: Offered during the summer only

Program Cost:
- Tuition: $3,600
- Books/Testing fee:
  Thermo King Literature (No cost)
  EPA Section 608 Preparatory Manual (Testing fee $30)

CONSTRUCTION DIVISION

ARCHITECTURAL TECHNOLOGY

ST. LOUIS

Combining critical thinking skills, state-of-the-art technology and hands-on experience, the Architectural Technology program trains students in the newest practices of this evolving profession to launch a successful career. Upon completion of the program, students will be able to assess, plan, and create effective building and structural design. Course offerings cover in-depth design and construction principles, site, structural and building environment engineering, building information modeling and internet and digital imaging tools. A series of studio classes taken throughout the program paired with real-world projects, allows students to work together on their projects in a mentoring atmosphere by partnering junior and senior architects on projects, helping them develop their own skills and ability to mentor others.

BACHELOR OF SCIENCE IN ARCHITECTURAL TECHNOLOGY

Course offerings include design principles, site and building design, construction technology, structural principles, architectural history, building information modeling, computer modeling, and fundamentals of graphic communication. Students participate in a series of architectural studio classes that give them the opportunity to manage projects from concept design through to construction documentation.

Students in Architectural Technology are required to complete the majority of their student projects via computer-aided design and drafting. Mirroring current industry practices, the program provides training in AutoCAD®, Autodesk® 3ds Max Design and Revit® Architecture, as well as a breadth of other graphics software. At the beginning of their first semester, students lease a notebook computer for use during their academic career at Ranken Technical College, with a buyout option upon completion of the program.

Students complete major studio projects in the following areas:

- Residential building technology: AutoCAD®
- Commercial building technology: AutoCAD® & Revit® Architecture
- Building design: 2D and 3D computer modeling, Revit Architecture
- Architectural visualization: Revit®, TwinMotion®, SketchUp Pro, Rhino 3D, and Blender
- Graphics & Presentation: Adobe® Creative Cloud

Upon completion of this program, students will be able to:

- Create a complete set of architectural construction documents for residential and commercial projects that are technically correct, code compliant, and graphically communicated in a professional manner.
- Communicate professionally in a written, spoken, and visual manner.
- Possess a broad knowledge of building materials and methods of assembly.
- Effectively analyze a design program and create an appropriate solution using current 2D/3D graphic technologies.
- Demonstrate an awareness of the role of architecture in history and today's society.

ASSOCIATE OF SCIENCE OR ASSOCIATE OF TECHNOLOGY IN ARCHITECTURAL TECHNOLOGY

For students who wish to complete only two years of introductory architectural technology and drafting training, the program offers the options to pursue associate of science or associate of technology degrees. After completion, they will be qualified for employment as an architectural draftsperson, but will not be able to pursue the bachelor's degree without first taking additional general education and technical courses.

Upon completion of this program, students will be able to:

- From a given design, produce complete set of architectural construction documents for residential and commercial projects that are technically correct, code compliant, and graphically communicated in a professional manner.
- Create architectural drawings/models using current 2D/3D graphic technologies.
- Communicate professionally in a written, spoken, and visual manner.
- Possess a broad knowledge of building materials and methods of assembly.
- Collaborate with multiple disciplines in a shared workspace model.
- Demonstrate an awareness of the role of architecture in history and today's society.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	ARC1111	Architectural Graphics	3	ARC1112, MTH1110 (Co. Req)
	ARC1112	Introduction to CAD	3	ARC1111, MTH1110 (Co. Req)
Second Semester	ARC1224	Principles of Design	3	ARC1111
	*ARC1225	Materials and Methods	6	ARC1111, ARC1112
	*ARC1226	Materials and Methods Lab	1	ARC1225 (Co. Req)
	ARC1223	Introduction to BIM	3	
Third Semester	ARC2120	Architectural Technology Studio I	6	ARC1111, ARC1112
	ARC2221	Architectural History I	3	ENG1101 (Co. Req)
	ARC2320	Digital Graphics I (Hybrid)	3	ARC1224
Fourth Semester	ARC2220	Architectural Technology Studio II	6	ARC2120, ARC1223
	ARC2122	Structures I (Not required for Associate of Technology)	3	MTH2112
	ARC2123	Building Systems Design	3	MTH1110
Fifth Semester	ARC2223	Structures II	3	ARC2122
	ARC3113	3D Modeling and Visualization	3	ARC2220
	ARC3120	Architectural Technology Studio III	6	ARC2220, ARC1223
Sixth Semester	ARC3222	Site Design I	3	ARC2220, MTH2220 (Co-Req)
	ARC3220	Junior Architectural Studio	6	ARC3120
	ARC3221	Architectural History II	3	ARC2221
	ARC3320	Digital Graphics II (Hybrid)	3	ARC2320
Seventh Semester	ARC4120	Senior Architectural Studio I	6	ARC3220, ARC3113
	ARC4202	Capstone Portfolio	3	ARC3320
	ARC- - - -	Internship or Elective	3	All ARC2200 Level Courses
Eighth Semester	ARC- - - -	Internship or Elective	3	All ARC2200 Level Courses
	ARC4112	Professional Practice	3	ENG2102
	ARC4220	Senior Architectural Studio II	6	ARC3113, ARC4120
Electives	ARC3024	Sustainable Strategies	3	
6 credit hours of elective required	ARC4200	Architectural Internship	3	
	ARC3050	Design-Build Workshop	3	
	ARC3022	Interior Architecture and Design	3	
	ARC3000	International Study	3	
	ARC3001	Precedent Study	3	
	CRP0110	Exterior/Interior Frame Construction (Evening Course)	6	
	CRP0120	Interior Finish (Evening Course)	6	
		Total Technical Credit Hours Required	*94*	

**ARC 1225 and ARC 1226 are designated as co-requisite courses and must be taken concurrently. Failure in either course requires the student to repeat both courses.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business	BUS1001	Career Success Skills	3	
Fine Arts	FNA3002	Digital Photography	3	
Associate of Science Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	MTH2240	Survey of Calculus	3	MTH2112
	PHY2230	College Physics	3	MTH2220
Bachelor of Science Required Courses 3 hours of COM 3 hours of ETH or PSY Total 6 hours required	COM3000	Intercultural Communications **or**	3	
	COM3100	Organizational Communications	3	
	ETH2222	Business Ethics **or**	3	
	PSY3100	Organizational Behavior **or**	3	
	PSY4000	Organizational Psychology	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

ARC1111 Architectural Graphics

This course introduces students to the profession of architecture and related foundational concepts. Through an introduction to architectural graphics, students will utilize hand drawn methods to visually communicate the shape, depth, and scale of three-dimensional objects and the spatial environment. These methods will include sketching, orthographic projection, axonometric and perspective drawings, shade and shadow, textures, and drawing composition. Additional topics include architectural vocabulary, color rendering, architectural lettering, and construction documentation. *Three credit hours*

ARC1112 Introduction to CAD

This course will introduce students to 2D computer-aided drawing using the software, AutoCAD. After an introduction to the functions of the software, students will begin drawing architectural shapes and objects. From given information, students will create construction documents for residential projects including plans, elevations, and wall sections. Students will also utilize hands-on skills to create a model of a typical house. *Three credit hours*

ARC1223 Introduction to BIM

This course will introduce students to the concepts and applications of Building Information Modeling (BIM). The student will become familiar with the advantages of BIM and the variety of uses within the building design industry. Students will learn the essentials to create an intelligent computer model of a building project using the latest computer modeling software. *Three credit hours*

ARC1224 Principles of Design

A lecture/studio course designed for students to develop a fundamental understanding of the primary components of design. The course has three parts: aesthetic theory, abstract graphics, and design vignettes. The vignettes are designed to give the students an architectural inquiry on the broad range of topics discussed. Specific studio emphasis is given to the basic consideration of beauty, form, space, order, and light, as well as the implications of function, use of materials, and design intent. Numerous successful architectural works are examined and discussed. *Six credit hours*

ARC1225 Material and Methods

Materials and Methods is a 3-credit hour lecture designed to give students the technical skills necessary to understand the materials, means, and assemblies used in commercial and residential construction. Characteristics of these materials and the principal factors affecting residential and commercial structures are covered, including the details necessary to construct such buildings. Particular consideration is given to building envelope construction and building support structure. *Three credit hours*

ARC1226 Material and Methods Lab

Materials and Methods Lab is a 1-credit hour corequisite course designed to expose students to the details, vocabulary, materials, and hands-on processes necessary to construct residential and commercial buildings. The student will use problem solving skills to create details using CAD software and appropriate materials to create mock-ups. *One credit hour*

ARC2120 Architectural Technology Studio I

Architectural Technology Studio I is a studio course that directs the student to produce construction documents for residential projects. From given designs, the student will create floor plans, elevations and details for two projects. During these tasks, the student will also be advancing their computer aided drafting skills with AutoCAD®. Lectures will integrate issues related to residential design, design styles, sustainable building methods, residential building codes, and other architectural topics. Supplementary projects will include a study model, color rendering, and sketching assignments. *Six credit hours*

ARC2122 Structures I
Structures I is an introduction to structural engineering and related terminology as it applies to architecture. The course involves determining loads (gravity and lateral) on a building structure based on code requirements, calculating direct stress on structural members, reactions for beams, and properties of sections. Students will utilize structural formulas to calculate bending, shear, and deflection of beams, then depict solutions in shear and moment diagrams. In addition, sustainable structural materials will be compared to conventional materials. *Three credit hours*

ARC2123 Building Systems Design
This course is designed to familiarize the student with the basic components of mechanical, electrical and plumbing systems, as well as to develop and understand how building materials and site conditions impact the design of those systems. The intent is that the student is then capable of making design choices which facilitate a more energy efficient and sustainable structure. Students will be expected to become fluent in the terms used by mechanical and electrical design professionals and understand the concepts of calculating the basic building systems loads. *Three credit hours*

ARC2220 Architectural Technology Studio II
This course introduces the student to commercial building projects. The student will be given a small commercial building design and the necessary criteria to develop the interior spaces, as well as the site conditions. The student will create required plans, sections, details, and schedules to be compiled into a set of construction documents. Through weekly lectures, the student will investigate commercial building techniques, building codes and Americans with Disabilities Act (ADA) regulations. *Six credit hours*

ARC2221 Architectural History I
Students learn contextual architectural history surrounding the discipline. Coursework is developed for students to understand the culture of the western world and how it created the architecture of the Ancient through Medieval eras. Students will be exposed to many different built structures and city planning examples through slide shows, lectures and class discussions. *Three credit hours*

ARC2223 Structures II
Structures II course is designed to build upon the previous Structures I course. This course combines the design aspects of wood, steel, and concrete structural materials. Students will design beams, columns, plates, and slabs; and investigate other design considerations including shear, deflection, and bearing. Students will also learn how to create a structural framing plan and design the lateral load resistance elements for seismic and wind loading. *Three credit hours*

ARC2320 Digital Graphics I (Hybrid)
Digital Graphics for Architecture I provides an introduction to necessary architectural software's as well as presentation layouts to depict design intent. This course is required before Digital Graphics for Architecture II. *Three credit hours*

ARC3022 Interior Architecture and Design
Interior Architecture and Design is an architectural elective course that provides the student with a comprehensive knowledge of the practices and concepts of commercial interiors. In addition to lectures on materials, color, lighting, furniture, space planning and more, the student will create small projects and present them to the class in a critique setting. These projects will require the student to utilize skills in sketching, CAD, rendering, design, and communication. *Three credit hours*

ARC3050 Design-Build Workshop
Design-Build Workshop serves primarily as a fabrication shop for the construction of full-scale architectonic elements (including wall sections, mockups, and designed furniture prototypes). Execution of these elements exposes the student to general hand and power tool literacy in a shop environment. Demonstrations during class will focus on techniques which enforce Architectural Technology Studio topics with a focus on mechanical assembly, material methodology, and detailing. Students will complete one full-scale mockup, or prototype, and critically evaluate the result. Supplementary opportunities will include application of finishing techniques (paints, stains, and coatings) to varied material types. *Three credit hours (Note: Additional Tool Cost Applies)*

ARC3113 3D Modeling and Visualization
The course introduces architectural applications of varied 3D modeling software titles, exposing students to surface and mass-modeling, parametric solid modeling, materials rendering, and basic walkthrough animations. Software explored will be contemporary with the industry and can include SketchUp Pro, Rhino 3D, Blender, and TwinMotion, in addition to Revit. Sample work-flows between these products will be explored in a hands-on approach. This course is a combined lecture/studio that will reinforce commands learned through application of exercises and small projects. *Three credit hours*

ARC3120 Architectural Technology Studio III
As a student advances in their architectural education, it is important that all stages of the development of a design project are synthesized to the extent that is reasonably completed in an academic setting. The goal of this studio is to have the student carry the project through the latter stages of the design process culminating in a representative set of documents from which the conceived project could be built. The student will learn to use REVIT® Architecture software to develop the final documents. *Six credit hours*

ARC3220 Junior Architectural Studio
This studio is designed to focus on developing the student's basic architectural design and technical skills while utilizing various computer applications in the design solution process. Architectural design problems are given for the student to solve. Meaningful case studies will be examined relative to the specific architectural problems given. Advanced computer applications will be utilized, as well as the traditional medium of sketches and physical models to represent their design concepts and solutions. Emphasis will be placed on developing not only technical and functional credibility in the design solutions, but also learning correct design presentation methods. *Six credit hours*

ARC3221 Architectural History II
This course is a continuation from ART2221 Architectural History I and is designed to expose the students to western and non-western architecture. Topics in Western architecture will focus on design and city planning spanning time from the Renaissance to the Industrial Revolution. Discussion on non-Western architecture will focus on vernacular architecture of Pre-Columbian North and South America, Sub-Saharan Africa, Asia, and Oceania. The content of this course is delivered through lectures and class discussions. *Three credit hours*

ARC3222 Site Design I
This course is a lecture and studio class, which includes site planning, site design, building site orientation, site circulation, site security, grading, utilities, hydraulics, and landscaping. *Three credit hours*

ARC3320 Digital Graphics II (Hybrid)
Digital Graphics for Architecture II provides graphic design strategies as a medium for visualization in architectural presentation. Students learn current software and techniques that are practical for architectural graphics and diagrams such as Photoshop, Adobe InDesign, and Lumion. Students will design and produce final board presentations and portfolio layout for school and/or professional applications through lectures, digital workshops, and studio related exercises. *Three credit hours*

ARC4112 Professional Practice
Professional Practice is designed to educate the student on the inherent responsibilities of managing a construction project, and the communications required for the success of the project. Topics include: project construction management, contract negotiation, project administration, procurement, and specifying products. Projects include: preparing Requests for Proposals (RFP), Construction Change Directives (CCD), Construction Change Requests (CCR) and addendums, constructing cost estimates and scheduling charts, composing letters and memos to clients. This course reserves time for discussion of work ethic and its role in project management. *Three credit hours*

ARC4120 Senior Architectural Studio I
The studio is designed to focus on developing the student's basic architectural design and technical skills using various computer applications in the design solution process. Architectural design problems are given for the student to solve. Meaningful case studies will be examined relative to the specific architectural problems given. Advanced computer applications will be utilized, as well as the traditional medium of sketches and physical models to represent their design concepts and solutions. Emphasis will be placed on developing not only technical and functional credibility in the design solutions but also on learning correct design presentation methods. *Six credit hours*

ARC4200 Architectural Internship
The internship program allows the student to synthesize their assembled body of knowledge in a real work environment by allowing them to participate in the daily operations of a firm, and perform duties similar to those that they would perform if employed in the prescribed role. Eligible students from the Architectural Technology Department can combine a working and learning experience for credit in architectural firms, engineering offices or consulting engineering firms. *Three credit hours*

ARC4202 Capstone Portfolio
The Capstone Portfolio is designed to facilitate the assembly of selected examples of the student's work into a concise, carefully executed document. The document serves to clearly represent the student's competencies and skills to the AEC community, while seeking employment in the industry. *Three credit hours*

ARC4220 Senior Architectural Studio II
This studio is designed to focus on developing the student's basic architectural design and technical skills using various computer applications in the design solution process. Architectural design problems are given for the student to solve. Meaningful case studies will be examined relative to the specific architectural problems given. Advanced computer applications will be utilized, as well as the traditional medium of sketches and physical models to represent their design concepts and solutions. Emphasis will be placed on developing not only technical and functional credibility in the design solutions, but also on learning correct design presentation methods. *Six credit hours*

ARC3000 International Studies
This course is designed for students to experience the diversity, culture, and architecture of another country. Students will get an overview of the country's history, architecture, geography, politics, religion, culture, and language prior to visiting the country. Afterwards, the student will reflect on their trip by creating a visual exhibit, including a model and other components, to express their experiences. *Three credit hours*

ARC3001 Precedent Study
The Precedent Study tour is designed for students to experience the diversity, culture, and architecture of another city/region within the continental United States. Students will get an overview of the history, architecture, geography, politics, and local culture prior to the visit. Afterwards, the student will reflect on their trip by generating report documentation, including photos, diagrams, sketches, and written reflections to express their experiences. *Three credit hours*

ARC3024 Sustainable Strategies
This course will include an in-depth study of the social, environmental, and economic aspects of sustainability in the built environment. Students will investigate the effects of current climate cycles, historical and future predictions, while evaluating high-performance and responsive architectural solutions for both retrofit and new construction applications. Researching case studies of successes and failures in sustainable projects will enable the student to formulate design decisions that are regionally appropriate and offer improved resource management. Evaluation of innovative sustainability topics will be an essential feature of this course. *Three credit hours*

CRP0110 Exterior/Interior Frame Construction
This course covers basic carpentry math calculations of fractions and decimals, as well as right-angle geometry. Students will learn how to identify and safely operate different hand and portable/stationary power tools. The course also covers how to set up and operate leveling instruments. Concrete formwork, floor and wall framing,and gable roof construction are covered in this course. Upon completion of the basic framework of the small-scale module of the residential structure, students will hang an exterior door and install vinyl siding, soffit and fascia on the exterior of the building. Students will install roof shingles and learn proper flashing and water prevention techniques. *Six credit hours (Additional costs apply for this course)*

CRP0120 Interior Finish
This course covers the different aspects of interior finish work to be completed on the module constructed during CRP0110. Mathematical stair calculations and layout, and basic stair construction, is covered. Residential drywall installation/ patchwork and drywall finishing is covered. Students will learn how to install different floor systems such as carpet, sheet vinyl, ceramic tile and laminate. They will also learn how to install a suspended ceiling. Upon completion of the ceiling and flooring, students will install an interior pre-hung door unit and finish the rest of the structure with base trim and window casing. The basic woodworking portion of this course will cover the fabrication of small woodworking projects, such as a bookcase or coat rack. *Six credit hours (Additional costs apply for this course)*

BUILDING SYSTEMS DESIGN TECHNOLOGY

RANKEN WEST

Building systems design technicians collaborate with engineers in systems design, applications, testing, and development work. Those who work with mechanical contractors perform design, equipment selection, layouts, estimating and the supervision of building systems. Ranken's Building Systems Design Technology program will provide individuals with the skills, knowledge and experience needed to successfully acquire a design position and advance in their chosen field.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Ranken's Building Systems Design Technology program provides instruction in a wide range of overall system design, as well as in the selection and application of mechanical, electrical and piping equipment. Students use mechanical engineering principles to produce working drawings of electrical, heating, ventilation and air conditioning, as well as plumbing and fire protection systems for large scale commercial buildings. Also included are analyzing prints, using spreadsheets for cost estimating, preparing 3D scale and computer aided design (CAD) models and mechanical/electrical/plumbing (MEP) plans for heating, ventilation and air conditioning (HVAC), electrical and plumbing using AutoCAD® and Autodesk® Revit® MEP software.

Upon completion of this program, students will be able to:

- Produce mechanical, electrical and plumbing technical documents in accordance with project parameters using typical industry software
- Identify, navigate and implement ICC codes and code sections that pertain to mechanical, electrical, plumbing and fire protection systems
- Identify, navigate and implement installation standards that pertain to mechanical, electrical, plumbing and fire protection systems

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	BSD1000	Building Systems	12	
Second, Third or Fourth Semester	BSD1100	Heating Ventilation Air Conditioning/Mechanical Systems	12	BSD1000
Second, Third or Fourth Semester	BSD2000	Electrical Systems	12	BSD1000
Second, Third or Fourth Semester	BSD2010	Piping and Fire Protection	12	BSD1000
		Total Technical Credit Hours Required	*48*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

BSD1000 Building Systems (Offered Hybrid)
This course provides a comprehensive overview of architectural building planning and design. The student will work with Computer Aided Design (CAD) and Building Information Modeling (BIM) software including AutoCAD and Autodesk Revit MEP. Focus on the theory and practice of building design with emphasis on code requirements, specifications, and material selections will be presented. Students will learn print reading, how to utilize Architectural, Engineering and Metric scales along with their associated scale factors. The construction management process and proper CAD file management techniques will be introduced.
Twelve credit hours

BSD1100 Heating Ventilation Air Conditioning/Mechanical Systems (Offered Hybrid)
This course provides a comprehensive overview of heating, ventilation, air conditioning, and mechanical building systems. The student will work with Computer Aided Design (CAD) and Building Information Management (BIM) software including AutoCAD, Revit MEP, and Navisworks Manage. Focus on the theory and practice of mechanical building system design, with an emphasis on code requirements, specifications, load, heat loss and heat gain calculation procedures. Students will learn about various air distribution systems, hydronic, steam and refrigeration design techniques, along with the construction management process that accompanies their installation.
Twelve credit hours

BSD2000 Electrical Systems (Offered Hybrid)
This course provides a comprehensive overview of electrical distribution systems within the built environment. The student will work with Computer Aided Design (CAD) and Building Information Modeling (BIM) software including AutoCAD and Autodesk Revit. Focus on the theory and practice of electrical building system design with emphasis on National Electric Code (NEC) requirements and specifications will be presented. Students will learn about various lighting design and estimation concepts along with the construction management process that accompanies their installation, use and maintenance.
Twelve credit hours

BSD2010 Piping and Fire Protection (Offered Hybrid)
This course provides a comprehensive overview of piping and fire protection systems. The student will work with Computer Aided Design (CAD) and Building Information Modeling (BIM) software including AutoCAD and Autodesk Revit. Focus on the theory and practice of piping design and fire suppression systems with emphasis on Uniform Plumbing Code requirements and specifications will be presented. Students will learn about various types of piping and fire suppression systems and estimation concepts along with the construction management process that accompanies their installation.
Twelve credit hours

CARPENTRY AND BUILDING CONSTRUCTION TECHNOLOGY

ST. LOUIS, AND RANKEN CENTRAL MO

Ranken's Carpentry and Building Construction Technology program provides students with instruction and experience in residential building construction. Practical application and experience are an integral part of the carpentry program, providing students with real, hands-on training and unmatched skill development. Emphasizing leading practices in carpentry today, this program prepares students for all phases of residential building construction. The carpentry program also prepares students to hold a job in the field by providing instruction about blueprint reading and estimating. Graduates of Ranken's carpentry programs are qualified for employment with both unions and non-union building contractors specializing in new construction, home remodeling or in industry maintenance departments.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY ST. LOUIS, AND RANKEN CENTRAL

Throughout the Carpentry and Building Construction Technology program, students construct a residential structure from the ground up, in a series of phases, learning to:

- Manipulate hand and power tools, as well as stationary machinery
- Select lumber and building materials
- Complete residential buildings in all stages: foundation, frame, roof, interior and exterior finishing
- Read and interpret residential blueprints, shop drawings and building codes

Upon completion of this program, students will be able to:

- Maintain a safe and clean work environment as dictated by the Occupational Safety and Health Administration standards.
- Interpret, estimate, and price information from blueprints and a construction management platform.
- Measure, cut, prepare, and install rough frame, finish, and formwork components for residential construction using hand and power tools.
- Exhibit career ready, professional traits

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	CRP1116	Building Construction and Print Reading	13	
Second, Third or Fourth Semester	CRP1220	Exterior Finishes and Estimating	10	CRP1116
	CRP1221	Internship I	5	CRP1116
Second, Third or Fourth Semester	CRP2120	Interior Finishes and Estimating	9	CRP1116
	CRP2121	Internship II	5	CRP1116
Second, Third or Fourth Semester	CRP2220	Flooring and Estimating	9	CRP1116
	CRP 2221	Internship III	5	CRP1116
		Total Technical Credit Hours Required	*56*	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

DAY PROGRAM COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH 1100
Business/Information	BUS1001	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	
Associate of Science	MTH2112	College Algebra	3	MTH1111
Additional Required	MTH2220	Trigonometry	3	MTH2112
Courses	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

CRP1116 Building Construction and Print Reading

The main topics covered in Building Construction and Print Reading are building framing and formwork techniques and explaining the role and importance of job prints used on a construction project. To do this, students review basic math, use feet and inches, and convert fractions to decimal and use various types of measuring tools to record and apply accurate measurements. OSHA 30 safety training is covered which includes basic hand and power tool identification and usage. Students use various building materials and prints to perform building layout, concrete formwork, and apply several types of framing techniques. Students will also execute basic use of the Procore project management platform. This includes basic user interface, project selection and the completion of an official Procore project manager certification. *Thirteen credit hours*

CRP1220 Exterior Finishes and Estimating

The main topics in Exterior Finishes and Estimating explore the basic components and installation techniques for the exterior finishes and estimating in a construction setting. The exterior installation component includes using various types of tools to apply accurate measurements to roof shingles, windows, vinyl siding, soffit, and fascia in a building structure. The estimating component explores the foundational concepts of estimating construction material through the use of the Procore project management software. A foundational use of Procore project manager software is introduced that includes basic user interface and the completion of an official Procore Student certification. *Ten credit hours*

CRP2120 Interior Finish and Estimating

This course covers different aspects of interior finish work. Mathematical stair calculations and layout, as well as basic stair construction, is covered in this course. Also covered, drywall installation/patchwork and drywall finishing is covered. Students will install an interior pre-hung door unit, base trim, and window casing. In addition, various types of measuring tools are used to apply accurate measurements.
Nine credit hours

CRP 2220 Flooring and Estimating

Flooring and estimating will cover different types of floor coverings and installation techniques in building construction. Various aspects of construction management will be discussed, as well as the process for starting and maintaining an organized construction project in the Procore project management software. *Nine credit hours*

CRP1221, CRP2121, CRP2221 Construction Internships I, II, III

Students will participate in a work-study in a professional construction environment during their second, third, and fourth semesters. Students will apply skills learned in previous courses on an active construction site. *Five credit hours each*

EVENING PROGRAM CERTIFICATE IN CARPENTRY MAINTENANCE ST. LOUIS AND RANKEN CENTRAL

With a curriculum that combines classroom instruction and shop activities, this residential carpentry and maintenance program is designed for individuals who want to pursue a career in the carpentry maintenance field. These classes meet on Monday and Wednesday or Tuesday and Thursday evenings.

For students interested in furthering their education, these courses are creditable toward our Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Maintain a safe and clean work environment as dictated by the Occupational Safety and Health Administration standards.
- Interpret pertinent information from shop drawings.
- Layout and install all components for rough frame, finish, and formwork projects for construction.
- Cut and weld mild steel using oxy-acetylene fuels and shielded metal arc welding systems.

EVENING PROGRAM COURSES		HOURS	PREREQUISITES
CRP0110	Exterior/Interior Frame Construction	6	
CRP0120	Interior Finish	6	
FWL0110	Welding I	6	
	Total Technical Credit Hours for Certificate Completion	*18*	

COURSE DESCRIPTIONS

CRP0110 Exterior/Interior Frame Construction

This course covers basic carpentry math calculations of fractions and decimals as well as right-angle geometry. Students will learn how to identify and safely operate different hand and portable/stationary power tools. The course also covers how to set up and operate leveling instruments. Concrete formwork, floor and wall framing and gable roof construction are covered in this course. Upon completion of the basic framework of the small-scale module of the residential structure, students will hang an exterior door and install vinyl siding, soffit and fascia on the exterior of the building. Students will install roof shingles and learn proper flashing and water prevention techniques. *Six credit hours*

CRP0120 Interior Finish

This course covers the different aspects of interior finish work to be completed on the module constructed during CRP0110. Mathematical stair calculations and layout, as well as basic stair construction, is covered in this course. Residential drywall installation/patchwork and drywall finishing is covered. In this course, students will learn how to install different floor systems such as carpet, sheet vinyl, ceramic tile and laminate. They will also learn how to install a suspended ceiling. Upon completion of the ceiling and flooring, students will install an interior pre-hung door unit and finish the rest of the structure with base trim and window casing. The basic woodworking portion of this course will cover the fabrication of small woodworking projects, such as a bookcase or coat rack. *Six credit hours*

FWL0110 Welding I

Students will learn the necessary skills for welding and cutting processes used in the welding and fabrication industry. Processes covered in this program include Shield Metal Arc Welding (SMAW/Stick), GMAW (MiG) and GTAW (TiG) in the flat, horizontal and vertical positions. Lay-out, Oxy-Fuel cutting are also included in the curriculum. *Six credit hours*

HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION TECHNOLOGY

ST. LOUIS, RANKEN WEST AND RANKEN SOUTHEAST

In homes, offices, factories and schools, the air conditioning and heating industries provide year-round temperature, humidity and air quality control options, improving global standards of living. Since this is a recession resistant industry, demand for trained technicians will always result in excellent employment opportunities.

Students enrolled in the Heating, Ventilation, Air Conditioning & Refrigeration Technology program receive hands-on, practical experience in troubleshooting and repairing residential and commercial refrigeration, air conditioning and heating equipment. Students are trained on up-to-date technology and equipment to ensure superior knowledge in the HVACR industry.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

In this full-time, four-semester program, students receive instruction in:

- Basic refrigeration and electricity theories
- Applied electrical circuits
- Sheet metal, piping and conduit bending
- Domestic equipment
- Refrigeration coolers and freezers
- Residential and commercial equipment
- Commercial ice-making equipment

Graduates are prepared for employment as HVACR technicians, with the option to work in general service or specialize in a particular field, such as residential air conditioning, commercial refrigeration or heating equipment. Graduates also work in maintenance at industrial plants, hotels, hospitals and apartment complexes that utilize large refrigeration, air conditioning and heating systems. Students will participate in three internships where students will be able to practice their new skills in a real world work environment.

Students interested in completing the certificate of technology program will take all technical courses in the associate degree program, but will only need to complete two general education courses. Students who obtain an HVACR associate degree or certificate can choose to receive more in-depth training in Major Appliance Technology by completing one extra semester of courses in this program. Upon completion of the semester, students enrolled in an associate degree program will receive an associate degree in both Major Appliance Technology and HVACR, while students pursuing a certificate program will receive a certificate for Major Appliance Technology and HVACR.

Upon completion of the program, students will be able to:

- Diagnose malfunctions of air conditioning, heating and refrigeration equipment and repair, replace, or service to manufacturer and/or industry standards.
- Install and/or repair any supporting electrical and piping systems in which HVAC/R are dependent upon.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	HVA1000	Fundamentals of Refrigeration and Electrical	16	
Second Semester	HVA1150	Mechanical Application	9	HVA1000
	HVA1155	HVA Internship I	5	HVA1150
Third or Fourth Semester	HVA2010	Residential Heat/AC and Heat Pumps	9	HVA1150
	HVA2015	HVA Internship II	5	HVA1150
Third or Fourth Semester	HVA2110	Commercial Refrigeration and Light Commercial Heat/AC	9	HVA1150
	HVA2115	HVA Internship III	5	HVA1150
		Total Technical Credit Hours Required	*58*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

HVA1000 Fundamentals of Refrigeration and Electrical

This course introduces proper tool usage, refrigeration, lines, and component operation. Students learn the layout and fabrication of residential duct fittings. They will learn to read a temperature/pressure chart and apply it to various refrigerants which are used in the trade. Procedures such as recovery, evacuation, leak testing, and charging of refrigerant will be performed on various types of equipment to EPA standards. Students will be introduced to various types of metering devices, including gauge manifold and two-way service valves. Students will learn trouble diagnosis, charging methods, and the proper operation of a refrigerator and air conditioner, including proper pressures, temperatures, and running times. This course then continues with the introduction of basic electrical theory, Ohm's law, insulators, conductors, switches, and loads. Students will read and produce wiring/ladder diagrams, learn to wire and troubleshoot control circuits, motors, compressors, and relays. *Sixteen credit hours*

HVA1150 Mechanical Applications

This course involves learning how to use trade specific hand and power tools to OSHA 10 standards. Accurate trade measurements will be taken along with making leak-tight flare, swag, solder, and braze connections on copper tubing. Students will be introduced to the basic principles of natural gas along with pipe and vent-sizing of gas furnaces. Students will also learn the basics of pipe fusion and how to thread steel pipe together by using proper calculations and measurements. Finally, students will learn the layout and fabrication of duck fittings and perform all rough in, ductwork, and installation of new systems. Students will calculate duct sizing of sheet metal duck fittings for low pressure duct systems. *Nine credit hours*

HVA2010 Residential Heat/AC and Heat Pumps

This course covers the principles of wiring components and troubleshooting gas furnace systems including standing pilot, spark to pilot and direct ignition in two-stage and modulating gas systems. Indoor Air Quality Products (IAQ) including variable speed blower systems are taught. Students will also learn to troubleshoot electrical, refrigeration, and airflow of residential air conditioning, electric heat, and heat pump equipment. Students perform all rough in, ductwork, and installation of new systems. Students will calculate duct sizing of sheet metal duct fittings for low pressure duct systems. Emphasis is placed on service skills and systematic diagnosis. *Nine credit hours*

HVA2110 Commercial Refrigeration and Light Commercial Heat/AC

This course covers principles of commercial refrigeration and light commercial heat/air conditioning (AC) operation. Emphasis will be placed on the evaluation of the operational sequence of component parts for a variety of refrigeration systems, such as walk-in coolers, reach-in freezers, open display cases, beverage coolers, and a variety of three-phase commercial AC units and accessories. Students will monitor system operation, obtaining applicable performance conditions and diagnosis operation using EPA industry standards. Students will learn to troubleshoot electrical circuits, refrigeration circuits, water circuits, and air circuits for different refrigeration systems. Students will also systematically diagnosis a wide variety of commercial refrigeration and light air conditioning systems as well as correctly size components to select proper replacement parts following system analysis. The fundamentals of hydronics (heating or cooling by circulation of a fluid), steam heat and special controls, diagnosis, charging, and checkout procedure are covered as well. Building Automated Systems (BAS) used in the control and monitoring of facilities, energy use, and zone comfort conditions will be introduced. *Nine credit hours*

HVA 1155/2015/2115 HVA Internship I/II/III

Students will participate in an employer-sponsored work study where they apply a variety of HVACR operations in a workplace setting. The work and equipment may vary by worksite and may be located indoors or outdoors. *Five credit hours*

EVENING PROGRAM CERTIFICATE IN HEATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION TECHNOLOGY ST. LOUIS AND RANKEN SOUTHEAST

This program offers preparation at the mechanic level covering equipment servicing and repair. As the curriculum progresses, special attention is given to electrical applications—particularly to control circuits.

These classes meet on Monday and Wednesday or Tuesday and Thursday evenings. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Diagnose malfunctions of air conditioning, heating and refrigeration equipment and repair, replace, or service to manufacturer and/or industry standards.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	HVA0100	Fundamentals of Heat Transfer and Domestic Applications	6	
First or Second Semester	HVA0101	Electrical for HVACR	6	
Third or Fourth Semester	HVA0230	Residential HVAC and Heat Pumps	6	HVA0100, HVA0101
Third or Fourth Semester	HVA0240	Commercial Refrigeration/AC and Heating	6	HVA0100, HVA0101
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

HVA0100 Fundamentals of Heat Transfer and Domestic Applications

This course introduces the basics of refrigeration, including a description of what is taking place inside each component and the lines connecting them. Students learn to read a temperature/pressure chart and apply it to various refrigerants which are used in the trade. Common service procedures such as gauge installation, evacuation and recovery of refrigeration are also covered in the course. Students are exposed to trade measurements and are given theory behind what it takes to make a good solder and braze connection on copper tubing. This course introduces students to pressures, temperatures and running times for refrigerators and room air conditioners and continues with charging, service and operation of domestic refrigerators and room air conditioners.
Six credit hours

HVA0101 Electrical for HVACR

Study includes capacitors, current relays, potential relays and solid-state relays. Students practice methods used to recognize each relay and wire each relay circuit with its hermetic compressors. The course incorporates the wiring of basic fan relays, contactors and sequencers. Additionally, this course provides an overview of the different means of wiring, charging and problem diagnosis of domestic refrigerators and window air-conditioners. Troubleshooting through an electrical schematic is a staple of this course. Emphasis is placed on problem analysis of system operation. *Six credit hours*

HVA0230 Residential HVAC and Heat Pumps

Introduction to heat pumps, including various types, specific components, basic operation and common problems. Both major types of refrigerants are used in the shop equipment. This provides each student with exposure to the current refrigerant and the newer non-ozone depleting refrigerant. Students are able to service an air conditioner and heat pump, troubleshoot the reversing valve and evaluate various defrost systems of a heat pump. Electric and gas furnaces are also covered. The prominent gas flame ignition devices and the various methods used to operate a gas furnace will be covered along with the different equipment fuel efficiencies. Proper flue gas venting is also covered, primarily categories I and IV. *Six credit hours*

HVA0240 Commercial Refrigeration/AC and Heating

Introduces commercial refrigeration theory, which includes the function and sequence of the operation of component parts on various refrigeration systems; including, but not limited to, reach-in and walk-in coolers, beverage coolers and reach-in freezers. Students focus on the development of a systematic approach to diagnosing problems in commercial refrigeration. Low outdoor operating conditions, various refrigeration loads and the components used to assist a refrigeration system to perform correctly during these conditions will also be covered. This includes un-loaders, fan cycling controls, hot gas by-pass valves and others. Rooftop and light commercial AC and heating equipment will also be covered in this semester. The student will wire in complex motor control circuits and evaluate the performance data from the equipment for optimum operation. *Six credit hours*

MAJOR APPLIANCE TECHNOLOGY

ST. LOUIS

Home appliances play an essential role in the daily routine of the average American household. Accordingly, there has been a rise in the quantity and variety of household appliances in today's market. Because many of these are complex appliances, a greater degree of knowledge is required to diagnose and service the systems efficiently. Students enrolled in the Major Appliance Technology program receive hands-on experience troubleshooting and repairing gas and electric components for household appliances.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

In this full-time, four-semester program, students receive instruction in:

- Basic refrigeration and electricity theories
- Applied electrical circuits
- Domestic equipment
- Electromechanical knowledge and skills to diagnose and correct appliance difficulties

Graduates will be able to install and service equipment in the refrigeration, heating, air conditioning and appliance repair industries. Students will participate in three internships where students will be able to practice their new skills in a real world work environment. Students interested in completing the certificate of technology program will take all technical courses in the associate degree program, but will only need to complete two general education courses.

Students who obtain a Major Appliance Technology associate degree can choose to receive more in-depth training in Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) by taking one extra semester of courses in this program. Upon completion of the extra semester, students enrolled in an associate degree program will receive an associate degree in both Major Appliance Technology and HVACR, while students pursuing a certificate program will receive a certificate for Major Appliance Technology and HVACR.

Upon completion of the program, students will be able to:

- Diagnose malfunctions of dishwashers, washers, dryers, residential air conditioning, cooking and heating equipment, and repair, replace or service to manufacturer and/or industry standard.
- Install and/or repair any supporting electrical and piping systems which are dependent upon dishwashers, washers, dryers, residential air conditioning, cooking and heating equipment.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	HVA1000	Fundamentals of Refrigeration and Electrical	16	
Second Semester	HVA1150	Mechanical Application	9	HVA1000
	HVA1155	HVA Internship I	5	HVA1150
Third or Fourth Semester	HVA2010	Residential Heat/AC and Heat Pumps **or**	9	HVA1150
	HVA2110	Commercial Refrigeration and Light Commercial Heat/AC	9	HVA1150
	HVA2015	HVA Internship II	5	HVA1150
Third or Fourth Semester	MAT2110	Major Appliance Technology	9	HVA1150
	MAT2115	MAT Internship III	5	HVA1150
		Total Technical Credit Hours Required	*58*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)		HOURS	PREREQUISITES
COM1080	Technical Communications	3	
BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

HVA1000 Fundamentals of Refrigeration and Electrical

This course introduces proper tool usage, refrigeration, lines, and component operation. They will learn to read a temperature/pressure chart and apply it to various refrigerants which are used in the trade. Procedures such as recovery, evacuation, leak testing, and charging of refrigerant will be performed on various types of equipment to EPA standards. Students will be introduced to various types of metering devices, including gauge manifold and two-way service valves. Students will learn trouble diagnosis, charging methods, and the proper operation of a refrigerator and air conditioner, including proper pressures, temperatures, and running times. This course then continues with the introduction of basic electrical theory, Ohm's law, insulators, conductors, switches, and loads. Students will read and produce wiring/ladder diagrams, learn to wire and troubleshoot control circuits, motors, compressors, and relays. *Sixteen credit hours*

HVA1150 Mechanical Applications

This course involves learning how to use trade specific hand and power tools to OSHA 10 standards. Accurate trade measurements will be taken along with making leak-tight flare, swag, solder, and braze connections on copper tubing. Students will be introduced to the basic principles of natural gas along with pipe and vent-sizing of gas furnaces. Students will also learn the basics of pipe fusion and how to thread steel pipe together by using proper calculations and measurements. Finally, students will learn the layout and fabrication of duck fittings and perform all rough in, ductwork, and installation of new systems. Students will calculate duct sizing of sheet metal duck fittings for low pressure duct systems. *Nine credit hours*

HVA2010 Residential Heat/AC and Heat Pumps

This course covers the principles of wiring components and troubleshooting gas furnace systems including standing pilot, spark to pilot and direct ignition in two-stage and modulating gas systems. Indoor Air Quality Products (IAQ) including variable speed blower systems are taught. Students will also learn to troubleshoot electrical, refrigeration, and airflow of residential air conditioning, electric heat, and heat pump equipment. Emphasis is placed on service skills and systematic diagnosis.
Nine credit hours

HVA2110 Commercial Refrigeration and Light Commercial Heat/AC

This course covers principles of commercial refrigeration and light commercial heat/air conditioning (AC) operation. Emphasis will be placed on the evaluation of the operational sequence of component parts for a variety of refrigeration systems, such as walk-in coolers, reach-in freezers, open display cases, beverage coolers, and a variety of three-phase commercial AC units and accessories. Students will monitor system operation, obtaining applicable performance conditions and diagnosis operation using EPA industry standards. Students will learn to troubleshoot electrical circuits, refrigeration circuits, water circuits, and air circuits for different refrigeration systems. Students will also systematically diagnosis a wide variety of commercial refrigeration and light air conditioning systems as well as correctly size components to select proper replacement parts following system analysis. The fundamentals of hydronics (heating or cooling by circulation of a fluid), steam heat and special controls, diagnosis, charging, and checkout procedure are covered as well. Building Automated Systems (BAS) used in the control and monitoring of facilities, energy use, and zone comfort conditions will be introduced. *Nine credit hours*

MAT2110 Major Appliances Technology

This course includes the instruction and practical application of the repairs and service industry for electrical and gas appliances, such as washers, dryers, ranges, microwave ovens, refrigerators, and window air conditioners. Students learn the theory and application aspects, while working on real appliances and developing job skills in a workshop setting. Upon course completion, students will demonstrate a full knowledge of a variety of appliances and be able to diagnose and repair many in-home major appliances to become a productive worker as an entry-level service professional. Students use technology to develop fundamental skills for tracing and completing electrical circuits for major appliances. The course also trains students how to effectively communicate and apply customer relation skills to be used in an in-home environment. *Nine credit hours*

HVA 1155/2015/MAT2115 Internship I/II/III

Students will participate in an employer-sponsored work study where they apply a variety of major appliance operations in a workplace setting. The work and equipment may vary by worksite and may be located indoors or outdoors.
Five credit hours

EVENING PROGRAM CERTIFICATE IN MAJOR APPLIANCE TECHNOLOGY ST. LOUIS

This program offers preparation at the mechanical level covering equipment servicing and repair. As the curriculum progresses, special attention is given to electrical applications—particularly to control circuits. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Diagnose malfunctions of dishwashers, washers, dryers, residential air conditioning, cooking and heating equipment, and repair, replace or service to manufacturer and/or industry standard.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	HVA0100	Fundamentals of Heat Transfer and Domestic Applications	6	
First or Second Semester	HVA0101	Electrical for HVACR	6	
Third or Fourth Semester	HVA0230 HVA0240	Residential HAVC & Heat Pumps **or** Commercial Refrigeration/AC and Heating	6	HVA0100, HVA0101
Third or Fourth Semester	MAT0250	Laundry & Kitchen Appliances	6	HVA0100, HVA0101
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

HVA0100 Fundamentals of Heat Transfer and Domestic Applications

This course introduces the basics of refrigeration, including a description of what is taking place inside each component and the lines connecting them. Students learn to read a temperature/pressure chart and apply it to various refrigerants which are used in the trade. Common service procedures such as gauge installation, evacuation and recovery of refrigeration are also covered in the course. Students are exposed to trade measurements and are given theory behind what it takes to make a good solder and braze connection on copper tubing. This course introduces students to pressures, temperatures and running times for refrigerators and room air conditioners and continues with charging, service and operation of domestic refrigerators and room air conditioners.
Six credit hours

HVA0101 Electrical for HVACR

Study includes capacitors, current relays, potential relays and solid-state relays. Students practice methods used to recognize each relay and wire each relay circuit with its hermetic compressors. The course incorporates the wiring of basic fan relays, contractors and sequencers. Additionally, this course provides an overview of the different means of wiring, charging and problem diagnosis of domestic refrigerators and window air-conditioners. Troubleshooting through an electrical schematic is a staple of this course. Emphasis is placed on problem analysis of system operation. *Six credit hours*

HVA0230 Residential HVAC and Heat Pumps

Introduction to heat pumps, including various types, specific components, basic operation, and common problems. Both major types of refrigerants are used in the shop equipment. This provides each student with exposure to the current refrigerant and the newer non-ozone depleting refrigerant. Students are able to service an air conditioner and heat pump, troubleshoot the reversing valve, and evaluate various defrost systems of a heat pump. Electric and gas furnaces are covered. The prominent gas flame ignition devices and the various methods used to operate a gas furnace will be covered, along with the different equipment fuel efficiencies. Proper flue gas venting is also covered, primarily categories I and IV. Six credit hours

MAT0250 Laundry and Kitchen Appliances

This course introduces the student to installation and service of laundry equipment. Emphasis is placed on electric and gas dryers, as well as automatic washers. This course also introduces students the student to installation and service of kitchen equipment. Emphasis is placed on ranges, dishwashers, compactors, and disposals. Upon completion, students should be able to install and service gas and electric ranges, dishwashers, and garbage disposals. *Six credit hours*

PLUMBING TECHNOLOGY

ST. LOUIS

Life and good health in any community depend upon an ample supply of potable water and the ability to share and maintain this valuable resource. To meet this ongoing need, Ranken Technical College offers a nine-month certificate program in Plumbing Technology to train individuals to install, maintain and repair residential plumbing systems. Our program is highly regarded in the St. Louis regional plumbing community and is one of the four original programs offered by Ranken since 1907.

The program prepares graduates to enter the plumbing field as advanced technicians, estimators, maintenance mechanics, plumbing sales representatives, and pipefitters for industrial companies. Graduates also enroll in the plumbing program to gain industry knowledge and experience prior to entering a professional apprenticeship program.

CERTIFICATE OF TECHNOLOGY

Throughout this nine-month program, students will be provided with hands-on training and instruction in:

- Sanitary drainage systems
- Hot and cold water systems
- Pipefitting
- Venting
- General electricity principles
- Industry tools and new technologies

The program curriculum includes basic studies of related industries, including surveying, commercial hydronic heating systems, boiler, and steam fundamentals and basic computer skills. For students interested in furthering their education, these courses are creditable toward our Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Join a variety of piping materials, pipes, and fittings.
- Analyze blueprints and create simple plumbing drawings.
- Install entire plumbing system in Ranken built houses.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	PLT1000	Plumbing and Pipefitting	20	
Second Semester	PLT2000	Residential and Commercial Plumbing	20	PLT1000
		Total Technical Credit Hours for Certificate Completion	*40*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

PLT1000 Plumbing and Pipefitting
Plumbing and Pipefitting will give students a foundation in safety and plumbing related subjects such as traps, drainage, waste, vent systems, plumbing fixtures, plumbing appliances, storm drainage, and private sewage disposal. Students will also be introduced to plumbing code and perform plumbing system inspections. In this class students will learn by doing hands-on work on a live construction site and shop work with basic pipefitting projects such as, using threading equipment, making pipe nipples, assembling and testing steel, copper, plastic, pex, and cast iron pipes for water-tightness. They will also install a variety of plumbing fixtures in a simulated work environment. An introduction to the basics of plumbing math and blueprint reading will also be covered. *Twenty credit hours*

PLT2000 Residential and Commercial Plumbing
In Residential and Commercial Plumbing students will perform work to "code" on a live construction site and work on bathroom and kitchen projects such as installing kitchen sinks, garbage disposals, dishwashers and water conditioning equipment. Students will also perform the installation of water heaters, laundry room fixtures, sump pumps, and hot water boilers. Students will receive instruction in backflow protection for public and domestic water systems. Boiler technology and the application of electrical fundamentals to the discipline of plumbing will be covered. *Twenty credit hours*

EVENING PROGRAM CERTIFICATE IN PLUMBING AND PIPEFITTING TECHNOLOGY ST. LOUIS

Evening students can earn a certificate in Plumbing and Pipefitting Technology. This program is designed to fill the need in industry, that will include more hours of classroom/shop to meet St. Louis City and County plumber guidelines. The program is recognized as a registered Department of Labor Apprenticeship. Upon completing all required on-the-job training hours, students become eligible to receive a Department of Labor apprenticeship certificate.

Upon completion of the program, students will be able to:

- Join a variety of piping materials, pipes, and fittings.
- Repair commercial and residential plumbing.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	PPT0100	Plumbing Foundations	6	
	PPT0120	Residential Plumbing	6	PPT0100
	PPT0130	Water Supply and Waste/Vent Systems	6	PPT0100
	PPT0140	Commercial Plumbing	6	PPT0100
	PPT0150	Repair Plumbing	6	PPT0100
	PPT0160	Pipefitting and Plumbing Code	6	PPT0100
		Total Technical Credit Hours for Certificate Completion	*36*	

COURSE DESCRIPTIONS

PPT0100 Plumbing Foundations

Plumbing Foundations will begin with an OSHA approved 30-hour class in construction safety. Successful students receive their 30-Hour OSHA card which is the gold standard in the industry. An introduction to the basics of plumbing math, including fractions, decimals, subtraction, multiplication, and division, as well as measurement conversion will also be covered. Students will use various plumbing and pipefitting hand and power tools as they complete various projects in a simulated work environment. *Six credit hours*

PPT0120 Residential Plumbing

In Residential Plumbing, students will look at different plumbing fixtures used in the residential industry from custom homes to tract housing. Students will learn how to read and draw basic pipe drawings. Students will install various plumbing fixtures in a simulated work environment. Water heating methods and various installations will be covered. Students will learn about water protection methods including different backflow preventers and their uses. *Six credit hours*

PPT0130 Water Supply and Waste/Vent Systems

In Water Supply and Waste/Vent Systems, students will learn why we have vents in a plumbing system and how to size them to the appropriate drains. Students will install drains for sanitary and storm piping. Students will learn how the water supply system works and how to connect to it. Students will learn how to use the various materials used in residential and commercial applications. Students will build multiple projects such as toilets, kitchens, showers, bathtubs, etc., utilizing a full water and waste/vent system. *Six credit hours*

PPT0140 Commercial Plumbing

In Commercial plumbing, students will learn how public bathrooms incorporate the ADA rules. Students will examine and install fixtures and piping typically needed for auto garages, restaurants, shopping malls, supermarkets, prisons, etc. Students will learn how to properly install electrical components needed in the piping industry. National fuel gas code and methods for installation as well as different gas appliances will be covered. *Six credit hours*

PPT0150 Repair Plumbing

In Repair Plumbing, students will learn how to be a great service professional. Students will repair all types of fixtures and faucets of all ages. Drain stoppages and their causes, effects and solutions will be covered. Students will work various types of water heaters including tankless, tank type, electric and gas. Students will work with boilers, solar water heating, grease traps and gas/oil interceptors. Students will learn how to repair leaking water lines and waste lines as well as basics of bathroom remodels, kitchens and other fixtures. *Six credit hours*

PPT0160 Pipefitting and Plumbing Code

In Pipefitting and Plumbing Code, students will learn how to follow the basic pipefitting and plumbing codes in the industry. The differences in plumbing codes for the municipalities in the St. Louis area will be examined. Students will learn about the licenses needed, continuing education, and reasons we have codes. Students learn permit and inspection processes. Material take off methods will be discussed. We learn how Plumbers and Pipefitters differ in regards to joining pipe methods used, different codes, size of piping, amount of work, etc. Students will measure, cut, clean, assemble pipes and fitting for various projects. *Six credit hours*

ELECTRICAL DIVISION

CONTROL SYSTEMS TECHNOLOGY

ST. LOUIS AND RANKEN WEST

A degree in Control Systems provides the electrical and mechanical knowledge through hands on experience to control automated systems, making it one of the most dynamic and needed career paths available.

Being a certified FANUC training center, students have the opportunity to earn a FANUC certificate in robot operation and tool handling. Join this program to bring machines to life and watch your creations make real-time decisions in the physical world.

Ranken's Control Systems Technology (CST) program produces skilled electricians. Students enrolled in the program will be trained in the following:

- **Programmable Logic Controllers (PLCs)**
- **Variable frequency motor drives**
- **Calibration**
- **Human Machine Interfaces (HMI)**
- **Automation Control Technology**
- **Supervisory Control and Data Acquisition (SCADA)**

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

In a world that is increasingly becoming more advanced, the need for students that have a trade in automation is in high demand. This program starts out with the fundamental understanding of electricity and leads to a solid understanding of automation. Students learn how instrumentation, computer systems and robots are used to make everyday products in an automated manufacturing facility. Students will learn the skills to implement, program and troubleshoot these systems.

Graduates typically enter the field as calibration, electrical, or maintenance technicians that specialize in PLCs, FANUC robots, and Supervisory Control and Data Acquisition (SCADA) systems.

These systems and equipment are typically found in pharmaceutical plants, manufacturing plants, food processing plants, chemical plants, refineries and breweries.

Upon completion of the program, students will be able to:

- Construct electrical circuits utilizing National Electrical Code guidelines.
- Create and interpret drawings used in automated control systems.
- Install, calibrate, and program equipment used to measure and control; temperature, level, pressure and flow rate used in food and beverage, chemical, pharmaceutical, utilities and other manufacturing facilities.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
First or Second Semester	EEL1230	Intro to Automation & Robotics	12	
Third Semester	ELC2020	PLC s, HMI Graphical Displays, and SCADA systems	12	EEL1120 & EEL 1230
	***Internship or Elective		3	
Fourth Semester	CST2215	Instrumentation and Process Control	13	ELC2020
	***Internship or Elective		3	
ELECTIVES				
	EEL2000	Automation Internship I	3	24hrs of EEL/MAU courses
	EEL2010	Automation Internship II	3	EEL2000
	ELC2050	Function Block PLC Programming	3	EEL1230
	MNG4115	Lean Six Sigma	3	
	MNG4150	Project Management	3	
		Total Credits	*56*	

Note: *Students have the opportunity to earn dual degrees in Electrical Automation Technology or Mechanical Automation Technology by adding an additional semester. Students can earn all three degrees in as little as 6 semesters. Programs are location specific.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

EEL1120 Electrical Applications

This course will focus on electrical safety, tools used in the electrical trade and wiring of electrical circuits used in residential and commercial buildings. Students begin the course with an OSHA approved 10-hour class in electrical safety. This course will cover construction documents for electricians. The National Electrical Code (NEC) will be utilized so that students understand and implement safe and acceptable wiring methods. Electrical concepts such as types of electricity, units of measurement and electrical/electronic equipment and devices will be introduced and reinforced throughout this course. *Thirteen credit hours*

EEL1230 Intro to Automation & Robotics

This course provides the fundamentals of relay logic control circuits, a basic understanding of control circuits, ladder logic and component wiring design and operation through both theory and hands-on practice. Students will explore various methods used to distribute electrical power in commercial applications. The course will also cover electrical safety in arc flash, and types of commercial electrical equipment and devices are also studied. Students will construct various branch circuit lighting using AutoCAD receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. Students will also gain experience with industrial application of robotics technology and can acquire FANUC robot certification. *Twelve credit hours*

CST2215 Instrumentation and Process Control

Includes an introduction to computer hardware and computer operating systems. Principles of temperature, pressure, level and flow are discussed. The course covers fluid properties, conversion factors, piping and instrumentation diagrams, loop diagrams and complex ladder diagrams and schematics. Students learn theory of operation of devices used to measure and control process variables (including sensors, transducers, transmitters, controllers, pumps and valves) and cover control modes, control algorithms and control loop tuning methods—Ultimate, Damped Oscillation, Ziegler-Nichols and Shinskey's. Students will use AutoCAD® to create piping and instrumentation diagrams, loop diagrams, complex ladder diagrams and schematics. The course also explores calibration and configuration of devices used to measure and control process variables (including sensors, transducers, transmitters, controllers, pumps, valves and variable frequency drives). Students learn application of theory principles to set up and tune proportional integral-derivative (PID) control loops utilizing various control modes, control algorithms and control loop tuning methods (open- and closed-loop). Troubleshooting skills are taught and practiced throughout the curriculum. *Thirteen credit hours*

ELC2020 PLCs, HMI Graphical Displays, and SCADA Systems

This class provides extensive, in-depth instruction in the design, development and troubleshooting of Programmable Logic Controller (PLC) projects and Human Machine Interface (HMI) applications that communicate with and control PLCs. Hands-on PLC and HMI hardware setup, programming, process monitoring and troubleshooting are studied. This course also covers PLC project wiring, operation and process control in simulated installations, configuration of motor control circuits and industrial networking. Explore the core functionalities of SCADA (Supervisory Control and Data Acquisition) systems, such as data collection, real-time monitoring, control, alarming, and reporting, to understand their role in industrial automation and monitoring. *Twelve credit hours*

EEL 2000 Automation Internship I/EEL 2010 Automation Internship II

An internship will provide real-life work experience alongside industry professionals in an industrial environment where you will maintain, troubleshoot, and repair complex machines and industrial systems. The hands-on experience varies by company, but conveying systems, multi-axis machines, robotic arms, and hydraulic lifts are common machines that one could find themselves working with on the job. With assistance from the Career Services department, students must obtain an internship with a company that relates to the electrical or manufacturing field. With the oversight of a mentor, the student will be immersed into the working environment to practice their new skills on real equipment. *Three credit hours.*

ELC2050 Function Block PLC Programming (Online Only)

In this comprehensive online course, you will gain hands-on experience with Siemens TIA Portal, learning to bridge the gap between traditional control systems and modern PLC-based automation. The course covers three core learning outcomes: communicating between Siemens S7-1200 PLCs and PCs, converting standard electrical circuits to PLC circuits, and mastering the essential commands for programming Siemens PLCs using TIA Portal. Through interactive lessons and real-world applications, you will develop practical skills to configure and troubleshoot PLC systems, enabling you to design and implement efficient automation solutions. Whether you're new to PLCs or want to enhance your skills, this course will guide you in implementing automated solutions using the Siemens S7-1200 PLC and TIA Portal. *Three credit hours*

MNG4115 Lean Six Sigma (Online Only)

Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management (Online Only)

In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

EVENING PROGRAM CERTIFICATE IN CONTROL SYSTEMS TECHNOLOGY - ST. LOUIS

This certificate program focuses on the measurement and control of automated processes and technical systems in industrial plants. Emphasis is placed on level, temperature, pressure, flow and the more analytical variables such as pH, viscosity, density and humidity.

Control Systems Technology offers opportunities in the fast-growing petrochemical (refineries), chemical, pharmaceutical, food processing, distilleries and power plant industries.

Because the highly sophisticated equipment encompasses the areas of pneumatics, electricity, analog electronics, programmable controllers and computers, students in the certificate program will leave as control systems technicians with proficiencies in each of those areas. These classes meet on Monday and Wednesday or Tuesday and Thursday evenings. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Interpret drawings used in automated control systems.
- Install, calibrate, and program equipment used to measure and control; temperature, level, pressure and flow rate used in food and beverage, chemical, pharmaceutical, utilities and other manufacturing facilities.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	EEL0110	DC and AC Theory and Lab	6	
Second Semester	EEL0115	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third Semester	ELA0240	Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control	6	EEL0115
Fourth Semester	CST0240	Principles of Control, Batch Processing and Communications	6	ELA0240
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

EEL0110 DC and AC Theory and Lab

Introduces electricity from a fundamental point of view. During the direct current (DC) portion of study, students are introduced to basic electrical terms and DC circuit concepts and calculations. Study includes hands-on laboratory experiments illustrating principles studied in theory. Students will also acquire competence in using analog and digital measuring and test equipment. During the alternating current (AC) portion of study, students will work with electrical components such as capacitors, inductors and transformers that are employed in circuit analysis. Transformer principles, resistor-inductor (RL) and resistor-capacitor (RC) circuits and impedance, resonance and power factor subjects are studied in theory and constructed in the lab. Students use test equipment such as oscilloscopes and signal amplifiers. *Six credit hours*

EEL0115 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits, basic Programmable Logic Controllers (PLCs), ladder logic, and component wiring design and operation. Students will also practice basic Variable Frequency Drives (VFDs). Students will then explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are explored. The course will also review electrical safety, types of electrical equipment and devices. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. *Six credit hours*

ELA0240 Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control

Basic PLC instructions and HMI applications are explored in real-world applications. To reinforce class lectures, students perform related lab exercises. Students will learn how field sensors and control components interact with PLC. The Allen-Bradley SLC 5/04 controller with Rockwell RSLogix™ 500 software and RSView32™ are used in a Windows environment. Online and offline programming is covered, along with wiring methods and various troubleshooting techniques. *Six credit hours*

CST0240 Principles of Control, Batch Processing and Communications

Includes principles of temperature fluid properties, conversion factors, piping and instrumentation diagrams as well as the theory and operation of devices used to measure and control variables (including sensors, transducers, transmitters, controllers, pumps and valves). Focus is placed on the calibration and configuration of various electronic digital transmitters and controllers, pressure, level and flow and basic control concepts effects of process dynamics. Students also learn basic principles for cascade, ration and dead time control. In addition, this course covers feed forward and multivariable control theory and tuning parameters for control systems. Emphasizes basic principles and operation of variable speed drives and introduces distributed control systems. The course covers hierarchy and communications of computers and introduction to computer networks, data highways and field buses. Batch processing is taught under the guidelines of the International Society of Automation, ISA-88. *Six credit hours*

ELECTRICAL AUTOMATION TECHNOLOGY

ST. LOUIS, RANKEN WEST, RANKEN SOUTHEAST, RANKEN CENTRAL

For major manufacturing and commercial industries, electrical power is the lifeline of business. Used to create, distribute and sell their products, companies today operate on complex electronic systems and rely on highly skilled workers to guarantee the strength of their services.

Ranken's Electrical Automation Technology (EAT) program produces skilled electricians. Students enrolled in the program are trained to install, maintain, troubleshoot and repair electrical systems, including:

- **Power distribution**
- **Industrial motor controls/motors**
- **Switching circuits**
- **Programmable logic controllers**
- **Variable frequency motor drives**
- **Industrial networking**
- **FANUC Robots**
- **Supervisory Control and Data Acquisition (SCADA)**

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Through lecture and shop/lab activities, first year students receive instruction and training in electrical theory, solid-state electronics and logic control, installing electrical systems, power distribution and the National Electric Code (NEC). During the second year, students gain experience with single- and three-phase motors, variable frequency motor drives, motion control, ladder diagrams, advanced control logic, industrial control networking and programmable logic controllers.

In addition, EAT graduates are versed in the layout, installation and blueprint reading of commercial and industrial wiring in new construction projects. Graduates earn an associate of technology or associate of science degree and enter the workforce as maintenance electricians with some of the largest companies in St. Louis. Career opportunities in the field include commercial/industrial electricians, electrical control technicians and electrical maintenance/service technicians.

Upon completion of the program, students will be able to:

- Construct electrical circuits utilizing National Electrical Code guidelines
- Install, maintain, troubleshoot and repair industrial, commercial, and residential electrical systems.
- Program and configure equipment controlling various types of electrical motors and automated processes.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
First or Second Semester	EEL1230	Intro to Automation and Robotics	12	
Third or Fourth Semester	ELA2015	Automated Motors and Drives	13	EEL1120 & EEL1230
	***Internship or Elective		3	
Third or Fourth Semester	ELC2020	PLCs, HMI Graphical Displays, and SCADA Systems	12	EEL1120 and EEL1230
	***Internship or Elective		3	
ELECTIVES				
	EEL2000	Automation Internship I	3	24hrs of EEL/MAU Courses
	EEL2010	Automation Internship II	3	EEL2000
	ELC2050	Function Block PLC Programming	3	EEL1230
	MNG4115	Lean Six Sigma	3	
	MNG4150	Project Management	3	
		Total Credits	*56*	

Note: *Students have the opportunity to earn dual degrees in Control Systems Technology or Mechanical Automation Technology by adding an additional semester. Students can earn all three degrees in as little as 6 semesters. Programs are location specific.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

EEL1120 Electrical Applications

This course will focus on electrical safety, tools used in the electrical trade and wiring of electrical circuits used in residential and commercial buildings. Students begin the course with an OSHA approved 10-hour class in electrical safety. This course will cover construction documents for electricians. The National Electrical Code (NEC) will be utilized so that students understand and implement safe and acceptable wiring methods. Electrical concepts such as types of electricity, units of measurement and electrical/electronic equipment and devices will be introduced and reinforced throughout this course. *Thirteen credit hours*

EEL1230 Intro to Automation & Robotics

This course provides the fundamentals of relay logic control circuits, a basic understanding of control circuits, ladder logic and component wiring design and operation through both theory and hands-on practice. Students will explore various methods used to distribute electrical power in commercial applications. The course will also cover electrical safety in arc flash, and types of commercial electrical equipment and devices are also studied. Students will construct various branch circuit lighting using AutoCAD receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. Students will also gain experience with industrial application of robotics technology and can acquire FANUC robot certification. *Twelve credit hours*

ELA2015 Automated Motors and Drives

Students will be able to identify, build, install and trouble shoot electrical control circuits using push buttons, selector switches, limit switches, photo eyes, prox switches, toggle switches, terminal blocks, indicator lights, L.E.D.s, control relays, electrical schematics, and device symbols, common to the electrical trade. *Thirteen credit hours*

ELC2020 PLCs, HMI Graphical Displays, and SCADA Systems

This class provides extensive, in-depth instruction in the design, development and troubleshooting of Programmable Logic Controller (PLC) projects and Human Machine Interface (HMI) applications that communicate with and control PLCs. Hands-on PLC and HMI hardware setup, programming, process monitoring and troubleshooting are studied. This course also covers PLC project wiring, operation and process control in simulated installations, configuration of motor control circuits and industrial networking. Explore the core functionalities of SCADA (Supervisory Control and Data Acquisition) systems, such as data collection, real-time monitoring, control, alarming, and reporting, to understand their role in industrial automation and monitoring. *Twelve credit hours*

EEL 2000 Automation Internship I/EEL 2010 Automation Internship II

An internship will provide real-life work experience alongside industry professionals in an industrial environment where you will maintain, troubleshoot, and repair complex machines and industrial systems. The hands-on experience varies by company, but conveying systems, multi-axis machines, robotic arms, and hydraulic lifts are common machines that one could find themselves working with on the job. With assistance from the Career Services department, students must obtain an internship with a company that relates to the electrical or manufacturing field. With the oversight of a mentor, the student will be immersed into the working environment to practice their new skills on real equipment. *Three credit hours*

ELC2050 Function Block PLC Programming (Online Only)

In this comprehensive online course, you will gain hands-on experience with Siemens TIA Portal, learning to bridge the gap between traditional control systems and modern PLC-based automation. The course covers three core learning outcomes: communicating between Siemens S7-1200 PLCs and PCs, converting standard electrical circuits to PLC circuits, and mastering the essential commands for programming Siemens PLCs using TIA Portal. Through interactive lessons and real-world applications, you will develop practical skills to configure and troubleshoot PLC systems, enabling you to design and implement efficient automation solutions. Whether you're new to PLCs or want to enhance your skills, this course will guide you in implementing automated solutions using the Siemens S7-1200 PLC and TIA Portal. *Three credit hours*

MNG 4115 Lean Six Sigma (Online Only)
Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management (Online Only)
In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

EVENING PROGRAM CERTIFICATE IN ELECTRICAL AUTOMATION TECHNOLOGY - ST. LOUIS, RANKEN SOUTHEAST, RANKEN CENTRAL

This certificate program offers training in power electricity, the industrial applications of electronics, industrial logic and programmable controllers. The course emphasizes the maintenance, troubleshooting and installation of electrical circuitry and equipment controls.

Graduates will be prepared to enter the work force as apprentices or entry level industrial electricians. Others may gain employment in diverse areas such as research and development laboratories, utilities and manufacturers, electrical equipment distributors (as service and field technicians), electrical sales and estimating.

These classes meet on Monday and Wednesday or Tuesday and Thursday evenings.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Install and maintain industrial, commercial, and residential electrical systems.
- Program and configure equipment controlling various types of electrical motors and automated processes.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	EEL0110	DC and AC Theory and Lab	6	
Second Semester	EEL0115	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third or Fourth Semester	ELA0230	Motor Controls, Drives and Power Distribution	6	EEL0115
Third or Fourth Semester	ELA0240	Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control	6	EEL0115
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

EEL0110 DC and AC Theory and Lab

Introduces electricity from a fundamental point of view. During the direct current (DC) portion of study, students are introduced to basic electrical terms and DC circuit concepts and calculations. Study includes hands-on laboratory experiments illustrating principles studied in theory. Students will also acquire competence in using analog and digital measuring and test equipment. During the alternating current (AC) portion of study, students will work with electrical components such as capacitors, inductors and transformers that are employed in circuit analysis. Transformer principles, resistor-inductor (RL) and resistor-capacitor (RC) circuits and impedance, resonance and power factor subjects are studied in theory and constructed in the lab. Students use test equipment such as oscilloscopes and signal amplifiers.
Six credit hours

EEL0115 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits, basic Programmable Logic Controllers (PLCs), ladder logic, and component wiring design and operation. Students will also practice basic Variable Frequency Drives (VFDs). Students will then explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are explored. The course will also review electrical safety, types of electrical equipment and devices. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. *Six credit hours*

ELA0230 Motor Control, Drives and Power Distribution

Covers the theory of both alternating current (AC) and direct current (DC) machines and drives. Students will also learn how to set up, maintain and troubleshoot AC and DC motor drive systems. Hands-on activities involve the installation, programming and troubleshooting of AC and DC motor drive systems. Students study and construct power distribution for single-phase and three-phase operations. Students will also understand instrument, auto and potential transformers.
Six credit hours

ELA0240 Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control

Basic PLC instructions and HMI applications are explored in real-world applications. To reinforce class lectures, students perform related lab exercises. Students will learn how field sensors and control components interact with the PLC. The Allen-Bradley SLC 5/04 controller with Rockwell RSLogix™ 500 software and RSView32 are used in a Windows environment. On-line and off-line programming is covered, along with wiring methods and various troubleshooting techniques.
Six credit hours

ELECTRICAL SYSTEMS DESIGN TECHNOLOGY

ST. LOUIS

The Electrical Systems Design program allows an innovative mind to excel in the electrical industry. In this program, students will design and draft the electrical backbone of residential and commercial buildings using today's latest software and technology. The program creates skilled technicians who are qualified to work side-by-side with building engineers.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Through lecture and shop/lab activities, first year students receive instruction and training in electrical theory, installing electrical systems, power distribution, the National Electric Code (NEC) and the foundations of electrical design software such as CAD, BIM, and Revit. During the second year, students will read and create blueprints for both residential and commercial settings that provide the electrical loads and cost estimation for a client.

Electrical Design graduates are versed in the layout, installation, and blueprint reading of commercial and industrial wiring in new construction projects. Graduates become an electrical systems designer, an electrical estimators, insurance inspectors, and electrical engineer associates.

Program graduates will have great flexibility in career options and are qualified for employment as junior electrical designers, electrical estimators, insurance inspectors, manufacturers' sales representatives and electrical engineering associates.

Upon completion of the program, students will be able to:

- Construct electrical circuits and systems utilizing National Electrical Code guidelines.
- Create electrical construction documents using a variety of software.
- Construct electrical construction estimates using applicable software.
- Design and create lighting systems using applicable software.
- Contribute to organizational success through process efficiency and stakeholder collaboration.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
Second Semester	BSD1000	Building Systems	12	
Third Semester	ESD2115	Applied Electrical Design	15	BSD1000 and EEL1120
	***Internship or Elective		3	
Fourth Semester	ESD2215	Commercial Electrical Design	14	ESD2115
	***Internship or Elective		3	
ELECTIVES				
	ESD 2116	Automation Internship I	3	EEL1120, BSD1000
	ESD 2216	Automation Internship II	3	ESD2116
	MNG 4115	Lean Six Sigma	3	
	MNG4150	Project Management	3	
		Total Credits	*60*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information	BUS1001	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	
Associate of Science	MTH2112	College Algebra	3	MTH1111
Additional Required	MTH2220	Trigonometry	3	MTH2112
Courses	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

EEL1120 Electrical Applications

This course will focus on electrical safety, tools used in the electrical trade and wiring of electrical circuits used in residential and commercial buildings. Students begin the course with an OSHA approved 10-hour class in electrical safety. This course will cover construction documents for electricians. The National Electrical Code (NEC) will be utilized so that students understand and implement safe and acceptable wiring methods. Electrical concepts such as types of electricity, units of measurement and electrical/electronic equipment and devices will be introduced and reinforced throughout this course.
Thirteen credit hours

BSD1000 Building Systems

This course provides a comprehensive overview of architectural building planning and design. The student will work with Computer Aided Design (CAD) and Building Information Modeling (BIM) software including AutoCAD and Autodesk Revit MEP. Focus on the theory and practice of building design with emphasis on code requirements, specifications, and material selections will be presented. Students will learn print reading, how to utilize Architectural, Engineering and Metric scales along with their associated scale factors. The construction management process and proper CAD file management techniques will be introduced.
Twelve credit hours

ESD2115 Applied Electrical Design

Students will gain an in-depth understanding of the electrical design process. They will design a residential electrical project in accordance with the National Electrical Code (NEC), by selecting the appropriate materials and completing all of the required documentation. They will perform residential and commercial load calculations, motor and transformer protection, three-phase transformer calculations and sizing. Students will create mechanical and electrical drawings and diagrams in AutoCAD®. The emphasis is to create working blueprints from basic conceptual drawings. Upon completion of the course, students will have the skills to design a comprehensive electrical system blueprint. Students will read and interpret blueprint drawings for various trades. The course will focus on construction materials, procedures, specifications and the methods of estimating construction costs. Students will also obtain an introduction to electrical estimating by developing electrical estimates by hand and with spreadsheets.
Fifteen credit hours

ESD2215 Commercial Electrical Design

Students will focus on lighting characteristics, measurements, distribution curves, light sources, calculations and lighting techniques as developed by the Illumination Engineering Society of America. Students will develop a commercial lighting layout design, utilizing computerized lighting layout software. This course is an in-depth study of special occupancies in accordance to the National Electrical Code (NEC). Special emphasis will be given to articles 500-590 of the NEC. Students will develop a commercial and industrial electrical design concept with a local engineering firm using AutoCAD® and Revit (BIM Software). This project will be in accordance with the National Electrical Code (NEC). Students will gain an in-depth understanding of electrical estimating by using various methods, including the latest versions of cost and estimating software. *Fourteen credit hours*

ESD 2116 Professional Internship I/ESD 2216 Professional Internship II

An internship will provide real-life work experience alongside industry professionals in an Electrical Design environment where you will design, develop and estimate electrical construction documents. The hands-on experience varies by company. With assistance from the Career Services department, students must obtain an internship with a company that relates to the electrical systems design field. With the oversight of a mentor, the student will be immersed into the working environment to practice their new skills. *Three credit hours*

MNG 4115 Lean Six Sigma (Online Only)

Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management (Online Only)

In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

EVENING PROGRAM CERTIFICATE IN ELECTRICAL CONSTRUCTION DESIGN AND MANAGEMENT ST. LOUIS

In response to industry demand and feedback from the Electrical Systems Design Technology advisory board, Ranken offers an evening program certificate in Electrical Construction Design and Management. Electrical construction designers and project managers work in multiple phases of electrical construction.

Designers create electrical systems for residential, commercial and industrial buildings using computers and Computer Aided Drafting (CAD) software. The designs are then assembled, installed and maintained by electricians and electrical construction workers. Cost estimation, project scheduling and management of the fabrication and installation phase are also key to this career.

Jobs in Electrical Construction Design and Management are professional positions, requiring critical thinking skills and the perseverance to follow up with a project until it is complete. Most work is done in an office setting, but some positions may require travel, on-site supervision and project follow-up. Electrical designers and managers are employed by architectural firms, consulting engineering firms, electrical contractors and product sales and support offices. Graduates of this program will find entry-level jobs as project designers, project managers, estimators, product specialists and sales representatives.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of the program, students will be able to:

- Design lighting and electrical systems.
- Estimate electrical costs for construction projects.
- Create and assemble construction design documents for customer.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	EEL0110	DC and AC Theory and Lab	6	
Second Semester	EEL0115	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third or Fourth Semester	ESD0230	Residential and Commercial Lighting Design with AutoCAD®	6	EEL0115
Third or Fourth Semester	ESD0240	Construction Management and Estimating	6	EEL0115
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

EEL0110 DC and AC Theory and Lab

Introduces electricity from a fundamental point of view. During the direct current (DC) portion of a study, students are introduced to basic electrical terms and DC circuit concepts and calculations. Study includes hands-on laboratory experiments illustrating principles studied in theory. Students will also acquire competence in using analog and digital measuring and test equipment. During the alternating current (AC) portion of study, students will work with electrical components such as capacitors, inductors and transformers that are employed in circuit analysis. Transformer principles, resistor-inductor (RL) and resistor-capacitor (RC) circuits and impedance, resonance and power factor subjects are studied in theory and constructed in the lab. Students use test equipment such as oscilloscopes and signal amplifiers.
Six credit hours

EEL0115 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits, basic Programmable Logic Controllers (PLCs), ladder logic, and component wiring design and operation. Students will also practice basic Variable Frequency Drives (VFDs). Students will then explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are explored. The course will also review electrical safety, types of electrical equipment and devices. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course.
Six credit hours

ESD0230 Residential and Commercial Lighting Design with AutoCAD®

This course covers residential and commercial electrical design requirements while also teaching students to use AutoCAD LT® to draw electrical diagrams and blueprints in accordance to the National Electrical Code (NEC). Light characteristics and measurements, distribution curves, light sources, calculations, lighting techniques and computerized lighting layout are also covered. *Six credit hours*

ESD0240 Construction Management and Estimating

Covers construction project delivery systems, project team members, construction documents, construction blueprint reading, job site layout and control and subcontracting. Electrical estimating by hand, Excel spread sheets and computerized estimating software are also covered.
Six credit hours

MECHANICAL AUTOMATION TECHNOLOGY

ST. LOUIS, RANKEN WEST, RANKEN SOUTHEAST, RANKEN CENTRAL

As manufacturing continues to soar in the United States, the demand for mechanical automation technicians is skyrocketing! Today, cutting-edge manufacturers are merging a variety of systems to push automation to unprecedented heights. With the Mechanical Automation program, you'll become the highly sought-after, multi-skilled technician that companies are fiercely competing for. Step into the future of manufacturing and secure your place at the heart of innovation!

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE or CERTIFICATE OF TECHNOLOGY

The Mechanical Automation Technology program consists of four semesters. Students take coursework designed to prepare them with a variety of skills to maintain and repair factory equipment and other industrial machinery.

The students are encouraged to pursue an internship during the second half of the program with one of our the many manufacturing facilities in the area. Combining real-world work experience with Ranken's high-quality education will allow you to gain the confidence and experience to jump start your career. Students also take general education courses to complete the complete the degree or certificate.

Upon completion of the program, students will be able to:

- Install, maintain, troubleshoot, and repair industrial, commercial, and residential electrical systems.
- Program and configure equipment controlling various types of electrical motors and automated processes.
- Construct and install various facility, electrical, mechanical, and/or hydraulic and pneumatic systems to standard industry codes and job specifications.
- Demonstrate practical and theoretical aspects of management and the ability to accomplish goals of an organization.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
First or Second Semester	EEL1230	Intro to Automation & Robotics	12	
Third or Fourth Semester	ELA2015	Automated Motors and Drives	13	EEL1120 & EEL1230
	***Internship or Elective		3	
First - Fourth Semester	MAU2000	Mechanical and Fluid Power Systems	12	
	***Internship or Elective		3	
ELECTIVES				
	EEL2000	Automation Internship I	3	24hrs of EEL/MAU Courses
	EEL2010	Automation Internship II	3	EEL2000
	ELC2050	Function Block PLC Programming	3	EEL1230
	MNG4115	Lean Six Sigma	3	
	MNG4150	Project Management	3	
		Total Technical Credit Hours Required	*56*	

Note: *Students have the opportunity to earn dual degrees in Electrical Automation Technology or Control Systems Technology by adding an additional semester. Students can earn all three degrees in as little as 6 semesters. Programs are location specific.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	
	MTH 1110	Elementary Algebra	3	

COURSE DESCRIPTIONS

EEL1120 Electrical Applications

This course will focus on electrical safety, tools used in the electrical trade and wiring of electrical circuits used in residential and commercial buildings. Students begin the course with an OSHA approved 10-hour class in electrical safety. This course will cover construction documents for electricians. The National Electrical Code (NEC) will be utilized so that students understand and implement safe and acceptable wiring methods. Electrical concepts such as types of electricity, units of measurement and electrical/electronic equipment and devices will be introduced and reinforced throughout this course. *Thirteen credit hours*

EEL1230 Intro to Automation & Robotics

This course provides the fundamentals of relay logic control circuits, a basic understanding of control circuits, ladder logic and component wiring design and operation through both theory and hands-on practice. Students will explore various methods used to distribute electrical power in commercial applications. The course will also cover electrical safety in arc flash, and types of commercial electrical equipment and devices are also studied. Students will construct various branch circuit lighting using AutoCAD receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. Students will also gain experience with industrial application of robotics technology and can acquire FANUC robot certification. *Twelve credit hours*

ELA2015 Automated Motors & Drives

This course covers how to install, maintain, and troubleshoot alternating current (AC) machines. Focus is also put on National Electric Code (NEC) calculations for single and multiple motor installations. Instruction on AC drives includes calculating correct parameters and frequency. Finally, students learn how to program and monitor equipment through specific software and industrial networks. *Thirteen credit hours*

MAU2000 Mechanical and Fluid Power Systems

Students in this course will begin with interpretation of machine operation and maintenance documentation, read and interpret technical drawings, safely move and store materials and equipment, and properly use hand tools for equipment maintenance. Students will also adhere to mechanical power transmission safety rules, use dimensional measurement tools, install, and align power transmission systems, and properly lubricate machines in accordance with maintenance schedules. This course will then segue to cover the skills and knowledge to successfully adhere to fluid power schematics by running hydraulic and pneumatic systems and adjusting system pressures as needed, install hydraulic and pneumatic conductors, install, test, and troubleshoot components in a basic hydraulic and pneumatic circuit. *Twelve credit hours*

EEL2000 Automation Internship I/EEL 2010 Automation Internship II

An internship will provide real-life work experience alongside industry professionals in an industrial environment where you will maintain, troubleshoot, and repair complex machines and industrial systems. The hands-on experience varies by company, but conveying systems, multi-axis machines, robotic arms, and hydraulic lifts are common machines that one could find themselves working with on the job. With assistance from the Career Services department, students must obtain an internship with a company that relates to the electrical or manufacturing field. With the oversight of a mentor, the student will be immersed into the working environment to practice their new skills on real equipment. *Three credit hours*

ELC2050 Function Block PLC Programming (Online Only)
In this comprehensive online course, you will gain hands-on experience with Siemens TIA Portal, learning to bridge the gap between traditional control systems and modern PLC-based automation. The course covers three core learning outcomes: communicating between Siemens S7-1200 PLCs and PCs, converting standard electrical circuits to PLC circuits, and mastering the essential commands for programming Siemens PLCs using TIA Portal. Through interactive lessons and real-world applications, you will develop practical skills to configure and troubleshoot PLC systems, enabling you to design and implement efficient automation solutions. Whether you're new to PLCs or want to enhance your skills, this course will guide you in implementing automated solutions using the Siemens S7-1200 PLC and TIA Portal. *Three credit hours*

MNG 4115 Lean Six Sigma (Online Only)
Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management (Online Only)
In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

ALARM SYSTEMS TECHNOLOGY (NON-CREDIT)

EVENING PROGRAM CERTIFICATE IN ALARM SYSTEMS TECHNOLOGY

The Alarm Systems Technology program trains students in the installation of fire and electronic security monitoring systems and the integration of new technology into residential and commercial settings. Combining the skills of an electrician with those of an information technology specialist, students will receive professional training on the most up-to-date security technologies.

Alarm systems security technicians plan, install and troubleshoot residential and commercial security systems, including closed circuit TV, card access, intercom, video and other related equipment.

Alarm Systems Technology has become an active field of employment as people integrate security, computer and telephony technology to better manage their assets.

Upon completion of the program, students will be prepared for a variety of security and electrical opportunities, including communications installation, service technician, fire alarm inspection and voice and data service technician.

Upon completion of the program, students will be able to:

- Plan, install and troubleshoot residential and commercial security systems, including closed circuit TV, card access, intercom, video and other related equipment.

EVENING PROGRAM COURSES			PREREQUISITES
First Semester	ASY101C	Fundamentals of Alarm Systems	
Second Semester	ASY102C	Alarm System Electronics and Computer Controls	ASY101C
Third Semester	ASY103C	Design and Integration of Alarm Systems	ASY102C
Fourth Semester	ASY104C	Installation and Commissioning of Alarm Systems	ASY103C

COURSE DESCRIPTIONS

ASY101C Fundamentals of Alarm Systems

This course is the foundation course for all following coursework in Alarm Systems Technology, including the basics of construction materials and methods, introduction to many types of conduits and wireways used in low-voltage applications and coverage of the hardware and systems used by a low-voltage technician to mount and support boxes, receptacles and other electrical components. Additionally, students learn safety rules and regulations for electricians, the necessary precautions to take for various electrical hazards found on the job, and the Occupational Safety and Health Administration (OSHA) mandated lockout/tagout procedure. This course also includes an introduction to conduit bending and installation, and the makeup, identification and applications of various types of conductors and cables used in telecommunications and security systems.

ASY102C Alarm System Electronics and Computer Controls

This course increases the depth and breadth of the student's electrical and electronic knowledge in direct current (DC) and alternating current (AC) devices and circuitry. Additionally, the course covers diagnosis using electrical test equipment National Electrical Codes surrounding grounding issues, lightning protection, telecommunications cabling, life safety systems, motor and generator power sets and uninterrupted power supplies. The student will interpret electrical drawings, site plans, equipment schedules and perform take-offs from construction drawings. Since all systems have integrated computer controls, the student will learn how to assemble a PC, how to load application software and how to perform a system backup.

ASY103C Design and Integration of Alarm Systems

An emphasis in low-voltage cabling installations for a variety of computer-controlled buses and networks, such as fiber-optic cable, CAT 5 and co-axial cable installations. Additionally, the student will learn to install and troubleshoot wireless radio frequency and infrared networked systems. The course teaches all phases of installation, including site survey, project planning, documentation, as well as system maintenance and repair.

ASY104C Installation and Commissioning of Alarm Systems

This course integrates all of the prior learning from semesters one, two and three as the technician learns life safety system applications. The course covers fire alarm, intrusion detection security, audio, hospital nurse call and signaling, closed circuit and broadband TV and building access control systems. Students learn interconnection and integration protocols as well as system commissioning and user training.

INFORMATION TECHNOLOGY DIVISION

INFORMATION TECHNOLOGY

The Information Technology (IT) division at Ranken Technical College offers students an unparalleled education and intensive hands-on experience to prepare them for successful, fast-track careers. Ranken's IT programs offer flexibility in designing a career that's right for you. Students spend time learning the unique features and benefits of each career field available to them and may choose between four track options offering specialized training.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

The various track options offer students the opportunity to design and build networks and websites. Students receive intense hands-on lab time, spending three hours in the lab working with equipment and technology to one hour in classroom theory. Class sizes are small, usually with no more than two students to every piece of equipment. Lab exercises focus on troubleshooting and working through real-world situations and problems, so students can be confident they are prepared to work in the fast-paced IT field. Leading industry CompTIA, Cisco and Microsoft testing and certifications are also integrated into the course curriculum. Perhaps one of the biggest advantages of Ranken's IT program is that students learn to think and solve problems.

We teach students how to be continual learners—a "must-have" in today's rapidly changing IT field. Based on our strong industry relationships and advisory board input, our programs are flexible enough to quickly incorporate cutting edge technology. Graduates of Ranken's IT programs work at companies such as Anheuser-Busch, Emerson, Enterprise, BJC Healthcare, Charter Communications, AT&T, IBM, and the Lindbergh School District.

NETWORK ARCHITECTURE AND DESIGN TECHNOLOGY
ST. LOUIS

In this networking -centered program, students will work with Cisco® equipment, program and configure routers and switches, study Software Defined Networking (SDN) technology, security and firewall issues and virtual LANs (VLANs). Students will be prepared for the Cisco Certified Network Associate (CCNA), AWS Certified Cloud Practitioner (CLF-C01), Security+, and A+ Industry certification.

Upon completion of this program, students will be able to:

- Install, configure, secure and troubleshoot PC's, operating systems, routers, servers and peripherals in a physical, virtual and cloud environment for small/home offices.
- Configure and secure enterprise level networks using various routing and switching technologies in an IPv4 and IPv6 environment.
- Implement a router/switch network environment that follows stand security guidelines and supports private Virtual Local Area Networks (VLANs), Virtual Private Networks (VPNs), and RADUIS authentication.

CLOUD TECHNOLOGY
ST. LOUIS

This track focuses on Microsoft Server for enterprise network services, infrastructure and Active Directory services. Students will install, manage, and monitor these enterprise level services using on-premises virtualization and cloud technologies that include Hyper-V, VMware, Amazon Web Services, and Microsoft Azure. Students will be prepared for the AWS Certified Cloud Practitioner (CLF-C01), Microsoft Azure Fundamentals, Security+, and A+ Industry certifications.

Upon completion of this program, students will be able to:

- Install, configure, secure and troubleshoot PCs, operating systems, routers, servers and peripherals in a physical, virtual and cloud environment for a small/home office network.
- Implement fundamental cybersecurity practices including secure network architecture, access control, and threat mitigation across diverse environments.
- Install, configure, maintain, and troubleshoot enterprise level Servers and Active Directory with Microsoft and Amazon Web Services.
- Support Microsoft data centers and hyper converged environments by installing, configuring, and maintaining VMWare and Microsoft Azure.

NETWORK SYSTEMS MANAGEMENT TECHNOLOGY
ST. LOUIS, RANKEN WEST, RANKEN SOUTHEAST, RANKEN CENTRAL MO

Featuring elements of System Administration and Network Architecture, this track will focus on configuring Cisco routers and Microsoft Server utilizing a Hyper-Convergance Infrastructure. Students will be prepared for the Cisco Certified Network Associate (CCNA), AWS Certified Cloud Practitioner (CLF-C01), Security+, and A+ industry certifications.

Upon completion of this program students will be able to:

- Install, configure, secure and troubleshoot PCs, operating systems, routers, servers and peripherals in a physical, virtual and cloud environment for a small/home office.
- Configure and secure enterprise level networks using various routing and switching technologies in an IPv4 and IPv6 environment.
- Install, configure, maintain, and troubleshoot enterprise level servers and Active Directory with Microsoft and Amazon Web Services

DAY PROGRAM COURSES - ST. LOUIS			HOURS	PREREQUISITES
First Semester	CNT1000	Information Technology Fundamentals	15	
Second Semester	CNT1101	Introduction to IT Administration	15	
Third and Fourth Semester	INF2100	Cisco Network Administration	13	CNT1101
(Network Architecture)	INF2201	Cyber Security	13	INF2100
Third and Fourth Semester	INF2014	System Administration I	14	CNT1000
(Cloud Technology)	INF2016	System Administration II	14	INF2014
Third and Fourth Semester	INF2100	Cisco Network Administration	13	CNT1101
(Network Systems Management)	INF2014	System Administration I	14	CNT1000
		Total Technical Credit Hours Required	*55-57*	

DAY PROGRAM COURSES - RANKEN WEST/RANKEN SOUTHEAST/RANKEN CENTRAL MO			HOURS	PREREQUISITES
First Semester	CNT1000	Information Technology Fundamentals	15	
Second Semester	CNT1101	Introduction to IT Administration	15	
Third and Fourth Semester	INF2100	Cisco Network Administration	13	CNT1000 and CNT1101
(Network Systems Management)	INF2014	System Administration I	14	CNT1101
		Total Technical Credit Hours Required	56	

Important Note: *Ranken West and Ranken Southeast Network Systems Management Technology students may complete the first and second semester in any order and the third and fourth semester in any order; however, both the first and second semester must be complete before advancing to the third or fourth.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information	BUS1001	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	
Associate of Science	MTH2112	College Algebra	3	MTH1111
Additional Required	MTH2220	Trigonometry	3	MTH2112
Courses	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

CNT1000 Information Technology Fundamentals

Students will engage in hands-on learning, focusing on modern technologies such as virtualization, cloud computing, the Internet of Things, and desktop operating systems. They will learn to build, configure, and troubleshoot PCs and laptops, utilizing cutting-edge AI tools for advanced troubleshooting and help desk ticket resolution. In particular, students will concentrate on the Microsoft Windows operating system, while also exploring macOS, Linux, Chrome OS, Android, and iOS. These skills will serve as the foundation for a career in Information Technology, providing students with the valuable expertise needed to thrive in a rapidly evolving industry.
Fifteen credit hours

CNT1101 Introduction to IT Administration

Students will engage in hands-on learning, focusing on new technologies around networking, server, and cloud administration. They will acquire a comprehensive grasp of fundamental networking terminology, concepts, and components, honing practical skills in basic network configuration, IP addressing, subnetting, connectivity, and testing using diverse equipment such as workstations, routers, and switches. Furthermore, they are equipped to identify and mitigate security threats within IT networks. The curriculum extends to practical exercises in deploying and configuring servers while enriching students' understanding of server infrastructure. Additionally, students explore the transformative capabilities of the AWS Cloud, delving into topics such as the AWS shared responsibility model, security best practices, cost management, and essential AWS services tailored to various use cases. Through this integrated approach of theory and hands-on practice, students are primed to tackle the dynamic challenges prevalent in the field of IT administration. *Fifteen credit hours*

INF2014 System Administration I

This course provides a thorough examination of Server Operating Systems, emphasizing networking services such as user creation, file sharing, printer sharing, and remote access. Students gain hands-on experience in installing and configuring Microsoft Active Directory Domain Services to support larger scale infrastructures. Moreover, students acquire foundational security skills essential for core security tasks and for advancing in an IT security career. Topics covered include evaluating the security status of enterprise environments, securing hybrid environments, and recognizing and addressing security incidents and events.
Fourteen credit hours

INF2016 System Administration II

This hands-on course explores installation, configuration, and management of VMware vSphere®, which consists of VMware vSphere® ESXi™ and VMware® vCenter Server™. The course is based on ESXi, vCenter Server 7.*. Additionally, students will also explore Linux Operating system's including but not limited to configuring Files and Directories, pipes and redirections, system logging, file permissions, boot manager, monitoring and killing process, DNS, simple scripts, and much more. Lastly, the students will explore the world of Microsoft Azure. Students will gain knowledge of cloud services and how those services are provided with Microsoft Azure. Items covered are cloud concepts, Azure services, Azure workloads, security and privacy is Azure, as well as support. Students at the end of the semester will attempt the AZ-900 Azure Certification. *Fourteen credit hours*

INF 2100 Cisco Network Administration

The Cisco Network Administration course helps students develop skills in router interface configurations, Cisco IOS® software management, routing protocol configuration and the creation and placement of access control lists (ACLs) to control router access. Students configure advanced Internet Protocol (IP) addressing, IPv4 and IPv6, command-line interface (CLI) switch configuration, ethernet switching, VLAN configuration, VLAN Trunking Protocol (VTP) configuration and inter-VLAN routing configuration. WAN technology evaluation, WAN design, network troubleshooting and network management are also discussed. *Thirteen credit hours*

INF2201 Cyber Security

This course provides the skills required to qualify for exciting and growing opportunities in security operation centers as an analyst or incident responder. The course focuses on how to monitor, detect and respond to cybersecurity threats. Also covers cryptography, host-based security analysis, security monitoring, computer forensics, attack methods and incident report and handling. Uncovering cybercrime, cyber espionage and other threats to the integrity of networks is an exciting new area that spans all industries. *Thirteen credit hours*

EVENING PROGRAM CERTIFICATE IN COMPUTER NETWORKING TECHNOLOGY ST. LOUIS

Composed of a combination of computer desktop operating systems, Local Area Networking (LAN), Wide Area Networking (WAN) and microcomputer hardware, Ranken's four-semester evening program leads to a Certificate in Computer Networking Technology.

The first two semesters of the program focus on preparing students to become A+ Certified technicians. The curriculum covers installation, configuration and troubleshooting of desktop computer systems.

During the second year, students are introduced to network devices and how they fit into the network. Using Cisco routers, students learn how to implement routing among the LAN protocol suites and across WANs. With the skills gained in this program, students are prepared to design, build and maintain small and medium-sized networks.

At the completion of the second year, students are eligible to earn Cisco® Certified Network Associate (CCNA™) certification. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program students will be able to:

- Install, configure and troubleshoot desktop operating systems, PC's, and peripherals
- Configure routers with various routing protocols.
- Program and configure inter-switch communications.
- Design and implement IPv4 and IPv6 addresses schemes on LAN/WAN networks.
- Implement LANs across local and wide area networks.
- Implement network Infrastructure Services (DHCP, NAT).
- Configure address-based filtering and traffic control.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	CNT0110	Command Line and Windows® Lab	6	
First or Second Semester	CNT0120	Microcomputer Hardware and Peripherals	6	
Third Semester	CNT0130	Data Communication and Basic Router Configuration	6	CNT0110, CNT0120
Fourth Semester	CNT0230	Implementing Cisco® Networking Equipment and Wide Area Network (WAN) Router Configuration	6	CNT0130
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

CNT0110 Command Line and Windows® Lab

Provides a comprehensive overview of Microsoft Windows operating systems. Students will work with partitioning, formatting, directory structures, file management, device drivers, batch files, configuration files and remote recovery consoles. Students will learn to use a command line interface for troubleshooting and system recovery. Students will spend time installing each operating system while gaining an in-depth understanding of Microsoft Windows optimizations, customization, client-side network configuration, peer-to-peer networking, printing, resource sharing, policies, profiles, administration, security and remote administration.
Six credit hours

CNT0120 Microcomputer Hardware and Peripherals

Offers an in-depth study of personal computers. Students spend time studying microcomputer subsystems, including: processors, memory and modern bus types. Students also study, install and configure the most common business oriented peripheral devices. Students learn to build, configure and troubleshoot personal computers. Students will be prepared for the CompTIA A+ certification exam.
Six credit hours

CNT0130 Data Communication and Basic Router Configuration

The semester begins with an introduction to the Internetworking model and the Transmission Control Protocol (TCP)/Internet Protocol (IP) protocol suite. Course will focus on networking fundamentals including the Open Systems Interconnection model and industry standards, networking layouts, IP addressing and basic network design. The second half of the semester students will examine basic beginning router configurations to learn how a Cisco router works and study how to configure and troubleshoot a Cisco router that is on a TCP/IP network. Students will also receive an introduction to local area network (LAN) switching. *Six credit hours*

CNT0230 Implementing Cisco® Networking Equipment and Wide Area Network (WAN) Router Configuration

The course begins by building on skills learned in previous semesters and focuses on designing a local area network (LAN). Students learn advanced router configurations, local LAN switching, network management and advanced network design. Later in the semester, students are introduced to WAN concepts and cover advanced design considerations and protocol implementations, including how WANs are implemented on a Cisco Router. *Six credit hours*

APPLICATION & WEB DEVELOPMENT TECHNOLOGY

ST. LOUIS AND ONLINE

This program will focus on website design and Web-based application development using a variety of programming languages and industry standard applications and services. Graduates will be able to design, develop and maintain software applications that can help businesses discover new opportunities and solve real-world problems.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Ranken's Application and Web Development Technology is designed to prepare the students for employment with companies that develop business applications and/or websites. The curriculum utilizes industry standard tools such as Visual Studio, Android Studio, Sql Server Management Studio, and Git. Each semester consists of project based curriculum developed around real world scenarios that help to build a web portfolio for each student.

Upon completion of this program students will be able to:

- Develop and design websites that use the latest versions of HTML, CSS, JavaScript and modern JavaScript libraries.
- Develop, troubleshoot and implement applications using object-oriented programming principles and fundamentals.
- Build data-driven web applications using JavaScript, Node.js, and Database Management Systems.
- Utilize a version control system to manage code.
- Leverage AI coding tools and agentic integrations to accelerate development, optimize performance, and evaluate solution quality.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First and Second Semester	AWD1000	Web Development Technologies	14	
	AWD1100	Programming Fundamentals with C#	14	
Third and Fourth Semester	AWD1111	Database-Driven Web Development	14	AWD1000, AWD1100
	AWD1115	Database-Driven Web Development II	14	AWD1000, AWD1100
		Total Technical Credit Hours Required	*56*	

Important Note: *Students may complete the first and second semester in any order and the third and fourth semester in any order; however, both the first and second semester must be complete before advancing to the third or fourth.*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

AWD1000 Web Development Technologies
This web-based course includes the technologies needed to develop modern, mobile websites. Students get hands-on experience in the latest HTML, CSS and JaxaScript technologies. This course will introduce and cover current content management systems, accessibility concepts, web ethics, e-commerce, website search engine optimization, and mobile website technologies. The focus is to build students' abilities and confidence through hands-on exercises and real world projects. This course will provide the base for a strong future in web development. *Fourteen credit hours*

AWD1100 Programming Fundamentals with C#
This course offers an introduction to writing programs that demonstrate C# and object-oriented programming concepts and logic focused problem solving skills that will translate to real world applications. This course will also help students begin to understand and demonstrate code debugging skills that will be pivotal in the development field. Hands-on applications of coding, utiliing modern developer tools will allow students to get the foundation needed for application development. *Fourteen credit hours*

AWD1111 Database-Driven Web Development
Modern web applications must be scalable to handle thousands of concurrent users. Node.js is a good fit for this environment because it enables developers to build lightweight, flexible, and high-performance web applications in the popular JavaScript programming language. Students will learn to build full-stack web applications with Node.js, Express.js, and modern JavaScript syntax. They will learn to persist, manipulate, and query user data with popular Database Management Systems. Students will get an introduction to both Relational and No-SQL databases, to prepare them for modern high-performance web applications. *Fourteen credit hours*

AWD 1115 Database-Driven Web Application II
Students will delve deeper into web application development as they use industry standard tools to design, code, and test multi-page web applications. Students will implement the Model View Controller (MVC) pattern, work with relational databases, and make full stack web apps with standard features that look great and act responsively. This will widen students' understanding of core programming concepts and web application development. *Fourteen credit hours*

MANUFACTURING DIVISION

ADVANCED PRECISION MACHINING TECHNOLOGY

ST. LOUIS AND RANKEN WEST

As cutting-edge technologies continue to transform the manufacturing industry, companies are facing an urgent need for machinists who can use industry's sophisticated machines to design and build intricate parts. Ranken's Advanced Precision Machining Technology program is designed to meet this demand by providing students with a solid foundation in engineering principles and hands-on experience in machining, Computerized Numerical Control (CNC) programming, inspection/quality control, maintenance, and machine tool building. Students also receive specialized training in areas such as CNC, Computer-Aided Drafting (CAD)/Computer-Aided Manufacturing (CAM), inspection and quality control, engineering design, and maintenance machining. To ensure students are well-prepared for the workforce, the program offers internships that allow students to alternate between classroom training and practical experience with employers. This combination of academic instruction and real-world application provides a comprehensive approach to education, equipping students with the skills needed to excel in the evolving manufacturing landscape.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY

Ranken's Advanced Precision Machining Technology program is designed to prepare students for employment with companies that have implemented a team-oriented design, production, quality, and maintenance environment. Advanced Precision Machining Technology is a four-semester apprenticeship program that consists of instruction in a classroom setting as well as training in a live production facility.

This invaluable experience develops student proficiencies in:

- Machining Principles
- Quality practices and maintenance
- Computer Numerical Control (CNC) Programming
- Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM)
- Multi-axis Programming

Upon completion of this program, students will be able to:

- Demonstrate an understanding of basic safety practices in a machining environment.
- Interpret engineering drawings and apply mathematical principles that result in the creation of parts that meet industry standards.
- Set-up and operate Conventional and CNC equipment.
- Employ CAD/CAM applications.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	APM1110	Machining Theory and Applied Foundations	12	
Second Semester	APM1210	CNC Mill Programming	8	APM1110
	APM1205	Professional Intership I	5	APM1210
Third or Fourth Semester	APM2010	CNC Lathe Programming	8	APM1210
	APM2015	Professional Internship II	5	APM1210
Third or Fourth Semester	APM2110	CAD and CAM Programming	8	APM1210
	APM2115	Professional Internship III	5	APM1210
		Total Technical Credit Hours Required	*51*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

APM1110 Machining Theory and Applied Foundations

This course provides a comprehensive introduction to the fundamental principles and practical applications of machining processes. Students will explore the theory behind material removal techniques, cutting tool geometry, speeds and feeds, and the mechanics of machining operations such as turning, milling, drilling, and grinding. Emphasis is placed on the safe and efficient use of manual machine tools, blueprint reading, measurement and inspection techniques, and the interpretation of technical drawings. Through hands-on lab work and real-world problem-solving scenarios, students will develop the foundational skills needed for success in the manufacturing and precision machining industries. *Twelve credit hours*

APM1210 CNC Mill Programming

This course provides students with the foundational knowledge and hands-on skills required to operate and program Computer Numerical Control (CNC) milling machines. Emphasizing both theoretical concepts and practical application, the course covers topics such as machine setup, tool selection, G-code and M-code creation, and CNC program development. Students will learn how to read blueprints, create tool paths, and create G and M code programs. Safety procedures, quality control, and troubleshooting techniques are also emphasized to ensure industry-standard performance. *Eight credit hours*

APM2010 CNC Lathe Programming

This course provides a comprehensive introduction to CNC (Computer Numerical Control) Lathe Programming, focusing on the fundamental principles and practical applications required to operate and program CNC lathes effectively. Students will learn G-code and M-code programming, setup procedures, tooling selection, safety practices, and troubleshooting techniques. Emphasis is placed on both manual programming and the use of CAD/CAM software to generate part programs. Hands-on training will be integrated with classroom instruction to develop skills in reading technical drawings, setting tool offsets, selecting cutting parameters, and running production-quality parts on CNC lathes. By the end of the course, students will be able to write, edit, and test CNC programs for turning operations, including facing, threading, grooving, drilling, and contour turning. *Eight credit hours*

APM2110 CAD and CAM Programming

This course provides an in-depth introduction to Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) systems used in modern engineering and manufacturing industries. Students will learn to create detailed 2D and 3D models using industry-standard CAD software and develop CNC machining programs using CAM tools. Emphasis is placed on the integration of CAD and CAM to streamline product design and manufacturing processes. Topics include CAD modeling, geometric dimensioning and tolerancing, toolpath generation, G-code programming, CNC machine setup, and simulation. Hands-on labs and projects provide practical experience in designing components and generating manufacturing instructions. By the end of the course, students will be able to design complex parts, simulate machining processes, and produce accurate CNC code for manufacturing applications. *Eight credit hours*

APM1205, APM2015, APM2115 Professional Internship I, II, III

Students will participate in a work-study in a professional machining environment during their second, third, and fourth semesters. Students will apply skills learning in previous courses in a real-world industry setting. *Five credit hours each*

EVENING PROGRAM CERTIFICATE IN PRECISION MACHINING TECHNOLOGY ST. LOUIS AND RANKEN WEST

This machinist-level program consists of machining, metal processing theory, mathematics, blueprint reading, Computerized Numerical Control (CNC) programming and Computer Aided Drafting/Computer Aided Manufacturing (CAD/CAM). The primary goal of the program is to develop fundamental machining skills on milling machines and lathes.

Sections can be taken as stand-alone sections or combined for a four-semester certificate. In order to receive the certificate, students must complete Engine Lathe Fundamentals, Milling Machine Fundamentals and CNC Programming sections; plus either an advanced machining or CAD/CAM section.

The CAD/CAM section focuses on topics such as advanced computer literacy for the programmer, fundamentals of two-dimensional and three-dimensional drafting and programming with the latest state-of-the-art software. These classes meet Monday and Wednesday or Tuesday and Thursday evenings. For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be able to:

- Interpret basic part blueprints to determine and prioritize manufacturing procedures for part production.
- Set-up and operate saw, mill & lathe conventional machine tools.
- Set-up, program and operate Computer Numerical Control (CNC) machine tools.
- Create part programs using CAM (Computer Aided Manufacturing) software such as Mastercam.
- Analyze, record, and effectively communicate (oral, written, electronic) the machining process and inspection results.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	PMT0111	Engine Lathe Fundamentals	6	
First or Second Semester	PMT0113	Milling Machine Fundamentals	6	
Third Semester	PMT0213	CNC Programming **or**	6	PMT0113
	PMT0211	Advanced Machining	6	PMT0111/PMT0113
Fourth Semester	PMT0224	CAD/CAM	6	PMT0213
		Total Technical Credit Hours for Certificate Completion	*24*	

COURSE DESCRIPTIONS

PMT0111 Engine Lathe Fundamentals

This course provides a comprehensive introduction to the engine lathe, one of the most versatile and essential machines in the metalworking industry. Students will learn the foundational principles of lathe operation, including safety protocols, machine setup, tool selection, and basic machining techniques. Through hands-on practice, students will gain experience in facing, turning, drilling, boring, threading, and part measurement using precision instruments. *Six credit hours*

PMT0113 Milling Machine Fundamentals

This course provides an in-depth introduction to the fundamental principles and practices of milling machine operations. Students will learn the setup, operation, and maintenance of manual and CNC milling machines, with a strong emphasis on safety, precision, and efficiency. Topics include machine components, types of milling cutters, feeds and speeds, blueprint reading, tolerances, and proper use of measuring tools. Hands-on lab activities allow students to gain practical experience in basic milling procedures, such as face milling, end milling, slotting, and drilling. *Six credit hours*

PMT0211 Advanced Machining

Students will be using lathes, mills and surface grinders. The projects involve assembly and tooling used in industry. Trigonometry, carbide tooling and grinding will also be covered. *Six credit hours*

PMT0213 CNC Programming

This course introduces students to the fundamentals of Computer Numerical Control (CNC) programming used in modern manufacturing. Through a combination of theory and hands-on practice, students will learn how to write, interpret, and troubleshoot G-code and M-code programs for CNC milling and turning operations. Emphasis is placed on understanding machine setup, tooling, coordinate systems, and precision measurement. Students will gain experience using CNC simulators and operating CNC machinery to produce accurate and efficient machined parts. *Six credit hours*

PMT0224 Computer Aided Drafting/Computer Aided Manufacturing

This course provides a comprehensive introduction to Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) technologies, essential tools in modern engineering and manufacturing processes. Students will learn to create precise 2D drawings and 3D models using industry-standard CAD software, and transition those designs into manufacturable components through CAM systems .Key topics include geometric modeling, drafting standards, CNC programming, toolpath generation, simulation, and post-processing for CNC machines. The course emphasizes hands-on experience through design projects, CNC machining exercises, and integration of CAD/CAM workflows. By the end of the course, students will be equipped with the skills to design and manufacture components efficiently using digital tools. *Six credit hours*

AGRICULTURAL ENGINEERING TECHNOLOGY

RANKEN WEST

In today's rapidly evolving agricultural landscape, modern farms are transforming into high-tech hubs of innovation, and the demand for skilled professionals with multi-craft expertise has never been higher. Ranken's Agricultural Engineering Technology program offers comprehensive training in several of the most sought-after skills that agricultural companies demand as they seek employees with multi-craft expertise. The student will develop a variety of technical skills that will prepare them to work in multiple areas of the agricultural industry using the latest technologies.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE, OR CERTIFICATE OF TECHNOLOGY

Ranken's Agricultural Engineering Technology program provides overall instruction, hands-on training and experience in the practices and skills needed in the agricultural industry. This includes precision technology, sustainable energy and soil science, food and horticulture production, and agricultural electrical and mechanical systems. Students interested in completing the certificate of technology program will take all technical courses in the associate degree program and two general education courses.

The Agricultural Engineering Technology program offers specialized instruction in the following areas:

- Electrical and Mechanical Systems
- Hydraulic/Pneumatic Systems
- Soil Science
- Aquaponics, Aquaculture and Hydroponics
- Precision Agriculture Technologies
- Green Energy Systems

Upon completion of this program, students will be able to:

- Test, maintain, troubleshoot and repair electrical and mechanical motors and components.
- Perform crop production utilizing aquaponics and hydroponics to grow and harvest plants and fish.
- Implement sustainable agricultural technologies by integrating renewable energy and soil conservation techniques
- Improve efficiency in agricultural operations using technology.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
	AET1010	Agricultural Automation & Technology	12	
	AET1210	Sustainable Energy and Soil Science	12	
	AET2000	Agri-Science	12	
	AET2100	Digital Precision Agriculture	12	
		Total Technical Credit Hours Required	*48*	

Important Note: *Students may complete the semesters in any order*

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)		HOURS	PREREQUISITES
COM1080	Technical Communications	3	
BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

AET1010 Agricultural Automation and Technology
This course provides a comprehensive introduction to agricultural automation, control systems, and fundamental mechanical, fluid power, and electrical technologies. Students will explore automation controls used in commercial agriculture, including wiring, troubleshooting, and installing automated control circuits. Hands-on experience will include constructing branch circuit lighting and receptacle wiring for systems commonly found in agriculture. Students will also gain practical skills in pneumatics and hydraulic system maintenance, components, and fluid characteristics by getting hands on experience in the different piping methods used in aquaponics and other agricultural industries. *Twelve credit hours*

AET1210 Sustainable Energy and Soil Science
This course provides an in-depth exploration of renewable energy and soil science within the context of modern agricultural technology. Students will examine key sustainable energy sources, including solar, wind, and bioenergy, and their applications in agriculture to improve efficiency and reduce environmental impact. Upon completion of this course, students will have the opportunity to take the PV Associate Credential exam. The course also covers fundamental soil science principles, emphasizing soil health, and testing methods essential for sustainable agriculture. Through hands-on activities, case studies, and emerging technologies, students will develop the skills needed to integrate renewable energy solutions and soil management techniques into agricultural systems for a more sustainable future.
Twelve credit hours

AET2000 Agri-Science
Students will be introduced to biological system designs, production techniques, and methods of integrated science of an aquaponics system. Students will study plant anatomy, life cycles, and reproduction strategies of plants suitable for aquaponic and hydroponic crops. Students will practice use of safe nutrients, pest management, seeding, pruning, and harvesting. Students will study the systems and components of controlled environment agriculture. Students will study fish health, management and the selection process for fish suitable for aquaponic systems. Students will handle and weigh fish, perform health checks and oversee water quality control by completing daily water tests. *Twelve credit hours*

AET2100 Digital Precision Agriculture
Students will receive an introduction to small unmanned aerial systems (sUAS) used in production agriculture. Students will receive a comprehensive overview of precision agriculture technologies and techniques, including soil mapping, global positioning, and remote sensing. Students will gain an understanding of the Federal Aviation Administration regulations for UAS and remote sensing technologies. Students will prepare for and take the remote pilot certificate exam, FAA 107. Students will complete personal pesticide applicator certification and learn how it applies to UAS production. Students will practice their processing and analyses skills using data gained from a UAS in an agricultural setting. *Twelve credit hours*

APPLIED ENGINEERING TECHNOLOGY

ST. LOUIS AND RANKEN WEST

This training program provides the comprehensive education and training necessary to create a technician that supports the engineering and production teams in large manufacturing facilities looking to be on the cutting edge of technology. While engineers are focused on designing the next product for production, these trained technicians assist the engineers in providing the appropriate documentation for the type of equipment and production teams involved. Trained engineering technicians provide the valuable feedback from production teams to the engineers creating a cohesive team that allows the company to stay ahead of their competition.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

This program provides the foundational precision machining skills needed to understand the various components in a production environment in a large manufacturing facility. The seated coursework will provide a heavy focus on blueprint reading, quality control, and Computer Numerical Control (CNC) programming to machine parts within a set tolerance.

The program also includes training to obtain the necessary skills needed to communicate with engineers while keeping a focus on efficiency and quality. Students will take a series of online courses focused on management and business that will support their new careers as engineering technicians.

Upon completion of this program, students will be able to:

- Interpret engineering drawings and apply mathematical principles that result in the creation of parts that meet industry applications.
- Setup, calibrate, operate, and interpret results from industry-level tools and equipment.
- Employ Computer Aided Drafting (CAD) and 3D Modeling software to communicate technical information.
- Collect, organize, analyze, and interpret data to produce meaningful conclusions and recommendations.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	APM1110	Machining Theory and Applied Foundations	12	
Second Semester	APM1210	CNC Mill Programming	8	APM1110
	APM1205	Professional Internship I	5	APM1210
Third Semester	APM2100	CAD and CAM Programming	8	APM1210
	APM2015	APM Professional Internship II	5	APM 1210
	MTH3113	Statistical Analysis	3	MTH1111
Fourth Semester	*Total of 9 credits from the following courses:*			
	MNG4110	Production and Operation Management	3	
	MNG4150	Project Management	3	
	MNG4300	Management Information Systems	3	
	ETH2222	Business Ethics	3	
	APM2105	Professional Internship III	5	APM1210
	MNG4115	Lean Six Sigma	3	
		Total Technical Credits Required	*58*	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology **or**	3	
	PSY1206	Introduction to Psychology	3	
Mathematics/Science	MTH1110	Elementary Algebra	3	
	MTH1111	Intermediate Algebra	3	MTH1110
Business/Information Technology	BUS1001	Career Success Skills	3	
	MNG1204	Intro to Business & Management	3	
Associate of Science Additional Required Courses	MTH2112	College Algebra	3	MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

APM 1110 Machining Theory and Applied Foundations
This course begins with a thorough understanding of Machine Shop Safety that includes covering OSHA, NIOSH and appropriate PPE. Students will learn to use standard hand tools, gages, and precision measuring tools that are commonly found in the machinist field. They will also develop entry-level skills of proper feed and speed to operate manual lathes and mills. Students will be introduced to machinist formulas, GD&T, and trigonometry. Additionally, students will read and interpret mechanical prints by identifying tolerance, symbols, line types, and the different views. Finally, students will apply these mathematical and print reading skills by seeing how it applies to a machined part. Students will apply concepts by manufacturing parts based on provided technical drawings. *Twelve credit hours*

APM 1210 CNC Mill Programming
This course addresses the manufacturing processes used to build a product, from design to delivery in the marketplace by reinforcing GD&T, Machinist formulas, and trigonometric functions. In creating a final product, students will also be introduced to G and M Code programming for CNC mils and ISO programming methods. Finally, students will correct possible errors of tools and workpiece offsets by utilizing a simulation software. *Eight credits hours*

APM 2100 CAD and CAM Programming
This course is an entry-level class for Mastercam 2D Milling. This course introduces students to Mastercam and Solidworks software and takes them from successfully modeling, to programming, to manufacturing finished parts and assemblies for machining on a CNC mill and lathe. Not only will students be introduced to multi-axis programming, but they will also understand advanced-level essential skills such as manipulation of the setting, correct model placement, and construction of 2D and 3D geometry. Finally, students will gain exposure to basic tool and die and mold making. *Eight credit hours*

8 Week Internships - 5 Credit Hours:
APM 1205, APM 2015, APM 2105
Students will participate in a work-study in a professional machining environment during their second, third, and fourth semesters. Students will apply skills learning in previous courses in a real-world industry setting.

ETH2222 Business Ethics
This course will apply ethical theory and practice to business management. Exploring ethical systems, cultural difference and similarities; role of individuals, business, and government. *Three credit hours*

MNG4110 Production and Operation Management
This course is designed to provide the student with a holistic overview of Operations Management (integrating manufacturing and services) and lean concepts for improving processes. Major topic areas will include: Operations Management (OM) in today's business environment, process decisions, facility decisions, aggregate planning and inventory decisions, daily operations decisions and lean concepts and quality tools for improving processes. *Three credit hours*

MNG 4115 Lean Six Sigma
Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management
In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

MNG4300 Management Information Systems
Provides students with the necessary knowledge and skills to make sound business decisions relating to information systems and to work with management to resolve problems in this area. Topics include how to develop and implement an information systems strategy. *Three credit hours*

MTH3113 Statistical Analysis
This course will acquaint students with the mathematical concepts of statistical analysis. The course includes an introduction to the theory and applications of descriptive and inferential statistics including probability, random variables, expected values, probability distribution functions and hypothesis testing. *Three credit hours.*

INDUSTRIAL TECHNOLOGY

EVENING PROGRAM CERTIFICATE IN INDUSTRIAL TECHNOLOGY

ALL LOCATIONS

Students can earn a certificate in Industrial Technology by pursuing a generalist program customized to suit individual needs and interests. These courses combine classroom and shop projects to provide overall instruction, hands-on training and experience in the practices and skills needed by area-wide manufacturing and industrial firms. These classes meet on Monday and Wednesday or Tuesday and Thursday evenings.

Upon completion of this program, students will be able to:

- Construct and install various facility, electrical, mechanical, and fluid systems to standard industry codes and job specifications.
- Identify and interpret trade related prints, schematics, and work orders to diagnose and repair facility structures, building systems electrical and mechanical equipment, and fluid power devices used in industrial and manufacturing facilities and commercial buildings.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
Blueprint Reading	BPR0100	Blueprint Reading	6	
Electrical Maintenance	EEL0110	DC and AC Theory and Lab	6	
	EEL0115	Basic Controls Circuits and Commercial Wiring Practices	6	EEL0110
Fabrication and Welding	FWL0110	Welding I	6	
	FWL0120	Welding II	6	FWL0110
Industrial Maintenance	INT0100	Hydraulics, Millwright and Rigging	6	
	INT0110	Industrial Maintenance Mechanics	6	
Precision Machining	PMT0111	Engine Lathe Fundamentals	6	
	PMT0113	Milling Machine Fundamentals	6	
Plumbing	PPT0100	Plumbing Foundations	6	
	PLT0110	Pipefitting Theory and Practice	6	
Stationary Engineering	STE0110	Stationary Engineering I	6	
	STE0120	Stationary Engineering II	6	
		Total Technical Credit Hours for Certificate Completion	*24*	*(minimum)*

Important Note: *Students must apply four courses from the list above for a total of 24 credits necessary to qualify for an Industrial Technology certificate. Electrical Maintenance, and Stationary Engineering may be taken as standalone two-semester certificate programs or as embedded certificates within the Industrial Technology program. Standalone two-semester certificate programs are not Title IV eligible. Students seeking to receive an embedded certificate along with the Industrial Technology certificate must make this request prior to starting the Industrial Technology program. Students must complete the requirements for the Industrial Technology certificate before any embedded certificates will be awarded. The minimum age to take the Stationary Engineer Exam is 21 years old.*

COURSE DESCRIPTIONS

BLUEPRINT READING

BPR0100 Blueprint Reading

Presents the fundamentals of general blueprint reading, projection drawings, common terms and symbols. Students will learn to interpret blueprints and symbols in the machine trades, the building trades and welding. *Six credit hours*

ELECTRICAL MAINTENANCE

EEL0110 DC and AC Theory and Lab

Introduces electricity from a fundamental point of view. During the direct current (DC) portion of study, students are introduced to basic electrical terms and DC circuit concepts and calculations. Study includes hands-on laboratory experiments illustrating principles studied in theory. Students will also acquire competence in using analog and digital measuring and test equipment. During the alternating current (AC) portion of study, students will work with electrical components such as capacitors, inductors and transformers that are employed in circuit analysis. Transformer principles, resistor-inductor (RL) and resistor-capacitor (RC) circuits and impedance, resonance and power factor subjects are studied in theory and constructed in the lab. Students use test equipment such as oscilloscopes and signal amplifiers *Six credit hours*

EEL0115 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits, basic Programmable Logic Controllers (PLCs), ladder logic, and component wiring design and operation. Students will also practice basic Variable Frequency Drives (VFDs). Students will then explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are explored. The course will also review electrical safety, types of electrical equipment and devices. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. *Six credit hours.*

FABRICATION AND WELDING

FWL0110 Welding I

Students will learn the necessary skills for welding and cutting processes used in the welding and fabrication industry. Processes covered in this program include Shield Metal Arc Welding (SMAW/Stick), GMAW (MiG) and GTAW (TiG) in the flat, horizontal and vertical positions. Lay-out, Oxy-Fuel cutting are also included in the curriculum. *Six credit hours*

FWL0120 Welding II

Focuses on the skills required to perform welds in various positions. Students will be prepared for the AWS certification test in vertical Shield Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW)on steel plate. *Six credit hours*

INDUSTRIAL MAINTENANCE

INT0100 Hydraulics, Millwright and Rigging

Includes instruction in the hydraulic transmission of force and energy, the operation of hydraulic pumps, hydraulic actuators, control of hydraulic energy through the use of pressure control valves, cylinders, directional control valves and flow control valves. The course also covers the millwright and rigging fundamentals of layout and leveling, ropes, knots, splices, wire rope, chins, weight calculations, CG cranes, hoists and ladders. *Six credit hours*

INT0110 Industrial Maintenance Mechanics

Includes instruction in math, basic terms, bearings, seals, industrial pumps, power transmission, power transmission components, brakes, clutches, use of V-belts and fasteners. Also covers basic pneumatics, compressors and compressed gas systems. *Six credit hours*

PRECISION MACHINING

PMT0111 Engine Lathe Fundamentals

Students will concentrate on the manual lathe. They will learn turning, threading, taper turning and drilling operations. Students will learn setups such as, between centers, three jaw chucks and four jaw chucks. They will also have lessons on basic right angle trigonometry, print reading, drill presses, saws and lay-out. *Six credit hours*

PMT0113 Milling Machine Fundamentals

The student will concentrate on the vertical milling machine. They will learn the set-up and operations of a mill. Students will also have lessons on basic right angle trigonometry, print reading, drill presses, saws and lay-out. *Six credit hours*

PLUMBING

PPT0100 Plumbing Foundations

Plumbing Foundations will begin with an OSHA approved 30-hour class in construction safety. Successful students receive their 30-Hour OSHA card which is the gold standard in the industry. An introduction to the basics of plumbing math, including fractions, decimals, subtraction, multiplication, and division, as well as measurement conversion will also be covered. Students will use various plumbing and pipefitting hand and power tools as they complete various projects in a simulated work environment. *Six credit hours*

PLT0110 Pipefitting Theory and Practice

Covers the use of basic hand and power tools for cutting and threading steel pipe and cutting and joining copper pipe, using both hard and soft soldering methods. The course includes practical mathematics and layout methods as it applies to the piping trade. Also, the course covers drain waste vent piping systems, the use of copper and cast iron and plastic pipe, along with related fittings. *Six credit hours*

STATIONARY ENGINEERING

STE0110 Stationary Engineering I

Covers boilers, including the construction of different styles, pressure capabilities, different ways of firing, safety devices and water level controls, including efficiencies, pollution, boiler auxiliaries such as feedwater heaters, softeners and feedwater treatment. Students tour an industrial boiler room and learn about pumps, both piston and centrifugal, methods of sizing, pressures and prime movers. *Six credit hours*

STE0120 Stationary Engineering II

Provides a history of steam engines over the last century with tours of steam engines still used today. Course covers the replacement of steam engines by turbines, how steam engines operate air compressors and how to maintain good compressed air as well as the basics of electricity and how to start and synchronize generators safely. The course will then focus on power generation, efficiency and how to obtain the most productivity from electrical equipment. Students will finish up the semester learning the basics of all industrial refrigeration with an emphasis on ammonia, efficiencies and safety. *Six credit hours*

EVENING PROGRAM CERTIFICATE IN FACILITIES TECHNOLOGY ST. LOUIS

Ranken evening program students can earn a certificate in Facilities Technology by pursuing a generalist program customized to suit individual needs and interests. These courses combine classroom and shop projects to provide overall instruction, hands-on training and experience in the maintenance practices and skills needed by area facilities, including universities, hospitals, hotels and industrial businesses.

These classes meet on Monday and Wednesday or Tuesday and Thursday evenings.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

Dependent upon course combination chose for this program, student will be able to do some or all of the following:

- Install and service electrical, HVAC, and plumbing components.
- Demonstrate an understanding of the fundamentals of inspecting structures, interpreting blueprints and symbols, and the functions of steam engines, air compressors, and generators.

EVENING PROGRAM COURSES (CHOOSE FOUR)			HOURS	PREREQUISITES
Blueprint Reading	BPR0100	Blueprint Reading	6	
Carpentry Maintenance	CRP0110	Exterior/Interior Frame Construction	6	
	CRP0120	Interior Finish	6	
Electrical Maintenance	EEL0110	DC and AC Theory and Lab	6	
	EEL0115	Basic Control Circuits and Commercial Wiring Practices	6	EMT0110
Heating, Ventilation, Air Conditioning and Refrigeration	HVA0100	Fundamentals of Heat Transfer and Domestic Applications	6	
	HVA0101	Electrical for HVACR	6	
Plumbing	PPT0100	Plumbing Foundations	6	
	PLT0110	Pipefitting Theory and Practice	6	
Stationary Engineering	STE0110	Stationary Engineering	6	
	STE0120	Stationary Engineering	6	
		Total Technical Credit Hours for Certificate Completion	*24*	*(minimum)*

Important Note: *Students must apply four courses from the list above for a total of 24 credits necessary to qualify for an Facilities Technology certificate. Electrical Maintenance, and Stationary Engineering may be taken as standalone two-semester certificate programs or as embedded certificates within the Facilities Technology program. Standalone two-semester certificate programs are not Title IV eligible. Students seeking to receive an embedded certificate along with the Facilities Technology certificate must make this request prior to starting the Facilities Technology program. Students must complete the requirements for the Facilities Technology certificate before any embedded certificates will be awarded. The minimum age to take the Stationary Engineer Exam is 21 years old.*

COURSE DESCRIPTIONS

BLUEPRINT READING

BPR0100 Blueprint Reading

Presents the fundamentals of general blueprint reading, projection drawings, common terms and symbols. Students will learn to interpret blueprints and symbols in the machine trades, the building trades and welding. *Six credit hours*

CARPENTRY MAINTENANCE

CRP0110 Exterior/Interior Frame Construction

This course covers basic carpentry math calculations of fractions and decimals as well as right-angle geometry. Students will learn how to identify and safely operate different hand and portable/ stationary power tools. The course also covers how to set up and operate leveling instruments. Concrete formwork, floor and wall framing and gable roof construction are covered in this course. Upon completion of the basic framework of the small-scale module of the residential structure, students will hang an exterior door and install vinyl siding, soffit and fascia on the exterior of the building. Students will install roof shingles and learn proper flashing and water prevention techniques. *Six credit hours.*

CRP0120 Interior Finish

This course covers the different aspects of interior finish work to be completed on the module constructed during CRP0110. Mathematical stair calculations and layout, as well as basic stair construction, is covered in this course. Residential drywall installation/ patchwork and drywall finishing is covered. In this course, students will learn how to install different floor systems such as carpet, sheet vinyl, ceramic tile and laminate. They will also learn how to install a suspended ceiling. Upon completion of the ceiling and flooring, students will install an interior pre-hung door unit and finish the rest of the structure with base trim and window casing. The basic woodworking portion of this course will cover the fabrication of small woodworking projects, such as a bookcase or coat rack. *Six credit hours*

HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION

HVA0100 Fundamentals of Heat Transfer and Domestic Applications

This course introduces the basics of refrigeration, including a description of what is taking place inside each component and the lines connecting them. Students learn to read a temperature/ pressure chart and apply it to various refrigerants which are used in the trade. Common service procedures such as gauge installation, evacuation and recovery of refrigeration are also covered in the course. Students are exposed to trade measurements and are given theory behind what it takes to make a good solder and braze connection on copper tubing. This course introduces students to pressures, temperatures and running times for refrigerators and room air conditioners and continues with charging, service and operation of domestic refrigerators and room air conditioners. *Six credit hours*

HVA0101 Electrical for HVACR

Study includes capacitors, current relays, potential relays and solid-state relays. Students practice methods used to recognize each relay and wire each relay circuit with its hermetic compressors. The course incorporates the wiring of basic fan relays, contactors and sequencers. Additionally, this course provides an overview of the different means of wiring, charging and problem diagnosis of domestic refrigerators and window air-conditioners. Troubleshooting through an electrical schematic is a staple of this course. Emphasis is placed on problem analysis of system operation. *Six credit hours*

PLUMBING

PPT0100 Plumbing Foundations

Plumbing Foundations will begin with an OSHA approved 30-hour class in construction safety. Successful students receive their 30-Hour OSHA card which is the gold standard in the industry. An introduction to the basics of plumbing math, including fractions, decimals, subtraction, multiplication, and division, as well as measurement conversion will also be covered. Students will use various plumbing and pipefitting hand and power tools as they complete various projects in a simulated work environment. *Six credit hours*

PLT0110 Pipefitting Theory and Practice

Covers the use of basic hand and power tools for cutting and threading steel pipe and cutting and joining copper pipe, using both hard and soft soldering methods. The course includes practical mathematics and layout methods as it applies to the piping trade. Also, the course covers drain waste vent piping systems, the use of copper and cast iron and plastic pipe, along with related fittings. *Six credit hours*

ELECTRICAL MAINTENANCE

EEL0110 DC and AC Theory and Lab

Introduces electricity from a fundamental point of view. During the direct current (DC) portion of study, students are introduced to basic electrical terms and DC circuit concepts and calculations. Study includes hands-on laboratory experiments illustrating principles studied in theory. Students will also acquire competence in using analog and digital measuring and test equipment. During the alternating current (AC) portion of study, students will work with electrical components such as capacitors, inductors and transformers that are employed in circuit analysis. Transformer principles, resistor-inductor (RL) and resistor-capacitor (RC) circuits and impedance, resonance and power factor subjects are studied in theory and constructed in the lab. Students use test equipment such as oscilloscopes and signal amplifiers. *Six credit hours*

EEL0115 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits, basic Programmable Logic Controllers (PLCs), ladder logic, and component wiring design and operation. Students will also practice basic Variable Frequency Drives (VFDs). Students will then explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are explored. The course will also review electrical safety, types of electrical equipment and devices. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. *Six credit hours*

STATIONARY ENGINEERING

STE0110 Stationary Engineering I

Covers boilers, including the construction of different styles, pressure capabilities, different ways of firing, safety devices and water level controls, including efficiencies, pollution, boiler auxiliaries such as feedwater heaters, softeners and feedwater treatment. Students tour an industrial boiler room and learn about pumps, both piston and centrifugal, methods of sizing, pressures and prime movers. *Six credit hours*

STE0120 Stationary Engineering II

Provides a history of steam engines over the last century with tours of steam engines still used today. Course covers the replacement of steam engines by turbines, how steam engines operate air compressors and how to maintain good compressed air as well as the basics of electricity and how to start and synchronize generators safely. The course will then focus on power generation, efficiency and how to obtain the most productivity from electrical equipment. Students will finish up the semester learning the basics of all industrial refrigeration with an emphasis on ammonia, efficiencies and safety.
Six credit hours

FABRICATION AND WELDING TECHNOLOGY

ST. LOUIS, RANKEN CENTRAL MO, AND RANKEN SOUTHEAST

Ranken offers Fabrication and Welding Technology at the St. Louis campus, Ranken Central MO, and Ranken Southeast locations. The curriculum includes oxy-fuel cutting, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW). The theory for each of these processes is discussed along with proper joint design and proper welding techniques.

CERTIFICATE OF TECHNOLOGY - ST. LOUIS

Blueprint reading and welding symbol interpretation are practiced throughout the course. The welding is done on plate and pipe on low carbon steel, stainless steel and aluminum. Several certification tests are offered in SMAW, GMAW/MIG and GTAW/TIG, and FCAW.

For students interested in furthering their education, these courses are creditable toward our Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be able to:

- Interpret prints, welding symbols, and apply knowledge of construction math to calculate part dimensions.
- Fabricate, fit, assemble structural, boiler tube, and piping systems.
- Inspect welds to American Welding Society (AWS) standards.
- Weld at proficiency level equivalent to AWS certification in Shielded Metal Arc Welding, Gas Metal Arc Welding, Flux Cored Arc Welding, and Gas Tungsten Arc Welding.
- Cut material with oxygen fuel cutting, carbon arc gouging, and plasma cutting equipment.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	FWL1100	Fundamentals of Welding Technology	12	
	FWL1110	Blueprint Reading and Quality Inspection	3	
Second Semester	FWL1220	Fabrication and Welding	15	FWL1100 & FWL1110
		Total Technical Credit Hours Required	*30*	

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

FWL1100 Fundamentals of Welding Technology
This course introduces students to welding and cutting processes in theory and in a shop environment. Students will receive an overview of various techniques, including Shield Metal Arc Welding (SMAW), Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (MIG/GMAW) and Gas Tungsten Arc Welding (TIG/GTAW) that will be applied to various metals. Emphasis will be placed on developing proper welding techniques in all positions. Students will also learn the procedures for preparing materials, using oxy-fuel cutting and carbon arc gouging. By the end of the course, students will be prepared for the American Welding Society (AWS) certification test and vertical SMAW, GTAW/TIG, GMAW/MIG, and FCAW on steel plates. *Twelve credit hours*

FWL1110 Blueprint Reading and Quality Inspection
This course offers an in-depth study of blueprint reading, basic weld inspection, construction math and basic rigging. Students will gain a complete understanding of typical weld symbols and blueprints that are used throughout the welding industry. *Three credit hours*

FWL1220 Fabrication and Welding
This course builds upon skills and theories learned in the Fundamentals of Welding Technology course. Students will cut material with oxygen fuel cutting, carbon arc gouging and plasma cutting equipment. Students lay out, fabricate, fit and assemble structural, boiler tube and piping systems. Students will learn the necessary setup and operation of equipment used in the structural steel fabrication industry. Students will use blueprints to fabricate parts that are commonly found in the structural steel industry. Students will also learn to weld stainless steel and aluminum metals. *Fifteen credit hours*

EVENING PROGRAM CERTIFICATE IN FABRICATION AND WELDING OR ADVANCED FABRICATION AND WELDING
ST. LOUIS, RANKEN CENTRAL MO, AND RANKEN SOUTHEAST

The evening program curriculum for Fabrication and Welding includes oxy-fuel cutting, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Gas Tungsten Arc Welding (GTAW), Flux Cored Arc Welding (FCAW). The theory for each of these processes is discussed along with proper joint design and proper welding techniques. Students who wish to earn a Certificate in Fabrication and Welding must take Welding I and II, and an elective course from the list below. To earn the Advanced Fabrication and Welding certificate, students must take Welding I and II and a total of two elective courses of their choosing from the list below. For students interested in furthering their education, these courses are creditable toward our Bachelor of Science in Applied Management (BSAM) degree.

Upon completion of this program, students will be able to:

- Interpret prints and welding symbols.
- Fabricate, fit, assemble structural steel systems.
- Inspect welds to American Welding Society (AWS) standards.
- Weld at proficiency level equivalent to AWS certification in Shielded Metal Arc Welding, Gas Metal Arc Welding, Flux Cored Arc Welding, and Gas Tungsten Arc Welding.
- Cut material with oxygen fuel and plasma cutting equipment.

EVENING PROGRAM COURSES		HOURS	PREREQUISITES
FWL0110	Welding I	6	
FWL0120	Welding II	6	FWL0110 (Co. Req.)
For the Certificate in Fabrication and Welding, the above two courses are required, plus one of the following.			
For the Certificate in Advanced Fabrication and Welding, the above two courses are required, plus two of the following.			
FWL0231	Advanced Gas Tungsten Arc Welding (GTAW/TIG)	6	FWL0110
FWL0230	Advanced Shielded Metal Arc Welding (SMAW/Stick)	6	FWL0110, FWL0120
FWL0121	Advanced Gas Metal Arc Welding (GMAW/MIG) and Flux Cored Arc Welding (FCAW)	6	FWL0110
FWL0111	Welding Inspection and Print Reading	6	
FWL0122	Structural Fabrication	6	FWL0110
	Total Technical Credit Hours for Certificate Completion	*18-24*	

COURSE DESCRIPTIONS

FWL0110 Welding I
Students will learn the necessary skills for welding and cutting processes used in the welding and fabrication industry. Processes covered in this program include, Shielded Metal Arc Welding (SMAW), GMAW (MIG) and GTAW (TIG) in the flat, horizontal and vertical positions. Lay-out, Oxy-Fuel cutting are also included in the curriculum. *Six credit hours*

FWL0120 Welding II
Students will learn the necessary skills for welding and cutting processes used in the welding and fabrication industry. Processes covered in this program include, Shield Medal Arc Welding (SMAW) welding. Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW), to be applied on various metals. The emphasis is to develop proper welding techniques in the flat and horizontal positions. The procedures for preparing materials, oxy-fuel cutting and carbon arc gouging are included. *Six credit hours*

FWL0231 Advanced Gas Tungsten Arc Welding (GTAW/TIG)
Covers Advanced Gas Tungsten Arc Welding (GTAW/TIG) welding processes by using mild steel, stainless steel and aluminum in all positions. Students will also learn to weld on pipe using the GTAW/TIG process. *Six credit hours*

FWL0230 Advanced Shielded Metal Arc Welding (SMAW/Stick)
Focuses on the skills for stick welding mild steel pipe in various positions. Students will be prepared to receive a certification in pipe welding. *Six credit hours*

FWL0121 Advanced Gas Metal Arc Welding (GMAW/ MIG) and Flux Cored Arc Welding (FCAW)
Develop advanced skills in the Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW) processes. Students will learn to weld by completing projects, including pipe welding. *Six credit hours*

FWL0111 Welding Inspection and Print Reading
Offers an in-depth study of blueprint reading and the ability to interpret shop drawings. Students will be introduced to different types of welding inspection and inspection principles, as well as the metallurgy related to welding. *Six credit hours*

FWL0122 Structural Fabrication
Students will earn the necessary setup and operation of equipment used in the structural fabrication industry. Students will fabricate parts using blue print formats commonly found in the structural fabrication industry. *Six credit hours*

CERTIFICATE OF TECHNOLOGY IN FABRICATION AND WELDING TECHNOLOGY

RANKEN CENTRAL MO AND RANKEN SOUTHEAST

Blueprint reading and welding symbol interpretation are practiced throughout the course. The welding is done on plate and pipe on low carbon steel, stainless steel and aluminum. Several certification tests are offered in SMAW, GMAW and GTAW.

Upon completion of this program, students will be able to:

- Interpret prints, welding symbols, and apply knowledge of construction math to calculate part dimensions.
- Fabricate, fit, assemble structural, boiler tube and piping systems.
- Inspect welds to American Welding Society (AWS) standards.
- Weld at proficiency level equivalent to AWS certification in Shielded Metal Arc Welding, Gas Metal Arc Welding, Flux Cored Arc Welding, and Gas Tungsten Arc Welding.
- Cut metal with oxygen fuel cutting, carbon arc gouging and plasma cutting equipment.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	PWF1100	Fundamentals of Welding Technology	7	
	PWF1110	Blueprint Reading and Quality Inspection	3	
	PWF1105	Internship I	5	
Second Semester	PWF1220	Fabrication and Welding	10	PWF 1100, 1110
	PWF1205	Internship II	5	
		Total Technical Credit Hours Required	*30*	

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1001	Career Success Skills	3	

Important Note: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.*

COURSE DESCRIPTIONS

PWF1100 Fundamentals of Welding Technology

This course introduces students to welding and cutting processes in theory and in a shop environment. Students will receive an overview of various techniques, including Shield Metal Arc Welding (SMAW) , Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (MIG/GMAW) and Gas Tungsten Arc Welding (TIG/GTAW) that will be applied to various metals. Emphasis will be placed on developing proper welding techniques in all positions. Students will also learn the procedures for preparing materials, using oxy-fuel cutting, plasma cutting, and carbon arc gouging. *Seven credit hours*

PWF1105 Internship I

Students are employed with a sponsor where they apply a variety of welding operations in a workplace setting. The work and equipment may vary by worksite, and may be located indoors or outdoors, depending on the sponsor. The work will be tracked and evaluated for credit. *Five credit hours*

PWF1110 Blueprint Reading and Quality Inspection

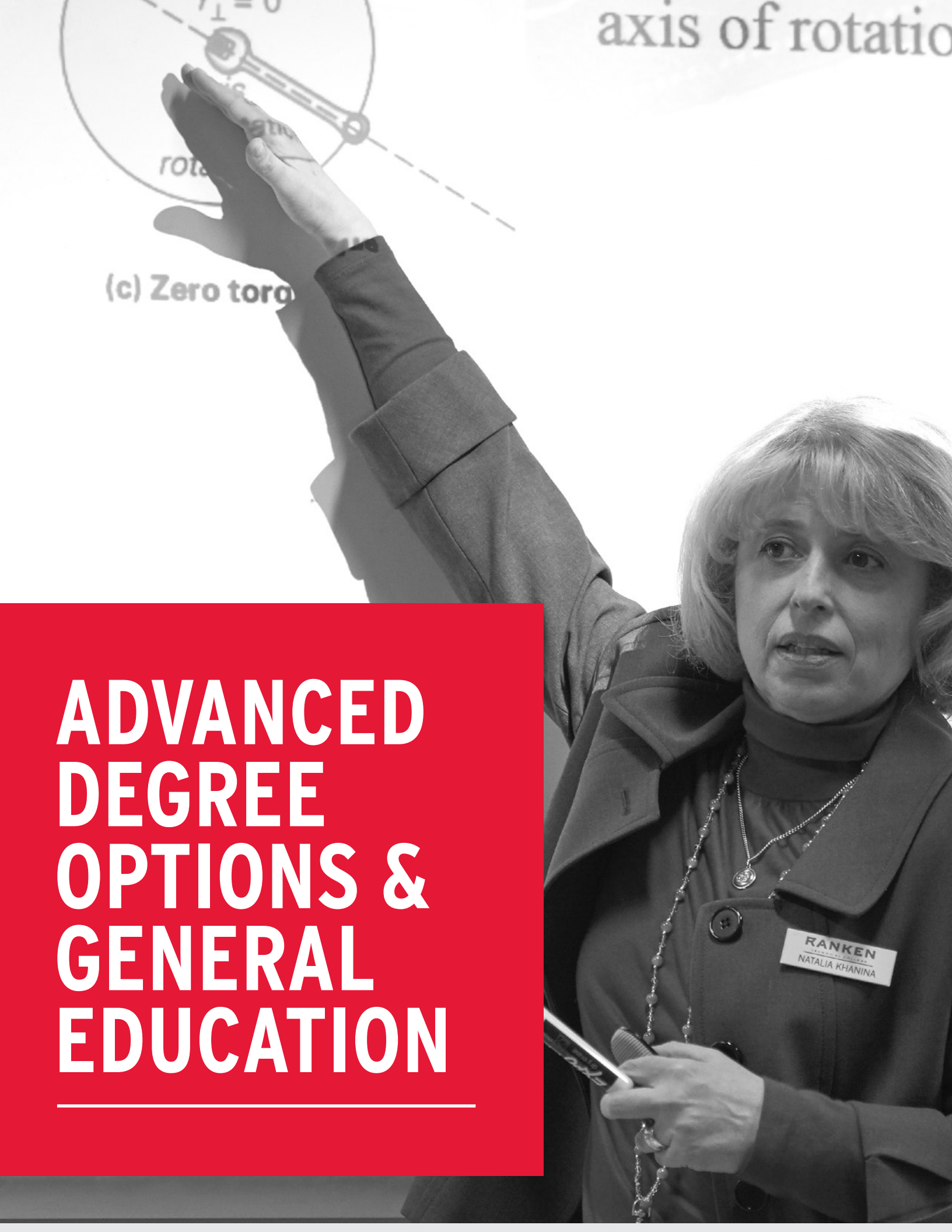
This course offers an in-depth study of blueprint reading, basic weld inspection, construction math and basic rigging. Students will gain a complete understanding of typical weld symbols and blueprints that are used throughout the welding industry. *Three credit hours*

PWF1220 Welding and Fabrication

This course builds upon skills and theories learned in the Fundamentals of Welding Technology course. Students will cut material with oxygen fuel cutting, carbon arc gouging and plasma cutting equipment. Students lay out, fabricate, fit and assemble structural, boiler tube and piping systems. Students will learn the necessary setup and operation of equipment used in the structural steel fabrication industry. Students will use blueprints to fabricate parts that are commonly found in the structural steel industry. Students will also learn to weld stainless steel and aluminum metals. By the end of the course, students will be prepared for the American Welding Society (AWS) certification test and for SMAW, GTAW/TIG, GMAW/MIG, and FCAW on steel plates. *Ten credit hours*

PWF1205 Internship II

Students are employed with a sponsor where they apply a variety of welding operations in a workplace setting. The work and equipment may vary by worksite, and may be located indoors or outdoors, depending on the sponsor. The work will be tracked and evaluated for credit. *Five credit hours*



ADVANCED DEGREE OPTIONS & GENERAL EDUCATION

BACHELOR OF SCIENCE IN APPLIED MANAGEMENT - ONLINE

Ranken offers a Bachelor of Science in Applied Management (BSAM) degree program that is available to:

- Current Ranken Students
- Ranken Alumni
- Graduates from other technical schools
- Experienced technical workers
- Apprentices and graduates of union trade programs
- Individuals with technical training from the military

In order to graduate from the program, students must complete 30 technical credit hours. The 30 technical credit hours may come from Ranken technical credit, transfer credit, or credit received via the Credit for Prior Learning Program. The courses are specifically designed to accommodate the needs of the working adult. The BSAM program offers a unique educational blend designed to transform highly skilled technicians into successful managers. The program combines Ranken's top-quality technical education with managerial and business courses, as well as the communications skills needed to be competitive in the 21st century. Students who graduate with a Bachelor of Science in Applied Management will have opportunities for greater career advancement and financial rewards.

The BSAM program is accredited through the Accreditation Council for Business Schools and Programs (ACBSP). The ACBSP is a leading specialized accreditation association for business education supporting, celebrating, and rewarding teaching excellence.

For more information contact:
www.acbsp.org
(913) 339-9356

Entrepreneurship Emphasis

This program heightens students' awareness of the significant role entrepreneurship plays in the economy, both state and nationwide. These courses are designed for students who desire self-employment as a career. The classes will address the challenges of entrepreneurship, managerial processes, and organizational dynamics, along with integrating the necessary components for small business success.

- **Outcome:** Students will demonstrate the importance of self-directed actions and behaviors that enable financial, operational and managerial independence for a venture in a new or existing market and the competency necessary to create economic values and jobs.

Management Emphasis

Offering additional business courses, the management emphasis is intended for individuals who wish to advance into management or supervisory positions. Students will learn the process of accomplishing the goals of an organization through the effective use of people and resources.

- **Outcome:** Demonstrate practical and theoretical aspects of management and the ability to accomplish goals of an organization.

Management Information Systems (MIS) Emphasis

This program enables information technology graduates to plan all aspects of an information system and ensure that projects are implemented within budget in a timely way. The MIS track is designed for individuals wishing to advance in their careers as successful managers or directors of their organization's information systems department.

- **Outcome:** Apply analytical, critical thinking skills, and information systems concepts for solving organizational challenges creating innovative and effective solutions in a timely manner.

Supply Chain Management Emphasis

Ranken's Supply Chain Management Certification Program is offered completely online. Topics covered in this 6-course program include Integrated Supply Chain Management, Inventory Management, Manufacturing and Service Operations, Order Fulfillment and Customer Service, Transportation, and Warehousing. The program curriculum will also prepare students for the Council of Supply Chain Management (CSCM) SCPro Certification.

- **Outcome:** Apply knowledge and skills required to evaluate, manage and execute a highly effective supply chain management system.

GENERAL EDUCATION COURSES		HOURS	PREREQUISITES
BUS1001	Career Success Skills	3	
MNG1204	Intro to Business and Management	3	
ETH2222	Business Ethics	3	
PHY2100	Conceptual Physics	3	MTH1110
COM1105	Oral Communications	3	
ENG1101	College Composition I	3	
ENG2102	College Composition II	3	ENG1101
ECO3210	Microeconomics	3	
SOC1206	Principles of Sociology or	3	
PSY1206	Introduction to Psychology	3	
MTH1111	Intermediate Algebra	3	MTH1110
MTH2112	College Algebra	3	MTH1111
	Program Requirement Total Credit Hours	*126*	

Important Notes: *Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree. Outside of the technical training, a minimum of 30 credit hours must be earned from Ranken Technical College. *Required if prior learning experience (PLA) and/or work experience is necessary for credit.*

ENTREPRENEURSHIP PROGRAM COURSES		HOURS	PREREQUISITES
Technical Training			
RTC2500	Ranken Technical College Credits	1 to 30	
	or		
TEC2500	Technical Education College Credits	1 to 30	
COM3100	Organizational Communications	3	COM1105
MNG3100	Management & Supervision	3	MNG1204 or MNG1224
PSY3100	Organizational Behavior	3	SOC1206 or PSY1206
ECO3210	Microeconomics	3	
MNG3200	Human Resource Management	3	
MNG3250	Employment Law	3	MNG3200
MTH3113	Statistical Analysis	3	MTH1111 or MTH1100
COM3000	Intercultural Communications	3	COM1105
MNG3300	Managerial Accounting	3	MTH1111
ETH2222	Business Ethics	3	
MNG3350	Principles of Finance	3	MNG3300
MNG4110	Production & Operation Management	3	
MNG4250	Small Business Management	3	
MNG4400	Business Strategy & Implementation	3	
PSY4000	Organizational Psychology	3	SOC1206 or PSY1206
MNG4020	Global Business Strategy	3	
MNG4200	Principles of Marketing	3	
MNG4252	Total Quality Management	3	
MNG4253	Customer Relations Management	3	
ECO3205	Macroeconomics	3	
MNG4251	Negotiation Strategies for Entrepreneurs	3	
MNG4500	Capstone (Entrepreneurship Emphasis)	3	All Core Courses
POL3208	American Government	3	

MANAGEMENT PROGRAM COURSES		HOURS	PREREQUISITES
Technical Training			
RTC2500	Ranken Technical College Credits	1 to 30	
or			
TEC2500	Technical Education College Credits	1 to 30	
COM3100	Organizational Communications	3	COM1105
ECO3210	Microeconomics	3	
MNG3100	Management and Supervision	3	MNG1204 or MNG1224
PSY3100	Organizational Behavior	3	SOC1206 or PSY1206
MNG3200	Human Resource Management	3	
MNG3250	Employment Law	3	MNG3200
MTH3113	Statistical Analysis	3	MTH1111 or MTH1100
COM3000	Intercultural Communications	3	COM1105
ETH2222	Business Ethics	3	
MNG3300	Managerial Accounting	3	MTH1111 or MTH1100
MNG3350	Principles of Finance	3	MNG3300
MNG4110	Production and Operation Management	3	
MNG4115	Lean Six Sigma	3	
PSY4000	Organizational Psychology	3	SOC1206 or PSY1206
MNG4020	Global Business Strategy	3	
MNG4200	Principles of Marketing	3	
MNG4250	Small Business Management	3	
MNG4400	Business Strategy and Implementation	3	
ECO3205	Macroeconomics	3	
MNG4150	Project Management	3	
MNG4300	Management of Information Systems	3	
MNG4500	Capstone (Management Emphasis)	3	All Core Courses
POL3208	American Government	3	

MIS PROGRAM COURSES		HOURS	PREREQUISITE
Technical Training			
RTC2500	Ranken Technical College Credits	1 to 30	
or			
TEC2500	Technical Education College Credits	1 to 30	
COM3100	Organizational Communications	3	COM1105
MNG4300	Management of Information Systems	3	
MNG3100	Management and Supervision	3	MNG1204 or MNG1224
PSY3100	Organizational Behavior	3	SOC1206 or PSY1206
MNG3200	Human Resource Management	3	
MNG3250	Employment Law	3	MNG3200
ETH2222	Business Ethics	3	
MTH3113	Statistical Analysis	3	MTH1111 or MTH1100
MNG4200	Principles of Marketing	3	
MNG3300	Managerial Accounting	3	MTH1111 or MTH1100
COM3000	Intercultural Communications	3	COM1105
MNG3350	Principles of Finance	3	MNG3300
ECO3210	Microeconomics	3	
MNG4150	Project Management	3	
PSY4000	Organizational Psychology	3	SOC1206 or PSY1206
MNG4020	Global Business Strategy	3	
MNG4230	Modern System Analysis and Design	3	
MNG4231	Business Networks and Telecommunications	3	
MNG4232	Modern Database Management	3	
ECO3205	Macroeconomics	3	
MNG4320	Enterprise Resource Planning (ERP)	3	
MNG4500	Capstone (IT Emphasis)	3	All Core Courses
POL3208	American Government	3	

SUPPLY CHAIN MANAGEMENT PROGRAM COURSES		HOURS	PREREQUISITE
Technical Training			
RTC2500	Ranken Technical College Credits	1 to 30	
or			
TEC2500	Technical Education College Credits	1 to 30	
MNG3100	Management and Supervision	3	MNG1204 or MNG1224
MNG3200	Human Resources Management	3	
MNG3250	Employment Law	3	MNG3200
MNG3300	Managerial Accounting	3	MTH1111 or MTH1100
MNG3350	Principles of Finance	3	MNG3300
MNG4110	Production and Operation Management	3	
MNG4020	Global Business Strategy	3	
MNG3001	Integrated Supply Chain Management	3	
MNG3002	Inventory Management	3	
MNG3003	Manufacturing and Service Operations	3	
MNG3004	Customer Service and Order Fulfillment	3	
MNG3005	Transportation Management	3	
MNG3006	Warehousing Management	3	
COM3000	Intercultural Communications	3	COM1105
COM3100	Organizational Communications	3	COM1105
ECO3205	Macroeconomics	3	
ECO3210	Microeconomics	3	
ETH2222	Business Ethics	3	
MTH3113	Statistical Analysis	3	MTH1111 or MTH1100
POL3208	American Government	3	
PSY3100	Organizational Behavior	3	SOC1206 or PSY1206
PSY4000	Organizational Psychology	3	SOC1206 or PSY1206
MNG4500	Small Business Capstone Project	3	MNG3300, MNG3350, MNG4200

COURSE DESCRIPTIONS

ETH2222 Business Ethics

This course will apply ethical theory and practice to business management. Exploring ethical systems, cultural difference and similarities; role of individuals, business, and government. *Three credit hours*

MNG3001 Supply Chain Management

Interest in supply chain management, in both the private and public sectors, has soared in recent years. Leading organizations now recognize the immense opportunities that can be leveraged through effective supply chain management, in areas ranging from competitive strategy to market share to shareholder value. To gain these competitive advantages, they need skilled individuals who can design, execute, and manage their supply chains. This course provides a solid foundation of knowledge of supply chain management concepts, components, and principles.

MNG3002 Inventory Management

Inventory management is a critical component of supply chain management, addressing how much inventory should be carried across the supply chain, where to carry it, and how much safety stock is required to meet the organization's cost and customer service objectives. This course provides an understanding of fundamental concepts of inventory management and the strategic role that inventory plays in the modern supply chain environment.

MNG3003 Manufacturing and Service Operations

To succeed in manufacturing and service operations, managers need both technical and behavioral skills, and how to apply thee skills to transform processes and outputs in a wide variety of operational contexts throughout the supply chain. This course covers the planning, organizing, controlling, directing, motivating and coordinating functions used to produce goods or services. Students will also gain a deep understanding of long-term strategic decisions such as facility location; mid-term tactical decisions such as setting levels of inventory and labor; and short term operational decisions such as job assignments.

MNG3004 Customer Service and Order Fulfillment

This course brings together authoritative knowledge about all facets of our fulfillment and customer service process management throughout the supply chain This course also addresses planning, organizing, controlling, and coordinating order fulfillment and service operation activities from initial customer inquiry all the way through post sales service. Students will gain a deep understanding of the crucial processes, which may be the only direct contacts some organizations have with their customers, and can make or break organizational reputations.

MNG3005 Transportation Management
The proper management of transportation processes and issues is critical to fulfilling customer demand, and to the ultimate success of a supply chain. This course focuses on the key principals, strategies, and decisions required for the cost-efficient, effective flow of goods between sellers and buyers.

MNG3006 Warehousing Management
The proper management of warehousing is vital to the fulfillment of customer demand and the ultimate success of a supply chain. This course brings together authoritative knowledge about all facets of warehouse process and operations supply management. This course will cover basic warehousing storage and handling operations, strategic planning, and the effects of warehousing design and service decisions on total logistics costs and customer service.

MNG3100 Management and Supervision
Students study the concepts, terminology, principles, theory and issues in management as it relates to the supervisor in the workplace. Topics are organized around the four traditional functions of management: planning, organizing, leading and controlling. This course describes the evolution of management thought, the use of quantitative techniques to improve decision making and guidance for helping students build their management careers. *Three credit hours*

MTH3113 Statistical Analysis
This course will acquaint students with the mathematical concepts of statistical analysis. The course includes an introduction to the theory and applications of descriptive and inferential statistics including probability, random variables, expected values, probability distribution functions and hypothesis testing. *Three credit hours*

MNG3200 Human Resource Management
Studies the processes and practices pertaining to organization and management of personnel including employee selection, development, motivation and evaluation. Emphasis will be on the management of human resources in service-oriented organizations. *Three credit hours*

MNG3250 Employment Law
Covers the impact of law on the management of human resources in an organization. This course will examine common law protections for the individual worker, including wrongful termination, employee privacy, wage and hour regulation, occupational safety, workers' compensation and employee benefits. *Three credit hours*

MNG3300 Managerial Accounting
Emphasizes the use of accounting information for internal planning and control purposes. This course is intended for managers who will make business decisions using data obtained from the accounting system. The course will cover basic issues involved in using a cost accounting system. *Three credit hours*

MNG3350 Principles of Finance
An introduction to the principles of financial management, this course will emphasize understanding the role of finance within a company. Topics covered include elements of financial planning, valuation, cost of capital investment and depreciation under various conditions. *Three credit hours*

MNG4020 Global Business Strategy
This course covers international business operations and the impact of culture, global relations and management practices on domestic and foreign business organizations. Topics include international trade, investment, economics, culture, multi-cultural corporate management environment and other related topics. *Three credit hours*

MNG4110 Production and Operation Management
This course is designed to provide the student with a holistic overview of Operations Management (integrating manufacturing and services) and lean concepts for improving processes. Major topic areas will include: Operations Management (OM) in today's business environment, process decisions, facility decisions, aggregate planning and inventory decisions, daily operations decisions and lean concepts and quality tools for improving processes. *Three credit hours*

MNG 4115 Lean Six Sigma
Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodology for eliminating waste from processes, products, and other business activities while having a positive impact on financial performance. Students learn to attack and solve problems using a systematic method. *Three credit hours*

MNG4150 Project Management
In this course, managers will become skilled in steering a project from inception to completion, while staying within the project budget. *Three credit hours*

MNG4200 Principles of Marketing
Introduces key concepts, methods of analysis, strategies and tactics which are critical to managing profitable customer relationships in today's domestic and foreign marketplaces. The course includes a study of product quality and branding, pricing, distribution and promotion. *Three credit hours*

MNG4230 Modern System Analysis and Design
This course presents a clear introduction to systems analysis and design. Examples and cases are drawn from actual systems projects, enabling students to learn in the context of solving real-world problems. *Three credit hours*

MNG4231 Business Data Networks and Telecommunications
Covers fundamental business data communication concepts, beginning with an overview of the companies and government agencies involved in the field, the effects of communications on today's society, types of networks and security, the importance of wireless technologies, e-business applications and the increased speed in communication services. *Three credit hours*

MNG4232 Modern Database Management (MIS Emphasis)
This course begins by explaining why databases are used, how they improve on alternatives such as spreadsheets, what their components are and how they are developed. Next, it introduces the relational model and defines basic relational terminology. It contains a thoroughly revamped discussion of normalization, including a new four-step process that makes it far easier to understand and perform. This course is introducing statements for data definition and modification, as well as SQL SELECT statements. Next, it turns to database design and management, including the entity-relationship (E-R) model and basic data modeling. *Three credit hours*

MNG4250 Small Business Management
Reviews the considerations faced by individuals planning to establish and manage a small business venture. Includes business planning, legal forms of ownership, financial planning and resources, tax considerations, insurance issues and basic considerations in operations and control. *Three credit hours*

MNG4251 Negotiation Strategies for Entrepreneurs
This course is designed to improve students' skills in all phases of negotiation: understanding prescriptive and descriptive negotiation theory as it applies to dyadic and multiparty negotiations, to buyer-seller transactions and the resolution of disputes, to the development of negotiation strategy and to the management of integrative and distributive aspects of the negotiation process. The course is based on a series of simulated negotiations in a variety of contexts including one-on-one, multi-party, cross-cultural, third-party, and team negotiations. *Three credit hours*

MNG4252 Total Quality Management
Students will develop an understanding of total quality management principles, frameworks, tools, and techniques for effective real-life applications in both manufacturing and the service industry. Students will develop and implement a TQM systems, create business strategies that are driven by TQM, use TQM tools for data analysis, and create strategy to implement TQM practices in the workplace for savings on the input cost of an organization. *Three credit hours*

MNG4253 Customer Relations Management
The aim of this course is to introduce the different facets of customer service and to identify who the company's customers really are. This course will also analyze key components of CRM and explain how it is integrated within an organization. Students will develop an understanding of the terms and benefits of service standards and their impact on the customer experience and bottom line. Students will identify how CRM creates value for companies and customers, and what developmental roles have the greatest value on CRM. *Three credit hours*

MNG4300 Management Information Systems
Provides students with the necessary knowledge and skills to make sound business decisions relating to information systems and to work with management to resolve problems in this area. Topics include how to develop and implement an information systems strategy. *Three credit hours*

MNG4320 Enterprise Resource Planning (ERP)
This course covers the opportunities for increased productivity by bringing a company's many different systems together into one large integrated system. This complete introduction to the world of ERP provides the necessary background for success in today's marketplace. *Three credit hours*

MNG4400 Business Strategy and Implementation
The purpose of this course is to introduce the strategy diamond and the five elements framework and present the three major themes: the dynamic nature of firms and industries, strategy formulation and implementation and strategic leadership. This course focuses on how firms formulate, implement and evaluate strategies. Strategic-management concepts and techniques are studied. *Three credit hours*

MNG4500 Capstone Course
This project-based course focuses on bringing the management skills together from finance, accounting, human resources, business strategy, communications, marketing, employment law, and more. Students will demonstrate their knowledge of formulating strategies and evaluating decisions necessary to be competent managers and supervisors. *Three credit hours*

CERTIFICATE IN SUPPLY CHAIN MANAGEMENT ONLINE

Ranken's Supply Chain Management Certificate is offered completely online. Topics covered in this 6-course program include integrated supply chain management, inventory management, manufacturing and service operations, order fulfillment and customer service, transportation, and warehousing. The program will also prepare students for the Council of Supply Chain Management (CSCM) SCPro Certification.

ONLINE COURSES		HOURS	PREREQUISITES
MNG3001	Supply Chain Management	3	
MNG3002	Inventory Management	3	
MNG3003	Manufacturing and Service Operations	3	
MNG3004	Customer Service and Order Fulfillment	3	
MNG3005	Transportation Management	3	
MNG3006	Warehouse Management	3	

COURSE DESCRIPTIONS

MNG3001 Supply Chain Management

Interest in supply chain management, in both the private and public sectors has soared in recent years. Leading organizations now recognize the immense opportunities that can be leveraged through effective supply chain management, in areas ranging from competitive strategy to market share to shareholder value. To gain these competitive advantages, they need skilled individuals who can design, execute, and manage their supply chains. This course provides a solid foundation of knowledge of supply chain management concepts, components, and principles. *Three credit hours*

MNG3002 Inventory Management

Inventory management is a critical component of supply chain management, addressing how much inventory should be carried across the supply chain, where to carry it, and how much safety stock is required to meet the organization's cost and customer service objectives. This course provides an understanding of fundamental concepts of inventory management and the strategic role that inventory plays in the modern supply chain environment. *Three credit hours*

MNG3003 Manufacturing and Service Operations

To succeed in manufacturing and service operations, managers need both technical and behavioral skills, and how to apply the skills to transform processes and outputs in a wide variety of operational contexts throughout the supply chain. This course covers the planning, organizing, controlling, directing, motivating and coordinating functions used to produce goods or services. Students will also gain a deep understanding of longterm strategic decisions such as facility location; midterm tactical decisions such as setting levels of inventory and labor; and short-term operational decisions such as job assignments. *Three credit hours*

MNG3004 Customer Service and Order Fulfillment

This course brings together authoritative knowledge about all facets of order fulfillment and customer service process management throughout the supply chain This course also addresses planning, organizing, controlling, and coordinating order fulfillment and service operation activities from initial customer inquiry all the way through post sales service. Students will gain a deep understanding of the crucial processes, which may be the only direct contacts some organizations have with their customers and can make or break organizational reputations. *Three credit hours*

MNG3005 Transportation Management

The proper management of transportation processes and issues is critical to fulfilling customer demand, and to the ultimate success of a supply chain. This course focuses on the key principals, strategies, and decisions required for the cost efficient, effective flow of goods between sellers and buyers. *Three credit hours*

MNG3006 Warehousing Management

The proper management of warehousing is vital to the fulfillment of customer demand and the ultimate success of a supply chain. This course brings together authoritative knowledge about all facets of warehouse process and operations supply management. This course will cover basic warehousing storage and handling operations, strategic planning, and the effects of warehousing design and service decisions on total logistics costs and customer service. *Three credit hours*

GENERAL EDUCATION - ONLINE

Consistent with the College's purpose and philosophy, the general education division of Ranken Technical College was designed to provide a foundation of general education to complement our students' technical education. Ranken is committed to maintaining a strong general education division for three reasons:

1. General education courses provide the necessary mathematical, scientific and communication skills required to succeed in the students' major course of study and advance on the job.
2. General education courses help develop the ability to think critically, analyze information and solve problems.
3. Employers want to hire technically trained graduates who, in addition to possessing good technical skills, can communicate effectively, work well with others, and adapt to new situations.

Upon completion of this program, students will be able to:

- Create oral and written communications that are concise, informative, and appropriate for business situations.
- Demonstrate proficiency in the use of productivity software applications in general business situations.
- Demonstrate quantitative thinking and reasoning skills through scientific computations common in technical environments.
- Exhibit work ethic skills and basic business knowledge required to secure and retain employment.
- Demonstrate critical reasoning and thinking skills through problem solving, argumentation, data collection, documentation, and analysis.
- Apply general knowledge of the humanities to enhance interaction with people of all ethnicities and social groups.

OUTCOMES ASSESSMENT OF STUDENT LEARNING

Outcomes assessment is a continuous, ongoing process of improvement in which each department at the College establishes its individual course and program objectives. At certain points in the program, a variety of assessment instruments are used to measure whether students have achieved the stated objectives. The results of these assessments are analyzed by each department to determine what improvements to student learning are necessary to achieve the desired outcomes. By using outcomes assessment to improve student learning, the College is able to maintain its position as a leader in the field of providing excellence in technical education.

COURSE DESCRIPTIONS

ENGLISH AND SOCIAL SCIENCES

COM1080 Technical Communications

This course focuses on the reading, writing, listening and speaking skills needed in a technical field. Upon completion, students will have the basic computer skills necessary to write business correspondence such as letters, emails and reports. They will prepare and give presentations using different delivery styles and visual aids, including PowerPoint. This course is intended for certificate program students. Credit may not be applied toward the associate of technology degree. *Three credit hours*

COM1105 Oral Communications

This course introduces students to terms and concepts of verbal and nonverbal communication in business and society with a focus on cultural diversity. Upon completion, students will be able to give presentations using different delivery styles and visual aids, including PowerPoint. They will understand the communication process and use active listening techniques to promote effective communication. They will be able to solve problems in small groups using problem-solving techniques and teamwork. *Three credit hours*

COM3000 Intercultural Communications

This course examines the complex relationship between culture and communication. Upon completion, students will be able to describe communication differences between cultures and understand the importance of intercultural communication competence in a global environment. They will describe their own cultural identity and compare it to other cultures and co-cultures. They will understand the challenges different religions have on intercultural communication. *Three credit hours*

COM3100 Organizational Communications

Studies the communications within organizations, including relevant theories and technologies. Course includes both written and oral communications in business; effective organization and writing of correspondence, memoranda, reports and research proposals; and creating and presenting oral presentations. *Three credit hours*

ENG1101 College Composition I

This is a college writing course designed to develop the student's ability to organize, draft, revise and evaluate expository forms of writing using the Modern Language Association (MLA) standards. Upon completion, students will use word processing programs to write essays that explain, inform, and describe while focusing on purpose and audience. They will use grammar, spelling, punctuation and mechanics correctly. They will use critical thinking skills to analyze a variety of expository texts. *Three credit hours*

ENG2102 College Composition II
This college writing course further utilizes rhetorical principles and skills gained from ENG1101 with a focus on persuasion and argumentation. Upon completion, students will write argumentation essays supported with evidence while avoiding common logical fallacies. Students will conduct online research and write documented research papers using Modern Language Association (MLA) standards. They will use grammar, spelling, punctuation and mechanics correctly. They will use critical thinking skills to analyze a variety of argumentation texts. Prerequisite: ENG1101. *Three credit hours*

POL3208 American Government
Covers topics such as federalism, federal and state constitutions, political parties and elections at the national, state and local level, legislatures, governors, the judiciary, the structure of local governments, budgeting and service delivery. The course also deals with how federal, state and local laws impact businesses. *Three credit hours*

PSY1206 Introduction to Psychology
This course introduces students to the scientific study of human behavior. Upon completion, students will understand how the mind works and why people behave the way they do. They will be able to describe basic research concepts in scientific psychology. They will demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings and historical trends in psychology. *Three credit hours*

PSY3100 Organizational Behavior
Covers the impact of individuals, groups, structures and environment on behavior within organizations. The primary focus is on people, what they do and how their behavior affects individual, group and organizational performance. The process of ethical decision making for the employee, manager and organization are also covered. *Three credit hours*

PSY4000 Organizational Psychology
Applies psychological methods to solve human problems in industry and business. Students study relationships between the individual worker and the work environment. Emphasis will be on application of the most influential theories. Topics will include organizational dynamics, motivating workers, job satisfaction, selecting and training employees and work group influences. *Three credit hours*

SOC1206 Principles of Sociology
This course introduces students to the scientific study of society. Particular attention will be given to the social aspects of business organizations. Upon completion, students will understand why sociology is studied, and how social science data is collected and used by sociologists. They will understand sociological theories of stratification, status, culture, gender roles, family and religion. *Three credit hours*

MATHEMATICS AND SCIENCE

MTH1110 Elementary Algebra
This course focuses on topics in elementary algebra. Upon completion, students will be able to perform calculations with real numbers, solve linear equations, use algebra to model application problems, and graph two-variable linear equations. *Three credit hours*

MTH1111 Intermediate Algebra
This course focuses on topics in intermediate algebra. Upon completion, students will be able to perform operations on exponents and polynomials, factor algebraic expressions and perform operations on rational expressions. Prerequisite: MTH1110. *Three credit hours*

MTH2112 College Algebra
This course focuses on algebraic concepts. Upon completion, students will be able to describe the concept and notation of functions, represent functions graphically and algebraically, solve systems of linear equations and graph linear inequalities. They will perform operations on roots, radicals and complex numbers; solve quadratic equations; and perform operations on exponential and logarithmic functions. Prerequisite: MTH1111. *Three credit hours*

MTH2220 Trigonometry
This course is designed to teach the trigonometric concepts and skills needed in basic science, technology, pre-engineering, and in mathematics itself. Upon completion, students will be able to compute values of trigonometric functions for key angles. They will compute values of basic inverse trigonometric functions, graph trigonometric functions and use basic trigonometric identities to prove other trigonometric identities. They will solve right and oblique triangle problems and trigonometric equations. They will represent complex numbers in trigonometric form and apply the concepts of trigonometry to solve application problems. Prerequisite: MTH2112 or equivalent. *Three credit hours*

MTH2240 Survey of Calculus
This course introduces students to basic concepts and operations of differential and integral calculus, with applications to a variety of practical situations drawn from social, economic, life and applied physical sciences. Prerequisite: MTH2112. *Three credit hours*

MTH3113 Statistical Analysis
This course will acquaint students with the mathematical concepts of statistical analysis. The course includes an introduction to the theory and applications of descriptive and inferential statistics including probability, random variables, expected values, probability distribution functions and hypothesis testing. *Three credit hours*

PHY2100 Conceptual Physics
This course is a conceptual introduction to physics. Emphasis is on developing knowledge and understanding of basic physical principles. Topics include an overview of the nature of physics, Newton's laws of motion, gravitation, mechanical energy, temperature and heat engines and the laws of thermodynamics. The behavior of fluids, wave, motion, the nature of light and the structure of the atom also will be introduced. Prerequisite: MTH1110. *Three credit hours*

PHY2230 College Physics
This course is an algebra/trigonometry-based physics course emphasizing problem-solving. The course is designed to develop mathematical and problem-solving skills by covering various topics in physics. Topics covered include motion in one and two dimensions, Newton's laws, work and energy, momentum and collisions, circular motion and the law of gravity, statics, rotational dynamics and solids and fluids. Prerequisite: MTH2220. *Three credit hours*

BUSINESS AND INFORMATION TECHNOLOGY

BUS1001 Career Success Skills
This course focuses on the job readiness attitudes and behaviors necessary for success in a technical career. Upon completion, students will be able to utilize key functions in the college's Learning Management System. Students will also explore the job search process by creating a resume and learning interview techniques. Finally, they will recognize work ethic traits that will help them find employment and advance in their chosen careers. *Three credit hours*

ECO3205 Macroeconomics
Covers economic activity and growth, determination of income, employment, output, inflation, aggregate supply and demand, money and banking, monetary and fiscal policies and international economic issues. *Three credit hours*

ECO3210 Microeconomics
Covers topics in economic activity and growth, determination of income, employment and output, aggregate demand and supply, monetary and fiscal policies, and related topics. *Three credit hours*

MNG1204 Introduction to Business and Management
This course introduces students to business and management theories and applications within organizations. Upon completion, students will understand concepts such as personal finance, capitalism, small business, forms of business ownership, leadership theories, management styles, e-commerce, business ethics and the impact of technology on business and globalization. *Three credit hours*

MNG1224 Automotive Service Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business, preparing them for this business, or other careers. The objectives of this course are accomplished through the use of case studies and critical thinking exercises, and are designed to meet the objectives of the Automobile Service Consultant certification of the Automotive Service Excellence (ASE) Education Foundation. *Three credit hours*

FINE ARTS

FNA3002 Digital Photography
This course introduces students to the basic concepts and applications of electronic imaging hardware and software. Upon completion, students will be able to use established photography techniques to compose, produce, and edit digital photographic images of varying subject matter (with particular focus on architectonic elements) in both black-and-white and color. Students will also apply post-processing techniques using contemporary image-editing software (i.e.: Adobe Lightroom & Photoshop). Students will provide a mobile-device camera/lens, and the course will provide access to DSLR camera equipment for rental during the course. *Three credit hours*

PROFESSIONAL, HANDS-ON EXPERIENCE, THAT'S THE RANKEN DIFFERENCE.

PROFESSIONAL

At Ranken, our goal is to help students experience success in the real world, therefore each student will be treated as a working professional from day one. Students will be exposed to the values, attitudes and behaviors sought by current employers—these qualities will lead to successful careers in the real world.

Our general education courses and emphasis on professionalism ensure that students leave Ranken with the analytical and communication skills necessary to advance their careers or continue their education. Since most of our instructors have worked in the industry, they are able to pass on the skills necessary for students to succeed.

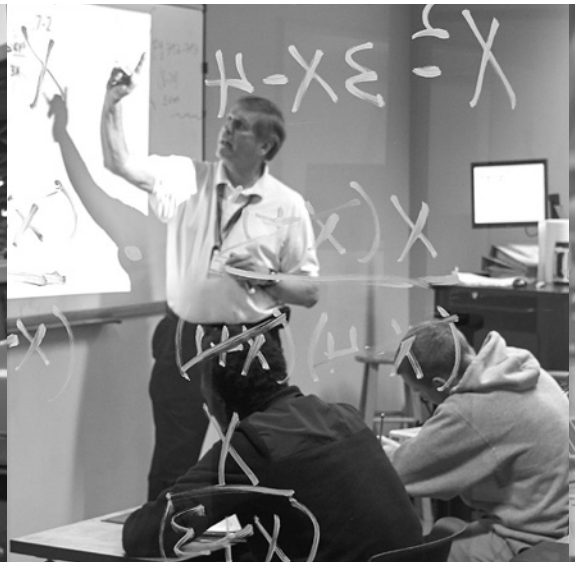
HANDS-ON

Industry leaders help shape our curriculum to ensure that our students are getting highly relevant, cutting-edge training. With an average of at least 15 hours per week of hands-on work in a lab or shop setting, Ranken graduates are highly skilled and fully equipped to launch a successful career.

EXPERIENCE

For more than a century, Ranken has been setting the gold standard in technical education and putting our graduates in the forefront of the industries we serve. Through our partnerships with industry leaders, Ranken is able to give our students the knowledge, skills and experience necessary to remain competitive in an ever-changing, highly technical job market.

RANKEN
TECHNICAL COLLEGE

RANKEN MAIN CAMPUS (ST. LOUIS) · 4431 FINNEY AVENUE, ST. LOUIS, MO 63113
RANKEN WEST (WENTZVILLE) · 755 PARR ROAD, WENTZVILLE, MO 63385
RANKEN WEST (TROY) · 651 JOHN DEERE DRIVE, TROY, MO 63379
RANKEN SOUTHEAST (PERRYVILLE) · 1907 NORTH PERRYVILLE BOULEVARD., PERRYVILLE, MO 63775
RANKEN CENTRAL MISSOURI (ASHLAND) · 975 PERRY AVENUE, ASHLAND, MO 65010
RANKEN EDWARDSVILLE - 141 ENTERPRISE DRIVE, EDWARDSVILLE IL 62025

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