RANKEN

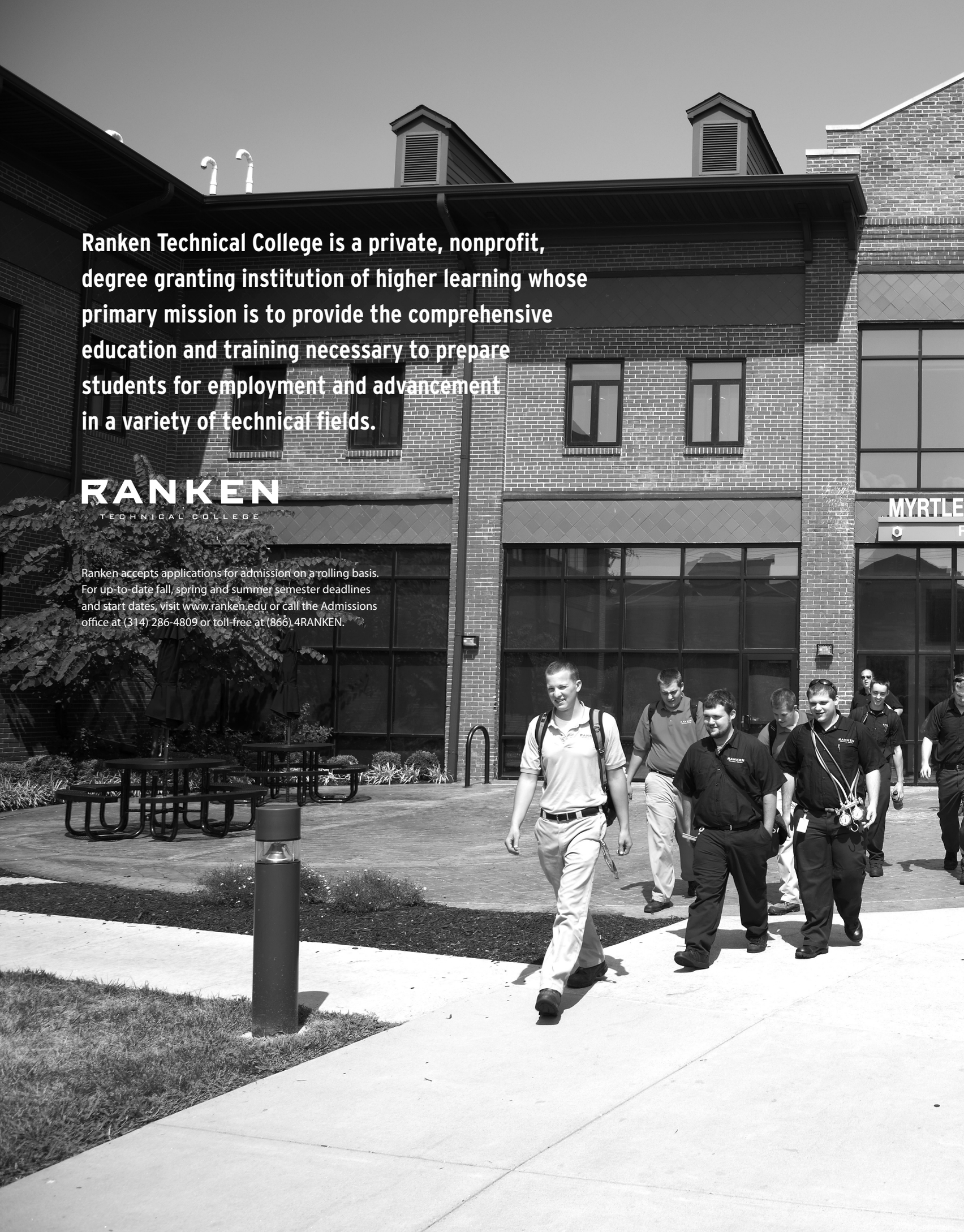
TECHNICAL COLLEGE

Catalog / 2019-2020

PROFESSIONAL GRADE.

AUTOMOTIVE ARCHITECTURE IT ELECTRICAL CONSTRUCTION MANUFACTURING

ranken.edu



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
TECHNICAL COLLEGE

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, computer, human relations, business and life skills along with an appreciation for and ability to continue the learning process.
- 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 occupations.

VALUES

The value statements for Ranken Technical College define the framework for how the College will accomplish its mission and purposes. Ranken Technical College shall:

- Be a leader in providing technical education for a highly skilled workforce.
- Promote an environment which celebrates inclusion, recognizing the valuable and unique contributions diverse people can bring to the Ranken community.
- Actively involve itself in workforce development and community issues.
- Continuously explore new areas of technology for inclusion in existing programs as industry demand and market conditions dictate.
- Pursue opportunities for growth and expansion, compatible with the College mission and appropriate to its resources, which address the needs of industry, the community and students.
- Support a continuous improvement process that assesses and improves the quality of education in terms of content, delivery and student learning.
- Ensure faculty and staff possess the requisite knowledge, education, experience and motivation to perform their varied roles.
- Provide student support services necessary to promote persistence from enrollment to employment.
- Furnish students with opportunities to engage outside of the classroom, including student activities, service projects, and work-based learning, to enhance their overall development.
- Foster a climate in which employees experience a high level of job satisfaction.
- Manage resources in an ethical and responsible manner to meet current and future challenges.
- Foster an environment of high standards in terms of conduct, ethics, and craftsmanship, not only for students, but for all members of the Ranken family.
- Treat all members of the Ranken family—students, alumni, employees, financial supporters, employers and visitors—with dignity and respect by conducting business in a professional and responsible manner.

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, at $52 million, 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. In order to offer quality technical education to students outside of the St. Louis metro area, the College opened a second location in Wentzville in 2013 and opened a third location in Perryville in 2017.

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)
- UAW/TAP Education: Daimler-Chrysler, General Motors and Ford Motor Company

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
- Fleet Management
- 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

INFORMATION TECHNOLOGY DIVISION

- Application & Web Development Technology
- Microsoft Administration
- Microsoft Windows Server
- Network Architecture & Design Technology
- System Administration & Virtualization Technology
- Network Systems Management Technology

MANUFACTURING DIVISION

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

ADVANCED DEGREE OPTIONS

- Bachelor of Science in Applied 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 WEST BUILDING

Plumbing Technology ..... Ground Floor
Plumbing and Pipefitting Technology ..... Ground Floor

4. FINNEY BUILDING

Architectural Technology ..... 2nd Floor

5. GRAY BUILDING

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

6. COOK BUILDING

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

7. COOK WEST BUILDING

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

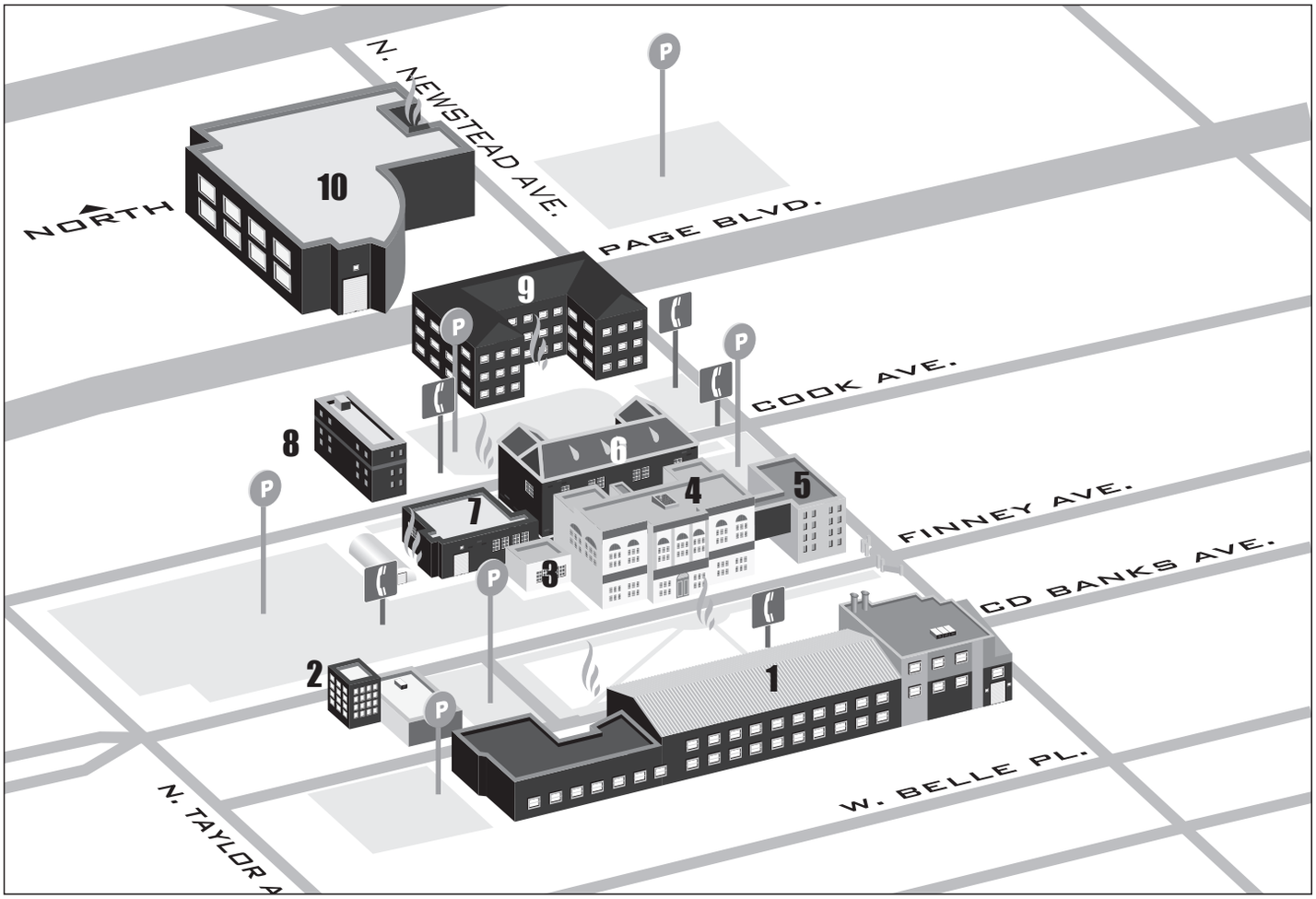
8. LANGENBERG ELECTRICAL TECHNOLOGY CENTER

Electrical Division ..... 1st and 2nd Floors

9. MYRTLE AND EARL WALKER RESIDENCE HALL

10. MARY ANN LEE TECHNOLOGY CENTER

Fabrication and Welding Technology ..... Ground Floor
High Performance Racing Technology ..... Ground Floor



RANKEN WENTZVILLE

Wentzville, Missouri, located in St. Charles County, became the site of the College's second location in spring 2013. This new 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.

With its rising population, robust economic development and proximity to high-tech companies, Wentzville was an ideal landing spot for Ranken's newest location.

PROGRAMS OFFERED AT RANKEN WENTZVILLE

Ranken Wentzville currently offers day and evening courses, and many 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 Manufacturing Technology
- Application and Web Development
- Automotive Maintenance Technology
- Building Systems Engineering Technology
- Control Systems Technology
- Diesel Technology
- Electrical Automation Technology
- Network Systems Management
- Bachelor of Science in Applied Management

STUDENT SERVICES

Students who attend Ranken Wentzville 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 Wentzville students by having St. Louis campus staff visit Ranken Wentzville.

Wentzville 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.

WENTZVILLE ADMISSIONS CONTACT INFORMATION

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

WENTZVILLE LOCATION ADMISSIONS OFFICE HOURS

Monday–Thursday	9 a.m.–6 p.m.
Friday	9 a.m.–4 p.m.
Saturday	By appointment only

RANKEN PERRYVILLE

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 Perryville location will help bring more skilled workers to the region and help fill the rising gap in technology jobs.

PROGRAMS OFFERED AT RANKEN PERRYVILLE

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

- Commercial Driver's License
- Diesel Technology
- Fabrication & Welding Technology
- Industrial Engineering Technology
- Network Systems Management
- Bachelor of Science in Applied Management

STUDENT SERVICES

Students who attend Ranken Perryville 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 Perryville students by having St. Louis campus staff visit Ranken Perryville.

Perryville 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.

PERRYVILLE CONTACT INFORMATION

Ranken Technical College
1205 Corporation Lane, Perryville, MO 63775
Phone: (314) 286-3382
Email: perryvilleadmissions@ranken.edu
Web: www.ranken.edu/perryville

PERRYVILLE LOCATION ADMISSIONS OFFICE HOURS

Monday–Thursday	9 a.m.–4 p.m.
Friday	7:30 a.m.--3:30 p.m.
Saturday	By appointment only

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 dean 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

St. Louis
Ranken Technical College
4431 Finney Avenue
St. Louis, MO 63113
Phone: (314) 286-4809
Toll Free: (866) 4RANKEN
Fax: (314) 286-3309
Email: admissions@ranken.edu

Wentzville
Ranken Technical College
755 Parr Road
Wentzville, MO 63385
Phone: (855) RANKENW
Email: wentzvilleadmissions@ranken.edu

Perryville
Ranken Technical College
1205 Corporation Lane
Perryville, MO 63775
Phone: (314) 286-3382
Email: perryvilleadmissions@ranken.edu

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.

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. The following procedure will be used to determine placement in courses:

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

1. Complete an application.
2. Take Ranken's placement test (administered at Ranken or remotely) for Reading, Math and Writing.
   OR: Submit ACT or SAT scores in Reading (ACT: 16 or higher, SAT: 300 or higher), Math (ACT: 17 or higher, SAT: 400 or higher) and Composition (ACT: 17 or higher).
   OR: Submit a college transcript with transferable credits for English Comp I and/or Elementary or higher Algebra.
3. Submit the $95 non-refundable registration fee.
4. Submit a copy of your high school diploma, final high school transcript or GED Certificate.

The placement test is untimed and administered during regular Student Success Center office hours. Students should allow at least two hours for testing.

* Current placement test score standards are available upon request from the Admissions office.

EVENING PROGRAM

Evening program students who possess a high school diploma, GED or HISET meet all requirements for entrance into their major. and are not required to meet placement criteria. There are additional Alarm Systems Technology, Stationary Engineering, Control Systems Technology, Electrical Automation Technology or Electrical Construction Design and Management. The evening program registration fee is $95.

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. Any student enrolled at Ranken who has met the placement requirement (75% or higher in both written and hands-on testing) in one of the assessment programs may be eligible to receive college credit. For more information, contact the Admissions office or the director of student success.

COLLEGE-LEVEL EXAMINATION PROGRAM (CLEP®)

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 their prior learning by accepting and proctoring the College-Level Examination Program (CLEP®) exams, which measure mastery of college-level, introductory course content in a wide range of subjects. 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 contact the Student Success Center.

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. Contact the Admissions 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 noncitizen
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 Student Success Center 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 Student Success Center. 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 Student Success Center 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 studentis 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 TIMEFRAME

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 timeframe calculation, however, accepted transfer hours are counted in the 150% maximum timeframe 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.

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 Center. 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 Student Success Center.

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 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 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

Example of R2T4 calculation:
A student attends during the 2016-2017 Fall semester. The semester began on 8/24/16 and ended on 12/19/16. He received a Pell Grant for the semester totaling $2,908.00 that was applied to his student account prior to withdrawing. The College determined that he "unofficially" withdrew from the College with a recorded LDA of 10/12/16. Based on the R2T4 calculation, he attended 42.4% of the payment period. This is calculated by taking the number of days completed (50) and dividing by the total number of days in the semester (118). The student earned $1,232.99 of the Pell Grant that was applied to his account. This is calculated by taking the total Pell Grant received ($2,908) and multiplying it by the percentage of the payment period that he attended (42.4%). The College is required to return $1,675.00 to the Pell Grant Program. If he had completed 60% or more of the semester; the College would not be required to return any of his funds.

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.

TUITION AND FEES

GENERAL TUITION

Application Fee	$95
Technical Major (up to 24 hours)	$593 / Credit Hour
General Education Only	$150 / Credit Hour
Student Fee	$65 / Semester
Bachelor of Science	$326 / Credit Hour
5 Semester Apprenticeship Programs	$474 / 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.

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 15.
- Tuition for the spring semester is due by December 15.
- Tuition for the summer session is due by May 1.

BOOKS, TOOLS AND SUPPLIES 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.

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 are required to lease a laptop from Ranken Technical College. This includes installation of instructional software for Architectural Technology, Electrical Construction and Design Management Technology, or Building Systems Engineering 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.

STUDENT FEE

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 and diploma. For the updated student activity fees please visit www.ranken.edu.

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 Academic Advising office 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. Textbooks purchased through MBS Direct are subject to their return policies. For more information, visit http://bookstorembsdirect.net/ranken.htm.

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.

REFUND POLICY

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.

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.

STUDENT SERVICES

BOOKSTORE

Ranken Technical College operates an on-campus bookstore 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 are ordered online through MBS Direct, a third-party bookstore. For information on how to order books, contact the bookstore at (314) 286-4820.

COUNSELING CENTER

Ranken is committed to taking a personal approach to student needs and concerns. Counseling services are free and available to all currently enrolled students. The counseling center provides a confidential environment where students 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.

FOOD SERVICE

The College features a full-service dining hall on 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. 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. It is equipped with fitness and weight equipment, a television lounge, ping-pong tables, and a snack vending area. The Student Success Center (SSC) provides all tutoring, testing and library functions of the College and offers a comprehensive array of academic support services. Most of the services, with the exception of some testing services, are provided by the SSC at no charge. The SSC is a resource for all customers of the College: students, parents, faculty and staff members, industrial workers and industrial employers, and the general public.

In addition, study skills guidance is available throughout the year on topics such as learning styles, taking lecture notes, test taking and time management. Information about various help topics,as well as most SSC documents, aids, databases and schedules may be found online via Inside Ranken.

STUDENT SUCCESS CENTER

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, contact Keith Morton at knmorton@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 SSC operates a testing room and administers placement, course, and industrial testing in addition to Credit-By-Assessment, Credit-By-Examination and College-Level Examination Program (CLEP®) testing services. The SSC also administers the Ranken STEPS (math and reading) program, which may be identified as prerequisites for general studies or technical education majors.

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 and extent of the disability along with recommendations for appropriate accommodations.

The Student Success Center provides a pleasant and inviting space for student learning and socializing. If you need assistance or have any questions or concerns, please visit the Student Success Center, call (314) 286 4891 or email ssc@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 Sevices 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 (FORMERLY VICA)
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 AMBASSADOR PROGRAM
Ranken's Student Ambassadors are an influential group of students who are passionate about Ranken and want to spread the word about their positive educational experiences to prospective students. Ambassadors assist in a variety of activities including giving campus tours, planning campus-wide events and helping the Admissions office in a general capacity. Ambassadors may earn up to $500 a year for their assistance.

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.

WOMEN IN TECHNOLOGY (WIT)
WIT provides female students and employees at Ranken a forum to discuss issues, socialize and get acquainted with other women on campus. The group has meetings throughout the school year.

WOMEN OF WALKER
Women of Walker (WOW) is an organization for the female residents of Walker Hall. WOW meets every month for activities that allow for conversation regarding members' lives in male-dominated industries. This organization promotes fellowship, support and encouragement.

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
TitleIXInvestigator@ranken.edu
Vice President for Diversity and Student Success
Location: St. Louis Location, Finney Building, First Floor
(314)286-3627

The Title IX Investigator will forward reports of noncompliance to the appropriate personnel, including the Title IX Coordinator who is responsible for Institutional Monitoring and Compliance Assurance.

Title IX Coordinator
TitleIXCoordinator@ranken.edu
Registrar
Location: St. Louis Location, Finney Building, First Floor
(314)286-3355

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 Center 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.

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.

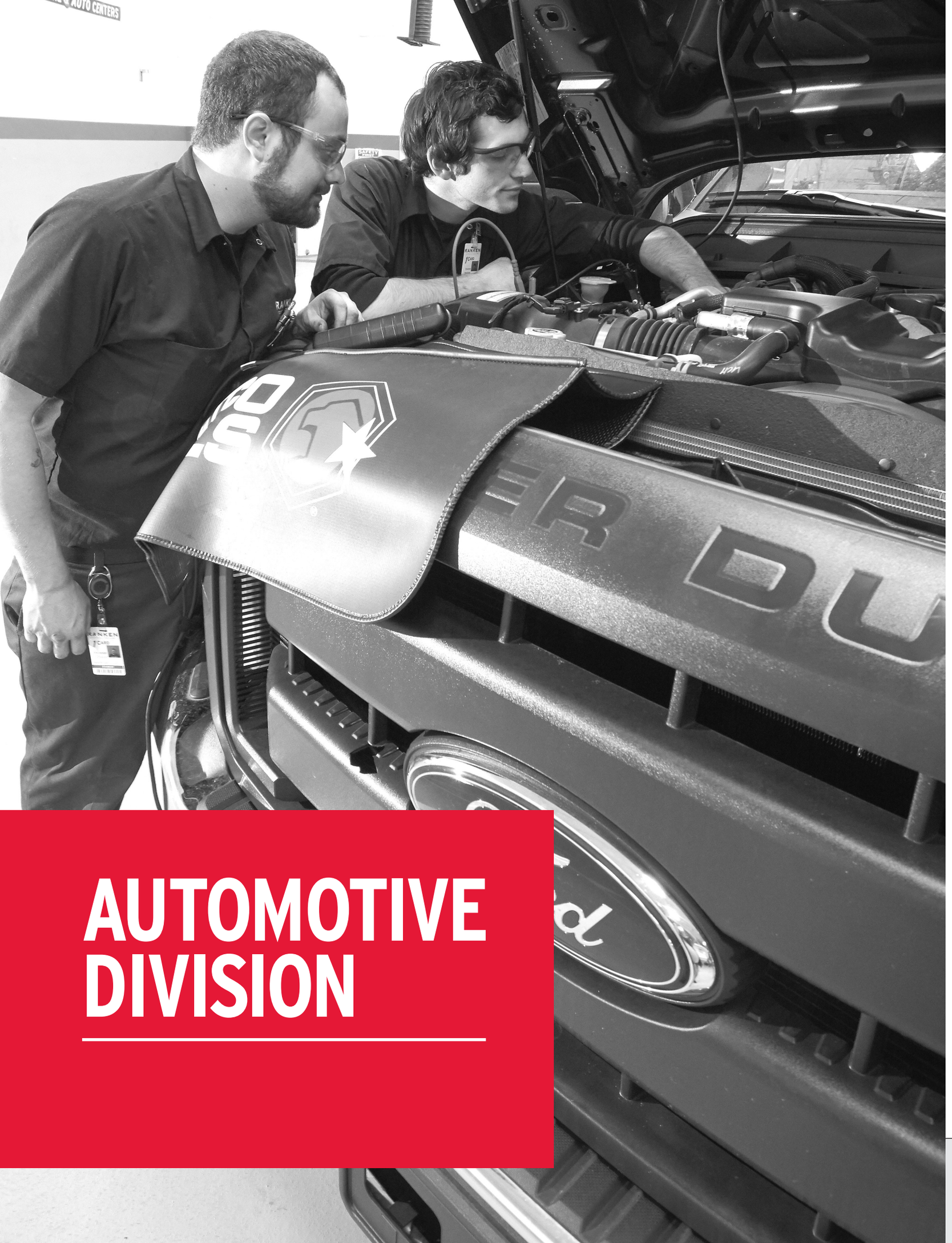
RELEASE OF STUDENT INFORMATION

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

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 at local I-CAR Gold or Road to Gold collision shops.

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, instruction will cover crucial industry topics including cycle time, repair blueprinting and hybrid technology, 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 (formerly NATEF) 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 (formeraly NATEF) 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 Pro Level One, Two and Three certifications and five ASE certifications. Graduates may also qualify for a Sikkens certification.

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.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE WITH A MINOR IN FLEET MANAGEMENT

Companies with large fleets of vehicles need qualified automotive experts to manage those fleets. Our National Association of Fleet Administrators (NAFA)-approved training classes are now available to Automotive Collision Repair Technology students who wish to minor in Fleet Management.

All major technical and general education coursework must be completed with the same requirements as the Associate of Technology or Associate of Science degrees, respectively, in Automotive Collision Repair. An additional four courses, three credit hours each, in fleet management are required for the minor completion. All Fleet Management courses are presented online, and the total credits required to complete the minor are 12 credit hours beyond the major.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
Section One	PCT1100	Collision Repair Fundamentals and Detailing	10	
	PCT1110	Professional PCT Internship I	5	PCT1100
Section Two	PCT1200	Collision Repair	10	PCT1100
	PCT1210	Professional PCT Internship II	5	
Section Three	PCT2000	Collision Practices	10	PCT1200
	PCT2010	Professional PCT Internship III	5	
Section Four	PCT2100	Advanced Collision Repairs	10	PCT2000
	PCT2110	Professional PCT Internship IV	5	
Section Five	PCT2200	Aluminum Repairs	12	PCT2100
		Total Technical Credit Hours Required	72	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
	BUS1000	Career Success Skills	3	

MINOR IN FLEET MANAGEMENT COURSES			HOURS	PREREQUISITES
	MNG3010	Professional Skills Development	3	
	MNG3011	Vehicle Maintenance Management	3	
	MNG3012	Risk and Asset Management	3	
	MNG3013	Business Management	3	
		Total Technical Credit Hours for Certificate Completion	12	

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

COURSE DESCRIPTIONS

PCT 1100 Collision Repair Fundamentals and Detailing

Students will learn about worker protection and personnel safety in the collision repair industry, in addition to completing I-CAR's Intro to Collision Repair, SP2 Safety Training, 3M respirator evaluation, and Fit Test. Students will learn removal and replacement procedures of trim and hardware. This consists of removing and reinstalling hoods, fenders, headlamps, bumpers, doors, and other fastened parts, while using aligning procedures to put these components back, based on manufacturer specifications. Students will measure, evaluate, and repair electrical circuits. So they can start and charge a vehicle before or during repairs. They will also receive instruction in the removal of mechanically fastened, welded, and adhesively bonded panels. Students will learn plastic repair methods, using welding and adhesive procedures to restore today's modern plastic parts. 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 1200 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 and body filler applications. 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 learn how to perform Metal Inert Gas (MIG) brazing and the oxyacetylene/plasma cutting process. Students will also learn how to service and repair a vehicle's mechanical and electrical systems, in addition to learning the importance of recognizing surface defects in existing finishes, mixing refinish materials, how to apply automotive primer surfacer and sealers. Ten credit hours.

PCT 2000 Collision Practices

Students will learn the importance of identifying collision damage and diagnosing structural components, using dimension specification sheets and three-dimensional computerized measuring systems. They will become accustomed to using computer print-outs to perform damage analysis and create repair plans. They will learn the different methods of removing structural components for replacement and reinstallation, and learn to analyze vehicles using scan tools to perform pre- and post-scans of vehicle computer systems. Diagnostic trouble codes will be analyzed to diagnose and repair vehicles to pre-accident condition. Students will learn how to apply protective coatings, such as seam sealers, undercoats, and corrosion protection, emphasizing the application and blending of waterborne basecoat/clear, as well as the refinishing of plastics. Ten credit hours.

PCT 2100 Advanced Collision Repairs

Students will learn procedures for straightening, replacing, and sectioning structural components, per vehicle manufacture repair procedures. They will also learn how to measure for damaged mechanical components, while learning replacement procedures. The course covers post-collision suspension alignments in detail. An emphasis is placed on advanced refinishing processes, such as tri-coat refinishes, blending, and color tinting. Ten credit hours.

PCT 2200 Aluminum Repairs

Students will learn basic and advanced cosmetic straightening of aluminum and aluminum body filler applications. The course will cover the principles of Metal Inert Gas (MIG) setup and tuning, while emphasizing personal and vehicle safety during the welding process. Students will prepare for the I-CAR Aluminum welding certification test. They 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. Students will learn procedures for preparing aluminum components for replacement, as well as anchoring and pulling of the vehicle. They will gain an understanding of the differences in the estimating process of an aluminum vehicle, versus steel. Ten 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 (formerly NATEF) task list. Five credit hours each.

EVENING PROGRAM CERTIFICATE IN AUTOMOTIVE COLLISION REPAIR

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			PREREQUISITES
Section One	ACR0110	Non-Structural Repair	6
Section Two	ACR0111	Refinishing	6
Section Three	ACR0112	Structural	6
Section Four	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

ST. LOUIS AND WENTZVILLE

The average vehicle today has 30 microprocessors, and as updated technology continues to influence the automotive industry, automobile dealerships and independent repair shops are in need of skilled technicians who are capable of solving new, complex problems. To meet this need, Ranken's Automotive Maintenance Technology (AMT) program provides students with the comprehensive knowledge and skills required by leading automotive manufacturers and service facilities.

Our students compete in SkillsUSA and regularly win top honors at the local, state, and national levels. The program is accredited by the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) 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 (formerly NATEF) 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	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
BUS1000	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

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	AMT0110	Engines and Automotive Electricity	6	
Second Semester	AMT0120	Computer Electronics and Computer Controls	6	AMT0110
Third Semester	AMT0230	Brakes/Vehicle Systems and Suspensions	6	AMT0110 (Co. Req.)
Fourth Semester	AMT0240	Clutches/Manual Transmisions and Automatic Transmissions	6	AMT0120 (Co. Req.)
		Total Technical Credit Hours for Certificate Completion	24	

COURSE DESCRIPTIONS

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 Electronics and Computer Controls

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 during this course. Six credit hours.

AMT0230 Brakes/Vehicle Systems and Suspensions

Instruction begins with a comprehensive overview of vehicle brake systems, including brake foundations, disc and drum, hydraulics and electronic antilock braking systems. An in-shop emphasis focuses on the hands-on repair of braking systems, including rotor/drum reconditioning. This course also covers vehicle chassis systems. The curriculum will address steering systems, front suspension systems, tire and wheel construction and balance and wheel alignment, including two and four wheel adjustments. The theory section incorporates a comprehensive study of vehicular chassis systems in current operation.
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.

CERTIFIED DEALERSHIP TECHNICIAN PROGRAMS

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

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

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

Students in the Ranken Toyota Technical Education Network (T-TEN) program focus on Toyota and Lexus brand vehicles, gaining real-world experience through a paid internship at a sponsoring dealership. Alternating between eight-week blocks of instruction and eight-week blocks of field work over the five-semester program, students gain hands-on experience with the same tools, equipment, and vehicles that the dealership has. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) and an industry benchmark of automotive certification.

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 & Suspensions, Brakes, Electrical, Heating & Air Conditioning Systems.
- Exhibit career ready professional traits.
- Adapt to new technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
Section One	TOY1100	Maintenance and Light Repair	10	Department Approval
	TOY1110	Professional T-TEN Internship I	5	TOY1100
Section Two	TOY1200	Engines and Electrical	10	TOY1100
	TOY1210	Professional T-TEN Internship II	5	
Section Three	TOY2000	Manual Transmission and HVAC	10	TOY1200
	TOY2010	Professional T-TEN Internship III	5	
Section Four	TOY2100	Engine Controls and Automatic Transmissions	10	TOY2000
	TOY2110	Professional T-TEN Internship IV	5	
Section Five	TOY2200	Automotive Diagnostics	12	TOY2100
		Total Technical Credit Hours Required	72	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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.

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)				PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1000	Career Success Skills	3	

COURSE DESCRIPTIONS

TOY1100 Maintenance and Light Repair
Introduction to automotive service profession and dealership service environment with emphasis on proper procedures of the express service lane; includes overall vehicle inspection, fluid service, brakes, steering & suspension, service information systems and basic scan tool function. Ten credit hours.

TOY1200 Engines and Electrical
The engines section covers teardown and rebuilding of engines, stressing correct measuring and inspection techniques. The electrical section consists of fundamental concepts, battery-starting-charging systems, body electrical and proper diagnosis. Ten credit hours.

TOY2000 Manual Transmissions and HVAC
This course focuses on identification, diagnosis, repairs of manual transmissions, including transmission removal and replacement, as well as diagnosis and repair of four-wheel drive systems. The Heating Ventilation and Air Conditioning (HVAC) section includes diagnosis and repair of heater and air conditioner problems with an emphasis on component replacement using proper procedures. Ten credit hours.

TOY2100 Engine Controls and Automatic Transmissions
This course covers diagnosis of check engine light issues, ignition, fuel and emission systems. The automatic transmission section will include removing and replacing transmissions and diagnosis and repair of units. Ten credit hours.

TOY2200 Automotive Diagnostics
Upon completion of this course, students will be able to repair electrical issues utilizing advanced functions of scan tools and oscilloscopes on powertrain, body and chassis systems. Instruction will emphasize proper diagnostic routines. Twelve credit hours.

TOY1110, 1210, 2010 and 2110 Professional T-TEN Internships (I, II, III and IV)
Work study in a dealership service department, applying and practicing skills correlated with the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) task list. Five credit hours each.

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

Students in the Ranken Technical College Honda Professional Automotive Career Training (PACT) program focus on Honda and Acura vehicles gaining real-world experience through a paid internship at a sponsoring dealership. Alternating between eight-week blocks of instruction and eight-week blocks of field work over the five-semester program, students gain hands-on experience with the same tools, equipment, and vehicles that the dealership has. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF).

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 & Suspensions, Brakes, Electrical, Heating & Air Conditioning Systems.
- Exhibit career ready professional traits.
- Adapt to new technologies in the automotive service and repair industry.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
Section One	HON1100	Maintenance and Light Repair	10	Department Approval
	HON1110	Professional PACT Internship I	5	HON1100
Section Two	HON1200	Engines and Electrical	10	HON1100
	HON1210	Professional PACT Internship II	5	
Section Three	HON2000	Manual Transmissions and HVAC	10	HON1200
	HON2010	Professional PACT Internship III	5	
Section Four	HON2100	Engine Controls and Automotive Transmissions	10	HON2000
	HON2110	Professional PACT Internship IV	5	
Section Five	HON2200	Automotive Diagnostics	12	HON2100
		Total Technical Credit Hours Required	72	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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.

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			PREREQUISITES
	COM1080	Technical Communications	3
	BUS1000	Career Success Skills	3

COURSE DESCRIPTIONS

HON1100 Maintenance and Light Repair
Introduction to automotive service profession and dealership environment with emphasis on proper procedures of the express service lane; includes overall vehicle inspection, fluid service, brakes, steering and inspection, service information systems, and basic scan tool function. Ten credit hours.

HON1200 Engines and Electrical
The engines section covers teardown and rebuilding of engines, stressing correct measuring and inspection techniques. The electrical section consists of fundamental concepts, battery-starting-charging systems, body electrical and proper diagnosis. Ten credit hours.

HON2000 Manual Transmissions and HVAC
This course focuses on identification, diagnosis, repairs of manual transmissions, including transmission removal and replacement, as well as diagnosis and repair of four-wheel drive systems. The Heating Ventilation and Air Conditioning (HVAC) section includes diagnosis and repair of heater and air conditioner problems with an emphasis on component replacement using proper procedures. Ten credit hours.

HON2100 Engine Controls and Automatic Transmissions
This course covers diagnosis of check engine light issues, ignition, fuel, and emission systems. The automatic transmission section will include removing and replacing transmissions and diagnosis and repair of units. Ten credit hours.

HON2200 Automotive Diagnostics
Upon completion of this course, students will be able to repair electrical issues utilizing advanced functions of scan tools and oscilloscopes on powertrain, body and chassis systems. Instruction will emphasize proper diagnostic routines. Twelve credit hours.

HON1110, 1210, 2010 and 2110 Professional PACT Internships (I, II, III and IV)
Work study in a dealership service department, applying and practicing skills correlated with the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) task list. Five credit hours each.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (ASSET)

Ford and Lincoln dealerships require that their employees hold certifications that are only available through Ford's Technical Career Entry Program (TCEP) network. As the only college in the region that belongs to the TCEP network, Ranken Technical College offers Ford's Automotive Student Service Education Training (ASSET) Program as part of a two-year associate degree program.

As part of Ranken's Ford ASSET program, participating Automotive Maintenance Techonogy students rotate between Ranken Technical College and an internship at a sponsoring dealership every eight weeks for the duration of the program. While attending Ranken, students also receive Ford Service Technician Specialty Training on Ford and Lincoln vehicle systems. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF).

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				PREREQUISITES
Section One	AFA1100	Maintenance and Light Repair	10	Department Approval
	AFA1110	Professional ASSET Internship I	5	AFA1100
Section Two	AFA1200	Electrical and Climate Control	10	AFA1100
	AFA1210	Professional ASSET Internship II	5	
Section Three	AFA2000	Engine Repair and Performance	10	AFA1200
	AFA2010	Professional ASSET Internship III	5	
Section Four	AFA2100	Automotive Powertrains	10	AFA2000
	AFA2110	Professional ASSET Internship IV	5	
Section Five	AFA2200	Diagnostics and Diesel Engines	12	AFA2100
		Total Technical Credit Hours Required	72	

GENERAL EDUCATION COURSES				PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

AFA1100 Maintenance and Light Repair

This eight-week course prepares students with knowledge and skills to work in the dealership. The course covers shop safety practices, tool and equipment use. Introduction to maintenance procedures, including multi-point vehicle inspection, fluid services, brake system service, steering and suspension systems, and perform wheel alignments. Ten credit hours.

AFA1200 Electrical and Climate Control

Students will learn fundamental concepts, battery-starting-charging systems, vehicle lighting, and practical application of Ford electrical diagnostic procedures. The climate control section of this course covers the theory, operation, and repair of automotive heating and air conditioning systems. Ten credit hours.

AFA2000 Engine Repair and Performance

This course covers the principles of operation of the modern automotive engine. Removal and installation procedures, disassembly, diagnosis, repair, reassembly, and timing of modern Ford engines. The course also covers diagnosis of check engine light issues, ignition system, fuel system, and emission systems. Lab activities focus on diagnosis of misfires and other drivability concerns. Ten credit hours.

AFA2100 Automotive Powertrains

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

AFA2200 Diagnostics and Diesel Engine

This course studies specialized body electronic systems, including topics of instrumentation, audio and entertainment systems, advanced air bag systems, data communication networks, anti-theft systems, collision avoidance, traction control, vehicle stability and hybrid/electric vehicle technology. Emphasis is placed on current and developing technology and diagnostic strategy. Lab activities utilize Ford scan tools, oscilloscopes, vibration analyzers, and on-board self-diagnostic systems. Students will learn the theory and operation of electronic diesel engine controls and emission systems. Lab activities focus on electronic fuel injection controls, intake air systems, and diesel engine emission control systems. Twelve credit hours.

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

Work study in a dealership service department, applying and practicing skills correlated with the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) task list. Five credit hours each.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (ASEP)

The General Motors Technology program is designed to prepare students for careers in servicing and maintaining General Motors (GM) vehicles at Buick, Cadillac, Chevrolet or GMC dealerships. Courses are based on the General Motors (GM) Automotive Service Educational Program (ASEP), which provides GM-specific training initiatives to assist GM dealers in educating their next generation of technicians. Participating Automotive Maintenace Technology students alternate between blocks of eight weeks of instruction at Ranken and eight weeks of hands-on work in an internship at a sponsoring dealership. This real-world experience gives students the opportunity to work with the same tools and equipment as service facility technicians. At the end of the five-semester program, students will have completed thirty-two weeks of internship experience. This program is accredited by the Automotive Service Excellence (ASE) Education Foundation (formeraly NATEF).

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

- Inspect, diagnose, service and repair vehicle: Engines, Computerized Engine Controls, Steering & 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
Section One	GMT1100	Maintenance and Light Repair	10	Department Approval
	GMT1115	Professional ASEP Internship I	5	GMT1100
Section Two	GMT1200	Engines and Electrical	10	GMT1100
	GMT1210	Professional ASEP Internship II	5	
Section Three	GMT2010	Manual Transmission and HVAC	10	GMT1200
	GMT2015	Professional ASEP Internship III	5	
Section Four	GMT2110	Engine Controls and Automatic Transmissions	10	GMT2010
	GMT2115	Professional ASEP Internship IV	5	
Section Five	GMT2220	Automotive Diagnostics	12	GMT2110
		Total Technical Credit Hours Required	72	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

GMT1100 Maintenance and Light Repair

Introduction to automotive service profession and dealership service environment with emphasis on proper procedures of the express service lane; includes overall vehicle inspection, fluid service, brakes, steering & suspension, service information systems and basic scan tool function. Ten credit hours.

GMT1200 Engines and Electrical

The engines section covers teardown and rebuilding of engines, stressing correct measuring and inspection techniques. The electrical section consists of fundamental concepts, battery-starting-charging systems, body electrical and proper diagnosis. Ten credit hours.

GMT2010 Manual Transmissions and HVAC

The manual transmissions section of this course focuses on identification, diagnosis, repairs of manual transmissions, including transmission removal and replacement, as well as diagnosis and repair of four-wheel drive systems. The Heating Ventilation and Air Conditioning (HVAC) section includes diagnosis and repair of heater and air conditioner problems with an emphasis on component replacement using proper procedures. Ten credit hours.

GMT2110 Engine Controls and Automatic Transmissions

The engine controls section of this course covers diagnosis of check engine light issues, ignition, fuel and emission systems. The automatic transmission section will include removing and replacing transmissions and diagnosis and repair of units. Ten credit hours.

GMT2220 Automotive Diagnostics

The Automotive Diagnostics course covers diagnosis and repair of a vehicle's most advanced electrical systems such as infotainment systems, traction control and stability systems, anti-lock brake systems and advanced body electrical systems. The course also covers diagnosis and repair of noise, vibration and harshness (NVH) concerns. All diagnostics will utilize advanced functions of scan tools and oscilloscopes on powertrain, body and chassis systems. Instruction will emphasize proper diagnostic procedures. Twelve credit hours.

GMT1115, 1210, 2015 and 2115 Professional ASEP Internships (I, II, III and IV)

Work study in a dealership service department, applying and practicing skills correlated with the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) task list. Five credit hours.

DIESEL TECHNOLOGY
WENTZVILLE AND PERRYVILLE

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			HOURS	PREREQUISITES
First Semester	DSL1000	Diesel Foundations	12	
Second Semester	DSL1200	Diesel Electronics and Engine Controls	12	DSL1000
Third Semester	DSL2040	Diesel Engine, Drivetrain & Welding	12	DSL1200
Fourth Semester	DSL2000	Diesel Brakes and Chassis	12	DSL1200
		Total Technical Credit Hours Required	48	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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.

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)		PREREQUISITES
COM1080	Technical Communications	3
BUS1000	Career Success Skills	3

COURSE DESCRIPTIONS

DSL1000 Diesel Foundations

This foundational course will be taught using hands-on training, lecture and online modules. Students will learn to prepare a detailed repair order, navigate efficiently on electronic information systems, and safely perform preventative maintenance inspections. They will diagnose and service diesel engines by removing, disassembling and measuring components; this process will be completed with re-assembly, installation and adjustments. The course will also train students to perform fluid maintenance services on diesel engines. Twelve credit hours.

DSL1200 Diesel Electronics & Engine Controls

In this course, students will diagnose basic electrical problems using electronic wiring diagrams and digital meters. They will learn to solve issues related to computer network and multiplexing systems, as well as how to diagnose diesel engine control systems and fuel injection using diagnostic scan tools. They will also service diesel emission systems including diesel exhaust fluid systems (DEF). This course will be taught using hands-on training, lecture and online modules. Twelve credit hours.

DSL2000 Diesel Brakes & Chassis

The identification, diagnosis and replacement of steering and suspension components will be covered in this class. Students will learn to repair, replace, and balance wheels and tires. Using the latest laser alignment equipment, students will also learn to align steering angles. Students will develop the skills to perform a brake job on both hydraulic and air brake systems. The course will introduce true drums and rotors on brake lathe machines, and students will diagnose and repair antilock braking systems (ABS). This course will be taught using hands-on training, lecture and online modules. Twelve credit hours.

DSL2040 Diesel Engine Drivetrain & Welding

This course will train students to diagnose, repair, and service diesel engines, along with automatic and manual transmissions. They will learn to repair engines, replace clutches, rebuild differentials and diagnose and repair hydraulic and fuel systems concerns. They will also learn the techniques of cutting and repairing metal objects using oxyacetylene torches, plasma cutters and MIG welders. This course will be taught using hands-on training, lecture and on-line modules. Twelve credit hours.

HIGH PERFORMANCE RACING TECHNOLOGY

The High Performance Racing Technology (HPRT) program adds the excitement of aftermarket engine performance improvement to our standard automotive technician training. Specialized training allows students to design and build any type of high performance engine using a wide variety of aftermarket engine components and control systems. Students then learn to tune it for maximum output and drivability using various data acquisition tools and dynamometers. To gain a mechanical repair foundation, students in the HPRT program share first semester classes with the Automotive Maintenance Technology (AMT) program. After the first semester, students focus on the HPRT curriculum, including engines and tuning.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

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 AMT graduates, HPRT graduates accept gainful employment in automotive careers with an emphasis in engines and tuning.

The program develops student proficiencies in the following areas:

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

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

- Inspect, machine, diagnose, and tune for high performance applications.
- Exhibit career ready professional traits.
- Adapt to emerging technologies in the automotive performance industry.

DAYPROGRAMCOURSES			HOURS	PREREQUISITES
First Semester	AHP1003	High Performance Foundations	12	
Second Semester	AHP2202	High Performance Engines	12	AHP1003 or AMT1003
Third Semester	AHP2220	High Performance Tuning	12	AHP1003
Fourth Semester	AMT2100	Chassis and Climate Control	12	AHP1003
Fifth 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	60	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
BUS1000	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

AHP1003 High Performance Foundations

The High Performance Foundations class prepares 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 repair orders and navigate electronic information systems such as Alldata, Mitchell, and other factory systems. This class also covers the use of a digital meter to test electrical circuits and the operation of 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 High Performance Foundations class also includes a section of training on automotive engines. Students 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 also learn how to properly perform fluid maintenance services on modern automotive vehicles. This course is taught using hands-on training, lecture, and online modules. Twelve credit hours.

AHP2202 High Performance Engines

Students learn all required machining processes for rebuilding a stock-type engine. This includes engine teardown, through assembly and dynamometer performance verification. Students also learn the math and science behind the development of a proper high performance power plant, while learning to assemble a high performance engine through properly testing it to find optimum performance. Twelve credit hours.

AHP2220 High Performance Tuning

This class offers a highly interactive look at many of the engine performance and control components used in the high performance tuning industry. The course covers: intake and cylinder head air-flow improvements, such as increased valve size, porting, bigger throttle bodies, and exhaust systems. Students learn a wide variety of engine fuel and ignition control systems. The design and application of turbocharger and supercharger systems for gasoline and diesel engines will be covered, along with nitrous. Students also learn carburetor modification and tuning and power train gearing and suspension systems. Twelve credit hours.

AMT2100 Chassis and Climate Control

The Chassis portion of this course includes steering, suspension, and brakes. This includes 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 learn essential tire work components, using the latest in road force wheel-balancing equipment. Students also learn how to properly align a vehicle using the latest laser alignment equipment, and how to complete a proper brake job on both drum and disc systems. Students use the most up-to-date car brake lathes and true rotors, which are mandatory for most warranty repairs in dealerships. This course covers how to diagnose and repair anti-lock braking systems (ABS), stability control systems, and Climate Control instruction. Students learn how to service R134A systems by diagnosing and replacing air conditioner (A/C) components, as well as using variety of A/C recovery and refill machines. 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 is taught using hands-on training, lecture and on-line modules. Six credit hours.

AMT2215 Automotive Line

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 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 HIGH PERFORMANCE RACING TECHNOLOGY

The High Performance Racing Technology (HPRT) evening program allows students to gain training in aftermarket engine performance improvement. Our specialized instruction allows students to design and build any type of high performance engine using a wide variety of aftermarket engine components and control systems, to tune it for maximum output and drivability using various data acquisition tools and dynamometers. The focus is on both engines and tuning. Students entering this program must have a foundation of mechanical repair. Past Ranken Automotive Maintenance Technology (AMT) associate degree graduates are automatically qualified to enter into the program. Past Ranken AMT certificate graduates or current automotive technicians may enter the program with approval from the automotive division chair. Classes typically meet in the evenings, Monday – Thursday. HPRT graduates accept employment in automotive machine shop/race shops, automotive tuner/repair shops, aftermarket part manufacturers/suppliers, professional racing teams, and aftermarket tool manufacturers/suppliers. Successful completion of both semesters is necessary to qualify for a certificate. 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, machining, and tuning for high performance applications.
- Adapt to emerging technologies in the automotive performance industry.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	AHP2202	High Performance Engines	12	AMT0110 or equivalent
First or Second Semester	AHP2220	High Performance Tuning	12	AMT0110 or equivalent
		Total Technical Credit Hours for Certificate Completion	24	

COURSE DESCRIPTIONS

AHP2202 High Performance Engines

Contains training on the entire engine machining process. Starting from engine teardown and ending with assembly and dynamometer performance verification, students learn all of the required machining processes for rebuilding a stock type engine. Throughout the course, students also learn the math and science behind the development of a proper high performance power plant while also learning to assemble a high performance engine properly. They will be able to run a complete dyno test to find out how close they are to their desired performance. Twelve credit hours.

AHP2220 High Performance Tuning

This offers a highly interactive look at many of the engine performance and control components used in the high performance tuning industry. Intake and cylinder head air flow improvements such as increased valve size, porting, bigger throttle bodies and exhaust systems are among some of the topics covered. This course covers a wide variety of engine fuel and ignition control systems. The design and application of turbocharger and supercharger systems for gasoline and diesel engines will also be covered, along with nitrous. Students learn carburetor modification and tuning and power train gearing and suspension systems. Twelve credit hours.

PROFESSIONAL TECHNICIAN PROGRAM
ST. LOUIS AND WENTZVILLE

Students in Ranken's Professional Technician Program have the opportunity to earn while they learn with a unique program featuring paid internships at specifically selected work sites. Entry into this program is open to students enrolled in the first semester of Ranken's Automotive Maintenance Technology program, and is based on student applications and available openings with participating employers.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Starting in their second semester at Ranken, students who are accepted into the program will alternate 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 Automotive students who complete internships in this format typically go on to accept full-time positions at their work site after graduation.

Sponsoring employers may include but are not limited to:

- Audi Dealerships
- AUTOTIRE Car Care Centers
- DOBBS Tire and Auto Centers
- Dodge
- Firestone Complete Auto Care centers
- Jeep
- Meineke Car Care Centers
- Midas
- MOPAR/Chyrsler/Fiat
- NAPA Certified Auto Repair Centers
- Nissan
- Subaru
- Other approved independent repair facilities

The program develops student proficiencies in the following areas:

- Maintenance and light repair
- Heating and air conditioning
- Automatic/manual transmission
- Engine controls
- Automotive diagnostics

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 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	APT1200	Brake/Steering & Suspension	10	Department Approval and AMT1003
	APT1210	Professional Internship I	5	AMT1003
Third Semester	APT2100	Advanced Electrical/Engine Controls	10	APT1200
	APT2110	Professional Internship II	5	APT1200
Fourth Semester	APT2200	Automotive Drivetrain	10	APT2100
	APT2210	Professional Internship III	5	
Fifth Semester	APT3100	HVAC & Automotive Diagnostics	12	All of the above
		Total Technical Credit Hours Required	69	

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			PREREQUISITES
	COM1080	Technical Communications	3
	BUS1000	Career Success Skills	3

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1224	Automotive Service Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

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.

APT1200 Brake/Steering & Suspension

In the Brakes section of this course, 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. 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. Ten credit hours.

APT2100 Advanced Electrical/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. Students will learn to work with the OBD II platform along with 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 airbag systems. In the computer networking portion, students will learn how to diagnose and repair computer communication and networking problems. Ten credit hours.

APT2200 Automotive Drivetrain

This course focuses on identification, diagnosis and repairs of rear differentials, axels and driveshafts, transfer cases, manual and automatic transmissions and transaxels, including transmission removal and replacement, as well as diagnosis and repair of four-wheel drive systems. Ten credit hours.

APT3100 HVAC & Automotive Diagnostics

In the HVAC section of this course, students will learn how to identify and handle refrigerant in the automotive field. This course will include instruction in the proper recovery, recycling and recharging processes and equipment. Students will also learn about the refrigerant cycle and the function, diagnosis and repair of the HVAC system components. The automotive diagnostics portion of this course focuses on developing the student's ability to use advanced features of scan tools and oscilloscopes on powertrain, body and chassis systems, the ability to work in a logical sequence to diagnose and perform repairs and work as a line technician, to put what students have learned to use. Twelve credit hours.

APT1210, APT2110, APT2210 Professional Internships (I, II, III)

Students will participate in a work study in a sponsoring service environment during their second, third and fourth semesters. They will apply and practice skills correlated with the Automotive Service Excellence (ASE) Education Foundation (formerly NATEF) task list. Five credit hours.

CONSTRUCTION DIVISION

ARCHITECTURAL TECHNOLOGY

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® Architecture & 3ds Max® Design

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.
- Collaborate with multiple disciplines in a shared workspace model.
- 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

GENERAL EDUCATION COURSES				HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I		3	Placement Exam or ENG1099
	ENG2102	College Composition II		3	ENG1101
	COM1105	Oral Communications		3	
	SOC1206	Principles of Sociology or		3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology		3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or		6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra		3	Placement Exam
Business/Information	BUS1000	Career Success Skills		3	
Technology	MNG1204	Intro to Business & Management		3	ENG1099 (Co. Req.)
Bachelor's and Associate	COM3000	Intercultural Communications or	(Required for Bachelor of Science in Architectural Technology only)	3	
of Science Additional	COM3100	Organizational Communications		3	
Required Courses	MTH2112	College Algebra		3	MTH1100 or MTH1111
	MTH2220	Trigonometry		3	MTH2112
	MTH2240	Survey of Calculus		3	MTH2112
	PHY2230	College Physics		3	
	ETH2222	Business Ethics or	(Required for Bachelor of Science in Architectural Technology only)	3	
	PSY3100	Oraganization Behavior or		3	
	PSY4000	Organizational Psychology		3	

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	ART1113	Architectural Graphics and Intro to AutoCAD	6	ART1125, MTH1110 (Co. Req.)
	ART1125	Materials and Methods I	3	ART1113 (Co. Req.)
Second Semester	ART1225	Materials and Methods II	3	ART1125
	ART2120	Architectural Technology Studio I	6	ART1113
	ART3123	Intro to BIM	3	
Third Semester	ART2220	Architectural Technology Studio II	6	ART2120, ENG1101 (Co. Req.)
	ART2221	Architectural History I	3	
Fourth Semester	ART1224	Principles of Design	6	ART1113
	ART2121	Structures I (Not required for Associate of Technology)	2	MTH2112
	ART2123	Building Systems Design	3	MTH1110
Fifth Semester	ART2222	Structures II	2	ART2121
	ART3113	3D Modeling and Graphic Presentation	3	ART2220
	ART3120	Architectural Technology Studio III	6	ART2220, ART3123
Sixth Semester	ART3222	Site Design and Engineering	3	ART2220, MTH2220 (Co. Req.)
	ART3220	Junior Architectural Studio	7	ART2220
	ART3221	Architectural History II	3	ART2221
	FNA3004	Digital Graphics for Architecture	3	ART2220
Seventh Semester	ART4112	Professional Practice	3	ENG2102
	ART4120	Senior Architectural Studio I	7	ART3113
	SOC4100	Survey of Research Methods	3	
	ART	Architecture Elective	3	
Eighth Semester	ART	Internship or Elective	3	All ART2200 level courses
	ART4202	Capstone Portfolio	1	
	ART4203	Capstone Research Project	2	SOC4100
	ART4220	Senior Architectural Studio II	7	ART3113
Electives	ART3024	Principles of LEED	3	
	ART4200	Architectural Internship	3	
	ART3022	Interior Design	3	
	ART3000	Classicial Adventures	3	
	CRP0110	Exterior/Interior Frame Construction (Evening Course)	6	
	CRP0120	Interior Finish (Evening Course)	6	
		Total Technical Credit Hours Required	97	

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

COURSE DESCRIPTIONS

ART1113 Architectural Graphics and Intro to AutoCAD®
A combination lecture/studio course that includes an introduction to basic architectural graphics. The course develops basic skills for constructing architectural drawings representing two and three dimensions using proper drafting methods with AutoCAD®. The students will develop basic drafting vocabulary, sketching and architectural drawing skills and comprehend the role of the architect. Six credit hours.

ART1125 Materials and Methods I
Materials and Methods I is a course designed to give a student the vocabulary skills necessary to understand and design structures using standard building materials and methods. Characteristics of these materials and the principal factors affecting residential and small commercial structures are covered. Particular consideration is given to foundation, floor, wall and roof construction, project phases and sustainability. Three credit hours.

ART1224 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.

ART1225 Material and Methods II
Materials and Methods II is a lecture course designed to give students the skills necessary to understand the materials used in commercial buildings and the details necessary to construct such buildings. Through discussion and given examples, the student will use problem-solving skills to create details using AutoCAD®. Three credit hours.

ART2120 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, green building methods, building codes, and other architectural topics. Miscellaneous projects will include a study model, color rendering, and sketching assignments. Six credit hours.

ART2121 Structures I
The Structures I course is an introduction to structural engineering and related terminology as it applies to architecture. The course involves calculating direct stress problems, reactions for beams, properties of sections, shear diagrams, and moment diagrams. Students will become familiar with using structural tables to solve related formulas. Two credit hours.

ART2123 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.

ART2220 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.

ART2221 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.

ART2222 Structures II
The 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. With given information, students will design for these members using formulas and appropriate tables. Two credit hours.

ART3022 Interior Design
Interior Design is an architectural elective course that provides the student with a comprehensive knowledge of the practices and concepts of interior design. In addition to lectures on materials, color, lighting, furniture, space planning and more, the student will create related 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.

ART3024 Principles of LEED
Principles of LEED (Leadership in Energy and Environmental Design) will introduce and explore the issues and concepts surrounding sustainable design and green building methods as prescribed by the LEED program. After reviewing the history and influencers of man's relationship to nature through the built environment, we will discuss the LEED rating system and certification process, as well as other assessment systems. Topics will include the integration of sustainability with building systems for new construction and other types of projects, as well as the economics of green building, and current initiatives. Three credit hours.

ART3113 3D Modeling and Graphic Presentation

The course will deal with architectural applications of computer-aided drafting involving 3D mass modeling, parametric solid modeling, rendering and walkthroughs. Students learn to operate the hardware and software typically used in the architectural profession such as Autodesk, Revit® Architecture, Autodesk® 3ds Max and image editing programs. A basic introduction to the systems will be presented in a hands-on approach. This course is a combined lecture/studio that will reinforce commands learned by performing related exercises and projects. Three credit hours.

ART3120 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.

ART3123 Intro 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.

ART3220 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. Seven credit hours.

ART3221 Architectural History II

This course is a continuation from ART2221 Architectural History I and is designed to expose the students to western architecture, design, and city planning from the Renaissance to the present day. The content of this course is delivered through slide shows and class discussions. Three credit hours.

ART3222 Site Design and Engineering

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.

ART4112 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.

ART4120 Senior Architectural Studio I—Design

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. Seven credit hours.

ART4200 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.

ART4202 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. One credit hour.

ART4203 Capstone Research Project

The research project is a culminating activity involving an interdisciplinary approach, synthesizing prior learning, and presented using written and oral components. The purpose of the research project is to provide the student with a practical learning situation, and an invaluable opportunity to utilize the knowledge and skills acquired over the course of the educational process, in a "real-world" application of the students' abilities. Two credit hours.

ART4220 Senior Architectural Studio II—Design

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. Seven credit hours.

FNA3004 Digital Graphics for Architecture

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 Illustrator and InDesign. 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.

ART3000 Classical Adventures

Classical Adventures 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 over spring break. 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.

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, 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.

BUILDING SYSTEMS ENGINEERING TECHNOLOGY

WENTZVILLE

Building systems engineering 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 Engineering 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 Engineering 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:

- Design and implement mechanical, electrical and piping systems within a given structure.
- Design and layout mechanical, electrical and plumbing building systems within client parameters and specifications.
- Analyze blueprints and other documentation to prepare take-off-to-build material lists.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	BSE1000	Building Systems	12	
Second, Third or Fourth Semester	BSE1100	Heating Ventilation Air Conditioning/Mechanical Systems	12	BSE1000
Second, Third or Fourth Semester	BSE2000	Electrical Systems	12	BSE1000
Second, Third or Fourth Semester	BSE2010	Piping and Fire Protection	12	BSE1000
		Total Technical Credit Hours Required	48	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

BSE1000 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.

BSE1100 Heating Ventilation Air Conditioning/Mechanical Systems

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.

BSE2000 Electrical Systems

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.

BSE2010 Piping and Fire Protection

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

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

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

As a required part of the program's curriculum, students participate in Ranken's Community Development Corporation (RCDC), a non-profit organization that constructs affordable homes for residents of the College's community. Students interested in completing the certificate of technology program will take all technical courses in the associate degree program and two general education courses.

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 shop drawings.
- Measure, cut, prepare, and install rough frame, finish, and formwork components for residential construction using hand and power tools.
- Cut and weld mild steel using oxy-acetylene fuels and shielded metal arc welding systems.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	CRP1110	Residential Blueprint Reading	2	
	CRP1111	Framing and Formwork Theory	3	
	CRP1112	Framing and Formwork Shop	8	
Second Semester	CRP1210	Construction Estimating and Management	2	All CRP1100 Courses
	CRP1211	Interior and Exterior Finishes Theory	3	All CRP1100 Courses
	CRP1212	Interior and Exterior Finishes Shop	8	All CRP1100 Courses
Third Semester	CRP2101	Residential Housing Construction I	15	All CRP1200 Courses
Fourth Semester	CRP2201	Residential Housing Construction II	15	CRP2101
	CRP2202	Welding for Carpenters	2	CRP2101
		Total Technical Credit Hours Required	58	

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			HOURS	PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1000	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.

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or MTH1111
Additional Required	MTH2220	Trigonometry	3	MTH2112
Courses	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112

COURSE DESCRIPTIONS

CRP1110 Residential Blueprint Reading

This course provides a thorough explanation of the term "blueprint" and the role of an architect in print production. The primary emphasis in this course is finding information and working with dimensions on a full set of residential drawings. Different types of views and drawings, symbols, abbreviations, specifications and details are covered in this course. In addition, students will learn basic trade math and sketching skills. Two credit hours.

CRP1111 Framing and Formwork Theory

This course supplements the CRP1112 shop class. The main topics covered in this course are light commercial and residential framing components and techniques. However, students will first learn basic hand and portable power tool identification and usage. The nature of wood and how it is applied in the construction industry will also be covered. Students will learn concrete formwork components and basic installation techniques as well as door and window installation. This course will also cover the theory of floor, wall, ceiling, roof and stair construction. Three credit hours.

CRP1112 Framing and Formwork Shop

This course will apply the theory taught in CRP1111 in a hands-on shop setting. The primary emphasis in this course is module construction, which involves the construction of floor, wall, ceiling, roof and stair frames. As in the theory course, Occupational Safety and Health Administration (OSHA) 10 safety training and basic hand and power tool identification and usage will be covered first. The components of a residential structure will be broken down into separate components and built in both individual and group settings. Students will build a step stool and/or chest, install Symons forms and lay out building lines. Students will also hang exterior doors and new-construction windows upon completion of the modules. Eight credit hours.

CRP1210 Construction Estimating and Management

This course introduces material estimation for concrete footings, foundations and flatwork. Students will learn how to estimate framing material for residential floors, walls and roofs. Using the Microsoft Office Excel programs, students will prepare complete material takeoffs to submit to material vendors. Material and labor quantities, price per unit and total costs will be figured for each area of a residential structure. Two credit hours.

CRP1211 Interior and Exterior Finishes Theory

This course supplements the CRP1212 shop class. This course is primarily focused on interior/exterior finishes, which include base trim, window and door trim, crown molding, floor installation, interior door installation, roof shingles, vinyl siding, soffit and fascia. Students will learn about hand and portable power tool identification and usage, as well as basic components and installation techniques for the exterior/interior finishes in a residential structure. Three credit hours.

CRP1212 Interior and Exterior Finishes Shop

This course will apply the theory taught in CRP1211 in a hands-on shop setting. This course is primarily focused on interior/exterior finishes, which include installing base trim, window trim and crown molding, as well as various types of floor covering installation and interior door installation. On the exterior, students will install asphalt roof shingles, vinyl siding, soffit and fascia. This course also covers OSHA 10 safety training and basic hand and power tool identification and usage. Exterior and interior finishes will be installed by students on a residential module. Eight credit hours.

CRP2101 Residential Housing Construction I

This course provides a hands-on opportunity to complete all of the rough framing work in a residential structure. Students will use leveling instruments to install sill plates. Students will then construct the floor and wall frames out of engineered framing lumber and nominal framing lumber. The truss-setting procedure will be covered in the course, along with all of the applicable safety guidelines. Students will install exterior doors and windows, coffered ceilings, vinyl siding, soffit and fascia. mortarless brick installation will also be introduced in this course. Time permitting, students will install all drywall sheet-goods on the interior of the structure. All students will also be involved in foreman development training. Fifteen credit hours.

CRP2201 Residential Housing Construction II

This course provides hands-on opportunities to complete all of the finish work in a residential structure. Students hang and finish drywall and install interior doors. Base trim, window trim, and crown mold installation is the primary emphasis in this course. Students also frame the beams for a front porch, set the finished porch posts and install the soffit on the underside of the porch. Time permitting, students will set up all of the exterior flatwork forms and also lay out, install and pour the concrete in all footing and foundation forms for the next year's program. All students will be involved in foreman development training. Fifteen credit hours.

CRP2202 Welding for Carpenters

Students will learn basic welding and burning techniques used in the residential and commercial sector of the construction industry. The main emphasis in this course is Shielded Metal Arc Welding (SMAW/ Stick Welding). Students will also learn how to weld on mild steel plates in horizontal and flat positions. In addition to SMAW, students will use oxy-fuel cutting to burn small holes and straight lines in mild steel. The final project in this course involves cutting and burning mild steel parts and welding them back together in accordance with industry and instructor specifications for strength and appearance. Two credit hours.

EVENING PROGRAM CERTIFICATE IN CARPENTRY MAINTENANCE

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 AND REFRIGERATION TECHNOLOGY

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. According to the US Bureau of Labor Statistics, employment of heating, air conditioning and refrigeration mechanics and installers is expected to grow 34 percent by the year 2020, which is much faster than the average growth rate for all occupations. Rising demand for trained technicians will result in excellent employment opportunities.

Students enrolled in the Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) 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 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 or Second Semester	HVA1000	Fundamentals of HVACR Electrical	13	
First or Second Semester	HVA1200	Fundamentals of Heat Transfer and Domestic Applications	13	
Third or Fourth Semester	HVA2100	Commercial Refrigeration and Light Commercial Heat/AC	13	All 1000 level courses
Third or Fourth Semester	HVA2200	Residential Heat/Air and Heat Pumps	13	All 1000 level courses
		Total Technical Credit Hours Required	52	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
	BUS1000	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

HVA1100 Fundamentals of HVACR Electrical

This course introduces basic electrical theory, Ohm's law, insulators, conductors, switches, and loads. Students wire simple, series and parallel circuits and apply Ohm's law. Electrical meters are also introduced along with basic circuitry. Students will competently have the ability to read and produce wiring/ladder diagrams. Students will be proficient in wiring and troubleshooting control circuits. The course continues with electrical symbols, capacitors, and motors. Students are introduced to hermetic compressors, relays, control circuits, and fan relays. Thirteen credit hours.

HVA1200 Fundamentals of Heat Transfer & Domestic Applications

This course involves learning how to use tools properly and safely. Accurate trade measurements will be taken along with making leak-tight flare, swag, solder, and braze connections on copper tubing. Introduces the basics of refrigeration, including a description of what is taking place in each component and the lines connecting them, Students learn to read a temperature/ pressure chart and apply it to variou 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. This course then continues with trouble diagnosis, charging, and performing operational checks. Students will learn to solder and braze tubing using various heat sources and alloys. Students will thread and put steel pipe together properly. This course teaches the proper layout techniques for fabricating residential duct fittings. Introduces students to various types of metering devices, with the review of gauge manifold and two-way service valves. Students learn charging methods, trouble diagnosis, and the proper operation of a refrigerator. Introduces students to proper pressures, temperatures, and running times for refrigerators and room air conditioners. Combines principles of threading steel pipe correctly and properly figuring piping measurements. Thirteen credit hours.

HVA2100 Commercial Refrigeration & Light Commercial Heat/AC

Covers principles of commercial refrigeration and light commercial heat/air conditioning (AC) operation, including 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 relevant performance conditions and diagnosis operation all by use of EPA Industry standards. Troubleshooting electrical circuits, refrigeration circuits, water circuits, and air circuits for different refrigeration systems. Class systematically performs problem diagnosis in a wide variety of commercial refrigeration and light air conditioning systems, as well as sizing 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. Introduction to "Building Automated Systems" (BAS) used in the control and monitoring of facilities, energy use, and zone comfort conditions. Thirteen credit hours.

HVA2200 Residential Heat/Air & Heat Pumps

Covers principles of wiring components and troubleshooting of gas furnace systems including, standing pilot, spark to pilot and direct ignition, two stage and modulating gas systems. Pipe and vent-sizing of gas furnaces. Emphasis is placed on service skills and systematic trouble diagnosis. Indoor Air Quality Products (IAQ) including variable speed blower systems are taught. Course covers trouble diagnosis of 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 in the homes of Ranken's Community Development Corporation (RCDC) program. Thirteen credit hours.

EVENING PROGRAM CERTIFICATE IN HEATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

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

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 electrical 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 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 conditionng, 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.

DAYPROGRAMCOURSES			HOURS	PREREQUISITES
First or Second Semester	HVA1200	Fundamentals of Heat Transfer and Domestic Applications	13	
First or Second Semester	HVA1100	Fundamentals of HVACR Electrical	13	
Third or Fourth Semester	HVA2200	Residential Heat/AC and Heat Pumps	13	All 1000 level courses
Third or Fourth Semester	MAT2200	Major Appliance+ Technology	13	All 1000 level courses
		Total Technical Credit Hours Required	52	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
BUS1000	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

HVA1200 Fundamentals of Heat Transfer and Domestic Applications

In this course, students learn how to use hand tools properly and safely. Accurate trade measurements are taken along with making leak-tight flare, swag, solder, and braze connections on copper tubing. Students are introduced to the basics of refrigeration, including a description of what takes place in 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. Procedures such as recovery, evacuation, leak testing, and charging of refrigerant are performed on various types of equipment. This course then continues with trouble diagnosis, charging and performing operational tasks. Students learn to solder and braze tubing using various heat sources and alloys. Students thread and put steel pipe together properly. The course teaches the proper layout techniques for fabricating residential duct fittings and involves the fabrication of over twenty residential sheet metal duct fittings. Students are introduced to various types of metering devices, with the review of gauge manifold and two-way service valves. Students learn charging methods, trouble diagnosis, and the proper operation of a refrigerator. The course introduces students to proper pressures, temperatures, and running times for refrigerators and room air conditioners. It combines the principles of threading steel pipe correctly and properly figuring piping measurements. Thirteen credit hours.

HVA1100 Fundamentals of HVACR Electrical

This course introduces basic electrical theory, Ohm's law, insulators, conductors, switches, and loads. Students wire simple, series, and parallel circuits and apply Ohm's law. Electrical meters are also introduced, along with basic circuitry. Students will have ability to competently read and produce wiring-ladder diagrams. Students will be proficient in wiring and troubleshooting control circuits. The course continues with electrical symbols, capacitors, and motors. Students are introduced to hermetic compressors, relays, control circuits, and fan relays. Thirteen credit hours.

MAT2200 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. Thirteen credit hours.

HVA2200 Residential Heat/AC and Heat Pumps

This course covers principles of wiring components and troubleshooting of gas furnace systems, including standing pilot, spark to pilot and direct ignition, two-stage and modulating gas systems. Pipe and vent sizing of gas furnaces. Emphasis is placed on service skills and systematic trouble diagnosis. Indoor Air Quality Products (IAQ), including variable speed-blower systems are taught. Course covers trouble diagnosis of 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 in the homes of Ranken's Community Development Corporation (RCDC) program. Thirteen credit hours.

EVENING PROGRAM CERTIFICATE IN MAJOR APPLIANCE TECHNOLOGY

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 conditionng, cooking and heating equipment, and repair, replace or service to manufacturer and/or industry standard.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	HVA0100	Fundamentals of Heat Transfer and Domestic Applications	6	
Second Semester	HVA0101	Electrical for HVACR	6	
Third Semester	HVA0230	Residential HAVC & Heat Pumps	6	HVA0100, HVA0101
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, 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 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 efficiences. 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

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 Associate of Applied Science (AAS) and Bachelor of Science in Applied Management (BSAM) degrees.

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	
	BUS1000	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 TECHNOLOGY

Evening students can earn a certificate in Plumbing Technology by pursuing this program. These courses combine classroom and shop experience to provide overall instruction, hands-on training and experience in the practices and skills needed by area-wide employers. To earn a certificate in Plumbing Technology, students must complete two courses that encompass the pipefitting and plumbing systems curriculum.

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

- Join a variety of piping materials, pipes, and fittings.
- Install a full drain, waste and vent system, and a properly-sized water supply system with plumbing fixtures.

EVENING PROGRAM COURSES			HOURS
First Semester	PLT0110	Pipefitting Theory and Practice	6
Second Semester	PLT0100	Plumbing Systems Theory and Practice	6
		Total Technical Credit Hours for Certificate Completion	12

COURSE DESCRIPTIONS

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, and joining pex, as well as 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.

PLT0100 Plumbing Systems Theory and Practice

Covers plumbing for the home owner or handyman, with hands-on application and theories about plumbing safety, drainage, waste, vent systems, plumbing fixtures, plumbing appliances and hot and cold water supply systems. Plumbing system inspections and tests are included. Six credit hours.

EVENING PROGRAM CERTIFICATE IN PLUMBING AND PIPEFITTING TECHNOLOGY

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. Students can complete an apprenticeship at the end of the program, earning them a certificate from the Department of Labor.

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
Section 1	PPT0100	Plumbing Foundations	6
Section 2	PPT0120	Residential Plumbing	6
Section 3	PPT0130	Water Supply and Waste/Vent Systems	6
Section 4	PPT0140	Commercial Plumbing	6
Section 5	PPT0150	Repair Plumbing	6
Section 6	PPT0160	Pipefitting and Plumbing Code	6
		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 what 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

ELECTRICAL TECHNOLOGY

Graduates of Electrical Technology division's four-semester programs in Control Systems Technology, Electrical Automation Technology, and Electrical Systems Design Technology are highly valued among area employers, because students receive the hands-on training necessary to meet the growing needs of companies with electronic control and distribution systems. From installing and maintaining basic electrical systems, to operating a facility through an electronically controlled network, Electrical Technology presents students with many opportunities.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	EEL1100	Introduction to National Electrical Code (NEC)	3	MTH1110 (Co. Req.)
	EEL1110	DC/AC Electrical Fundamentals Lab	2	
	EEL1111	DC/AC Electrical Fundamentals Theory	5	
	EEL1112	Electrical Wiring Shop	3	
Second Semester	EEL1215	Control Circuits & Commercial Wiring	15	All EEL1100 courses
		Total Technical Credit Hours Required	28	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

EEL1100 Introduction to National Electrical Code (NEC)

Provides insight into the technical aspects of the electrical field, explores various wiring methods and electrical components using National Electric Code (NEC) fundamentals. Three credit hours.

EEL1110 DC/AC Electrical Fundamentals Lab

Develop basic hands-on skills using resistors, capacitors, inductors and transformers. Basic troubleshooting introduced, using both hands-on & computer-generated circuits. Students utilize: analog & digital meters, direct current (DC) & alternating current (AC) power supplies, oscilloscopes & AC signal generators. Two credit hours.

EEL1111 DC/AC Electrical Fundamentals Theory

Introduces fundamentals of electricity. Covers basic electrical terms, DC circuit concepts and AC circuit analysis. Electrical components such as resistors, capacitors, inductors and transformers are employed in circuit analysis. Five credit hours.

EEL1112 Electrical Wiring Shop

Focuses on tools used in the electrical trade, electrical safety, electrical equipment and the actual wiring of basic electrical circuits. Also covers blueprint reading for electricians. Three credit hours.

EEL1215 Control Circuits & Commercial Wiring

This course explores, through lecture and hands-on construction, types of electromechanical relay logic control circuits as applied in both the commercial and industrial environment. Students study ladder logic & component wiring design. Operations these circuits perform are emphasized through lab exercises. Fundamental motor control, from its basic application through advanced instruction sets. Students are involved in hard wiring motor control components using ladder logic into functional control circuits. Students learn a hands-on approach to maintaining and troubleshooting various types of control circuits. Students focus on applying National Electric Code (NEC) for sizing, grounding and over-current protection of single-phase & three-phase feeder circuits. Students perform various calculations as required by the NEC. Transformer theory and commercial/industrial power distribution systems are covered. Students construct electrical installations utilizing both metal raceway and metal jacketed cabling systems as they are commonly used in commercial wiring projects. Students design and install commercial circuits utilizing the requirements of the NEC. Safe work practices emphasized. Basic construction documents, electrical plans and estimating procedures are discussed & utilized. 15 credit hours.

CONTROL SYSTEMS TECHNOLOGY

ST. LOUIS AND WENTZVILLE

Control systems influence the speed and efficiency of businesses that rely on highly automated processes and technical systems. Ranging from a few basic instruments to a complex network of personal and industrial computers, electronic controls and "intelligent" instruments, process control systems are often used to monitor and operate an entire manufacturing facility from the convenience of one computer.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Ranken's Control Systems Technology program prepares students for a career in the instrumentation and process control industry by providing instruction in mechanical, electrical, thermal and fluid principles, as well as hands-on training in installing, calibrating, troubleshooting and servicing the various parts that compose a control system.

Graduates typically enter the field as electrical/instrumentation technicians and control system technicians responsible for maintaining instrumentation, electrical controls, motor controls, programmable logic controllers (PLC) and computer-based systems found in manufacturing plants, food processing plants, utilities, refineries, breweries and chemical plants. Additional job opportunities include positions as draftspersons, lab technicians, technical writers and salespersons in the general field of control systems technology.

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
Third Semester	ELC2010	Programmable Logic Controllers (PLCs) and Human Machine Interfaces (HMIs) Graphical Displays	13	All EEL1200 courses
Fourth Semester	CST2215	Instrumentation and Process Control	13	ELC2010 or EEL1220
		Total Technical Credit Hours Required	26	

COURSE DESCRIPTIONS

ELC2010 Programmable Logic Controllers (PLCs) and Human Machine Interfaces (HMIs) Graphical Displays

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. Students will also gain experience with industrial application of robotics technology. Thirteen credit hours.

ELC2215 Instrument 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

EVENING PROGRAM CERTIFICATE IN CONTROL SYSTEMS TECHNOLOGY

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	EEL0120	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third Semester	ELA0240	Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control	6	EEL0120
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.

EEL0120 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered in both theory and hands-on practice. Students will 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 cover an introduction to 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 AND WENTZVILLE

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**
- **Servo and motion control**

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE - ST. LOUIS CAMPUS

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:

- Constuct 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
Third or Fourth Semester	ELA2015	Automated Motors and Drives Applications	13	All EEL1200 courses
Third or Fourth Semester	ELC2010	Programmable Logic Controllers (PLCs) and Human Machine Interfaces (HMIs) Graphical Displays	13	All EEL1200 courses
		Total Technical Credit Hours Required	26	

COURSE DESCRIPTIONS

ELC2010 Programmable Logic Controllers (PLCs)/ Human Machine Interfaces (HMIs) Graphical Displays

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. Students will also gain experience with industrial application of robotics technology. Thirteen credit hours.

ELC2015 Automated Motors and Drives Applications

This course covers both alternating current (AC) and direct current (DC) machines and how to install, maintain and troubleshoot these machines. Focus is on National Electric Code (NEC) calculations for single and multiple motor installations. Students will also learn how to construct, configure and troubleshoot AC and DC motor drive systems and single axis motion control systems. Instruction on AC drives includes both the volts/hertz and vector modes. Students also learn how to program and monitor equipment through specific software and industrial networks. Thirteen Credit Hours.

EVENING PROGRAM CERTIFICATE IN ELECTRICAL AUTOMATION TECHNOLOGY - ST. LOUIS CAMPUS

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	EEL0120	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third or Fourth Semester	ELA0230	Motor Controls, Drives and Power Distribution	6	EEL0120
Third or Fourth Semester	ELA0240	Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Control	6	EEL0120
		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.

EEL0120 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered in both theory and hands-on practice. Students will 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 also explored. The course will also cover an introduction to electrical safety, and types of electrical equipment and devices are also studied. 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.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE - WENTZVILLE LOCATION

First year electrical students at the Wentzville location "start" their Ranken experience in either of the first two semesters needed in their chosen electrical program. With students being able to take either of these first two courses in any order, the curriculum is restructured to provide students with quality flexible technical education, with different skill sets taught in the first two courses, each dependent from the other.

- Analyze and construct direct current and alternating current series, parallel and complex circuits
- Calculate electrical values using the concepts related to solving basic and complex direct current and alternating current electrical circuitry
- Explain the operation of electrical components, such as resistors, capacitors, inductors, and transformers, how they are employed in basic circuits
- Design and construct electrical circuits found in residential and commercial buildings, according to blueprints and National Electrical Code standards
- Construct basic bends in 1/2" electrical metallic conduit
- Practice basic safety rules for electrical work
- Utilize AutoCAD to represent electrical circuits in a construction drawing
- Create a manual electrical estimate using Microsoft Excel

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

- Constuct 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				PREREQUISITES
First or Second Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
First or Second Semester	EEL1220	Intro to Automation & Control Circuits	14	
Third or Fourth Semester	ELA2015	Automated Motors and Drives Applications	13	EEL1120
Third or Fourth Semester	ELC2010	PLCs and HMIs Graphical Displays	13	EEL1120
		Total Technical Credit Hours Required	46	

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. This course will cover construction documents for electricians and AutoCAD to represent the electrical circuits in a building. 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.

EEL1220 Introduction to Automation and Control Circuits

Offers fundamentals of relay logic control circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered in both theory and hands-on practice. Students will 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 also explored. The course will also cover an introduction to electrical safety, and types of electrical equipment and devices are also studied. 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. Fourteen credit hours.

ELA2015 Automated Motors and Drives Applications

This course covers both alternating current (AC) and direct current (DC) machines and how to install, maintain and troubleshoot these machines. Focus is on National Electric Code (NEC) calculations for single and multiple motor installations. Students will also learn how to construct, configure and troubleshoot AC and DC motor drive systems and single axis motion control systems. Instruction on AC drives includes both the volts/hertz and vector modes. Students also learn how to program and monitor equipment through specific software and industrial networks. Thirteen Credit Hours.

ELC2010 Programmable Logic Controllers (PLC) and Human Machine Interface (HMI) Graphical Displays

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

In response to a rising demand for skilled technicians who are qualified to work on a day-to-day basis with building engineers, Ranken has developed the Electrical Systems Design Technology (ESDT) program. Unique in the St. Louis region, this program provides four semesters of training and instruction leading to an associate degree.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

With an emphasis on electrical distribution systems for modern commercial and industrial buildings, coursework includes:

- Basic electricity theories
- Design and construction of electrical distribution systems
- Computer Aided Drafting (CAD)
- Building Information Modeling (BIM)
- Commercial lighting design
- Electrical estimating

Students enrolled in the ESDT program use campus labs for the study of electrical wiring, industrial controls, circuitry, machinery and power distribution. In the final semester, students are required to complete an electrical design and layout project, including a complete set of drawings, details and other necessary documentation.

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.
- Construct basic motor control circuits.
- Create electrical construction documents using a variety of software.
- Construct electrical constuction estimates using applicable software.
- Design and create lighting systems using applicable software.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
Third Semester	ESD2115	Applied Electrical Design	15	All EEL1200 level courses
Fourth Semester	ESD2215	Commercial Electrical Design	14	ESD2115
		Total Technical Credit Hours Required	29	

COURSE DESCRIPTIONS

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.

EVENING PROGRAM CERTIFICATE IN ELECTRICAL CONSTRUCTION DESIGN AND MANAGEMENT

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	EEL0120	Basic Control Circuits and Commercial Wiring Practices	6	EEL0110
Third Semester	ESD0230	Residential and Commercial Lighting Design with AutoCAD®	6	EEL0120 (Co. Req.)
Fourth Semester	ESD0240	Construction Management and Estimating	6	EEL0120 (Co. Req.)
		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 studiedin 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.

EEL0120 Basic Control Circuits and Commercial Wiring Practices

Offers fundamentals of relay logic control circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered in both theory and hands-on practice. Students will 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 cover an introduction to 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. 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, jobsite layout and control and subcontracting. Electrical estimating by hand, Excel spread sheets and computerized estimating software are also covered. Six 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 commerical 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

In this hardware-centered program, students will work with Cisco® equipment, program and configure routers and switches, study wireless local area network (LAN) configurations and security and firewall issues, voice over IP (VOIP) technology and vitual LANs (VLANs). Students will be prepared for the Cisco Certified Network Associate (CCNA™) certification test and Cisco Certified Network Associate Security. Upon completion of this program, students will be able to:

- Install, configure and troubleshoot computers, peripheral devices and operating systems.
- Construct a voice over IP Network using Cisco Unified Call Manager/Cisco Unified Call Manager Express.
- Configure and install Cisco ASA5505 Firewall into a router/switch network environment.
- Configure a Cisco router to follow standard security guidelines.
- Configure networks using Cisco routing and switching technologies.

SYSTEM ADMINISTRATION AND VIRTUALIZATION TECHNOLOGY

Software-centered, this track focuses on Microsoft Server for network services, network infrastructure and Active Directory, services and network virtualization using ESXi, VCenter Server and VMware. Students will be prepared to achieve the Microsoft Certified Technology Specialist (MCTS) certification. Upon completion of this program, students will be able to:

- Install, configure, upgrade and troubleshoot computers, peripheral devices and operating systems.
- Install, configure, maintain and troubleshoot Microsoft enterprise-level servers.
- Support data centers by implementing high availability and disaster recovery technologies
- Maintain group policies by configuring, monitoring and troubleshooting Active Directory configurations
- Implement and manage enterprise-level virtual environments

NETWORK SYSTEMS MANAGEMENT TECHNOLOGY

Featuring elements of System Administration and Virtualization" and network and database administration and network architecture technology, this track will focus on configuring Cisco routers. Students will also study Microsoft Server, including Active Directory services and network infrastructure. Students will be prepared for the Cisco Certified Network Associate (CCNA) certification test and Microsoft Certified Technology Specialist (MCTS). Upon completion of this program students will be able to:

- Install, configure, upgrade and troubleshoot computers, peripheral devices and operating systems.
- Configure networks using Cisco routing and switching technologies
- Implement IPv6 addresses scheme on LAN/WAN networks.
- Install, configure and troubleshoot desktop operating systems, PCs, and peripherals.
- Install, configure, maintain and troubleshoot Microsoft enterprise-level servers.
- Maintain group policies by configuring, monitoring and troubleshooting Active Directory configuration.

DAY PROGRAM COURSES	RANKEN ST. LOUIS		HOURS	PREREQUISITES
First Semester	CNT1100	Operating Systems	15	MTH1100 or MTH1110 (Co. Req.)
Second Semester	CNT1210	Microcomputer Hardware and Peripherals	7	CNT1100
	CNT1220	Introduction to Internetworking Technologies	7	CNT1100
Third and Fourth Semester	INF2100	Cisco Network Administration	13	CNT1210, CNT1220
(Network Architecture)	INF2200	Cyber Security and Voice Over IP	13	CNT1210, CNT1220
Third and Fourth Semester	INF2100	Cisco Network Administration	13	CNT1210, CNT1220
(Network Systems	INF2025	Microsoft Network Administration I	7	CNT1210, CNT1220
Management Technology)	INF2026	Microsoft Network Administration II	7	CNT1210, CNT1220
Third and Fourth Semester	INF2010	Network Virtualization	7	CNT1210, CNT1220
(System Administration &	INF2025	Microsoft Network Administration I	7	CNT1210, CNT1220
Virtualization)	INF2026	Microsoft Network Administration II	7	CNT1210, CNT1220
	INF2027	Microsoft Network Adminisration III	7	CNT1210, CNT1220
		Total Technical Credit Hours Required	55-59	

DAY PROGRAM COURSES	RANKEN WENTZVILLE & PERRYVILLE		HOURS	PREREQUISITES
First and Second Semester	CNT1100	Operating Systems	16	MTH1100 or MTH1110 (Co. Req.)
	CNT1210	Microcomputer Hardware and Peripherals	7	CNT1100
	CNT1220	Introduction to Internetworking Technologies	7	CNT1100
Third and Fourth	INF2100	Cisco Network Administration	13	CNT1210, CNT1220
Semester (Internet and	INF2025	Microsoft Network Administration I	7	CNT1210, CNT1220
Web-based Technology)	INF2026	Microsoft Network Administration II	7	CNT1210, CNT1220
		Total Technical Credit Hours Required	57	

Important Note: Ranken Wentzville & Perryville 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	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

CNT1100 Operating Systems

This course provides a comprehensive overview of Command Line, Linux, and Windows operating systems. Students will work with partitioning, formatting, directory structures, file management, memory resident programs, device drivers, batch files, Power Shell, configuration files and remote recovery consoles. Students will learn to use a command line interface for troubleshooting and system recovery. Students spend time installing and upgrading each operating system while gaining an in-depth understanding of Microsoft Windows optimization, customization, client side network setup, peer-to-peer networking, printing, resource sharing, policies, profiles, administration, security and remote administration. Students will be prepared to attempt the Microsoft 70-698: Installing and Configuring Windows 10 certification test which is credit towards a Microsoft Certified Systems Administrator (MCSA) credential. Fifteen credit hours.

CNT1210 Microcomputer Hardware and Peripherals

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 PCs and will be prepared for the CompTIA A+ certification exam. Seven credit hours.

CNT1220 Introduction to Internetworking Technologies

Students learn fundamental computer networking terms, concepts and components. Students develop skills in basic network configuration, connectivity and testing using workstations, hubs, routers and switches. Students also develop skills in cable construction and testing,

Students also develop skills in cable construction and testing, small model local area network (LAN) and wide area network (WAN) construction, IP addressing and basic subnetting. Seven credit hours.

INF2010 Network Virtualization

This hands-on course explores installation, configuration and management of VMware vSphere®, which consists of VMware vSphere®, ESXi™ and VMware® vCenter Server™. This course is based on ESXi™, vCenter Server™. This hands-on course will also provide an introduction to PowerShell cmdlets. Seven 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.

INF2200 Cyber Security and Voice Over IP (VOIP)

In this hardware-centered course, students work with Cisco® equipment, program and configure routers and switches, study security concepts and ASA devices, Voice Over IP technology and virtual LANs. Students become prepared for the Cisco Certified Network Associate Security (CCNA™ Security) certification test. Thirteen credit hours.

INF2025 Microsoft Network Administration I

Offers a comprehensive overview of the Microsoft Network Operating Systems. Focus is placed on using the Windows Server operating system to provide networking services, such as user creation, file sharing, printer sharing, Domain Naming Services and remote access. Students learn how to use the Microsoft Active Directory Services to provide networking services for larger-scale networks. Seven credit hours.

INF2026 Microsoft Network Administration II

Provides hands-on implementation of concepts studied in INF2025. Students design the layout to set up Active Directory Services for small and large networks, implement network plans by installing the Windows Network Operating System and configure servers to provide the proper networking services. Seven credit hours.

INF2027 Microsoft Network Administration III

This course focuses on advanced configuration of services necessary to deploy, manage and maintain a Windows Server 20 infrastructure, such as advanced networking services, Active Directory Domain Services (AD DS), Active Directory Rights Management Services (AD RMS), Active Directory Federation Services (AD FS), Network Load Balancing, Failover Clustering, business continuity and disaster recovery services. Students gain experience with access and information provisioning and protection technologies such as Dynamic Access Control (DAC), user-centric capabilities for anytime/ anywhere services and software to strengthen both control and compliance in organizations that deploy the entire Microsoft System Center and Web Application Proxy integration with AD FS and Workplace Join. Seven credit hours.

EVENING PROGRAM CERTIFICATE IN COMPUTER NETWORKING TECHNOLOGY

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 Semester	CNT0110	Command Line and Windows® Lab	6	
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.

EVENING PROGRAM CERTIFICATE IN MICROSOFT WINDOWS SERVER

Students enrolled in the Microsoft Windows Server evening certificate program will take the CompTIA A+ exams after completing the Command Line and Windows® Lab and Microcomputer Hardware/Peripherals courses. Students will also take the 70-410 exam: Installing and Configuring Windows Server 2012 and the 70-411 exam: Administering Windows Server 2012. After passing each Microsoft exam, the students will receive the Microsoft Certified Professional (MCP) certification. Knowledge and skills gained upon completion:

- Build, troubleshoot and configure desktop computers, Windows operating systems, and peripherals
- Operation and management of a Windows server infrastructure within an enterprise organization
- Manage the infrastructure of Web and IT application servers
- Use scripts and batch files to accomplish tasks

Upon completion of this program students will be able to:

- Install, configure and troubleshoot desktop operating systems, PC's, and peripherals
- Install, configure, maintain and troubleshoot Microsoft enterprise-level servers.
- Support data centers by implementing high availability and disaster recovery technologies.
- Maintain group policies by configuring, monitoring and troubleshooting Active Directory configurations.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	CNT0110	Command Line and Windows® Lab	6	
Second Semester	CNT0120	Microcomputer Hardware and Peripherals	6	
Third Semester	CNT0225	Microsoft Network Administrator I	6	CNT0110, CNT0120
Fourth Semester	CNT0226	Microsoft Network Administrator II	6	CNT0110, CNT0120
		Total Technical Credit Hours Required 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 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 PCs. Students will be prepared for the CompTIA A+ certification exam. Six credit hours.

CNT0225 Microsoft Network Administrator I

A server administrator is responsible for the operations and day-to-day management of a Windows Server infrastructure within an enterprise organization. Windows server administrators manage the infrastructure, Web and IT application servers. The Windows server administrators use scripts and batchfiles written by others or those that they occasionally write themselves to accomplish tasks on a regular basis. They conduct most server management tasks remotely by using Remote Desktop Server or administration tools installed on their local workstation. A server administrator's primary tasks include:

- Managing the server operating system, file, and directory services
- Software distribution and updates
- Profiling and monitoring assigned servers
- Troubleshooting

Server administrators also support engineering projects. Server administrators are responsible for server builds and configuration. Their job role involves 60% operations, 20% engineering, and 20% support tasks. Six credit hours.

CNT0226 Microsoft Network Administrator II

Provides hands-on implementation of concepts studied in Microsoft Windows Server environment. Students design the layout to set up Active Directory Services for small and large networks, implement network plans by installing the Windows Network Operating System and configure servers to provide the proper networking services. Six credit hours.

EVENING PROGRAM CERTIFICATE IN MICROSOFT ADMINISTRATION

The Microsoft Administration Certificate gives students the opportunity to obtain Microsoft Certified Technology Specialist (MCTS) certification. Knowledge and skills gained upon completion:

- Build, troubleshoot, and configure desktop computers, Windows operating systems, and peripherals
- Operation and management of a Windows server infrastructure within an enterprise organization
- Manage the infrastructure, Web, and IT application servers
- Use scripts and batch files to accomplish tasks on a regular basis
- Conduct most server management tasks remotely by using Remote Desktop Server or administration tools installed on their local workstation
- Design the layout to set up Active Directory Services for small and large networks
- Implement network plans by installing the Windows server operating system
- Configure servers to provide the proper networking services

Upon completion of this program students will be able to:

- Install, configure and troubleshoot desktop operating systems, PC's, and peripherals
- Install, configure, maintain and troubleshoot Microsoft enterprise-level servers.
- Support data centers by implementing high availability and disaster recovery technologies.
- Maintain group policies by configuring, monitoring and troubleshooting Active Directory configurations.

EVENING PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	CNT0225	Microsoft Network Administrator I	6	CNT0110, CNT0120 or equivalent
Second Semester	CNT0226	Microsoft Network Administrator II	6	CNT0110, CNT0120
Third Semester	CNT0227	Administering and Deploying System Center Configuration Manager	6	CNT0110, CNT0120
		Total Technical Credit Hours for Certificate Completion	18	

Important Note: After each course students must take a certification test. Students may start the program in any semester as long as prerequisites are met.

COURSE DESCRIPTIONS

CNT0225 Microsoft Network Administrator I

A server administrator is responsible for the operations and day-to-day management of a Windows Server infrastructure within an enterprise organization. Windows server administrators manage the infrastructure, Web and IT application servers, as well as use scripts and batch files written by others or those that they occasionally write themselves to accomplish tasks on a regular basis. They conduct most server management tasks remotely by using Remote Desktop Server or administration tools installed on their local workstation. A server administrator's primary tasks include:

- Managing the server operating system, file, and directory services
- Software distribution and updates
- Profiling and monitoring assigned servers
- Troubleshooting

Server administrators also support engineering projects. Server administrators are responsible for server builds and configuration. Their job role involves 60% operations, 20% engineering, and 20% support tasks. Six credit hours.

CNT0226 Microsoft Network Administrator II

Provides hands-on implementation of concepts studied in Microsoft Windows Server environment. Students design the layout to set up Active Directory services for small and large networks, implement network plans by installing the Windows Network Operating System and configure servers to provide the proper networking services. Six credit hours.

CNT0227 Microsoft Network Administrator III

This course focuses on advanced configuration of services necessary to deploy, manage and maintain a Windows Server 20 infrastructure, such as advanced networking services, Active Directory Domain Services (AD DS), Active Directory Rights Management Services (AD RMS), Active Directory Federation Services (AD FS), Network Load Balancing, Failover Clustering, business continuity & disaster recovery services. Students gain experience with access and information provisioning and protection technologies such as Dynamic Access Control (DAC), user-centric capabilities for anytime/anywhere services and software to strengthen both control and compliance in organizations that deploy the entire Microsoft System Center and Web Application Proxy integration with AD FS and Workplace Join. Six Credit Hours.

APPLICATION & WEB DEVELOPMENT TECHNOLOGY

ST. LOUIS AND WENTZVILLE

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.
- Create data-driven Web-based applications that utilize SQL, stored procedures, LINQ and NET data access techniques.
- Utilize a version control system to manage code.

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	.Net Framework with Web Databases	14	AWD1000, AWD1100
	AWD1112	Application Programming with Java	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	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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

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, utiliiing modern developer tools will allow students to get the foundation needed for application development. Fourteen credit hours.

AWD1111 .Net Framework with Web Databases

The .NET Framework is an integral Windows component for building and running the next generation of software applications and Web services. This course begins by using the ASP and C# programming languages within that framework. Emphasis will be given to the .NET architecture/design, data access, deployment and distribution. Students will also learn how to create database-driven websites, implementing the latest technologies to integrate databases within web applications. Students will be able to add databases to their .Net applications, manipulate data using SQL operations and publish static and dynamic data on the web. Fourteen credit hours.

AWD1112 Application Programming with Java

Students will delve deeper into application development as they are introduced to the Java programming language. Students write programs that demonstrate object-oriented concepts. This course will widen the student's understanding of programming concepts as well as introduce more planning and design aspects to help the student begin to visualize the conceptual requirements for building full-blown applications. Android Studio will be used in the second half of the course to develop an Android application. Using current software development kits, distributed version control systems and APIs, students will get well rounded, hands-on experience that will translate into the skills they will need to be successful. Fourteen credit hours.

MANUFACTURING DIVISION

ADVANCED MANUFACTURING TECHNOLOGY
WENTZVILLE

Manufacturers are becoming increasingly dependent upon the use of high-tech equipment that involves multiple, integrated systems. It is critical that these companies are able to recruit and employ individuals who know how to operate, troubleshoot and maintain this high-tech equipment. Ranken's Advanced Manufacturing Program in Wentzville is connected with industry through internships to meet this need. Students in the program will alternate between training classes and working an internship with an employer or in Ranken's manufacturing microenterprise. This blend of training with real world experience offers a superior approach to education.

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

Ranken's Advanced Manufacturing Technology program is designed to prepare students for employment with companies that have implemented a team-oriented design, production, quality and maintenance environment. Advanced Manufacturing Technology is a four-semester program that leads to an associate degree or certificate. Each semester 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
- Manufacturing processes
- Quality practices and maintenance
- Advanced programming and fixture design

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

- Apply the principles of mathematics, precision measurement and machining, and blueprint reading to the production of parts and tools to industry standards.
- Select and properly use appropriate instruments, tools, and equipment for basic and precision machining operation.
- Compare and distinguish the difference between the operation and programming of a CNC machine tool using manual programming and the operation and programming of CNC machine tool using CAM systems.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First Semester	MFG1000	Machining Principles	7	
	MFG1002	Professional MFG Internship I	5	MFG1000
Second Semester	MFG2000	Manufacturing Processes	7	MFG1000
	MFG2002	Professional MFG Internship II	5	
Third Semester	MFG2115	Mazatrol Programming	7	MFG2000
	MFG2102	Professional MFG Internship III	5	
Fourth Semester	MFG2030	CAD/CAM and Fixture Design	7	MFG2000
	MFG2032	Professional MFG Internship IV	5	
		Total Technical Credit Hours Required	48	

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
BUS1000	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

MFG1000 Machining Principles
This course begins with detailed coverage of machine shop safety. Subsequently, students will develop the necessary entry-level skills to safely and accurately operate manual lathes, manual mills, CNC mills and CNC lathes. Additional industrial equipment — such as a drill press, horizontal saw, pedestal grinder and inspection tools — will also be used. This course will focus on measurement, materials and engineering requirements with an emphasis on preparing the student for a manufacturing environment. Blueprint reading and basic right-angle trigonometry will be introduced. Seven credit hours.

MFG1002 Professional MFG Internship I
Applying skills learned in MFG1000 to a real-world industry setting. Five credit hours.

MFG2000 Manufacturing Processes
This course addresses the manufacturing processes used to build a product, from design to delivery into the marketplace. Students will be introduced to G-Code programming. General programming methods are introduced along with tool setup, and simulations are examined. Advanced blueprint reading and geometric dimensioning and tolerance (GD&T) skills are reinforced. Seven credit hours.

MFG2002 Professional MFG Internship II
Applying skills learned in MFG2000 to a real-world industry setting. Five credit hours.

MFG2115 Mazatrol Programming
Students will explore CAD/CAM (Computer aided drafting/Computer aided Machining) utilizing Mazatrol Conversational Programming (Fusion 640T and Matrix controllers). This class will focus on Mazatrol program creation, placing emphasis on turning, point machining, line machining, and face machining units. Students will be provided an overview of machining offsets, and step-by-step instructions needed for measuring, entering, and adjusting offsets to compensate for tool wear. Seven credit hours.

MFG2102 Professional MFG Internship III
Applying skills learned in MFG1100 to a real-world industry setting. Five credit hours.

MFG2030 CAD/CAM and Fixture Design
Students will use computer aided design and computer aided manufacturing (CAD/CAM) software to create the geometry of the parts to be machined. These geometries will then be dimensioned and used as blueprints for production. From the created geometry, 3D Solid Models will be generated which can help to visualize the final product. Finally, the machining toolpath will be created either using the geometry or solid model to generate the required G-code for CNC machines. Students will also learn how to design customized fixtures for different production parts in order to minimize the cycle time and optimize the production process. Seven credit hours.

MFG2032 Professional MFG Internship IV
Applying skills learned in MFG2020 to a real-world industry setting. Five credit hours.

INDUSTRIAL TECHNOLOGY

The Industrial Technology program offers comprehensive training in several of the most sought-after skills that companies demand as they seek employees with multi-craft expertise. Program graduates have expertise in a number of fields and are capable of stepping in and keeping equipment and machinery running in manufacturing plants, hotels or other mid-size or large companies. Recognized for their breadth of experience, they are qualified to solve most of the technical and industrial problems experienced by companies today. Additionally, our program prepares students for the Environmental Protection Agency (EPA) licensing exam covering refrigeration and air conditioning repair.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Ranken's Industrial Technology program provides overall instruction, hands-on training and experience in the practices and skills needed by many facilities, including universities, hospitals, hotels and industrial businesses. 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 Industrial Technology program offers specialized instruction in the following areas:

- Basic electricity
- Introduction to Heating, Ventilation, Air Conditioning and Refrigeration (HVACR)
- Introduction to welding
- National Electrical Code, motor controls and Programmable Logic Controllers (PLC)
- Basic pipefitting and plumbing
- Carpentry maintenance
- Hydraulics principles & theory
- Welding (TIG, MIG and SMAW)
- Industrial mechanical systems

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.

DAYPROGRAMCOURSES			HOURS	PREREQUISITES
	INT1120	Industrial Mechanical Systems	12	
	INT1220	Fluid Power/Welding & Metal Fabrication	12	
	INT2120	Industrial Facilities Maintenance	12	
	INT2020	Industrial Electrical/PLC	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	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
	BUS1000	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

INT1120 Industrial Mechanical Systems

This course covers the basics of drill presses, hand saws, and associated hand tools. Students will examine mechanical fasteners and torque, discuss the fundamentals of prints, symbols and terms specific to industrial mechanical systems. Students will identify basic components such as bearings, seals, and gaskets. They will apply common maintenance principles and analyze, repair and install power transmission devices including gears, chains, belts, and couplings. Twelve credit hours

INT1220 Fluid Power/Welding and Metal Fabrication

Introduces safety, the correct use of tools and the fundamentals of Fluid Power/Welding. Fluid Power fundamentals, principles, and circuit analysis. During the fluid power portion of the semester, students use techniques to implement motors, cylinders, directional control valves, metering, and check-and-flow control valves in working circuits. They disassemble the components for inspection, repair or replacement for testing proper operation. The welding portion covers Shield Metal Arc Welding (SMAW), Gas Metal Arc Welding (MIG/GMAW), and Gas Tungsten Arc Welding (TIG). Introduces oxy-fuel cutting. Provides hands-on exposure to mild steel through the structured shop welding procedures and practices. Twelve credit hours.

INT2120 Industrial Facilities Maintenance

Provides the theory and hands-on application of principles related to buildings and grounds maintenance, including basic carpentry projects that teach the student to measure, lay out and cut. This class includes the practical application of mathematics and the safe and proper use of hand and power tools. Projects include the construction of an elevated wood and metal stud structure. Exposes students to drywall and taping, window and door installation and suspended ceiling grid and stair construction. Students assemble and install various copper and polyvinyl chloride (PVC) pipe projects. Covers RAH equipment and students continue with the refrigeration cycle, pressure temperature relationships, British thermal units (BTU) calculations and refrigerant controls. Twelve credit hours.

INT2020 Industrial Electrical/PLC

Provides the theory and hands-on application of principles including the installation of receptacles, the installation of solid-state timers, photo-electric and proximity sensors, switching and lighting circuits per the National Electrical Code (NEC). Begins with safety, basic electrical concepts and Ohm's law. Progresses through alternating current, lighting, motors, relays, starters, overload devices, Variable Frequency Drives (VFDs), ladder logic, occupational lighting sensors, basic programmable logic controller (PLC) knowledge and three-phase electrical systems and services. Introduces three-phase motors and control circuits. Students will wire step-up/step-down transformers and construct both basic and PLC driven motor control circuits. Twelve credit hours.

EVENING PROGRAM CERTIFICATE IN INDUSTRIAL TECHNOLOGY

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	EMT0110	Electrical Maintenance I	6	
	EMT0120	Electrical Maintenance II	6	EMT0110
Fabrication and Welding	FWL0110	Welding I	6	
	FWL0120	Welding II	6	FWL0110 (Co. Req.)
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	PLT0100	Plumbing Systems Theory and Practice	6	
	PLT0110	Pipefitting Theory and Practice	6	
Stationary Engineering	STE0110	Stationary Engineering I	6	MTH1110, MTH1100
	STE0120	Stationary Engineering II	6	
		Total Technical Credit Hours for Certificate Completion	24	(minimum)

Important Note: Students may apply four courses from the list below for a total 24 credits necessary to qualify for an Industrial Technology certificate. Electrical Maintenance, Plumbing and Stationary Engineering may be taken as two-semester certificate programs. The two-semester certificate programs are not Title IV eligible.

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

EMT0110 Electrical Maintenance I

Emphasizes electrical safety and proper use of tools as students cover the basics of electricity. The course provides an overview of series, parallel and combination circuits as well as electrical systems. Students become familiar with both balanced and unbalanced systems. Introduces wiring methods including cable and conduit bending as well as surface metal raceway and flexible wiring systems. The course also covers standard switching circuits, basic service and feeder calculations, branch circuit requirements, along with an introduction to motor controls. Six credit hours.

EMT0120 Electrical Maintenance II

Emphasizes maintenance and continued instruction of motor control circuits, ladder diagrams, control relays, motor starters, Variable Frequency Drives (VFDs) and diagram reading. It also introduces students to troubleshooting programmable logic controllers (PLC). (Does not include programming of PLC.) Students will also wire step-up/step-down transformers. The installation of solid-state timers, photo-electric and proximity sensors is also covered. 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

PLT0100 Plumbing Systems Theory and Practice

Covers plumbing with hands-on application and theories about plumbing safety, drainage, waste, vent systems, plumbing fixtures, plumbing appliances and hot and cold water supply systems. Plumbing system inspections and tests are included. 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

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	EMT0110	Electrical Maintenance I	6	
	EMT0120	Electrical Maintenance II	6	EMT0110
Heating, Ventilation, Air	HVA0100	Fundamentals of Heat Transfer and Domestic Applications	6	
Conditioning and Refrigeration	HVA0101	Electrical for HVACR	6	HVA0100
Plumbing	PLT0100	Plumbing Systems Theory and Practice	6	
	PLT0110	Pipefitting Theory and Practice	6	
Stationary Engineering	STE0110	Stationary Engineering	6	MTH1110, MTH1100
	STE0120	Stationary Engineering	6	
Additional Stand-Alone Courses	INT101C	Home Inspection Training	6	
		Total Technical Credit Hours for Certificate Completion	24	(minimum)

Important Note: Students may apply four courses from the menu list below for a total 24 credits necessary to qualify for a Facilities Technology certificate. Electrical Maintenance, Plumbing and Stationary Engineering may be taken as two-semester certificate programs. The two-semester certificate programs are not Title IV eligible.

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

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.

PLT0100 Plumbing Systems Theory and Practice

Covers plumbing for the home owner or handyman, with hands-on application and theories about plumbing safety, drainage, waste, vent systems, plumbing fixtures, plumbing appliances and hot and cold water supply systems. Plumbing system inspections and tests are included. Six credit hours.

ELECTRICAL MAINTENANCE

EMT0110 Electrical Maintenance I

Emphasizes electrical safety and proper use of tools as students cover the basics of electricity. The course provides an overview of series, parallel and combination circuits as well as electrical systems. Students become familiar with both balanced and unbalanced systems. Introduces wiring methods including cable and conduit bending as well as surface metal raceway and flexible wiring systems. The course also covers standard switching circuits, basic service and feeder calculations, branch circuit requirements, along with an introduction to motor controls. Six credit hours.

EMT0120 Electrical Maintenance II

Emphasizes the installation and maintenance of transformers and motor control circuits, ladder diagrams, control relays, motor starters and diagram reading. It also introduces students to troubleshooting programmable logic controllers (PLCs). (Does not include programming of PLCs.) 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.

INT101C Home Inspection Training

This course will teach students the fundamentals of inspecting structure, exteriors, roofing, electrical, plumbing, heating/cooling systems, insulation/ventilation systems, report writing and business development and marketing strategies. After completion of this course, students will be able to identify and properly document defects of a residential property within the standards of the industry. They will be able to properly document their findings on an inspection report. They will also learn essential skills in working with realtors, mortgage brokers, attorneys and financial institutions that play a key role in real estate transactions. Six credit hours.

INDUSTRIAL ENGINEERING TECHNOLOGY
PERRYVILLE

The Industrial Engineering Technology program at Ranken provides the opportunity for students to enroll in a Department of Labor (DOL) approved apprenticeship for the occupation of industrial technician, with select employers. Students receive credit for their coursework in the IET program and work toward completing the hourly requirement at a participating employer. After satisfying the terms of the apprenticeship, students will receive a certificate of completion from the Department of Labor. The training curriculum is developed to meet the strict requirements of the National Institute of Metalworking Skills (NIMS).

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

The Industrial Engineering Technology program consists of five semesters. Students take coursework designed to prepare them with a variety of skills to maintain and repair factory equipment and other industrial machinery. There are ten instructional classes, each focusing on a different skill set. The classes are four weeks in duration, and alternate with a four-week internship, to provide real-world experience. Students also take general education courses to complete the degree.

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

- Maintain, analyze, service and repair industrial equipment and machinery.
- Achieve industrial maintenance credentials offered by the National Institute of Metal Working Skill (NIMS).

NATIONAL INSTITUTE OF METALWORKING SKILLS (NIMS) CREDENTIALS

Industry uses the credentials to recruit, hire, place, and promote individual workers. NIMS certifies individual skills against a national standard. Earning NIMS credentials requires a performance test and a theory test. The performance requirements and theory tests are drawn directly from the NIMS Standards, and are written and piloted by industry.

INDUSTRIAL ENGINEERING TECHNOLOGY COURSES		HOURS	PREREQUISITE
First Semeter	IET1100 Maintenance Operations	5	
	IET1105 Internship I	3	
	IET1110 Mechanical Systems	5	
	IET1115 Internship II	3	
Second Semester	IET1200 Hydraulic Systems	5	All 1100 level courses
	IET1205 Internship III	3	
	IET1210 Pneumatic Systems	5	
	IET1215 Internship IV	3	
Third Semester	IET2100 Electrical Systems	5	All 1100 level courses
	IET2105 Internship V	3	
	IET2110 Electronic Systems	5	
	IET2115 Internship VI	3	
Fourth Semester	IET2200 Electronic Controls	5	All 1100 level courses
	IET2205 Internship VII	3	
	IET2210 Electronic Process Control	5	
	IET2215 Internship VIII	3	
Fifth Semester	IET2300 Maintenance Welding	5	All 1100 level courses
	IET2305 Internship IX	3	
	IET2310 Maintenance Piping	5	
	IET2315 Internship X	3	
	Total Technical Credit Hours Required	80	

GENERAL EDUCATION COURSES				PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or MTH1111
Additional Required	MTH2220	Trigonometry	3	MTH2112
Courses	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112
		Total General Education Hours Required	21-24	

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

ASSOCIATE OF SCIENCE			HOURS	PREREQUISITES
	MTH2112	College Algebra	3	MTH1100 or MTH1111
	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112
		Additional coursework hours required for Associate of Science	12	

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			PREREQUISITES
	COM1080	Technical Communications	3	
	BUS1000	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

IET1100 Maintenance Operations
Students in the maintenance operations course will interpret machine operation and maintenance documentation; perform machine predictive preventative and maintenance procedures; read and interpret technical drawings; safely move and store materials and equipment; and properly use hand tools for equipment maintenance, inspection, and troubleshooting activities. Five credit hours.

IET1110 Mechanical Systems
This course prepares students with the skills and knowledge to successfully adhere to mechanical power transmission safety rules; use dimensional measurement tools; install and align power transmission systems; install, align and adjust gear drives and pillow block bearings; and properly lubricate machines in accordance with maintenance schedules. Five credit hours.

IET1200 Hydraulic Systems
This class covers the skills and knowledge to successfully adhere to fluid power schematics; run hydraulic systems and adjust system pressures as needed; service hydraulic filters and change fluid levels; install hydraulic conductors; install, test and troubleshoot components in a basic hydraulic circuit. Five credit hours.

IET1210 Pneumatic Systems
This course teaches skills and knowledge to successfully adjust pneumatic system branch operating pressure using a regulator; service a pneumatic filter and lubricator; install pneumatic conductors; operate a reciprocating air compressor and adjust operating pressure accordingly; install, test, and troubleshoot components in a basic pneumatic circuit. Five credit hours.

IET1300 Electrical Systems
This course provides an individual with the skills and knowledge to successfully adhere to electrical power and control systems safety rules; interpret electrical control and power schematics; adjust limit switches and electronic systems; measure voltage, current and resistance in an electrical circuit; select, install and test fuses and circuit breakers; install and test AC and DC electric motors; install and test electrical relay, electro-fluid and electrical motor components and circuits; test repair machine electrical grounds; troubleshoot a solenoid-operated fluid power relay control circuit; test and replace transformers; and replace electrical control wiring using either terminal or solder attachments. Five credit hours.

IET1310 Electonic Systems
This course provides an individual with the skills and knowledge to successfully adhere to electronic power and control systems safety rules; connect and test a DC power supply; install and test a solid-state relay; install and test analog electronic sensors and signal conditioning equipment; install and operate an AC variable frequency volts-to-hertz motor drive system. Five credit hours.

IET1400 Electronic Controls
This certification validates that an individual has the skills and knowledge to successfully connect and transfer programs to a PLC using a PC; create a basic PLC ladder system program; and troubleshoot, install and test basic PLCs and PLC components. Electric Code (NEC) calculations for single and multiple motor installations. Students will also learn how to set up, maintain and troubleshoot AC and DC motor drive systems and single axis motion control systems. Instruction on AC drives includes both the volts/hertz and vector modes. Five credit hours.

IET1410 Electronic Process Control
This certification validates that an individual has the skills and knowledge to successfully adhere to PCS safety rules; process control nomenclature and documentation; calibrate and test analog sensors and control elements; and install and operate a basic controller (single/basic process single loop system). Five credit hours.

IET11500 Maintenance Welding
This course gives an individual the skills and knowledge to successfully adhere to welding safety rules; use an acetylene torch to cut steel parts; explain basic welding symbols, schematics, equipment and selection process; prepare parts to be welded including degreasing, cleaning and grinding; use SMAW welder to make basic welds on flat stock; use GMAW welder to make basic welds on flat stock; weld inspection for defects and countermeasures for common defects; and use of a plasma cutter to cut flat stock. Five credit hours.

IET1510 Maintenance Piping
This course prepares an individual with the skills and knowledge to successfully adhere to piping system safety rules; interpret basic piping schematics; identify and select proper materials for installation and replacement; prepare material for installation or repair of piping systems; and proper assembly and disassembly of piping systems. Five credit hours.

IET1105 Internship I, IET1115 Internship II, IET1205 Internship III, IET1215 Internship IV, IET1305 Internship V, IET1315 Internship VI, IET1405 Internship VII, IET1415 Internship VIII, IET1505 Internship IX, IET1515 Internship X
The internships provides 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 welding arms, and hydraulic lifts are common machines found in industry. Your performance in key skill areas will be tracked and applied towards the NIMS credentialing process (National Institute of Metal Working Skills). Three credit hours each.

PRECISION MACHINING TECHNOLOGY

As new technologies continue to shape the manufacturing industry, companies are experiencing an immediate demand for machinists who are qualified to construct who are qualified to construct parts and maintain equipment. Ranken's NIMS accredited Precision Machining Technology program provides a foundation for engineering and prepares students for employment in machining, Computerized Numerical Control (CNC) programming, inspection/quality control, maintenance and machine tool building. Students are also trained in various specialties, including CNC, Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM), inspection and quality control, engineering design and

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

Throughout the four-semester associate degree program, students gain practical experience while programming and operating modern machinery in a well-equipped facility, similar to those commonly found in today's industry. The curriculum includes mechanical and computer design, dimensioning, blueprint reading and fundamental tool making, as well as hands-on experience in basic hand tools and shop technologies. In addition, the program emphasized the application of basic math principles in simulated shop situations. The program curriculum comprises various specialties, including:

- Computer Numerical Control (CNC) Programming
- Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM)
- Inspection
- Maintenance Machining

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

- Interpret part and assembly blueprints and perform mathematical calculations to determine and prioritize manufacturing procedures for part production.
- Set-up and operate a variety of conventional machine tools.
- Set-up, program and operate Computer Numerical Control (CNC) machine tools.
- Create part blueprints and part programs using CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) software such as Mastercam and Solidworks.
- Analyze, record, and effectively communicate (oral, written, electronic) the machining process and inspection results.

By analyzing a company's end product, constructing the parts and maintaining various pieces of equipment on an ongoing basis, students are exposed to problem-solving skills and are trained to meet the machining needs of today's technical industries. Instruction occurs on the latest state-of-the-art equipment. As a testament to industry support of this program, Ranken has one of the largest machining training centers in the region. Students are able to train on the state-of-the-art CNC machines, giving them exposure to cutting-edge technology. Students interested in completing the certificate of technology program will take all technical courses in the associate degree program and two general education courses.

DAYPROGRAMCOURSES			HOURS	PREREQUISITES
First Semester	PMT1010	Mathematics for the Machine Trade	3	PMT1010 (Co. Req.)
	PMT1015	Precision Machining and NIMS	13	PMT1010 (Co. Req.)
Second Semester	PMT1115	Advanced Precision Machining and NIMS	13	PMT1010, PMT 1015
Third Semester	PMT2015	CNC Programming and NIMS	13	PMT1115
Fourth Semester	PMT2115	CAD/CAM and Engineering Design	13	PMT2015

GENERAL EDUCATION COURSES			HOURS	PREREQUISITES
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology or	3	ENG1099 (Co. Req.)
	PSY1206	Introduction to Psychology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
Business/Information	BUS1000	Career Success Skills	3	
Technology	MNG1204	Intro to Business & Management	3	ENG1099 (Co. Req.)
Associate of Science	MTH2112	College Algebra	3	MTH1100 or 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	
	BUS1000	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

PMT1010 Mathematics for the Machine Trade

This course introduces the student to the mathematics needed to succeed in the machine trade. It provides an understanding of mathematical concepts and their application to the machine trade—with real problems that the student will encounter in the industry. Students will solve problems that contain fractions and percentages, use customary (English) or metric units of measure, apply the fundamentals of algebra, plane geometry and trigonometry to everyday machining problems including finding areas and volumes and solving machining problems that involve compound angles. Three credit hours.

PMT1015 Precision Machining & NIMS

Introduces students to common tools and fundamental machine processes used in the precision machining trade. Students will learn basic machining principles, including safety and part set-ups through hands-on operation of conventional machine tools. Students will learn to read and interpret blueprints with an introduction to BD&T (Geometric Dimensioning & Tolerancing) symbols, in addition to planning the manufacturing process of a mechanical part. Students will learn common measuring tools used in quality inspection. The course will also expose students to mathematical applications commonly used in the precision machining trade. Beginning with basic math and advancing through transposition of formulas, calculating speeds and feed rates, proportions and ratios and concluding with an introduction to trigonometry. This course is aligned with National Institute of Metalworking Skills (NIMS) certification standards. Students will have the opportunity to earn NIMS certification(s). Thirteen credit hours.

PMT1115 Advanced Precision Machining & NIMS

Students will learn advanced machining processes and complex set-ups to manufacture mechanical parts. Students will be introduced to fixturing principles and design. Students will apply intermediate blueprint reading, including GD&T applications. The grinding process required to manufacture a precision machine part as well as basic mechanical maintenance and industrial safety will be covered. Students will be introduced to advanced machining process theories, including tool & die, injection and die cast molding, and advanced machining process equipment, including a Coordinate Measurement Machine (CMM) and an Optical Comparator to verify the dimensions of the finished parts. This course is aligned with NIMS certification standards. Students will have the opportunity to earn NIMS certification(s). Thirteen credit hours.

PMT2015 CNC Programming & NIMS

Students will learn to program Computerized Numerical Control machine tools using the G&M programming coding system and will program, edit, and graphically plot programs for machined parts. This course provides hands-on experience to getting up and operating CNC machine tools. Provided with a blueprint, students will create and edit a part program, select the correct tooling and fixtures, and create a set-up document. Students will learn the Cartesian coordinate system and absolute/incremental programming formats. Students will inspect parts to specification using the Coordinate Measurement Machine (CMM). This course is aligned with NIMS certification standards. Students will have the opportunity to earn NIMS certification(s). Thirteen credit hours.

PMT2115 CAD/CAM and Engineering Design

Students will use Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) to design and create a variety of parts using Computer Numerical Control (CNC) machine tools. Using Mastercam and SolidWorks software, the students will learn how to draw fully dimensioned 2D blueprints and mechanical assembly drawings. The students will also use Mastercam to program complex toolpaths needed to produce a variety of 2D & 3D parts and will learn to create 3D solid models using SolidWorks. Students will learn reverse engineering using inspection tools and the Coordinate Measuring Machine (CMM) to produce a mechanical drawing. 13 credit hours.

EVENING PROGRAM CERTIFICATE IN PRECISION MACHINING TECHNOLOGY

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
Section One	PMT0111	Engine Lathe Fundamentals	6	
Section Two	PMT0113	Milling Machine Fundamentals	6	PMT0111
Section Three	PMT0211	Advanced Machining	6	
Section Four	PMT0213	CNC Programming	6	PMT0113
Section Five	PMT0224	CAD/CAM	6	PMT0213
		Total Technical Credit Hours for Certificate Completion	24	

COURSE DESCRIPTIONS

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.

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
Students will learn basic CNC Programming, including G and M codes, unique codes and thread milling. Students will learn the safety, set-up, and operation of CNC machine tools. Six credit hours.

PMT0224 Computer Aided Drafting/Computer Aided Manufacturing
Students will begin by learning Mastercam software in order to create geometry with the aid of a computer. These basic skills will develop into creating 3D wire frame and solid model parts. The mill CAM instruction will be used to generate programs and machine finished parts. Six credit hours.

FABRICATION AND WELDING TECHNOLOGY
ST. LOUIS AND PERRYVILLE

Ranken offers Fabrication and Welding Technology at both the St. Louis campus and newest location of Perryville, Missouri. 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 Associate of Applied Science (AAS) and Bachelor of Science in Applied Management (BSAM) degrees.

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

- Interpret prints, welding symbols, and apply knowledge of constuction 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.

DAYPROGRAMCOURSES			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	
	BUS1000	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) 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

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/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

Students will fabricate and fit welded assemblies according to instructions given by the instructor. Students will be able to visually inspect welds according to American Welding Society (AWS) standards, and will be able to weld at proficiency levels equivalent to AWS certification in Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW/TIG). Students will also be able to cut material with oxygen fuel cutting equipment. 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

Focusing on fabricating and the cutting and welding of components in the structural steel fabrication field. Students will learn the necessary setup and operation of equipment used in the industry. They will also learn to fabricate parts by using blueprint formats. Six credit hours.

CERTIFICATE OF TECHNOLOGY IN FABRICATION AND WELDING TECHNOLOGY - PERRYVILLE

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			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
	PWF1205	Internship II	5
		Total Technical Credit Hours Required	30

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)			PREREQUISITES
	COM1080	Technical Communications	3
	BUS1000	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) 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. 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

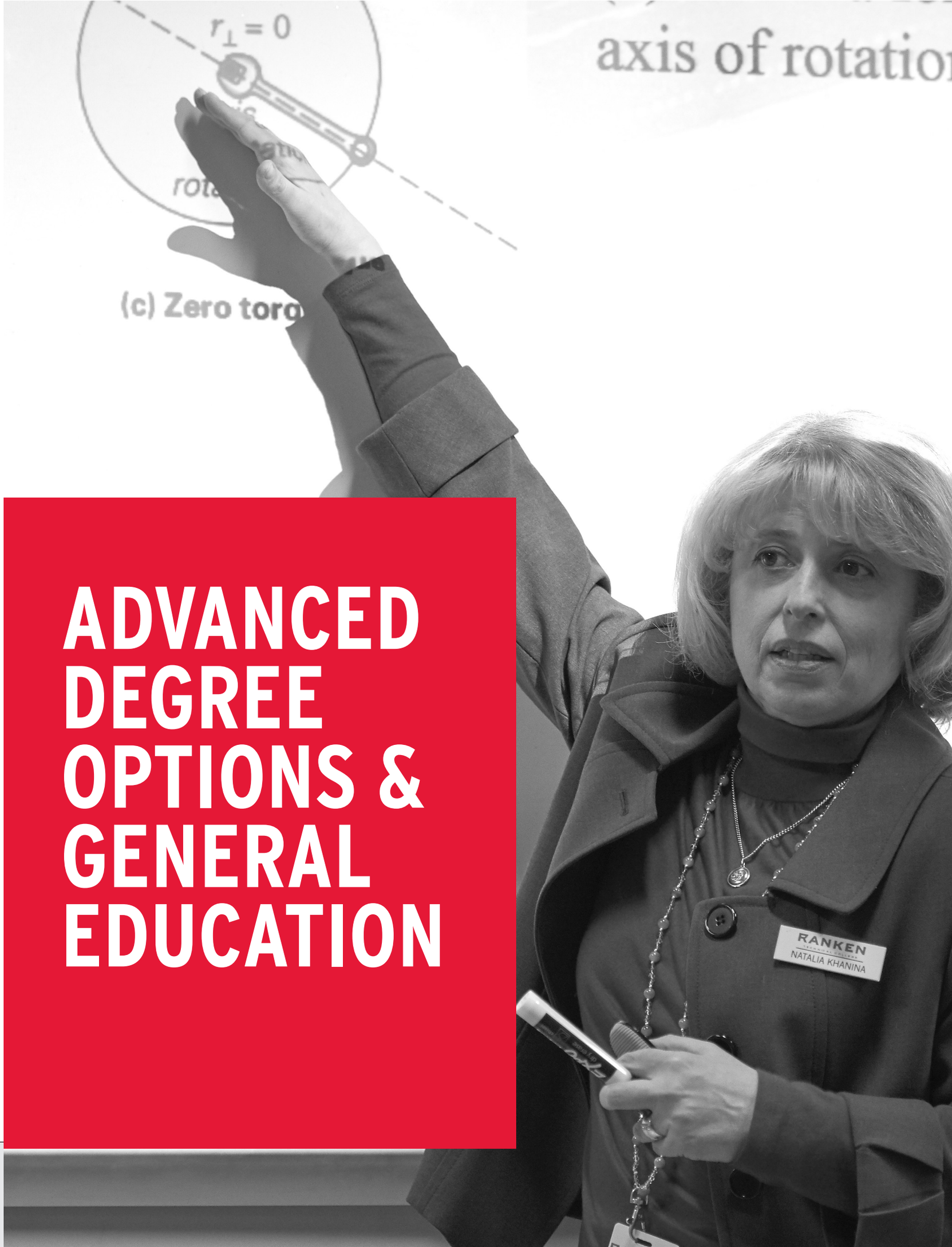
This course offers an in-depth study of blueprint reading, basic weld inspection, construction math and basic rigging. Students will gain a complete understanding of typical weld symbols and blueprints that are used throughout the welding industry. Three credit hours.

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. 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 MANAGMENT

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 or transfer technical credit. Online and evening 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.

Ranken Technical College 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.

Fleet Management Emphasis

This emphasis focuses on fleet management principles and best practices from multiple organizational perspectives, which ultimately results in a well-rounded fleet professional who is prepared for success regardless of what type of fleet they will manage throughout their career.

- Outcome: Apply skills and knowledge in the areas of vehicle maintenance, business management, and risk asset management.

GENERAL EDUCATION COURSES		HOURS
BUS1000	Career Success Skills	3
MNG1204	Intro to Business and Management	3
ETH2222	Business Ethics	3
PHY2100	Conceptual Physics	3
COM1105	Oral Communications	3
ENG1101	College Composition I	3
ENG2102	College Composition II	3
ECO3210	Microeconomics	3
SOC1206	Principles of Sociology or	3
PSY1206	Introduction to Psychology	3
MTH1111	Intermediate Algebra	3
MTH2112	College Algebra	3
	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	
MNG4253	Total Quality Management	3	MNG4110
MNG4252	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	

FLEET MANAGEMENT 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
MNG4200	Principles of Marketing	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
MNG3010	Professional Skills Development	3	
MNG3011	Vehicle Maintenance Management	3	
PSY4000	Organizational Psychology	3	SOC1206 or PSY1206
ECO3210	Microeconomics	3	
MNG3012	Risk and Asset Mangement	3	
MNG3013	Business Management	3	
MNG4115	Lean Six Sigma	3	
MNG4400	Business Strategy & Implementation	3	
ECO3205	Macroeconomics	3	
MNG4300	Management of Information Systems	3	
MNG4500	Capstone (Management Emphasis)	3	MNG3300, MNG3350, MNG4200
POL3208	American Government	3	

COURSE DESCRIPTIONS

MNG3100 Management and Supervision (available online)
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 (available online)
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 (available online)
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 (available online)
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 (available online)
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 (available online)
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 (available online)
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 (available online)
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 (available online)
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.

MNG4120 Risk Management (available online)
This course explores the area of Business Continuity and Risk Management in a comprehensive manner to provide for organizational resilience. Particular emphasis is placed on assessing threats which may lead to disastrous events, evaluating control alternatives and implementing strategies. Practical solutions to enable an organization to mitigate risk, manage crisis and recover after a disaster are discussed. The course is designed to expose the student to all aspects of a holistic Business Continuity and Risk Management program and to determine the most appropriate requirements. Three credit hours.

MNG4130 Project Management (available online)
This course offers a comprehensive introduction to the design and implementation of computer-based information systems. This course combines theory, practice and advice on the role of the project leader in managing the team, the individual and the task. Teaching students to plan all aspects of an IS project and to ensure that the project is implemented in a timely way and within budget is also covered. Three credit hours.

MNG4150 Project Management (available online)
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 (available online)
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 (available online)
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 (available online)
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) (available online)
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 (available online)
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 (available online)
Negotiation is an integral part of creating value and longevity for any business. A company's success depends on the negotiation skills of the governing body; whether they are seeking resources, deciding on salaries, or inking high-stake deals for your company. Learning how to execute proven tactics, refine personal negotiating style, and improve your ability to bargain successfully and ethically in any situation. 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 (available online)
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 (available online)
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 (available online)
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) (available online)
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 (available online)
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 (available online)
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.

EVENING PROGRAM CERTIFICATE OF COMPLETION IN FLEET MANAGEMENT (CREDIT OR NON-CREDIT)

Companies with large fleets of vehicles need qualified automotive experts to manage those fleets. Local companies like Ameren and Enterprise Rent-A-Car, as well as St. Louis City, St. Louis County, and local police departments, all need fleet managers. Students can take our National Association of Fleet Administrators (NAFA)-approved online training classes to become a Certified Automotive Fleet Manager (CAFM) or Certified Automotive Fleet Supervisor (CAFS). Students in this program will learn about fleet management principles and best practices from multiple organizational perspectives, to become a well-rounded fleet professional, prepared to manage any type of fleet. Students will complete two courses for the CAFS certificate, or all four courses for the CAFM certificate. All four courses can be applied toward a Bachelor of Applied Management degree with an emphasis in Fleet Management at Ranken.

EVENING PROGRAM COURSES		HOURS	PREREQUISITES
MNG3010	Professional Skills Development	3	
MNG3011	Vehicle Maintenance Management	3	
MNG3012	Risk and Asset Management	3	
MNG3013	Business Management	3	
	Total Technical Credit Hours for Certificate Completion	12	

COURSE DESCRIPTIONS

MNG3010 Professional Skills Development (available online)

This course focuses on leadership skills and development of professional expertise to allow fleet managers and supervisors to continuously educate themselves to stay ahead of the pack. It also provides fleet managers with the tools they need to function in a data-rich, information poor work environment by giving students a general knowledge of Information Technology (IT) which will help them to solve problems and enhance IT functionality. Three credit hours.

MNG3011 Vehicle Maintenance Management (available online)

Vehicle maintenance directly impacts productivity, driver satisfaction, corporate image, safety, environmental compliance, and the financial bottom line. The competencies in this course help students gain an understanding of essential maintenance principals to manage in-house or outsourced maintenance personnel and drivers. The course also deals with both conventional and alternative fuels in centralized and decentralized operations. Three credit hours.

MNG3012 Risk and Asset Management (available online)

This course focuses on the responsibilities involved with the selection, procurement, use, care and disposal of fleet vehicle and equipment assets. Students will develop planning and decision-making skills for anticipating and responding effectively to uncertain events. Instruction will include varying strategies of dealing with risk by focusing on insurance, subrogation, training and safety, in addition to how to effectively handle a loss. Three credit hours.

MNG3013 Business Management (available online)

This course focuses on an organization's rights, boundaries and responsibilities when dealing with leasing companies, automobile dealers, supply or service contractors and insurance companies. Other competencies covered include financial analysis of various acquisition options, ability to conduct a lifecycle analysis, basic accounting principles, benchmarking, outsourcing decisions and preparing and implementing a fleet budget. Three credit hours.

GENERAL EDUCATION

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.

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.

DEVELOPMENTAL STUDIES

The general education division offers developmental study courses in basic writing and basic mathematics. The Fundamentals of Composition, College Reading and Basic College Mathematics courses are designed to prepare students for instruction at the post-secondary level. Course requirements are determined by the College's placement tests.

NON-CREDIT DISTANCE LEARNING

Ranken has partnered with industry leaders in online education to offer excellent non-credit, distance learning options to potential students, current students and graduates. Ranken's Distance Learning program offers a wide range of interactive courses that can be taken entirely over the Internet. All of the courses are led by experienced instructors and experts in their respective fields. Learning courses are offered at basic, intermediate and advanced levels. Students can take the opportunity to sharpen computer skills, learn a foreign language, Web design, basic accounting, etc.

Short-term introductory courses last around six weeks, while career training courses can last between six months and one year. Courses are project-oriented and include lessons, quizzes, hands-on assignments, discussion areas, supplementary links and more. Complete any of these courses entirely from your home or office and at any time of the day or night. These classes are offered on a non-credit basis and will not be reflected on a Ranken transcript. To see a full listing, visit our website at www.ranken.edu.

Course categories include:

- Sustainable Energy and Going Green
- Business and Professional
- Management and Corporate
- General Education
- Media and Design
- IT and Software Development/Basic Computer Literacy
- Many more options are available

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.

COURSE DESCRIPTIONS

ENGLISH AND SOCIAL SCIENCES

COM1080 Technical Communications (available online)
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 (available online)
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 (available online)
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 (available online)
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.

ENG1098 College Reading
This developmental course prepares students for success in college-level reading. Upon completion, students will be able to comprehend written passages by analyzing, synthesizing and evaluating what they read. Students will use a variety of reading materials including textbooks, newspapers, novels, essays and websites. Three credit hours.

ENG1099 Fundamentals of Composition (available online)
This developmental course prepares students for success in College Composition I. Upon completion, students will be able to apply the writing process by rewriting, organizing, revising and editing sentences, paragraphs and short essays. Using word processing programs, they will write in several rhetorical modes and use grammar, spelling, punctuation and mechanics correctly. They will use critical thinking skills to analyze a variety of texts. Three credit hours.

ENG1101 College Composition I (available online)
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. Prerequisite: Placement or ENG1099. Three credit hours.

ENG2102 College Composition II (available online)
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.

FNA3004 Digital Graphics for Architecture
Provides graphic design strategiews as a medium for visualization in architectural presentation. Students learn current software and technologies that are practical for architectural graphics and diagrams such as Photoshop, Adobe Illustrator and InDesign. 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.

POL3208 American Government (available online)
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 (available online)
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. Prerequisite: ENG1098. Co-requisite: ENG1099. Three credit hours.

PSY3100 Organizational Behavior (available online)
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 (available online)
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 (available online)
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. Prerequisite: ENG1098. Co-requisite: ENG1099. Three credit hours.

SOC4100 Survey of Research Methods (available online)
This course gives students practical experience for using research methods to design and plan a research project. Upon completion, students will be able to define what constitutes qualitative and quantitative research. Students will be able to apply strategies to conduct qualitative and quantitative research. Each student will articulate a research problem, write a review of related literature, plan a research design and write a formal research proposal. This course is a prerequisite for ART4203 Capstone Research Project. Three credit hours.

MATHEMATICS AND SCIENCE

MTH1099 Basic College Mathematics (available online)
This developmental math course prepares students for elementary algebra. Upon completion, students will be able to add, subtract, divide and multiply whole numbers, fractions, decimals and percentages. Developing skills for algebra, students will solve equations using signed numbers and negative exponents. Three credit hours.

MTH1100 Elementary/Intermediate Algebra (available online)
This course combines topics in elementary and intermediate algebra. Topics include operations on real numbers, solving linear equations, graphing linear equations in two variables, applications of algebra, exponents and polynomials, factoring and rational expressions and equations. Prerequisite: placement exam. Three credit hours.

MTH1110 Elementary Algebra (available online)
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. Prerequisite: placement exam. Three credit hours.

MTH1111 Intermediate Algebra (available online)
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 (available online)
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 or MTH1100. Three credit hours.

MTH2220 Trigonometry (available online)
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 (available online)
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.

PHY2230 College Physics (available online)
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.

PHY2100 Conceptual Physics (available online)
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.

BUSINESS AND INFORMATION TECHNOLOGY

ECO3205 Macroeconomics (available online)
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 (available online)
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.

BUS1000 Career Success Skills (available online)
This course focuses on the computer skills job-readiness attitudes and behaviors necessary for success in a technical career. Upon completion, students will be able to utilize Microsoft Office Suite (Internet Explorer, Word, PowerPoint, Excel, and Outlook) to explore employment opportunities, create job-search documents, and make effective presentations to potential employers. Students will also participate in culturally diverse experiences in order to develop a work ethic supportive of diversity and equality. Three credit hours.

MNG1204 Introduction to Business and Management (available online)
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 (available online)
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.

NOTES

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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

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RANKEN PERRYVILLE · 1205 CORPORATION LANE, PERRYVILLE, MO · (314) 286-3382
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