ARE YOU RANKEN MATERIAL?

2016–17 Catalog
Ranken Technical College is a private, nonprofit, degree granting institution of higher learning whose primary mission is to provide the comprehensive education and training necessary to prepare students for employment and advancement in a variety of technical fields.

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

LOCATION/CAMPUS FACILITIES

Located in St. Louis, Missouri, north of the city’s Central West End, Ranken Technical College covers a tract of land equal to more than three city blocks. A first and lasting impression that strikes Ranken visitors is the large amount of space—equal to more than three city blocks. A first and lasting impression that strikes Ranken visitors is the large amount of space—equal to more than three city blocks. A first and lasting impression that strikes Ranken visitors is the large amount of space—equal to more than three city blocks.

In spring 2013, Ranken Technical College began offering courses at a second location in Wentzville, Missouri. Ranken/Wentzville currently offers courses in Advanced Manufacturing Technology, Automotive Maintenance Technology, Building Systems Engineering Technology, Diesel Technology, and Information Technology, as well as a Bachelor’s degree in Applied Management. Ranken Wentzville classes are a combination of hands-on technical training and general education, with many of our general education courses being offered in a schedule-friendly online format. Courses are offered in both day and evening, with degree and certificate options available. For more information on our Wentzville location, see page 5, contact us at (855) RANKENW, or visit us online at ranken.edu/wentzville.

VALUES

The vision 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.
• Promote an environment which celebrates diversity, recognizing the valuable and unique contributions diverse people bring to the Ranken community.
• Actively involve itself in community issues.
• Continuously explore new areas of technology for inclusion in existing programs as industry 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 which assesses and improves the quality of education in terms of content, delivery and student learning.
• Provide a faculty and staff possessing the expertise required by the School to produce students who are highly skilled and motivated to perform their varied roles.
• Provide student support services necessary to promote persistence from enrollment to employment.
• 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.
• Treat all members of the Ranken family—students, 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 focused 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 are likely to 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.

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 is 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 west of the St. Louis metro area, the College opened a second location in Wentzville in 2013.

ACCREDITATION AND APPROVALS

Ranken Technical College is accredited by The Higher Learning Commission.

For more information, contact: The Higher Learning Commission www.hlccommission.org 1-800-227-9440

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 a Candidate for Accreditation 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.
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 (see page 83)
- Automotive Maintenance Technology (see page 23)
- Building Systems Engineering Technology (see page 46)
- Diesel Technology (see page 34)
- Information Technology (see page 73)
- Bachelor of Science in Applied Management (see page 99)

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 Student Success Center and professional counseling, may be delivered 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 AND CONTACT INFORMATION

Ranken Technical College Admissions

706 Parr Road, Wentzville, MO 63385
Phone: (855) RANKENW
Email: wentzvilledmismissions@ranken.edu
Web: www.ranken.edu/wentzville

WENTZVILLE LOCATION OFFICE HOURS

Monday–Thursday 9 a.m.–6 p.m.
Friday 9 a.m.–4 p.m.
Saturday By appointment only
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 which 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 $1,000 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’ experiences and time commitment to college. The group also creates events that residents of Walker Hall participate in.

STUDENT SUCCESS CENTER
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 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 customer use. The Student Success Center has a money-operated copy machine and scanner that is available for customer use and provides more than 8,500 physical academic and research resources; access to more than 100,000 audiobooks and eBooks; access to various online databases; and a collection of more than 100 daily newspapers, professional journals and periodicals. Access to the catalog detailing the physical collection and to various electronic databases is also available online through Inside Ranken.

INFOPASSES and interlibrary loans are also available through the Student Success Center at Ranken Technical College. These programs provide 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) programs, which may be identified as prerequisite courses for general studies courses or technical majors, and Information Technology (IT) Certification Testing.

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 SSC is located on the second floor of the Finney Building and provides pleasant and inviting spaces for student learning and socializing. If you need assistance or have any questions or concerns, please visit the Student Success Center at Ranken Technical College.

STUDENT SUCCESS CENTER
Ranken Technical College
4431 Finney Avenue, Second Floor
St. Louis, MO 63113
Phone: (314) 286-4891
Email: ssc@ranken.edu

STUDENT SUCCESS CENTER HOURS
Monday–Tuesday 7 a.m.–7 p.m.
Wednesday–Thursday 7 a.m.–6 p.m.
Friday 7 a.m.–3 p.m.
Saturday 8 a.m.–12 noon
Each loft-style room is furnished with a twin-size bed, two-bedroom apartments and four-bedroom apartments. In 2009, has the capacity to house more than 200 students.

RESIDENTIAL LIFE

FOOD SERVICE

CAREER SERVICES

LIFETIME JOB PLACEMENT

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. The demand for Ranken's trained technicians grows every year, with an average of 96–98 percent of Ranken graduates obtaining jobs in their desired fields within six months of graduation.

Ranken's Career Services office also offers free lifetime placement for current students and alumni seeking full-time or 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, located on the first floor of the Finney Building, from 8 a.m. to 5 p.m. Monday through Thursday and 8 a.m. to 4 p.m. on Friday.

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 Career Services database. With this database, employers can view the résumé and Career Services can help facilitate the career search by referring a student's résumé to various companies.

ADMISSIONS

Ranken Technical College seeks students who will succeed in, benefit from and contribute to Ranken's educational programs and opportunities.

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

Fax: (314) 286-3309

Email: admissions@ranken.edu

Wentzville

Ranken Technical College

755 Parr Road

Wentzville, MO 63365

Phone: (855) RANKENW

Email: wentzvileadmissions@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.

ADMISSIONS OFFICE HOURS

St. Louis

Monday–Thursday 7:30 a.m.–6 p.m.

Friday 7:30 a.m.–4 p.m.

Saturday 8 a.m.–12 noon

Wentzville

Monday–Thursday 9 a.m.–6 p.m.

Friday 9 a.m.–4 p.m.

Saturday By appointment only

ADMISSION

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. Application and registration are encouraged early as classes fill very quickly.

MINIMUM STANDARDS FOR ADMISSION

Applicants who plan to graduate, possess a high school diploma or GED certificate are considered eligible for admission to the College. The following procedure will be used to determine placement in courses:

UNDERGRADUATE DAY PROGRAM AND BSAM

1. Complete an application.

2. Take the Compass® Placement Test® (Ranken's Placement Test can be administered at Ranken or at remote sites) for Reading, Math and Writing.

OR

Submit ACT scores in Reading (16 or higher), Math (17 or higher) and Composition (7 or higher).

OR

Submit a college transcript with transferable credits for English Comp I and/or Intermediate 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 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 or GED meet all requirements for entrance into their major and are not required to meet placement criteria. (Exception: Students entering the Applied Science, Alarm Systems Technology, Stationary Engineering, Control Systems Technology, Electrical Automation Technology or Electrical Construction Design and Management programs must take the ACT Compass® Math Placement Test.) 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 or adults with technical backgrounds. New BSAM students may enter the program with as few as 24 technical credit hours from previous Ranken courses, transferred technical credits or prior learning assessment credit from a completed portfolio.

Prior learning credit may be awarded for work experience in a technical, military, technical training, industry certifications or employer training on technical topics.

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 that 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) 286-4800.

COUNSELING CENTER

Ranken Technical College 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.

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 www.ranken.edu/student-life/public-safety. This report contains the College's policies and procedures for reporting crimes, the law enforcement authority public-safety. This report contains the College's policies and procedures for reporting crimes, the law enforcement authority

RESIDENTIAL LIFE

On-campus housing is available for students in Ranken's first dormitory, Walker Hall. This two-story dorm, which opened in 2009, has the capacity to house more than 200 students and features a recreation room with ping pong and pool tables, lounges with flat screen televisions, a seminar room for meetings and events, private study rooms, community kitchens with microwaves, wireless internet throughout the building, laundry room, mailroom, exercise equipment, 24/7 security, controlled access doors leading to residential areas and an outdoor basketball court. There are four different room types, including single units, double units, two-bedroom apartments and four-bedroom apartments. Each loft-style room is furnished with a twin-size bed, wardrobe (no wardrobes in two-bedroom apartments since they have closets), desk and chest of drawers for each resident to use. Bathrooms with showers are located in each residential unit. Internet and basic cable are provided in rooms at no extra cost to students. Utilities are included. All residents are required to purchase a meal plan. Financial aid may be available to help students pay for housing costs.

STUDENT CENTER

The Student Center offers students a central location to meet outside of class to relax, study and socialize. The Student Center has fitness and weight equipment, a television lounge, ping-pong tables and a snack vending area.

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Applications for admission through technical credit will be evaluated on a case-by-case basis. Letters of recommendation from employers, providing evidence of the prospective student's work, may also 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 equate previously acquired knowledge in terms of college credit. The Credit by Assessment program is one of the means used to determine a student's level of achievement and skill level attained through a high school and/or a technical program. Any student enrolled at Ranken who has met the requirements (75 percent 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 disciplines we teach. Many students come to our institution with a firm grounding in some of the disciplines we teach. The College-Level Examination Program (CLEP®) student success.

CREDIT BY ASSESSMENT programs may be eligible to receive college credit. For more information, contact the Admissions office to schedule an appointment with an admissions counselor.

READMISSION
Students who left 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 $195 registration fee to the Business office at the time of registration. Contact the Admissions office for additional information.

ORIENTATION
An orientation program is conducted prior to each new semester. All new students are required to attend in order to learn about the College's policies and procedures, regulations and support services. In addition, students are exposed to the resources that will help them build a successful career.

New undergraduate day division students will be notified of orientation dates. There is also a family orientation available in the evening, to inform family members about the resources available at the College. New undergraduate evening division students will have orientation on the first night of class.

TUITION
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 $195 registration 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.

In the event that a personal check or an ACH payment is accepted by any unit sponsored prior to purchase.

Books, Tools and Supplies Fees
Students are required to purchase books and tools, which vary in cost according to the respective technical programs. 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.

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.
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 full week of the semester: 90 percent credit of institutional charges.
2. Withdrawal from the College during the second full week of the semester: 75 percent credit of institutional charges.
3. Withdrawal from the College during the third full week of the semester: 60 percent credit of institutional charges.
4. Withdrawal from the College during the fourth full week of the semester: 45 percent credit of institutional charges.
5. After the end of the fourth week of the semester, there will be no credit of institutional charges.

Students who withdraw at the end of the fourth full week from either their technical major or from the College—will also forfeit any division scholarship that may have been awarded. 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.

Withdrawal with Eight-week Coursework
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 full week of the eight-week coursework: 60 percent refund of institutional charges.
2. Withdrawal from the College during the second full week of the eight-week coursework: 45 percent refund of institutional charges.

After the end of the second full week of the eight-week coursework, there will be no refund of institutional charges. Different withdrawal deadlines may apply to summer semester courses.

CREDIT BALANCE AND EREFUND 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.

RANKEN ONE CARD POLICY
Please note that if a student withdraws, is dismissed, graduates or is separated from the College for any reason, funds on his or her Ranken One Card are nonrefundable.

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+ Program
- 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 fill out a Free Application for Federal Student Aid (FAFSA). This application will provide a financial needs analysis, “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.

PRIORITY FINANCIAL AID APPLICATION DEADLINE
The priority deadline for financial aid applications is July 1 for the fall semester and December 1 for the spring semester. Students are advised to apply early for full consideration. Later applications will be considered only if funds are available.

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 select a certain percentage of financial aid recipients to verify that they qualified for their aid.
FINANCIAL AID (CONTINUED)

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 student’s FAFSA application. The request(s) for verification documentation will continue until such time that the student has:

1. Successfully completed the verification process and all appropriate corrections have been made by the Financial Aid office.

2. Has 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 successfully been completed, he/she will be eligible to receive Federal 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.
6. Must not be in default or owe a repayment of Federal or state financial aid.
7. If male and between the ages of 18-25 must have a draft registration set up 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.” 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 in school 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 period of enrollment.

Grade Point Average

All financial aid recipients 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 percent of the published program length, measured in attempted and transfer hours. In order to abide by this regulation, a student must complete at least 67 percent of their cumulative attempted hours. Accepted transfer hours are included in the 150 percent maximum timeframe calculation but are not included in the 67 percent completion rate calculation.

If a student’s cumulative completion rate is less than 67 percent, the student will be placed on financial aid warning for one semester. Upon completion of the financial aid warning semester, one of the following will occur:

• The student’s cumulative completion rate is at least 67 percent the student returns to “good standing” for financial aid purposes
• The student’s cumulative completion rate is NOT 67 percent or greater but the student’s semester completion rate is 67 percent or greater. Therefore, the student will remain on financial aid warning
• At the end of the semester the student’s cumulative completion rate and semester completion are both less than 67 percent, therefore, the student is terminated from any additional financial aid

Maximum Timeframe

As stated above, federal regulations require students to complete their program of study within 150 percent of the published program length. For example, a student enrolled in a program requiring 89 credit hours will lose all financial aid eligibility after the student has attempted 133 credit hours.

Developmental courses are not counted in the 150 percent maximum timeframe calculation, however, accepted transfer hours are counted in the 150 percent maximum timeframe calculation.

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.

Appeal and 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. Requests for an appeal must be in writing to the Financial Aid Office. If the student does not qualify to file an appeal, the student may pursue reinstatement by attending Ranken without any financial aid until he or she has attained a career GPA of 2.0 or better and a cumulative completion rate of 67 percent or better. Students who are on “financial aid probation” may appeal to have their financial aid eligibility reinstated. Requests for an appeal must be made in writing to the director of financial aid. If the student does not meet the academic requirements upon completion of the semester, the student will be 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.

If a student is granted an appeal, their financial aid status will change from “financial aid warning” to “financial aid probation.” An academic review will take place upon completion of the semester for which the student is placed on “financial aid probation.” If the student meets the academic requirements then they will be given a “good standing” status for financial aid purposes. If the student has not met the academic requirements then they will need to speak with the Financial Aid Office to determine further eligibility requirements.

Additional Information

• This policy applies to all Federal Title IV programs, all state and departmental 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.
• Completed courses are those in which a grade of A, B, C, D, F or P is received. Courses in which a W or F is received are considered “not” completed.
• Students must be enrolled in a 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 one must 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.

RETURN OF TITLE IV FINANCIAL 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” formula derived from the 1098 Refundation of the Higher Education Act. The federal formula is applicable to any student receiving Title IV Federal Aid, whether from federal work-study, if that student withdraws or on or before the 60th percent point in time in the semester. Withdrawal from the College refers to the student’s last date of attendance (LDA) as officially recorded in the Registrar’s Office. 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 “terms of enrollment,” for which the student has been accredited for that semester. The College also “earns” a portion of the financial aid. Financial aid that is determined to be “unearned” by the student and/or financial aid that is determined to be “unearned” by the student and/or Parent PLUS Loan money that has been made due to the required return calculation.

All students subject to this return formula will have their student billing accounts charged for any refund the College is required to pay back to the Title IV Federal Financial Aid program(s).

Students will be notified by the Business office of any adjustment that has been made to their student billing account. Students will also receive a copy of any correspondence regarding a return of subsidized, unsubsidized or Parent PLUS Loan money that has been made due to the required return calculation.

If funds were released to a student because of a credit balance on the student’s account, then the student may be required to...
FINANCIAL AID (CONTINUED)

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 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:
1. Federal Direct Unsubsidized Stafford Loan Program
2. Federal Direct Subsidized Stafford Loan Program
3. Federal Direct Parent PLUS Loan Program
4. Federal Pell Grant Program
5. Federal Supplemental Educational Opportunity Grant (SEOG) Program

Workheets used to determine the “Return of Title IV Aid” amounts are available upon request from the Financial Aid office.

* For purposes of this policy “institutional charges” refers to charges for tuition, lab fees, required laptop lease fees, certification testing fees, organizational fees, student activity fees and the documented costs of nonreturnable books, tools and equipment (as determined by the bookstore).

ADDITIONAL LOAN PROGRAMS
Ranken Technical College offers both private (alternative) and institutional loans.
1. 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.
2. The institutional loan program is administered by the financial aid counselor and eligibility to participate is determined through the financial aid process. There are two types of loan programs that are funded through the College:
   a. The “1st Semester Loan” available only to those students enrolled in the first semester of their major coursework.
   b. Remington/Thomson loans available to students who are NOT enrolled in the first semester of their major coursework.

The amount of the loans will vary based on the financial need of the student and repayment will begin one month after the student is no longer enrolled at the institution. Students must apply for financial aid in order to be eligible for any of these loan programs and must have exhausted all other financial options available to them. For additional information, contact the financial aid counselor.

SCHOLARSHIP PROGRAM
Ranken Technical College recognizes excellence in achievement. Scholarships may cover full or 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 contact the financial aid counselor.

PART-TIME EMPLOYMENT FOR STUDENTS
Ranken Technical College maintains a part-time employment service for active students who need supplementary income. Approximately 75 percent 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.

POLICIES AND PROCEDURES

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.

NONDISCRIMINATION POLICY
Ranken Technical College complies with Title VII of the Civil Rights Act of 1964. The 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.

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.

ANNUAL NOTIFICATION UNDER THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)
Ranken Technical College will compile a number of important records in the course of a student’s application, enrollment and attendance. These include:
- Admissions record
- Academic record
- Attendance record
- Disciplinary record
- Financial Aid Business office account record

Students have the right to inspect and review their educational records upon request to the Registrar. Those interested should submit to the Registrar a written request that identifies as precisely as possible the record or records to be inspected. If, after reviewing records, a student finds that they contain errors and are inaccurate or misleading, he or she may request that the records be amended. If the College does not agree with the student’s position, the student may request that a hearing be held. If the student believes that the College has not followed the federal rules under FERPA, the student may write to the U.S. Department of Education. A copy of the complete FERPA policy is available in the Registrar’s office.

Important Note:
The academic transcript of a student is created and maintained by the submission of various other records from faculty and support staff. The academic transcript of a student will be retained by Ranken Technical College perpetually. The records that support the academic transcript have retention limits, as defined in the College’s FERPA policy.

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.

For all other student policies and procedures, please refer to the student handbook.
The Automotive Collision Repair Technology 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, blueprinting and hybrid technology, 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 certified by the National Automotive Technicians Education Foundation (NATEF) in all four areas of auto body repair: Non-Structural, Structural, Refinishing and Mechanical/Electrical.

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 Automotive Collision Repair Technology courses and two general education courses.

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.

Ranken’s new Ford ASSET Program is the only one of its kind in the region. After a total of 32 weeks interning in a dealership, students graduate with the real-world skills they need to get their hands on a great career.
AUTOMOTIVE COLLISION REPAIR TECHNOLOGY (CONTINUED)

DAY PROGRAM COURSES

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<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ACR1111</td>
<td>Non-Structural Analysis and Damage Repair Theory</td>
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<tr>
<td>ACR1112</td>
<td>Non-Structural Analysis and Damage Repair Shop</td>
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<td>ACR1211</td>
<td>Structural Analysis and Collision Repair Theory</td>
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<td>ACR2111</td>
<td>Collision Mechanical Components Theory</td>
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Total Technical Credit Hours Required: 56

GENERAL EDUCATION COURSES

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<tr>
<td>ENG1101</td>
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<tr>
<td>ENG2102</td>
<td>College Composition II</td>
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</tr>
<tr>
<td>COM1105</td>
<td>Oral Communications</td>
<td>3</td>
</tr>
<tr>
<td>SOC1206</td>
<td>Principles of Sociology or</td>
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<tr>
<td>PSY2206</td>
<td>Introduction to Psychology</td>
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<tr>
<td>MTH1100</td>
<td>Elementary Algebra and MTH1111 Intermediate Algebra</td>
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<tr>
<td>MTH2200</td>
<td>College Physics</td>
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<td>BUS1000</td>
<td>Career Success Skills</td>
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<tr>
<td>BUS1200</td>
<td>Career Success Skills</td>
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<tr>
<td>MNG1224</td>
<td>Automotive Service Management</td>
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<tr>
<td>MTH1020</td>
<td>College Algebra</td>
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<tr>
<td>PHY2200</td>
<td>College Physics</td>
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<tr>
<td>PHY2240</td>
<td>Survey of Calculus</td>
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Total Technical Credit Hours for Minor Completion: 12

MINOR IN FLEET MANAGEMENT COURSES

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<tr>
<td>MNG2010</td>
<td>Professional Skills Development</td>
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<tr>
<td>MNG2021</td>
<td>Vehicle Maintenance Management</td>
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<tr>
<td>MNG2012</td>
<td>Risk and Asset Management</td>
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<tr>
<td>MNG2013</td>
<td>Business Management</td>
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Total Technical Credit Hours for Minor 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

ACR1112 Non-Structural Analysis and Damage Repair Shop

Emphasizes application of principles studied in ACR1111 to hands-on shop work. Eight credit hours.

ACR1211 Structural Analysis and Collision Repair Theory

Introduces the Steel Gas Metal Arc (GMA) welding process, preparing the students for the I-CAR Automotive Steel Metal Inert Gas (MIG) welding qualification test. An overview of the oxyacetylene/plasma cutting process is covered along with a section on aluminum welding used in repairing today's modern vehicles. This section prepares the student for the Automotive Aluminum GMAR (MIG) Welding Qualification Test. Includes a study of restraint systems and advanced application of movable and stationary glass. Introduces measuring procedures and how they relate to structural repairs. Provides detailed instructions on structural straightening of steel and aluminum materials along with the replacement of aluminum panels. Six credit hours.

ACR1212 Structural Analysis and Collision Repair Shop

Emphasizes application of principles studied in ACR1111 to hands-on shop work. Eight credit hours.

ACR2111 Collision Mechanical Components Theory

This course covers tires, wheels, suspensions and steering systems. An in-depth study is done on wheel alignment and diagnostic angles. The information covered in this course is critical for performing alignments in a shop environment. Students will be introduced to basic electrical theory, which incorporates information on diagnosis and testing of electrical systems. Advanced electrical systems are covered including lighting, starting and charging systems and power accessories. Students will learn about brake systems, with discussions on anti-lock brakes and traction control systems. Drive trains, fuel, exhaust, emissions systems and restraint systems will also be discussed. Students will also learn about hybrid technology in relation to mechanical components covered in this course. Six credit hours.

ACR2112 Collision Mechanical Components Shop

Emphasizes application of principles studied in ACR2111 to hands-on shop work. Eight credit hours.

ACR2211 Painting and Refinishing Theory

This course covers in detail the equipment needed to refinish vehicles with today's paint technology. An overview of environmental regulations and personal/refinishing safety is presented. Proper surface preparation along with proper masking techniques are also discussed. Emphasis is placed on the importance of proper undercoat systems, and presentations are given on color theory and how it relates to the refishing world. Discussions will focus on the application and blending of waterborne basecoat/clearcoat and tri-coat paint systems, as well as refishing of plastics and programs on paint tinting and detailing. Six credit hours.

ACR2212 Painting and Refinishing Shop

Emphasizes application of principles studied in ACR2211 to hands-on shop work. Eight credit hours.

MNG1224 Automotive Business and Management

This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 Automotive Service Consultant (ASE). Three credit hours.

Also offered in this course is instruction in the replacement of aluminum panels. Provides an in-depth study of plastic repair methods using welding and adhesives. An overview of trim and hardware used in today’s vehicles is discussed, along with movable and stationary glass. As an addition to this course, students will complete I-CAR’s Intro to Collision Repair. Six credit hours.
AUTOMOTIVE COLLISION REPAIR TECHNOLOGY (CONTINUED)

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-CARI) 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.

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 106. For more information about the BSAM degree, please turn to page 99.

EVENING PROGRAM COURSES

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE NAME</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<td>ACR0110</td>
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<td>ACR0111</td>
<td>Refinishing</td>
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<td>Structural</td>
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<td>Total Technical Credit Hours for Certificate Completion</td>
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</table>

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 refinishing equipment, understand and apply the proper undercoat system, determine areas to be refined, 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.

ST. LOUIS AND WENTZVILLE

The average vehicle today has 30 microprocessors on board, and as technology and electronics continue to influence the automotive industry, many automobile dealerships and independent repair shops are in need of skilled technicians capable of solving new and complex problems.

To meet this need, Ranken offers an Automotive Maintenance Technology (AMT) program that provides students with the comprehensive knowledge and skills required by leading automotive manufacturers and service facilities today.

Our students regularly compete in SkillsUSA and win top honors at the local, state and national levels. The program is certified by the National Automotive Technicians Education Foundation (NATEF), which is a branch of Automotive Service Excellence (ASE) 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 and malfunctions.

The program develops student proficiencies in the following areas:

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

During the last 40 days of the program, students will gain real-world experience as they participate in an on-site automotive practicum in which they will service and repair customer vehicles. See page 38 for more information about our High-Performance Racing Technology program.

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 for Automotive Maintenance 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 Maintenance Technology. 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.

CERTIFIED DEALERSHIP TECHNICIAN PROGRAMS

The Certified Dealership Technician Program offers students the opportunity to receive both a degree from Ranken and certifications from one of the four major automotive manufacturers.

For students who have a passion for a specific brand, Ranken currently offers several options; the General Motors (GM) Automotive Service Education Program (ASEP), the Toyota/Lexus Technical Education Network (TTEN), the Honda/Acura Professional Automotive Career Training (PACT), and the Ford Automotive Student Service Education Training Program (ASSET) programs. All programs train on late model vehicles and incorporate a paid professional internship in a dealership.

To learn more about the Certified Dealership Technician Program, see page 29 for a complete description.
PROFESSIONAL TECHNICIAN PROGRAM
The Professional Technician Program offers students the opportunity to gain real-world experience through structured internships that alternate with their class schedules. Students who are successfully attending their first semester automotive foundation class may apply for enrollment into the program. Enrollment is contingent on gaining employment at one of our approved employer training sites. Students in the program will attend classes for eight weeks, alternating with working in an internship for eight weeks at the qualifying training site.

RANKEN AUTOMOTIVE TRAINING AT WENTZVILLE
Ranken’s award-winning Automotive Maintenance program is also offered at our Wentzville location. Students will attend classes loaded with hands-on activities for four days each week while completing the four-semester program. Classes can also be taken in the evening, making it easier to find employment during the day.

DAY PROGRAM COURSES
<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Prerequisites</th>
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<tr>
<td>First Semester</td>
<td>AMT1003</td>
<td>Automotive Foundations</td>
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<td>Second Semester</td>
<td>AMT1200</td>
<td>Automotive Component Systems</td>
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<td>Automotive Driver Assistance</td>
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<td>AMT2215</td>
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<td>AMT2225</td>
<td>Automotive Professional Internship</td>
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Total Technical Credit Hours Required: 48

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)
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<td>ENG2101</td>
<td>College Composition II</td>
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<td>COM1105</td>
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<td>SOC1206</td>
<td>Principles of Sociology</td>
<td>3</td>
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<td>PSY1206</td>
<td>Introduction to Psychology</td>
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<td>Elementary Algebra</td>
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<td>BUS1000</td>
<td>Career Success Skills</td>
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<td>MTH2100</td>
<td>College Algebra</td>
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<td>MTH2220</td>
<td>Trigonometry</td>
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<td>PHY1200</td>
<td>College Physics</td>
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<td>MTH2240</td>
<td>Survey of Calculus</td>
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MINOR IN FLATBED MANAGEMENT COURSES
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<td>Professional Skills Development</td>
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<td>MNG2011</td>
<td>Vehicle Maintenance Management</td>
<td>3</td>
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<td>MNG2030</td>
<td>Risk and Accident Management</td>
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<td>MNG2013</td>
<td>Business Management</td>
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</table>

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

RANKEN EDUCATION CENTER, RANKEN.EDU
AUTOMOTIVE DIVISION

COURSE DESCRIPTIONS

AMT9003 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 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. These main sections of electrical are covered in the curriculum; engine control systems, body electronics and computer networking. The Chassis portion of this course includes steering, suspension 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.

AMT2205 Automotive 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.

AMT22205 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.

AMT2225 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.

MNG1224 Automotive Business and Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 (ASE). Three credit hours.

AUTOMOTIVE DIVISION
This semester begins with automotive body electronics, AMT0120 Computer Electronics and Computer Controls. Students will focus on electrical foundations and cover the automotive engine. During the second half of the semester, students will learn how to make the appropriate mechanical adjustments on an engine. The new curriculum will address steering, suspension, and balance and wheel alignment, including two and four wheel drive systems. 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 (CV) joints, drive shafts 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.

The second part of the semester covers the principles of operation for clutch systems, including brake foundations, disc and drum, hydraulics and electronic anti-lock braking systems. An in-shop emphasis focuses on 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 drive systems. The theory section incorporates a comprehensive study of vehicular chassis systems in current operation. Six credit hours.

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 (PROFESSIONAL TECHNICIAN TRACK)

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.

The program develops student proficiencies in the following areas:
- Maintenance and light repair
- Heating and air conditioning
- Automatic/manual transmission
- Engine controls
- Automotive diagnostics

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.

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 anti-lock braking systems. An in-shop emphasis focuses on 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 drive systems. The theory section incorporates a comprehensive study of vehicular chassis systems in current operation. 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 controlled systems with a digital automotive scope and various types of scan tools. Computer-related drivability troubleshooting is featured during this course. Six credit hours.
PROFESSIONAL TECHNICIAN PROGRAM (CONTINUED)

MINOR IN FLEET MANAGEMENT COURSES HOURS PREREQUISITES
MRKG2010 Professional Skills Development 3
MRKG2011 Vehicle Maintenance Management 3
MRKG2012 Risk and Asset Management 3
MRKG2013 Business Management 3
Total Technical Credit Hours for Minor Completion 12

Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward the 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 on 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.

GMT1000 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, service environment with emphasis on proper procedures of the express service lane; includes overall vehicle inspection, service, brake, steering & suspension, service information systems and basic scan tool function. Ten credit hours.

GMT2000 Manual Transmissions & 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.

GMT2120 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 hour.

GMT2200 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.

GMT1205, 2005, 2105 Internships (II, III, IV)
Students will perform work study in a sponsoring service environment during their second, third and fourth semesters. They will apply and practice skills correlated with the National Automotive Technicians Education Foundation (NATEF) task list. Two credit hours each.

MNG1244 Automotive Business and Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 (ASE). Three credit hours.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (AUTOMOTIVE IMPORT TECHNOLOGY TRACK)

According to the Bureau of Labor Statistics, some employers report difficulty finding workers with the right skills. Ranken’s Certified Dealership Technician Programs provides students with brand-specific instruction, giving graduates a competitive advantage when seeking employment in the industry.

Certified Dealership Technician Programs

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/Lexus Technical Education Network (T-TEN)

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 for Automotive Import 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 Maintenance Technology. 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.

DAT PROGRAM COURSES HOURS PREREQUISITES
Section One AIT1100 Maintenance and Light Repair 14 Department Approval
Section Two AIT1200 Engine Controls and Automatic Transmissions 10 AIT1100
Section Three AIT2000 Manual Transmission and HVAC 10 AIT1200
Section Four AIT2000 Automotive Diagnostics 10 AIT2000
Total Technical Credit Hours Required 64
CERTIFIED DEALERSHIP TECHNICIAN PROGRAMS (CONTINUED)

GENERAL EDUCATION COURSES

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<td>COMM101 Oral Communications</td>
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<td>SOC106 Principles of Sociology or PSY106</td>
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<td>PSY106 Introduction to Psychology</td>
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<td>Mathematics/Science</td>
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<td>Technology</td>
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<td>AFA2100 ASSET Internship IV</td>
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<tr>
<td>MTH1111 Intermediate Algebra</td>
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</table>

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (FORD TECHNOLOGY TRACK)

Ford and Lincoln dealers require that their employees hold certifications that are only available through Ford’s Technical Career Entry Program (FCEP) 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 Technology 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.

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 Ford 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 Maintenance Technology. 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

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<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<td>AFA1100 Maintenance and Light Repair</td>
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<td>AFA1105 ASSET Internship I</td>
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<td>AFA1200 Electrical and Climate Control</td>
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<td>AFA2000 Engine Repair and Maintenance</td>
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<td>AFA2105 ASSET Internship III</td>
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<td>AFA2200 Automatic Powertrains</td>
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MINOR IN FLEET MANAGEMENT COURSES

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<td>MNG1211 Vehicle Maintenance Management</td>
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<td>MNG1212 Risk and Asset Management</td>
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<td>MNG1213 Business Management</td>
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Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward the Ranken degree.

MINOR IN FLEET MANAGEMENT COURSES

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</table>

Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward the Ranken degree.
COURSE DESCRIPTIONS

AFA1100 Maintenance & Light Repair
Maintenance & Light Repair is an 8 week course designed to prepare you with knowledge and skills to begin working in the field. The course covers shop safety practices and tool & equipment usage. Introduction to maintenance procedures, including multi-point vehicle inspection and fluid services, brake system service, steering and suspension systems and perform wheel alignments. Ten credit hours.

AFA1200 Electrical & Climate Control
The electrical section consists of fundamental concepts, battery-starting-charging systems, vehicle lighting, and practical application of Ford electrical diagnostic procedures. The climate control section of this course cover the theory, operation and repair of automotive heating and air conditioning systems. Ten credit hours.

AFA2000 Engine Repair & Performance
The engines section of 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 engine performance section of this course 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 electronic diesel engine controls and emission systems. Lab activities utilize Ford scan tools, oscilloscopes, vibration analyzers and on-board self-diagnostic systems. The diesel engine section of this course studies the theory and operation of electronic diesel engine controls and emission systems. Lab activities focus on electronic fuel injection controls, intake air system and diesel engine emission control systems. Twelve credit hours.

MNG1224 Automotive Business and Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 (ASC). Three credit hours.

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE (GENERAL MOTORS TECHNOLOGY TRACK)

The General Motors Technology program at Ranken Technical College is designed to prepare students to pursue careers in servicing and maintaining General Motors (GM) vehicles at Buick, Cadillac, Chevrolet, GMC or AC Delco Professional Service Centers (PSCs). Program 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 Maintenance Technology students alternate between blocks of 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 the service facility technicians. At the end of the four-semester program, students will have completed thirty-two weeks of internship experience, giving them the experience they need to succeed.

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 Maintenance Technology. 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.

DATA PROGRAM COURSES

Section One GMT1700 Maintenance and Light Repair 3 GMT1105 GMT Internship I 2
Section Two GMT1200 Engines and Electrical 10 GMT1105 GMT Internship II 3
Section Three GMT2100 Manual Transmission and HVAC 10 GMT2100 GMT Internship III 2
Section Four GMT2120 Engine Controls and Automatic Transmissions 10 GMT2120 GMT Internship IV 2
Section Five GMT2200 Automotive Diagnostics 12 GMT2120

Total Technical Credit Hours Required 47

GENERAL EDUCATION COURSES

English/Social Sciences ENG1101 College Composition I 3 ENG1101
ENG2102 College Composition II 3
COM1100 Oral Communications 3
SOC1006 Principles of Sociology or 3
PSY2006 Introduction to Psychology 3

Mathematics/Science MTH1100 Elementary Algebra or MTH1111 Intermediate Algebra or 6 MTH1100
MTH1100 Elementary/Intermediate Algebra 3 Placement Exam or MTH1100
MTH1100 Elementary/Intermediate Algebra 3 Placement Exam

Business/Inter分支机构 BUS1300 Career Success Skills 3
MNG1224 Automotive Service Management 3 ENG1109 (Co. Req.)

Associate of Science MTH2112 College Algebra 3 MTH2112
MTH2200 Trigonometry 3 MTH2112

Courses PHY2230 College Physics 3 PHY2230
MTH2490 Survey of Calculus 3 MTH2112

MINOR IN FLEET MANAGEMENT COURSES

MNG2010 Professional Skills Development 3
MNG2011 Vehicle Maintenance Management 3
MNG2012 Risk and Asset Management 3
MNG2013 Business Management 3

Total Technical Credit Hours for Minor Completion 12

Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward this ranken degree.
CERTIFIED DEALERSHIP TECHNICIAN PROGRAMS (CONTINUED)

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.

**GMT2000 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.

**GMT2120 Engine Controls and Automatic Transmissions**
This course covers diagnosis of check engine light issues, ignition, fuel and emission systems. The automatic transmission section includes diagnosis and repair of automatic transmissions. Ten credit hours.

**GMT2200 Automotive Diagnostics**
Upon completion of this course, students will be able to repair automotive 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.

**GMT1195, 1205, 2005 and 2105 Internships (I, II, III and IV)**
Work study in a dealership service department, applying and practicing skills correlated with National Automotive Technicians Education Foundation (NATEF) task list. Two credit hours each.

**MNG1224 Automotive Business and Management**
This online course provides students with an understanding of the business operations of the automotive service business. They will gain a sound foundation of the automotive service business world as they prepare for 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 Automotive Service Consultant (ASE). Three credit hours.

**ASSOCIATE OF TECHNOLOGY**

**Diesel Technology**

With a projected steady increase in new diesel technician jobs in the next ten years, the U.S. Department of Labor notes that employers prefer applicants who have completed postsecondary training programs in diesel engine repair. Ranken’s Diesel Technology program was created to meet the growing need for heavy-duty service professionals in the transportation industry.

Diesel Technology students at Ranken receive hands-on training in a brand-new, 35,000 sq. foot facility at Ranken Wentzville. The program is modeled to meet Automotive Service Excellence (ASE) and National Automotive Technicians Education Foundation (NATEF) standards, and it will prepare graduates to be career-ready diesel service technicians.

**ASSOCIATE OF TECHNOLOGY 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 Diesel 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 Diesel Technology. 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.

**DIESEL TECHNOLOGY ST. LOUIS AND WENTZVILLE**

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**DAY PROGRAM COURSES**

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**GENERAL EDUCATION COURSES**

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**MINOR IN FLEET MANAGEMENT COURSES**

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<td>MNG1031</td>
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**TOTAL CREDIT HOURS FOR MINOR COMPLETION:** 12

**Important Note:** Only courses in which a grade of “C” or higher is earned may be applied toward the Ranken degree.
The identification, diagnosis and replacement of steering and suspension components will be covered in this class. 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.

**DSL2020 Diesel Drivetrain and Auxiliary Systems**

This course will train students to diagnose, repair, and service automatic and manual transmissions. They will learn to replace clutches, rebuild differentials and diagnose and repair hydraulic systems. This course will be taught using hands-on training, lecture and on-line modules. Twelve credit hours.

**MNG1214 Automotive Business and Management**

This online course provides students with an understanding of the characteristics, organizations, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for business or other careers. Tye 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 (ASE). Three credit hours.

**MNG2005 Professional Skills Development**

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.

**MNG2011 Vehicle Maintenance Management**

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.

**MNG3002 Risk and Asset Management**

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.
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. Our 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 and tune it for maximum output and drivability using various data acquisition tools and dynamometers. In order to gain a foundation of mechanical repair, students in the HPRT program will share a basic first semester with the Automotive Maintenance Technology (AMT) program. Upon completion of the first semester, students will be able to 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. Combining traditional and modern industry practices, the program develops student proficiencies in the following areas:

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

In addition to the positions offered to AMT graduates, HPRT graduates have an emphasis in engines and tuning.

DAY PROGRAM COURSES

| 1st Semester | AHP1003 | High Performance Foundations | 12 |
| 2nd Semester | AHP2202 | High Performance Engines | 12 | AHP1003 or AMT1003 |
| 3rd Semester | AHP2220 | High Performance Tuning | 12 | AHP1003 |
| 4th Semester | AMT2500 | Chassis and Climate Control | 12 | AHP1003 |
| 5th Semester | AMT2226 | Automotive Drivetrain Systems | 6 | All of the above |
|               | AHP1003 | Automotive Line or Professional Internship | 6 | All of the above |

Total Technical Credit Hours Required: 60

GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY) HOURS PREREQUISITES

| ENG1101 | College Composition I | 3 | Placement Exam or ENG1099 |
| ENG2102 | College Composition II | 3 | ENG1101 |
| COM1005 | Oral Communications | 3 |
| SOC1206 | Principles of Sociology | 3 | ENG1099 (Coreq.) |
| PSY1096 | Introduction to Psychology | 3 | ENG1099 (Coreq.) |
| MTH1110 | Elementary Algebra | 3 |
| MTH1111 | Intermediate Algebra | 6 | Placement Exam or MTH1099 |
| BUS1000 | Career Success Skills | 3 |
| NCV1224 | Automotive Service-Management | 3 | ENG1099 (Coreq.) |
| ENG1101 | College Composition I | 3 | Placement Exam or MTH1111 |
| MTH1220 | Trigonometry | 3 | MTH1122 |
| PHY2230 | College Physics | 3 | MTH1220 |
| MTH2410 | Survey of Calculus | 3 | MTH1122 |

Six credit hours.

GENERAL EDUCATION COURSES

| ENGL101 College Composition I | 3 |
| ENGL2102 College Composition II | 3 |
| COM1005 Oral Communications | 3 |
| SOC1206 Principles of Sociology | 3 |
| PSY1096 Introduction to Psychology | 3 |
| MTH1110 Elementary Algebra | 3 |
| MTH1111 Intermediate Algebra | 6 |
| BUS1000 Career Success Skills | 3 |
| NCV1224 Automotive Service-Management | 3 |
| ENG1101 College Composition I | 3 |
| MTH1220 Trigonometry | 3 |
| PHY2230 College Physics | 3 |
| MTH2410 Survey of Calculus | 3 |

Six credit hours.

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 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 repair orders and navigate electronic information systems such as Alldata, Mitchell and other factory systems. This course will also cover the use of a digital meter to test electrical circuits 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 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.

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 and dyno test it 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 also 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 be covered, along with nitrous. Students also learn carburetor modification and tuning and power train gearing and suspension systems.

Twelve credit hours.

AMT1200 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 lashes and true rotors, which are mandatory for most warranty repairs in dealerships. This course will cover how to diagnose and repair anti-lock braking systems (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 air conditioner (A/C) components, as well as using 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-speed all-wheel drive transfer cases, which includes the diagnosis and service procedures of U-joints and constant velocity joints. This course will also be taught using hands-on training, lecture and online 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.
HIGH PERFORMANCE RACING TECHNOLOGY (CONTINUED)

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.

MNG1224 Automotive Business and Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 National Institute for Automotive Service Excellence (ASE) Automobile Service Consultant Certification. Three 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. For more information about the acceptance requirements for the HPRT program, please contact the Admissions office at (314) 286-4809. 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.

ASSOCIATE OF APPLIED SCIENCE
Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 105. For more information about the BSAM degree, please turn to page 99.

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.

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

CONSTRUCTION DIVISION
Ranken’s Architectural Technology Advising Board brings their wealth of experience to ensure that the program is tailored to industry demand. With intensive job preparation built into the program, students develop the soft skills to transform their technical knowledge into professional success.
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. The program is designed to provide students with the knowledge, understanding and skills to not only launch successful careers, but also fully participate in the practice of architecture.

Upon completion of the program, students will be able to assess, plan and create effective building and structural design. Student coursework centers on hands-on architectural projects. Course offerings include in-depth design and construction principles, site, structural and building environment engineering, building information modeling and internet and digital imaging tools.

Hands-on experience is an integral component to student success in the Architectural Technology program. Students have participated in several real-world projects as well as gaining exposure to construction sites. A series of studio classes, taken throughout the program and steadily increasing in complexity, allows students to work together on their projects in a mentoring atmosphere. This reflects the real-world practice of partnering junior and senior architects on projects, helping them to develop their own skills and their ability to mentor others.

PROGRAM OBJECTIVES

• Building design using Revit® Architecture
• Architectural visualization using Revit® Architecture and 3ds Max® Design

Students enrolled in the Architectural Technology program are required to complete the majority of their coursework via computer, utilizing computer-aided design and drafting in each of their studio projects. 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 are issued a notebook computer for lease during their academic career at Ranken Technical College, with a buyout option upon completion of the program.

ASSOCIATE OF SCIENCE OR ASSOCIATE OF TECHNOLOGY IN ARCHITECTURAL TECHNOLOGY

Providing thorough training and experience in all aspects of the architectural profession, course offerings include design principles, site and building design, construction technology, structural principles, architectural history, building information modeling and computer modeling.

Throughout the program, students participate in a series of architectural studio classes that combine design projects with studio work and offer students the opportunity to manage projects from concept design through construction documentation. Students complete major studio projects in each of their studio projects. 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 are issued a notebook computer for lease during their academic career at Ranken Technical College, with a buyout option upon completion of the program.

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 option to pursue either an associate of science or associate of technology degree option. After completion, the student will be qualified for employment as an architectural drafter/student. A student completing one of these degrees will not be able to pursue the bachelor’s degree without taking additional general education and technical courses first.

DAY PROGRAM COURSES

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<td>ART4222</td>
<td>Interior Design</td>
</tr>
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</table>

Total Technical Credit Hours Required 97

GENERAL EDUCATION COURSES

<table>
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<tr>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tr>
<td>English/Social Science ENG1101</td>
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<td>ENG2102</td>
<td>College Composition II</td>
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<tr>
<td>COM1105</td>
<td>Oral Communications</td>
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<tr>
<td>SOC1206</td>
<td>Principles of Sociology 1</td>
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<tr>
<td>PSY1206</td>
<td>Introduction to Psychology</td>
</tr>
<tr>
<td>Mathematics/Science MTH1110</td>
<td>Elementary Algebra</td>
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<td>MTH1100</td>
<td>Intermediate Algebra</td>
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<tr>
<td>Business/Information BUS1000</td>
<td>Career Success Skills</td>
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<td>Technology MIN2224</td>
<td>Automotive Service Management</td>
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<tr>
<td>Bachelor’s and Associate of Science Additional MTH2122</td>
<td>College Algebra</td>
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<tr>
<td>MH2220</td>
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</tr>
<tr>
<td>MH2240</td>
<td>Survey of Calculus</td>
</tr>
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</table>

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CONSTRUCTION DIVISION RANKEN.EDU
ART1124 Principles of Design
A lecture/studio 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 Materials and Methods II
Materials and Methods II is a lecture course designed to give students the 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, wall and roof construction, project phases and sustainability. Three credit hours.

ART1226 Architectural Technology Studio I
The studio is designed to focus on developing the student’s basic architectural design and technical skills which will enable them to combine a working and learning experience for credit. The studio will combine a working and learning experience for credit in two and three dimensions using proper drafting techniques. Specific studio emphasis will include a study of materials, associated costs and sustainability. The student will be expected to become fluent in the terms used by architects and engineers. A combination lecture/studio course that includes an investigation into retail, commercial and residential architectural design problems and a meaningful design project. Three credit hours.

ART2120 Architectural Technology Studio I
This 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, plumbing, lighting 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. The student will also be responsible for completing a portfolio for a formal review at the end of the semester. 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 architectural landscape of today. Through an analysis of the Art Nouveau style, students will be exposed to different building structures and styles of examples ranging from subject presentations to slide shows, lectures and class discussions. Three credit hours.

ART2222 Structures II
The Structures II course is designed to build upon the previous Structures 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 construction details, 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 elective course with the intent to provide 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 students to utilize skills in sketching, CAD, rendering, design and communication. Three credit hours.

ART3024 Principles of LEED
Principles of LEED 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
This course will deal with architectural applications of computer-aided drafting involving 3D mass modeling, parametric solid modeling, rendering and animation. Students learn software typically used in the architectural profession such as AutoCAD®, Revit® Architecture, Autodesk® 3ds Max Design and Image Editing programs. A basic introduction to the systems will be presented. 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, AIA MasterSpec® and Microsoft Excel 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, the selection of the best computer modeling software. Three credit hours.

ART3220 Junior Architectural Studio
The studio is designed to focus on developing the student’s basic architectural design and technical skills. Students will be 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. Not only advanced computer applications will be utilized, but the student will also use and develop traditional media 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.

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, building site orientation, site circulation, site security, grading, utilities, hydrologics and landscape. Three credit hours.

ART4112 Professional Practice
Professional Practice is a lecture 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, contracts, project administration and specifying products. Projects include: preparing RFQ, CCR and addendums, constructing cost estimates and supporting contracts and memos to bidders. An internship will also be required. This course reserves time to be spent on discussing 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 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. Not only advanced computer applications will be utilized, but the student will also use and develop traditional media 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 purpose of the internship program is to allow 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 cohesive, 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, research 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 education process in a “real-world” application of the students’ abilities. Two credit hours.

ARCHITECTURAL TECHNOLOGY (CONTINUED)

ART4220 Senior Architectural Studio II – Design
The 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. Not only advanced computer applications will be utilized, but the student will also use and develop traditional media 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.

BUILDING SYSTEMS ENGINEERING TECHNOLOGY WENTZVILLE

Building system 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.

<table>
<thead>
<tr>
<th>DAY PROGRAM COURSES</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>BSE1000 Building Systems</td>
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<tr>
<td>Second Semester</td>
<td>BSE1010 Heating Ventilation Air Conditioning/Mechanical Systems</td>
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<tr>
<td>Third or Fourth Semester</td>
<td>BSE2000 Electrical Systems</td>
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<td>Third or Fourth Semester</td>
<td>BSE2010 Piping and Fire Protection</td>
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<td>Total Technical Credit Hours Required</td>
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</table>

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COURSE DESCRIPTIONS

BSE1000 Building Systems
Students will learn the mechanical, electrical and plumbing (MEP) components that are integrated together to make up a building system. Topics will include heating, ventilating and air conditioning systems (HVAC), electrical power and lighting systems, as well as plumbing drain-waste-vent and water distribution systems. Students will also learn to read MEP building prints and use the latest computer-aided engineering and computer-aided design (CAD) software to assist in system design and analysis. Building Information Modeling (BIM) will also be used and will include 3D and 4D modeling. Twelve credit hours.

BSE1000 Heating Ventilation Air Conditioning/Mechanical Systems
Students will learn the principles of design and layout of residential and light commercial hydraulic and HVAC systems, with an emphasis on proper equipment location and selection. This course will cover American Society of Heating and Air Conditioning Engineers (ASHRAE) standards for energy calculations of various construction types as well as load estimating, operating cost analysis and equipment selection. Students will analyze energy usage related to HVAC systems through integrated design methods. They will learn coordination of HVAC and piping systems with architectural, civil, structural and electrical disciplines, as well as the process of selecting HVAC, variable volume and hydronic systems to meet specific building requirements. Students will use AutoCAD®, Revit MEP and Microsoft Office Suite software to draft, design, manage and present their projects. Twelve credit hours.

BSE2000 Electrical Systems
Students will gain an in-depth understanding of the electrical design process. They will design electrical projects in accordance with the National Electrical Code (NEC), by selecting the appropriate materials and completing all of the required documentation. Topics include lighting characteristics, measurements, distribution curves, light sources, calculations and lighting techniques will also be covered. Students will develop a lighting layout design through computerized lighting design software, as well as gain an in-depth understanding of electrical estimating by using various methods, including using cost and estimating software. Twelve credit hours.

BSE2010 Piping and Fire Protection
This course will cover principles of design, layout and energy analysis of commercial piping systems in conjunction with local and state codes. Students will also learn coordination of plumbing, hydronics and steam systems with HVAC, architectural, structural, electrical and civil disciplines. Students will also prepare designs for life safety/fire suppression systems of commercial buildings, detailed construction documents depicting integration of all disciplines, smoke management for safe evacuation and fire suppression systems. Twelve credit hours.

GENERAL EDUCATION COURSES

<table>
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<th>CREDIT HOURS PREREQUISITES</th>
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<td>English/Social Sciences</td>
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<td>ENGL1001 College Composition I</td>
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<td>ENGL2002 College Composition II</td>
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<td>COMM1101 Oral Communications</td>
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<td>SOC1201 Principles of Sociology</td>
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<td>PSY1205 Introduction to Psychology</td>
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<td>Mathematics/Science</td>
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<td>MTH1100 Elementary Algebra I and MTH1111 Intermediate Algebra</td>
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<td>Business/Information</td>
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<td>Courses</td>
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<td>PHY2230 College Physics</td>
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<tr>
<td>MTH1240 Survey of Calculus</td>
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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, these programs prepare 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:

- Calculate 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 (RCDCC), 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.

<table>
<thead>
<tr>
<th>CERTIFICATE OF TECHNOLOGY</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tbody>
<tr>
<td>CRP1110 Residential Blueprint Reading</td>
<td>3</td>
<td>Placement Exam or ENGL1000</td>
</tr>
<tr>
<td>CRP1210 Construction Estimating and Management</td>
<td>3</td>
<td>ENGL1000 (Co. Req.)</td>
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<tr>
<td>CRP1211 Interior and Exterior Finishes Theory</td>
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<td>CRP1212 Interior and Exterior Finishes Shop</td>
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<td>CRP1213 Interior Estimating and Management</td>
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<td>CRP1214 Residential Housing Construction I</td>
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<td>CRP1215 Residential Housing Construction II</td>
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<td>CRP1216 Residential Housing Construction III</td>
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<td>CRP1217 Residential Housing Construction IV</td>
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<tr>
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<td>COM1001 Technical Communications</td>
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<th>COURSE DESCRIPTIONS</th>
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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 applies 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 program, 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.
CARPENTRY AND BUILDING CONSTRUCTION TECHNOLOGY (CONTINUED)

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 sills, rabbets, and rabbet molds. 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, cofredi 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. Twelve credit hours.

CRP2201 Welding I
Students will 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.

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 learn how to perform shielding gas welding, carbon arc gouging, and oxy-fuel cutting processes used in the welding and fabrication industry. Students will learn the necessary skills for welding and cutting mild steel plates and welding them back together in accordance with industry and instructor specifications for strength and appearance. Two credit hours.

CRP2301 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 molding 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 finish work and also lay out, install and pour the concrete for the footings and foundation forms for the next year’s program. All students will be involved in foreman development training. Twelve 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. Upon completion of the program, students will be able to:
- Compute basic construction math
- Frame a floor, wall and roof
- Install windows and doors
- Build basic stairs
- Construct concrete forms
- Perform Shielded Metal Arc Welding

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

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. 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.
HEATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION TECHNOLOGY (CONTINUED)

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 oil and gas equipment

Graduates are prepared for employment as HVACR mechanics, 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 and two additional general education courses. Students who obtain an HVACR associate degree can choose to receive more in-depth training in Major Appliance Technology by taking one extra semester. Upon completion of the extra semester, students will receive an associate degree in both Major Appliance Technology and HVACR.

DAY PROGRAM COURSES

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<thead>
<tr>
<th>DAYS</th>
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<tr>
<td>First or Second Semester</td>
<td>HVA1001 Fundamentals of Heat Transfer and Domestic Applications Theory</td>
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<tr>
<td>First or Second Semester</td>
<td>HVA1002 Fundamentals of Heat Transfer and Domestic Applications Shop</td>
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<tr>
<td>Third or Fourth Semester</td>
<td>HVA2111 Commercial Refrigeration and Light Commercial Heat/AC Theory</td>
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<tr>
<td>Third or Fourth Semester</td>
<td>HVA2112 Commercial Refrigeration and Light Commercial Heat/AC Shop</td>
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GENERAL EDUCATION COURSES

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<td>SOC1206 Principles of Sociology or POL2206 Introduction to Psychology</td>
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<td>MTH1110 Elementary Algebra and MTH1111 Intermediate Algebra or MTH1102 Elementary Intermediate Algebra</td>
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<td>Business/Information Technology</td>
<td>BUS1000 Career Success Skills</td>
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<td>Associate of Science</td>
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<td>PHY1240 Survey of Calculus</td>
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GENERAL EDUCATION COURSES CERTIFICATE OF TECHNOLOGY

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<td>BUS1000 Career Success Skills</td>
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Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward the Ranken degree.

COURSE DESCRIPTIONS

HVA1011 Fundamentals of Heat Transfer and Domestic Applications Theory
This course 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 various refrigerants which are used in the trade. Common service procedures such as gauge installation, evacuation and recovery of refrigeration are also covered in this 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. Principles of threading steel pipe correctly and figuring piping measurement are also covered. The course teaches the layout techniques for fabricating residential duct fittings. Five credit hours.

HVA1012 Fundamentals of Heat Transfer and Domestic Applications Shop
This course involves learning how to use hand tools properly and safely. Accurate trade measurements will be taken along with making leak-tight flare connections on copper tubing. Students will take readings on and monitor actual refrigeration systems and room air conditioners. Procedures such as recovery, evacuation, leak testing and charging of refrigerant will be performed. 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 also involves the fabricating of over twenty residential sheet metal duct fittings and introduces students to various types of metering devices, with the review of gauge manifold and two-stage operation. Students learn charging methods, trouble diagnosis and the proper operation of a refrigerant. This course then continues with trouble diagnosis, charging and performing operational checks. Eight credit hours.

HVA1001 Electrical for HVACR Theory
This course introduces basic electrical theory. Ohm’s law, insulators, conductors, switches and loads. 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 trouble-shooting control circuits. The course continues with electrical symbols, capacitors and motors. Students are introduced to hermetic compressors, relays, control circuits and fan relays. Five credit hours.

HVA1002 Electrical for HVACR Shop
Students write simple, series and parallel circuits and apply Ohm’s law. Students identify and test components outlined in the theory section, construct electrical circuits and use electrical meters to measure voltage resistance and current. This course also teaches students to wire and operate hermetic compressors, relays, control circuits and fan relays. Eight credit hours.

HVA2111 Commercial Refrigeration and Light Commercial Heat/AC Theory
Covers principles of commercial refrigeration and light heat/air conditioning (AC) theory, including function and operation sequence of component parts for a variety of refrigeration, 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 size refrigeration parts and diagnose electrical circuits, refrigeration circuits, water circuits and air circuits for different refrigeration systems. Class systematically approaches 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 trouble analysis. Covers fundamentals of hydronics (heating or cooling by circulation of a fluid), steam heat and special controls, diagnosis, charging and checkout procedure and principles of pneumatic controls. Building automated systems used in the control and monitoring of facilities, energy use and zone comfort conditions are also covered. Five credit hours.

HVA2112 Commercial Refrigeration and Light Commercial Heat/AC Shop
Students wire, determine proper operation, troubleshoot and repair commercial refrigeration systems such as walk-in coolers, reach-in freezers, open display cases, milk dispensers, glass frosters, beverage coolers, beer dispensing equipment and light commercial AC systems and accessories. Operations of simple building controls are also covered. Eight credit hours.
HEATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION TECHNOLOGY (CONTINUED)

HVA2211 Residential Heat/Air and Commercial Ice Makers Theory
Provides an overview of gas and electric furnaces and controls, thermostats, transformers, thermocouple and induced draft, flame sensor circuits piping and venting. Focuses on operating and troubleshooting residential air conditioning, heat pumps and heating equipment. Two-stage systems, variable speed blowers, Indoor Air Quality (IAQ) products and commercial ice maker equipment systems will all be covered. Five credit hours.

HVA2212 Residential Heat/Air and Commercial Ice Makers Shop
Involves wiring and checkout of furnace and controls, thermostats and transformers, thermocouple and induced draft, flame sensing, piping and venting of gas furnaces. Emphasis is placed on service skills and systematic trouble diagnosis. Course introduces trouble diagnosis of electrical, refrigeration and airflow of residential air conditioning equipment. Students wire, charge, test and troubleshoot heat pumps. Students install and start new systems at the job site of the homes in Ranken’s Ranken Community Development Corporation (RCCD) program. Covers installation and sequence of the major manufacturers’ ice makers. Eight credit hours.

ASSOCIATE OF SCIENCE
Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 99. For more information about the BSAM degree, please turn to page 99.

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, contactsors 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 flu gas venting is also covered, primarily categories I and IV. 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 tremendous rise in the quantity and variety of household electrical appliances marketed today. 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, practical experience in troubleshooting and repairing gas and electric components for many 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 and two additional 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. Upon completion of the extra semester, students will receive an associate degree in both Major Appliance Technology and HVACR.
This course introduces basic electrical theory. Students will learn 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. Five credit hours.

HVA2211 Residential Heat/Air and Commercial Ice Makers Theory
Provides an overview of gas and electric furnaces and controls, thermostats, transformers, thermocouple and induced draft, flame sensor circuits piping and venting. Focuses on operating and troubleshooting residential air conditioning, heat pumps and heating equipment. Two-stage systems, variable speed blowers, Indoor Air Quality (IAQ) products and commercial ice maker equipment systems will all be covered. Five credit hours.

ASSOCIATE OF APPLIED SCIENCE
Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 106. For more information about the BSAM degree, please turn to page 99.
MAJOR APPLIANCE TECHNOLOGY (CONTINUED)

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 mechancians, plumbing sales representatives and pipelayers for industrial companies. Graduates also enroll in the plumbing program to gain industry knowledge and experience prior to entering a professional apprenticeship program.

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 shown 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 schematic. Emphasis is placed on 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.

MAT0220 Plumbing Appliances

This course introduces the student to laundry equipment service and installation. Emphasis is placed on electric and gas dryers, as well as automatic washers. Upon completion, students should be able to service and install laundry equipment and water heaters. Six credit hours.

MAT0240 Kitchen Appliances

This course introduces 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.

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
- Pipelfitting
- Venting
- General electricity principles
- Industry tools and new technologies

In addition, the program curriculum includes basic studies of related industries, including surveying, domestic 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. Please see our AAS (page 104) and BSAM (page 99) program offering.

SCHEMATIC PROJECT COURSES HOURS PREREQUISITES

PLT1100 Plumbing Math
PLT1101 Plumbing Theory I
PLT1200 Advanced Plumbing Drafting
PLT1210 Advanced Fixtures Installation and System Design Shop
PLT1211 Plumbing Theory II
PLT1212 Advanced Fixtures Installation and System Design Shop
PLT1213 boilers and Steam Theory
PLT1214 Basic Electrical Theory and Practical Application

Six credit hours.

PLT1110 Introduction to Plumbing Drafting
PLT1111 Plumbing Theory I

Two credit hours.

PLT1112 Plumbing Theory II
PLT1210 Advanced Plumbing Drafting
PLT1211 Plumbing Theory II
PLT1212 Advanced Fixtures Installation and System Design Shop
PLT1213 Boilers and Steam Theory
PLT1214 Basic Electrical Theory and Practical Application

Eight credit hours.

PLT1113 Advanced Plumbing Drafting
PLT1211 Plumbing Theory I
PLT1212 Advanced Fixtures Installation and System Design Shop
PLT1213 Boilers and Steam Theory
PLT1214 Basic Electrical Theory and Practical Application

Eight credit hours.

PLT1114 Basic Electrical Theory and Practical Application
PLT1211 Plumbing Theory I
PLT1212 Advanced Fixtures Installation and System Design Shop
PLT1213 Boilers and Steam Theory
PLT1214 Basic Electrical Theory and Practical Application

Eight credit hours.

PLT1220 Advanced Plumbing Drafting

Two credit hours.

PLT1230 Fundamentals of Heat Transfer and Domestic Applications

Two credit hours.

PLT1240 Kitchen Appliances

Two credit hours.

PLT1250 Plumbing Math
PLT1251 Plumbing Theory I
PLT1252 Plumbing Theory II
PLT1253 Advanced Plumbing Drafting
PLT1254 Advanced Fixtures Installation and System Design Shop
PLT1255 boilers and Steam Theory
PLT1256 Basic Electrical Theory and Practical Application

Eight credit hours.

PLT1260 Advanced Plumbing Drafting

Eight credit hours.

GENERAL EDUCATION COURSES HOURS PREREQUISITES

BUS1000 Career Success Skills
COM1080 Technical Communications

Three credit hours.

PLT1000 Plumbing Math
PLT1100 Plumbing Theory I
PLT1200 Advanced Plumbing Drafting
PLT1210 Advanced Fixtures Installation and System Design Shop
PLT1211 Plumbing Theory II
PLT1212 Advanced Fixtures Installation and System Design Shop
PLT1213 boilers and Steam Theory
PLT1214 Basic Electrical Theory and Practical Application

Eight credit hours.

PLT1220 Advanced Plumbing Drafting

Eight credit hours.

PLT1230 Fundamentals of Heat Transfer and Domestic Applications

Eight credit hours.

PLT1240 Kitchen Appliances

Eight credit hours.

PLT1250 Plumbing Math
PLT1251 Plumbing Theory I
PLT1252 Plumbing Theory II
PLT1253 Advanced Plumbing Drafting
PLT1254 Advanced Fixtures Installation and System Design Shop
PLT1255 boilers and Steam Theory
PLT1256 Basic Electrical Theory and Practical Application

Five credit hours.

PLT1260 Advanced Plumbing Drafting

Two credit hours.

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

PLT1100 Plumbing Math
Consists of piping and math theory. Course covers topics like threads and threading equipment, steel pipe, Copper, plastic and cast iron pipe and jointing methods. It also includes pipe fittings, fitting allowances and fitting makeups. Students learn conversion of length measurements, equal spacing, 45-degree offsets, parallel offsets and rolling offsets. Students learn elevations and grades, water measurement, water pressure and formulas for solving problems with geometric shapes. Three credit hours.

PLT1110 Introduction to Plumbing Drafting
Covers the basics of plumbing drafting, which consists of the alphabet of lines, lettering, linework and arrows. It also includes orthographic projections, dimensioning, scale readings, plan views and isometric drawing construction. Two credit hours.

PLT1111 Plumbing Theory I
Provides a plumbing orientation, including history of the trade, safety, atmospheric pressure, traps, drainage, waste, vent systems, plumbing fixtures, plumbing appliances, storm drainage, private sewage disposal, plumbing systems inspections and tests and hot and cold water supply systems (public and private). Five credit hours.

PLT1112 Pipelfitting and Basic Fixture Installation Shop
Provides hands-on shop work to apply theories learned in PLT1111. Students start with basic pipelfitting projects, including how to make pipe nipples and nipple chucks by hand and with power and how to assemble, measure and test steel, Copper, plastic and cast iron pipes for watertightness. The class moves on to cover plumbing fixture installations. Students install wall-hung lavatories, water closets, bathtub installations, stack-ventilated bathroom groups, stack-ventilated kitchen sinks and commercial fixture installations. Eight credit hours.

PLT1220 Advanced Plumbing Drafting
Continues the study of plumbing drafting with advanced isometric drawings and diagrammatic plumbing drawings. Study includes pipe sizing according to the drainage fixture unit (DFU) method for drain, waste and vent piping. Instruction will cover the sizing of water piping with water supply fixture unit (WSFU) method for water service, meter and distribution piping within a building. Residential blueprints guide the students in drawing plumbing isometrics. Students size and create material lists for each drawing. Five credit hours.
PLUMBING TECHNOLOGY (CONTINUED)

PLT1211 Plumbing Theory II
This course includes a recap of drain-waste-vent (DWV) piping, atmospheric pressure, traps, water pipe sizing, backflow protection for public and domestic water systems, plumbing fixtures, plumbing appliances, storm drainage and private sewage disposal. Instruction covers the use of plumbing codes for all plumbing systems, inspections and tests. Students also learn surveying layout of sewer trenches and building foundations. Incorporates in-class review for the National Occupational Competency Testing Institute outcomes assessments test. Five credit hours.

PLT1212 Advanced Fixture Installation and System Design Shop
Consists of advanced bathroom and kitchen design, rough-in and finish. Students work with three-fixture baths, including those with fixtures on the same wall and on opposite walls. Students install kitchen sinks with garbage disposals, dishwashers and water conditioning equipment. It also covers the installation of water heaters, laundry room fixtures, wall-hung water closets and urinals, sump pumps and hot water boilers as well as surveying fieldwork, shop restoration, clean-up and inventory. Eight credit hours.

EVENING PROGRAM CERTIFICATE IN MAJOR APPLIANCE TECHNOLOGY
Evening students can earn a certificate in Plumbing Technology by pursuing this program, which is customized to suit individual needs and interests. 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.

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 TECHNOLOGY

Multiple career options and tremendous flexibility are just a few of the advantages of the Electrical Technology division. Graduates of the division's four-semester programs in Control Systems Technology, Electrical Automation Technology and Electrical Systems Design Technology are highly valued among area employers, because the Electrical Technology division offers students the expertise and hands-on training to meet the growing needs of companies with electronic control and distribution systems. From installing and maintaining basic electrical systems to operating an entire facility through an electronically controlled network, the Electrical Technology division presents students with countless opportunities.

During their first year, students in each of these programs will develop a solid knowledge of the fundamentals of electricity and electronics by sharing the same curriculum. By having the flexibility to learn more about each of the programs, students are able to make a more informed decision about which career path they would like to pursue.

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<td>E E L 1 1 0 0 I nt r o d u c t i o n t o N a t i o n a l E l e c t r i c a l C o d e ( N E C )</td>
<td>Provides insight into the technical aspects of the electrical field and explores various wiring methods and electrical components utilizing basic National Electric Code (NEC) fundamentals. Three credit hours.</td>
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<tr>
<td>E E L 1 1 1 0 D C / A C E l e c t r i c a l F u n d a m e n t a l s L a b</td>
<td>Develops basic hands-on skills using components such as resistors, capacitors, inductors and transformers. Basic troubleshooting is introduced, using both hands-on and computer-generated circuits. Students utilize the following equipment: analog and digital meters, direct current (DC) and alternating current (AC) power supplies, oscilloscopes and AC signal generators. Two credit hours.</td>
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<tr>
<td>E E L 1 1 1 1 D C / A C E l e c t r i c a l F u n d a m e n t a l s T h e o r y</td>
<td>Introduces the fundamentals of electricity. The course 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.</td>
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<tr>
<td>E E L 1 1 1 2 E l e c t r i c a l W i r i n g S h o p</td>
<td>Focuses on tools used in the electrical trade, electrical safety, electrical equipment and the actual wiring of basic electrical circuits. This course also covers blueprint reading for electricians. Three credit hours.</td>
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CONTROL SYSTEMS TECHNOLOGY

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, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

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 draftpersons, lab technicians, technical writers and salespersons in the general field of control systems technology.
CONTROL SYSTEMS TECHNOLOGY (CONTINUED)

COURSES DESCRIPTIONS

ELC2100 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 writing, 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.

CST2213 Instrumentation and Process Control Theory

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. Five credit hours.

CST2214 Instrumentation and Process Control Shop

Uses 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. Eight credit hours.

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

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 105. For more information about the BSAM degree, please turn to page 99.
ELECTRICAL AUTOMATION TECHNOLOGY

For major manufacturing and commercial industries, electrical power is the lifeblood 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 strengths and services of their businesses.

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

- Power distribution
- Industrial motor controls/motors
- Switching circuits
- Servo and motion control
- Programmable logic controllers

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

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

In addition, EAT graduates are versed in the layout, installation and blueprint reading of commercial and industrial wiring in various new construction projects. Graduates earn an associate of technology or associate of science degree and enter the workforce as commercial or industrial 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.

EVENING PROGRAM CERTIFICATE IN ELECTRIC AUTOMATION TECHNOLOGY

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 workforce 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.

EVENING PROGRAM COURSES

<table>
<thead>
<tr>
<th>COURSE DESCRIPTIONS</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEL0170 DC and AC Theory and Lab</td>
<td>6</td>
<td>EEL1110</td>
</tr>
<tr>
<td>ELA0230 Motor Control, Drives and Power Distribution</td>
<td>4</td>
<td>EEL1110</td>
</tr>
<tr>
<td>ELC2010 Programmable Logic Controllers (PLCs)/Human Machine Interfaces (HMI)</td>
<td>5</td>
<td>EEL1110, EEL1200</td>
</tr>
<tr>
<td>EEL0120 Basic Control Circuits and Commercial Wiring Practices</td>
<td>5</td>
<td>EEL1110</td>
</tr>
<tr>
<td>ELC2040 Programmable Logic Controllers (PLCs) and Human Machine Interface (HMI) Control</td>
<td>3</td>
<td>EEL1110</td>
</tr>
<tr>
<td>Total Technical Credit Hours Required</td>
<td>24</td>
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</tr>
</tbody>
</table>

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 the 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 inductor-capacitor (LC) 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 a comprehensive review 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 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 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 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 500 controller with Rockwell RSLogix™ 5000 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

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

- Basic electricity theory
- 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.

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 design layout using 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 COURSES

<table>
<thead>
<tr>
<th>COURSE DESCRIPTION</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester EEL1110 DC and AC Theory and Lab</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Second Semester EEL0120 Basic Control Circuits and Commercial Wiring Practices</td>
<td>6</td>
<td>EEL1110</td>
</tr>
<tr>
<td>Third Semester ESD2203 Residential and Commercial Lighting Design with AutoCAD®</td>
<td>6</td>
<td>EEL2102 (Co-Reqs)</td>
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<tr>
<td>Fourth Semester ELD424D Construction Management and Estimating</td>
<td>6</td>
<td>ELD2102 (Co-Reqs)</td>
</tr>
</tbody>
</table>

Total Technical Credit Hours Required 29

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 is pleased to offer a new 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 on 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 evaluated for transfer credit to the Bachelor of Science in Applied Management (BSAM) degree.

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 105. For more information about the BSAM degree, please turn to page 99.

ESD0120 Basic Control Circuits and Commercial Wiring Practices
Offers fundamentals of relay logic circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered both in theory and in hands-on practice. An overview of electronic control components such as diodes, transistors and integrated circuit chips is also explored. The course will cover an introduction to electrical safety, types of electrical equipment and devices are also studied. Students will construct various systems using different cabling and conduit methods. The National Electrical Code (NEC) will be used throughout the course. Six credit hours.

ELETRICAL 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.
ELECTRICAL CONSTRUCTION DESIGN AND MANAGEMENT TECHNOLOGY (CONTINUED)

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

EVENING PROGRAM CERTIFICATE OF COMPLETION 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.

PRIOR LEARNING ASSESSMENT EVALUATION

Students interested in furthering their education, such as obtaining an Associate of Applied Science (AAS) or Bachelor of Science in Applied Management (BSAM) degree, will be given the opportunity to have a Prior Learning Assessment evaluation.

EVENING PROGRAM COURSES

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>ASY101C Fundamentals of Alarm Systems</td>
<td></td>
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<tr>
<td>Second</td>
<td>ASY102C Alarm System Electronics and Computer Controls</td>
<td>ASY101C</td>
</tr>
<tr>
<td>Third</td>
<td>ASY103C Design and Integration of Alarm Systems</td>
<td>ASY102C</td>
</tr>
<tr>
<td>Fourth</td>
<td>ASY104C Installation and Commissioning of Alarm Systems</td>
<td>ASY103C</td>
</tr>
</tbody>
</table>

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 networking 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

In 2014, St. Louis businesses submitted 369 job opportunities for graduates from the Information Technology Division to Ranken’s job placement service.

INFORMATION TECHNOLOGY ST. LOUIS AND WENTZVILLE

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. All IT students begin in a common first semester that focuses on desktop operating systems and teaches students how to use the computer and networks as resources. 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. Courses offered are industry-driven, using Cisco Network Academy, NetApp Partner Academy, Microsoft IT Academy and CompTIA Academy course curriculum.

INTERNET AND WEB-BASED TECHNOLOGY

Focusing on Internet and Web-based programming with experience in Web design, students will utilize industry-standard applications such as Microsoft’s Visual Studio and Adobe DreamWeave® and learn hand-coded HTML, CSS, JavaScript, T-SQL and the Microsoft® .NET framework. Students will use a variety of programming languages to design, develop and maintain software applications to help businesses solve real-world problems and discover new opportunities via data-driven Web-based applications.

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
• Utilize object-oriented programming principles and fundamentals to develop, troubleshoot and implement applications in both Java and C# programming languages
• Develop web-based applications using traditional .NET Framework, MVC.NET, and .NET web services
• Create data driven applications that utilize a SQL Server database

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 virtual LANs (VLANs). Students will be prepared for the Cisco Certified Network Associate (CCNA™) certification test. Upon completion of this program, students will be able to:
• Design, configure and troubleshoot networks using Cisco routing and switching protocols
• Install, configure and troubleshoot desktop operating systems, PCs and peripherals

NETWORK SYSTEMS MANAGEMENT TECHNOLOGY

Featuring elements of 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. Upon completion of this program students will be able to:
• Implement static and dynamic routing protocols using Cisco routers

NETWORK AND DATABASE ADMINISTRATION TECHNOLOGY

Software centered, this track focuses on Microsoft Server for network services, network infrastructure and Active Directory, Microsoft Structured Query Language (SQL) for database configuration and services and network virtualization using ESXi, VCenter Server and VMware. Students will be prepared to achieve the Microsoft Certified Technology Specialist (MCTS) certification and VMware Certified Professional (VCP) certification. Upon completion of this program, students will be able to:
• Install, configure and maintain troubleshoot Cisco ASA security devices, secure existing networks with ACLs
• Implement IPv6 addresses on new/existing networks
• Implement voice over IP network services using Cisco Unified Communications Manager
• Install, configure and troubleshoot Cisco ASA security devices, secure existing networks with ACLs

NETWORK SYSTEMS MANAGEMENT TECHNOLOGY

Featuring elements of 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. Upon completion of this program students will be able to:
• Install, configure and maintain troubleshoot Cisco ASA security devices, secure existing networks with ACLs
• Implement IPv6 addresses on new/existing networks
• Implement voice over IP network services using Cisco Unified Communications Manager
• Install, configure and troubleshoot Cisco ASA security devices, secure existing networks with ACLs

INFORMATION TECHNOLOGY DIVISION

In 2014, St. Louis businesses submitted 369 job opportunities for graduates from the Information Technology Division to Ranken’s job placement service.
### INFORMATION TECHNOLOGY (CONTINUED)

- Implement switching technologies such as VLANs, Spanning Tree Protocol (STP), Inter-VLAN routing and VLAN Trunking Protocol (VTP)
- Install/configure Small Office/Home Office wireless network using Linksys wireless routers and clients
- Implement inter-VLAN routing using Cisco switches and routers
- Install/configure wide-area network (WAN) technologies such as Frame Relay and PPP
- Configure basic networking security strategies to protect corporate network
- Implement IPv6 addresses on new/existing networks
- Install and configure enterprise-level servers
- Implement high availability and disaster recovery
- Support data centers
- Create and maintain group policy
c
- Configure, monitor and troubleshoot Active Directory configurations

### 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 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.

### Infotech Division Track Path

<table>
<thead>
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<th>First Semester</th>
<th>Second Semester</th>
<th>Third and Fourth Semester</th>
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<tbody>
<tr>
<td>Network Systems Technology</td>
<td>CNT1100 Operating Systems</td>
<td>INF2010 Network Virtualization</td>
<td>INF2027 Microsoft Network Administration I</td>
</tr>
<tr>
<td>Management &amp; Design Technology</td>
<td>INF2026 Microsoft Network Administration II</td>
<td>INF2028 Advanced Networking and Internetworking Infrastructure Technologies Theory</td>
<td>INF2029 Microsoft Network Administration III</td>
</tr>
<tr>
<td>Infotech Division Infotech</td>
<td>INF2025 Microsoft Network Administration I</td>
<td>INF2027 Microsoft Network Administration II</td>
<td>INF2029 Microsoft Network Administration III</td>
</tr>
<tr>
<td>All Other Tracks</td>
<td>INF2025 Microsoft Network Administration I</td>
<td>INF2028 Advanced Networking and Internetworking Infrastructure Technologies Theory</td>
<td>INF2029 Microsoft Network Administration III</td>
</tr>
<tr>
<td>Systems Management</td>
<td>INF2026 Microsoft Network Administration II</td>
<td>INF2028 Advanced Networking and Internetworking Infrastructure Technologies Theory</td>
<td>INF2029 Microsoft Network Administration III</td>
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<tr>
<td>INF2027 Microsoft Network Administration II</td>
<td>INF2028 Advanced Networking and Internetworking Infrastructure Technologies Theory</td>
<td>INF2029 Microsoft Network Administration III</td>
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<td>INF2027 Microsoft Network Administration II</td>
<td>INF2028 Advanced Networking and Internetworking Infrastructure Technologies Theory</td>
<td>INF2029 Microsoft Network Administration III</td>
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</tbody>
</table>

### COURSE DESCRIPTIONS

**CNT1100 Operating Systems**
Provides a comprehensive overview of Command Line, Microsoft Windows operating systems. Students will learn to install, configure and deploy desktop operating systems in various environments including VMware workstations. Students will work with partitioning, formatting, directory structures, file management, memory resident programs, 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 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 as a Microsoft Certified Technology Specialist (MCTS). Fifteen credit hours.

**CNT1210 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 PCs and will be prepared for the CompTIA A+ certification exam. Seven credit hours.
INFORMATION TECHNOLOGY (CONTINUED)

CNT1221 Introduction to Internetworking Technologies
In this course, students will learn fundamental computer networking terms, concepts and components. Students will develop skills in basic network configuration, connectivity and testing using workstations, hubs, routers and switches. Students will 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.

INF2205 Microsoft Network Administration I
Offers a comprehensive overview of the Microsoft Network Operating System (Windows 2000/2003). Focus is placed on using the Windows Server operating system to provide network services, such as user creation, file sharing, printer sharing, Domain Naming Services and remote access. Students also learn how to use the Microsoft Active Directory Services to provide network services for larger scale networks. Seven credit hours.

INF2206 Microsoft Network Administration II
Provides hands-on implementation of concepts studied in INF2205. 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.

INF2207 Microsoft Network Administration III
This course focuses on advanced configuration of services necessary to deploy, manage and maintain a Windows Server 2012 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, Falcor Clustering, business continuity and disaster recovery services. Students will gain experience with access and information provisioning and protection technologies such as Dynamic Access Control (DAC), user-centric capabilities for anytime/anywhere 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.

IWT1229 Web Development and Design Foundation
This course includes the technologies needed to develop modern and highly effective websites. Students will obtain a comprehensive coverage of the latest HTML version, Cascading Style Sheets, Web Scripting technologies and Web design best practices while also learning about WordPress, accessibility, Web ethics, e-commerce, website promotion strategies, and mobile website development. With web-design-focused activities, hands-on exercises and real-world projects, this course provides the skills that beginning web developers will need. Fourteen credit hours.

IWT2207 Java Programming
The students are introduced to object-oriented programming using the Java SDK and Eclipse software packages. The fundamentals of control structures, classes and the Old Development Paradigm are thoroughly covered before moving onto graphics and more powerful applications of the Java language. Students will be prepared for the Oracle Certified Java Associate certification. Seven credit hours.

IWT2330 Web Databases
Students will learn how to create database-driven websites, implementing the latest technologies to integrate databases with Web applications. Students will also learn the basic database concepts with special emphasis on hands-on learning skills necessary to implement XML databases on the Web. At the completion of this course, students will be able to add a webpage database to an HTML page, manipulate data using SQL operations, publish both static and dynamic data on the Web, manipulate data on the Web using ADO RecordSets, convert text files to XML databases and query XML data using XQuery. 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.

EVENING PROGRAM COURSES

<table>
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<tr>
<th>SEMESTER</th>
<th>COURSE</th>
<th>DESCRIPTION</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>CNT1210</td>
<td>Command Line and Windows Lab</td>
<td>6</td>
</tr>
<tr>
<td>Second Semester</td>
<td>CNT1220</td>
<td>Microcomputer Hardware and Peripherals</td>
<td>4</td>
</tr>
<tr>
<td>Third Semester</td>
<td>CNT1230</td>
<td>Data Communication and Basic Router Configuration</td>
<td>6</td>
</tr>
<tr>
<td>Fourth Semester</td>
<td>CNT1230</td>
<td>Implementing Cisco Networking Equipment and Wide Area Network (WAN) Router Configuration</td>
<td>6</td>
</tr>
<tr>
<td>Fifth Semester</td>
<td>CNT1200C</td>
<td>Healthcare Information Networking</td>
<td>6</td>
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</table>

*Semester is optional

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.

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 109. For more information about the BSAM degree, please turn to page 99.
INFORMATION TECHNOLOGY (CONTINUED)

COURSES 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.

CNT306C Healthcare Information Networking
This course is designed to supplement Networking Academy core classes and help students prepare for 21st century careers in a healthcare environment. The Health Information Networking (HIN) course introduces students to IT fundamentals for healthcare organizations. Students will be introduced to basic information healthcare environment principles of security and privacy, fundamentals of electronic health record (EHR) systems and basic information on medical practice workflows and adjusting workflows for EHR implementation. Students in the HIN course will also learn how to design, secure and troubleshoot a network for a medical group. Six credit hours.

ADVANCED CISCO CERTIFIED NETWORK PROFESSIONAL (CCNP) CERTIFICATION TRAINING

Advanced training for Cisco Certified Network Professional (CCNP) certification is now available at Ranken Technical College. Our convenient evening classes are designed to help you work toward the next level in your certification goals. Ranken is not only a certified Cisco Networking Academy, but also the 2008 award winner of the prestigious Cisco “AR” award in the category of academic rigor.

The CCNP curriculum builds upon Cisco Certified Networking Associate (CCNA) courses, adding more complex network configurations, diagnosis and troubleshooting strategies.

EVENING PROGRAM COURSES

<table>
<thead>
<tr>
<th>COURSE Description</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNT300C Troubleshooting and Maintaining Cisco IP Networks</td>
<td>6</td>
<td>CNT300A, CNT300B</td>
</tr>
<tr>
<td>CNT302A Implementing Cisco IP Routing</td>
<td>6</td>
<td>CNT300A, CNT300B</td>
</tr>
<tr>
<td>CNT303C Implementing Cisco IP Switched Networks</td>
<td>6</td>
<td>CNT300A, CNT300B</td>
</tr>
</tbody>
</table>

These courses are designed for individuals wishing to become network engineers, network administrators and network technicians. Geared towards the working adult, classes are conveniently offered in the evening, meeting just twice a week, from 6 p.m. to 10 p.m.

Students may enroll in the CCNP program once they have successfully completed CCNA training within the Cisco Networking Academy or if they have a current CCNA certification.

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 Microsoft Windows Server 2008 Active Directory, Configuring (70-646) and the Microsoft Windows Server 2008 Network Infrastructure, Configuring (70-642) exam. After passing each Microsoft exam, the students will receive the Microsoft Certified Technology Specialist (MCTS) certification. Knowledge and skills gained upon completion of this certification is as follows:

- Ability to build, troubleshoot and configure desktop computers, Windows operating systems and peripherals
- Operation and management of a Windows server infrastructure within an enterprise organization
- Ability to maintain the infrastructure of both Windows and Active Directory
- Use scripts and batch files to accomplish tasks on a regular basis

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 105. For more information about the BSAM degree, please turn to page 99.

COURSES DESCRIPTIONS

CNT320C Implementing Cisco IP Routing
In this course, students will learn how to configure Enhanced Interior Gateway Routing Protocol (EIGRP) across High Level Data Link Control (HDLCL) Frame Relay, MultiProtocol Label Switching (MPLS), Virtual Private Network (VPN) and MPLS virtual circuits. Students will also configure Open Shortest Path First (OSPF) over HDLC, Frame Relay, PPP and over different Wide Area Network (WAN) links. Time will be spent implementing alternate routing path control, implementing Internet Protocol Version 6 (IPv6), analyzing branch office network designs and planning installations; and analyzing designs to support mobile workers and planning network modifications. Six credit hours.

CNT321C Implementing Cisco IP Switched Networks
This course covers the skills necessary to plan, configure and verify the implementation of complex enterprise switching solutions using Cisco’s Campus Enterprise Architecture including, Secure integration of Virtual Local Area Networks (VLAN), Wireless Local Area Networks (WLAN), voice and video into campus networks. Six credit hours.

CNT322C Troubleshooting and Maintaining Cisco IP Networks
In this course, students will learn to plan and perform regular maintenance on complex enterprise routed and switched networks and use technology-based practices and a systematic Information Technology Infrastructure Library (ITIL) compliant approach to perform network troubleshooting. Six credit hours.

EVENING PROGRAM COURSES

<table>
<thead>
<tr>
<th>COURSE Description</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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</thead>
<tbody>
<tr>
<td>First Semester CNT1010 Command Line and Windows Lab</td>
<td>6</td>
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</tr>
</tbody>
</table>
INFORMATION TECHNOLOGY (CONTINUED)

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 services. 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 percent operations, 20 percent engineering and 20 percent 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.

- 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

ASSOCIATE OF APPLIED SCIENCE
Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)
MANUFACTURING DIVISION

In 2014, graduates for the Manufacturing Division's Precision Machining Technology program had an average of more than 5 job opportunities per graduate.

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.

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:
• CNC operations
• Manufacturing processes
• Quality practices and maintenance
• Advanced programming and fixture design

<table>
<thead>
<tr>
<th>DAY PROGRAM COURSES</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tr>
<td>First Semester</td>
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<tr>
<td>Second or Third Semester</td>
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<td>MFG1000</td>
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<tr>
<td>Second or Third Semester</td>
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<td>MFG1100</td>
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<tr>
<td>Fourth Semester</td>
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<tr>
<td>Total Technical Credit Hours Required</td>
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<th>GENERAL EDUCATION COURSES</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>English/Social Sciences</td>
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<td>ENG1101</td>
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<tr>
<td>Mathematics/Science</td>
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<tr>
<td>Business/Information</td>
<td>3</td>
<td>BUS1000</td>
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<tr>
<td>Technology</td>
<td>3</td>
<td>MNG1012</td>
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<tr>
<td>Associate of Science</td>
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<td>MTH1102</td>
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<tr>
<td>Additional Required</td>
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<tr>
<td>Courses</td>
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<tr>
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<td>3</td>
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<th>GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tbody>
<tr>
<td>EDM1160 Technical Communications</td>
<td>3</td>
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<tr>
<td>BUS1000 Career Success Skills</td>
<td>3</td>
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</tr>
</tbody>
</table>

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

In today’s highly complex society, technical industries and companies are being called upon to implement new technologies and equipment to improve efficiencies and maximize day-to-day operations. To minimize downtime and costly delays, companies are in need of qualified technicians capable of maintaining and repairing a wide variety of mechanical and electrical equipment. 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.

In addition to developing multiple skill sets, Industrial Technology graduates experience on-the-job diversity and increased flexibility in their career choices.

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. 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 pipelining and plumbing
• Carpentry maintenance
• Hydraulics principles & theory
• Welding (TIG, MIG and SMAW)
• Industrial mechanical systems

Students interested in completing the certificate of technology program will take all technical courses in the associate degree program and two general education courses per semester.

<table>
<thead>
<tr>
<th>DAY PROGRAM COURSES</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INT 1113</td>
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<td>INT 1114</td>
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<td>INT 2111</td>
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<td>INST 202</td>
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<tr>
<td>Total Technical Credit Hours Required</td>
<td>52</td>
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</table>

Important Note: Students may complete the semesters in any order.
### General Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Prerequisites</th>
</tr>
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<tbody>
<tr>
<td>English/Social Sciences: ENG1101 College Composition I</td>
<td>3</td>
<td>Placement Exam or ENG1089</td>
</tr>
<tr>
<td>ENG2102 College Composition II</td>
<td>3</td>
<td>ENG1101</td>
</tr>
<tr>
<td>COMM1050 One Communications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SOC1206 Principles of Sociology</td>
<td>3</td>
<td>ENG1099 (Co. Req.)</td>
</tr>
<tr>
<td>PSY1206 Introduction to Psychology</td>
<td>3</td>
<td>ENG1099 (Co. Req.)</td>
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**Mathematics/Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>INT1113 Industrial Mechanical Systems Theory</td>
<td>5</td>
<td>Five credit hours.</td>
</tr>
<tr>
<td>INT1211 Welding/Metal Fabrication and Hydraulics Theory</td>
<td>8</td>
<td>Eight credit hours.</td>
</tr>
<tr>
<td>INT2112 Industrial Facilities Maintenance Theory</td>
<td>5</td>
<td>Five credit hours.</td>
</tr>
<tr>
<td>INT2111 Welding/Metal Fabrication and Hydraulics Shop</td>
<td>6</td>
<td>Six credit hours.</td>
</tr>
<tr>
<td>INT2012 Industrial Electrical/PLC Shop</td>
<td></td>
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</tr>
<tr>
<td>INT2011 Industrial Electrical/PLC Theory</td>
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</tr>
</tbody>
</table>

**EVENING PROGRAM CERTIFICATE IN INDUSTRIAL TECHNOLOGY**

- **INT1113 Industrial Mechanical Systems Theory**
  - This course covers the basics of drill presses, hand saws and associated hand tools. Students will examine mechanical fundamentals and torque, discuss the fundamentals of blueprints, symbols and terms specific to industrial mechanical systems. Students will identify basic components such as bearings and gaskets and analyze power transmission devices including gears, chains, belts and couplings. Fluid transmission components including valves, black iron piping and pumps will be covered as well as basic rigging, lifting and equipment layout theories. Five credit hours.

- **INT1114 Industrial Mechanical Systems Shop**
  - This course provides a hands-on application of all principles covered in INT1111, including basic mechanical hand tools and drill press operation, removal of frozen or damaged fasteners and installation/troubleshooting of various power transmission devices. Students will employ written documentation skills as applied to the industry. They will also apply Preventative and Predictive Maintenance procedures to increase equipment life and plant efficiency. Students will demonstrate proper procedures to secure, support, lift and place loads. Eight credit hours.

- **INT1212 Welding/Metal Fabrication and Hydraulics Shop**
  - Provides hands-on exposure to mild steel materials through structured shop procedures and practices. Students use plumbing techniques to implement pumps, motors, cylinders, directional control valves, metering and check-and-flow control valves in working circuits during the hydraulic portion of the semester. They disassemble the components for inspection, repair or replacement and final test for proper operation. Eight credit hours.

- **INT2111 Industrial Facilities Maintenance Theory**
  - Provides a broad overview in three areas of study. Carpentry maintenance focuses on small construction projects, such as hanging drywall, hanging doors, installing ceilings and other building and grounds maintenance skills. Pipe fitting/plumbing maintenance includes the practical application of mathematics as well as the safe and proper use of hand and power tools used for soldering, brazing and polyvinyl chloride (PVC) pipe and procedures used in the trade. The course also covers the mechanical refrigeration cycle, compressors and pressure temperature relationships. Five credit hours.

- **INT2112 Industrial Facilities Maintenance Shop**
  - Provides a hands-on application of principles covered in INT2111, including basic carpentry projects that teach the student to measure, layout and cut. 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. R/AH equipment is covered and students continue with the refrigeration cycle, pressure temperature relationships, British thermal units (BTU) calculations and refrigerant controls. Eight credit hours.

- **INT2011 Industrial Electrical/PLC Theory**
  - Begins with safety, basic electrical concepts and Ohm’s law. Progresses through alternating current, lighting, motors, relays, starters, overload devices, ladder logic, H/DI lighting equipment, basic programmable logic controller (PLC) knowledge and three-phase electrical systems and services. Introduces three-phase motors and control circuits, as well as National Electric Code (NEC) requirements wiring methods, box fill, conductor ampacity, de-rating calculations and conduit bending. Five credit hours.

- **INT2012 Industrial Electrical/PLC Shop**
  - Provides hands-on application of principles covered in INT2111, including the installation of receptacles, switching and lighting circuits per the National Electric Code (NEC). Students will also wire step-up/down transformers and construct both basic and PLC driven motor control circuits. Eight credit hours.

**General Education Courses (Certificate of Technology)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM1050 Technical Communications</td>
<td>3</td>
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<tr>
<td>BUS1000 Career Success Skills</td>
<td>3</td>
<td></td>
</tr>
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</table>

**Important Note:** Only courses in which a grade of “C” or higher is earned are applied toward the Ranken degree.

### COURSE DESCRIPTIONS

**INT1111 Industrial Mechanical Systems Theory**

This course covers the basics of drill presses, hand saws and associated hand tools. Students will examine mechanical fundamentals and torque, discuss the fundamentals of blueprints, symbols and terms specific to industrial mechanical systems. Students will identify basic components such as bearings and gaskets and analyze power transmission devices including gears, chains, belts and couplings. Fluid transmission components including valves, black iron piping and pumps will be covered as well as basic rigging, lifting and equipment layout theories. Five credit hours.

**INT1114 Industrial Mechanical Systems Shop**

This course provides a hands-on application of all principles covered in INT1111, including basic mechanical hand tools and drill press operation, removal of frozen or damaged fasteners and installation/troubleshooting of various power transmission devices. Students will employ written documentation skills as applied to the industry. They will also apply Preventative and Predictive Maintenance procedures to increase equipment life and plant efficiency. Students will demonstrate proper procedures to secure, support, lift and place loads. Eight credit hours.

**INT1212 Welding/Metal Fabrication and Hydraulics Shop**

Provides hands-on exposure to mild steel materials through structured shop procedures and practices. Students use plumbing techniques to implement pumps, motors, cylinders, directional control valves, metering and check-and-flow control valves in working circuits during the hydraulic portion of the semester. They disassemble the components for inspection, repair or replacement and final test for proper operation. Eight credit hours.

**INT2111 Industrial Facilities Maintenance Theory**

Provides a broad overview in three areas of study. Carpentry maintenance focuses on small construction projects, such as hanging drywall, hanging doors, installing ceilings and other building and grounds maintenance skills. Pipe fitting/plumbing maintenance includes the practical application of mathematics as well as the safe and proper use of hand and power tools used for soldering, brazing and polyvinyl chloride (PVC) pipe and procedures used in the trade. The course also covers the mechanical refrigeration cycle, compressors and pressure temperature relationships. Five credit hours.

**INT2112 Industrial Facilities Maintenance Shop**

Provides a hands-on application of principles covered in INT2111, including basic carpentry projects that teach the student to measure, layout and cut. 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. R/AH equipment is covered and students continue with the refrigeration cycle, pressure temperature relationships, British thermal units (BTU) calculations and refrigerant controls. Eight credit hours.
INDUSTRIAL TECHNOLOGY (CONTINUED)

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 and diagram reading. It also introduces students to troubleshooting programmable logic controllers (PLC). Does not include programming of PLC. The installation of a three-phase transformer with panel board feeding balanced and unbalanced loads is also covered. Six credit hours.

FABRICATION AND WELDING
FWL0100 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) welding, Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW), to be applied on various metals. The emphasis is to develop proper welding techniques in the flat and horizontal positions. The procedures for preparing materials—oxygen-fuel cutting and carbon arc gouging—are 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 various positions. The course also covers the milling and rigging fundamentals of layout and leveling, rope, knots, splice, wire rope, chins, weight calculations, CG cranes, hoists and ladders. Students will learn to interpret blueprints and symbols in the machine trades, including universities, hospitals, hotels and industrial businesses. Six credit hours.

MANUFACTURING DIVISION
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 milling 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
Instructs in the use of mechanical systems in the building. 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 rain gutters and learn proper flashing and water protection techniques. Six credit hours.

EVENING PROGRAM CERTIFICATE IN FACILITIES TECHNOLOGY
Ranken 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.

EVENING PROGRAM COURSES (CHOOSE FOUR)

BLUEPRINT READING

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<td>Blueprint Reading</td>
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<tr>
<td>Carpentry Maintenance</td>
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<td>Blueprint Reading</td>
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<tr>
<td>Electrical Maintenance I</td>
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<td>Blueprint Reading</td>
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<td>Plumbing</td>
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<td>Stationary Engineering</td>
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<th>COURSE</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Inspection Training</td>
<td>6</td>
<td>Blueprint Reading</td>
</tr>
<tr>
<td>Home Energy Audit Training</td>
<td>6</td>
<td>Blueprint Reading</td>
</tr>
<tr>
<td>Solar Photovoltaic (PVI) Technology Training</td>
<td>6</td>
<td>Blueprint Reading</td>
</tr>
</tbody>
</table>

Total Technical Credit Hours for Certificate Completion: 24

MANUFACTURING DIVISION
Solar energy systems and green technology

Evening Program Certificate in Solar Energy Systems and Green Technology

Solar energy programs provide the training graduates need to enter the rapidly expanding green technology fields. According to the U.S. Department of Energy, Photovoltaic (PV) technology is a young, growing high-tech industry that is going to create jobs and strengthen the economy.

PV makes use of the abundant energy of the sun and has little or no negative impact on our environment. It can be used in a wide range of products, from small consumer items to large commercial solar electric systems. Within the next ten years, PV electricity will be competitive in price with traditional sources of electricity and will become widely utilized.

Evening students can earn a certificate in Solar Energy Systems and Green Technology by pursuing this program and learn how to work with this important new technology and help reduce the world's carbon footprint.

Prerequisite to the program is Electrical Maintenance I (EMT0110) or an equivalent course. Each course may also be taken individually as a seminar.

Evening Program Courses

<table>
<thead>
<tr>
<th>COURSE DESCRIPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMT0110 Electrical Maintenance I</td>
</tr>
</tbody>
</table>

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.

INT10C 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.

INT10C Home Energy Audit Training

Energy audits have increased as the demand grows to lower expensive energy costs and move towards a sustainable future. There are tax credits from cities and the federal government for homeowners who implement recommendations made as a result of an energy audit. In this course you will learn the fundamentals of building science—thermodynamics, heat systems and transfer, moisture and humidity, airflow, insulation, thermal boundaries, P&V values, pressure boundaries, air sealing, blower door technology, ventilation, building calculations, combustion science and testing and energy conservation strategies. Six credit hours.

SEG100C Solar Photovoltaics (PV) Technology Training

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SEG100C Solar Photovoltaic (PV) Technology Training
Students learn the basic types of the photovoltaic system and their applications for both stand-alone (battery backup) and utility interactive systems (grid tied). Students will learn about the PV system install, design, size calculations and installation safety. The student will be able to draw one-line electrical diagrams for interactive and stand-alone PV systems showing all major components and subsystems, and indicate the locations of the PV source and output circuits, inverter input and output circuits, charge controller and battery circuits. This course is taught in accordance with the NABCEP PV entry level learning objectives and prepares students to take the NABCEP certification exam. At the end of the course, the student will be able to build a complete system from ground up. Lastly, the course covers the business side of the solar industry and helps the student understand what they need to know to run a solar business. Six credit hours.

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 and maintain machines and equipment. Through Ranken’s Precision Machining Technology (PMT) program, students receive training and hands-on instruction that emphasizes the design and construction of various components for machinery. Ranken’s 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. The state-of-the-art Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM) computer lab offers students the experience necessary to advance on the job by learning the latest computerized machining technology. While the primary purpose of the program is training skilled, general machinists, students are also trained in various specialties, including CNC, CAD/CAM, inspection and quality control, engineering design and maintenance machining.

Due to the rapidly expanding use of sophisticated CNC machine tools, coupled with the demand for machinists generated by the local defense industry, the St. Louis area is experiencing a shortage in those trained in the latest technologies. Therefore, the employment outlook for PMT graduates continues to be exceptionally promising.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Throughout the four-semester associate degree program, students will gain practical experience with 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 emphasizes 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

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.

<table>
<thead>
<tr>
<th>COURSE DESCRIPTIONS</th>
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</thead>
<tbody>
<tr>
<td>PMT1001 Introduction to Machining Theory</td>
</tr>
<tr>
<td>PMT1002 Introduction to Machining Lab</td>
</tr>
<tr>
<td>PMT1010 Introduction to Shops and Manufacturing (CAM)</td>
</tr>
<tr>
<td>PMT1011 Computer Numerical Control Theory</td>
</tr>
<tr>
<td>PMT1012 Computer Numerical Control Lab</td>
</tr>
<tr>
<td>PMT1021 CAD/CAM Theory</td>
</tr>
<tr>
<td>PMT1022 CAD/CAM Lab</td>
</tr>
<tr>
<td>PMT1031 Advanced Machining Theory</td>
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<tr>
<td>PMT1032 Advanced Machining Lab</td>
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<tr>
<td>PMT1033 Computer Aided Drafting (CAD)</td>
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<tr>
<td>PMT1034 Computer Aided Manufacturing (CAM)</td>
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<tr>
<td>PMT1035 Inspection</td>
</tr>
<tr>
<td>PMT1036 Maintenance Machining</td>
</tr>
<tr>
<td>PMT1037 Automation Theory</td>
</tr>
<tr>
<td>PMT1038 Automation Lab</td>
</tr>
<tr>
<td>PMT1039 Machine Tool Building</td>
</tr>
<tr>
<td>PMT1040 Precision Machining Technology Lab</td>
</tr>
<tr>
<td>PMT1041 Precision Machining Technology Theory</td>
</tr>
<tr>
<td>PMT1042 Precision Machining Technology Equipment</td>
</tr>
<tr>
<td>PMT1043 Precision Machining Technology Safety</td>
</tr>
<tr>
<td>PMT1044 Precision Machining Technology Math and Science</td>
</tr>
<tr>
<td>PMT1045 Precision Machining Technology English and Social Sciences</td>
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<tr>
<td>PMT1046 Precision Machining Technology Technology</td>
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<tr>
<td>PMT1047 Precision Machining Technology Science</td>
</tr>
<tr>
<td>PMT1048 Precision Machining Technology Business and Information</td>
</tr>
<tr>
<td>PMT1049 Precision Machining Technology General Education Courses</td>
</tr>
<tr>
<td>PMT1050 Precision Machining Technology General Education Courses (Certificate of Technology)</td>
</tr>
</tbody>
</table>

Important Note: Only courses in which a grade of “C” or higher is earned may be applied toward this Ranken degree.
the students will learn how to draw 3D wire frame, surfaces (CNC) equipment. Using Master Cam and Solid Works software, variety of parts using Haas Computer Numerical Control (CNC) to design, draw and produce a PMT1022 CAD/CAM Lab

Numerical Control (CNC) machines. The student will also learn parts to create tool paths to produce parts on Haas Computer

PMT1011 Computer Numerical Control Theory introduces students to basic numerical control programming, then transitions into advanced programming of a Computerized Numerical Control (CNC) lathe, vertical and horizontal machining centers with 4th axis capabilities. The hardware associated with CNC, the cartesian coordinate system and absolute/incremental programming formats are covered. Also, the use of computers to program, edit and graphically plot programs for mechanical parts will be included. Five credit hours.

PMT1012 Computer Numerical Control Lab introduces the student to programming and operation of Computerized Numerical Control (CNC) machine tools. Provides hands-on experience programming, setting up and operating CNC equipment. Students will be provided with a blueprint and will be responsible for programming and editing a part, choosing the correct tooling and fixtureing, along with creating a set-up sheet document upon completion of the project. Eight credit hours.

PMT1021 CAD/CAM Theory Students will learn Master Cam in order to create and manipulate 2D surfaces and solid parts. They will use these parts to create tool paths to produce parts on Haas Computer Numerical Control (CNC) machines. The student will also learn the essentials of SolidWorks and will create parametric models of parts and assemblies they previously created using Master Cam. Five credit hours.

PMT1022 CAD/CAM Lab Students will use Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) to design, draw and produce a variety of parts using Haas Computer Numerical Control (CNC) equipment. Using Master Cam and SolidWorks software, the students will learn how to draw 3D wire frame, surfaces and solid model parts. The students will also use Master Cam to develop the complex programs needed to produce a variety of parts on 3 and 4 axis Haas mills and 2 axis Haas lathes. The course will conclude with the student assembling the parts produced during the semester and creating a solid model of the finished assembly by using SolidWorks software. Eight credit hours.

PMT2001 Advanced Machining Theory The course begins with reviewing fundamental layout tools, measuring instruments, machine set-ups and machining processes. It then transitions into advanced machining processes of intricate parts which require custom fixtureing and complex set-ups. In the tool and die/mold making portion of this course, the students will learn the function and terminology of a stamping die and the molding process. Students will learn the theory of heat treating along with the grinding process required to manufacture a precision machine part. Five credit hours.

PMT2002 Advanced Machining Lab Students apply their machining skills and technical knowledge in order to manufacture a complex mechanical part to blueprint tolerance specifications on conventional machines found in a machine shop. Participating in a team manufacturing project, they will work in small groups designing, problem solving and manufacturing a product that replicates common practices found in prototype part development. Students will use advanced inspection equipment including a Coordinate Measurement Machine and an Optical Comparator to verify the dimensions of the finished parts. Eight 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 and Tuesday and Thursday evenings.

EVENING PROGRAM COURSES HOURS PREREQUISITES

<table>
<thead>
<tr>
<th>SECTION/NAME</th>
<th>COURSE</th>
<th>HOURS</th>
<th>PREREQUISITIES</th>
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</thead>
<tbody>
<tr>
<td>Section One</td>
<td>PMT0111 Engine Lathe Fundamentals</td>
<td>6</td>
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<tr>
<td>Section Two</td>
<td>PMT0113 Milling Machine Fundamentals</td>
<td>6</td>
<td>PMT0111</td>
</tr>
<tr>
<td>Section Three</td>
<td>PMT0211 Advanced Machining</td>
<td>6</td>
<td>PMT0113</td>
</tr>
<tr>
<td>Section Four</td>
<td>PMT0213 CNC Programming</td>
<td>6</td>
<td>PMT0113</td>
</tr>
<tr>
<td>Section Five</td>
<td>PMT0224 CAD/CAM</td>
<td>6</td>
<td>PMT0224 CAD/CAM</td>
</tr>
<tr>
<td></td>
<td>Total Technical Credit Hours for Certificate Completion</td>
<td>24</td>
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</tr>
</tbody>
</table>

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

ASSOCIATE OF APPLIED SCIENCE

Ranken is offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken’s standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 105. For more information about the BSAM degree, please turn to page 99.

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. The course also covers the CNC lathe and students will learn how to set-up and operate Haas CNC machine tools. Six credit hours.

PMT0224 CAD/CAM Students will begin by learning Master Cam software in order to draw blueprints with the aid of a computer. These basic drawing skills will develop into drawing 3D wire frame and solid model parts. The mill and lathe CAM instruction will be used to generate programs and machine finished parts. Six credit hours.
FABRICATION AND WELDING TECHNOLOGY

Due to high demand, Ranken offers a Fabrication and Welding Technology program in a new state-of-the-art facility. 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

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.

DAY PROGRAM COURSES

<table>
<thead>
<tr>
<th>COURSE DESCRIPTION</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<tbody>
<tr>
<td>FWL1100 Fundamentals of Welding Technology</td>
<td>12</td>
<td>FWL1110, FWL1120</td>
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<tr>
<td>FWL1110 Blueprint Reading and Quality Inspection</td>
<td>3</td>
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</tr>
<tr>
<td>FWL1200 Welding Fabrication</td>
<td>12</td>
<td>FWL1100, FWL1110</td>
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<tr>
<td>FWL1210 Fabrication Equipment Technology</td>
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<td>Total Technical Credit Hours Required</td>
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GENERAL EDUCATION COURSES (CERTIFICATE OF TECHNOLOGY)

<table>
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<tr>
<th>COURSE DESCRIPTION</th>
<th>HOURS</th>
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<tr>
<td>COM1080 Technical Communications</td>
<td>3</td>
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</tr>
<tr>
<td>BUS1000 Career Success Skills</td>
<td>3</td>
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Important Note: Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.

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. Please see our AAS (page 104) and BSAM (page 98) evening program offerings.

COURSE DESCRIPTIONS

FWL1100 Fundamentals of Welding Technology

Introduces students to welding and cutting processes in both theory and shop. The course provides an overview of various techniques, including Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW). Students will be prepared for the American Welding Society (AWS) certification test and vertical SMAW, GMAW and FCAW on steel plates. Twelve credit hours.

FWL1110 Blueprint Reading and Quality Inspection

Offers an in-depth study of blueprint reading. Students will have a complete understanding of typical weld symbols and the blueprints used throughout the welding industry, as well as basic weld inspection. Three credit hours.

FWL1200 Welding Fabrication

This course builds upon skills and theories learned in the Fundamentals of Welding Technology course. Students will learn to fabricate and fit welded assemblies according to the instructions given by the instructor. Students will learn to visually inspect welds according to American Welding Society (AWS) standards in Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW). Six credit hours.

FWL1210 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.

FWL1211 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.

FWL122 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.

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. PLEASE SEE OUR AAS (PAGE 104) AND BSAM (PAGE 98) EVENING PROGRAM OFFERINGS.
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 the program, students must complete 40 technical credit hours. The 40 technical credit hours may come from Ranken technical credit, transfer technical credit or from prior learning assessment credit from a completed portfolio. Flexible web-blended and evening courses throughout the year 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 and marketing 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 currently a Candidate for Accreditation 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

Ranken’s BSAM program offers flexibility in designing a career that’s right for you. The following track options allow students to graduate with an emphasis in one of the following areas:

**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.

**Management Information Systems (MIS) Emphasis**
The MIS emphasis 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.

**Marketing Emphasis**
This specialization focuses on fundamentals of sales and marketing management. In addition to marketing expertise, students will learn to demonstrate necessary management, interpersonal and professional thinking skills to impact organizational effectiveness at all levels of their company. Students will complete a competitive analysis, designed to place their business at an advantage in the marketplace. Graduates will be qualified for jobs as technical and sales specialists or product and brand managers in manufacturing and service industries.

Like all Ranken programs, the BSAM program is not just an education; it’s on-the-job-training that companies respect and look for when hiring.
### Bachelor of Science in Applied Management (Continued)

#### Management Program Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNG3200</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>MNG3300</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MNG3350</td>
<td>Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td>MNG3200</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>MNG2500</td>
<td>Employment Law</td>
<td>3</td>
</tr>
<tr>
<td>MTH3113</td>
<td>Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>COM3000</td>
<td>Intercultural Communications</td>
<td>3</td>
</tr>
<tr>
<td>MNG4200</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MNG4230</td>
<td>Modern System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>MTH3113</td>
<td>Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MNG4230</td>
<td>Management Information Systems</td>
<td>3</td>
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<tr>
<td>MNG4231</td>
<td>Business Networks and Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>MNG4232</td>
<td>Modern Database Management</td>
<td>3</td>
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<tr>
<td>ECO3205</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>MNG4320</td>
<td>Enterprise Resource Planning (ERP)</td>
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<tr>
<td>MNG4000</td>
<td>Operations Project (OT Emphasis)</td>
<td>3</td>
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<tr>
<td>POL3208</td>
<td>American Government</td>
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#### Marketing Program Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH1110</td>
<td>Elementary Algebra</td>
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</tr>
<tr>
<td>MNG4200</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MNG4230</td>
<td>Modern System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>MTH1110</td>
<td>Intermediate Algebra</td>
<td>3</td>
</tr>
<tr>
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<td>Business Networks and Telecommunications</td>
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<td>MNG4232</td>
<td>Modern Database Management</td>
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<td>POL3208</td>
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#### MIS Program Courses

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<th>Course Title</th>
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<tbody>
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<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MNG4230</td>
<td>Modern System Analysis and Design</td>
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<td>POL3208</td>
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</tbody>
</table>

### Accelerated Bachelor of Science in Applied Management

Ranken’s Bachelor of Science in Applied Management (BSAM) degree is geared toward technical students who wish to advance in their chosen technical career. Ranken provides three BSAM track options: Management, Information Systems (MIS) and Marketing.

The accelerated program offers a unique educational blend, designed to transform highly skilled technicians into successful managers. Now, it can be taken as an intensive three year program, allowing graduates to get into the field and advance in their careers quickly!

Students begin their two year technical program and as they complete their general education classes, they can start taking management courses immediately in a seated or web-blended format. This enables students to complete both their associate and bachelor’s degrees in three short years.

To the right is a sample schedule that a Management student could maintain. Some courses may be transferable, tested out and/or exchanged for other classes.

#### Year 1

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
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<td>Spring</td>
<td>ENG1101</td>
<td>Composition I</td>
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<td>Summer</td>
<td>ENG2102</td>
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#### Year 2

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<th>Hours</th>
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<tbody>
<tr>
<td>Fall</td>
<td>MNG4225</td>
<td>Marketing Strategies</td>
<td>3</td>
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<tr>
<td>Spring</td>
<td>PSY3026</td>
<td>Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>Summer</td>
<td>COM1105</td>
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#### Year 3

<table>
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<th>Semester</th>
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<tr>
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<tr>
<td>Spring</td>
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<td>Marketing Strategies</td>
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</tr>
<tr>
<td>Summer</td>
<td>MNG4200</td>
<td>Principles of Finance</td>
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</table>

### Important Note

*Only courses in which a grade of “C” or higher is earned may be applied toward this Ranken degree.

*Required if work experience and/or credit assessment is necessary.
MNG3100 Management and Supervision

Students study the concepts, terminology, principles, theory and issues in management as it relates to the supervisor in the workplace. Topics are organized around the four traditional functions of management: planning, organizing, leading and controlling. This course describes the evolution of management thought, the use of quantitative techniques to improve decision making and guidance for helping students build their management careers. Three credit hours.

MTH3113 Statistical Analysis

This course will acquaint students with the mathematical concepts of statistical analysis. The course includes an introduction to the theory and applications of descriptive and inferential statistics including probability, random variables, expected values, probability distribution functions and hypothesis testing. Three credit hours.

MNG3200 Human Resource Management

Studies the processes and practices pertaining to organization and management of personnel including employee selection, development, motivation and evaluation. Emphasis will be on the management of human resources in service-oriented organizations. Three credit hours.

MNG3250 Employment Law

Covers the impact of law on the management of human resources in an organization. This course will examine common law protections for the individual worker, including wrongful termination, employee privacy, wage and hour regulation, occupational safety, workers’ compensation and employee benefits. Three credit hours.

MNG3300 Managerial Accounting

Emphasizes the use of accounting information for internal planning and control purposes. This course is intended for managers who will make business decisions using data obtained from the accounting system. The course will cover basic issues involved in using a cost accounting system. Three credit hours.

MNG3350 Principles of Finance

An introduction to the principles of financial management, this course will emphasize understanding the role of finance within a company. Topics covered include elements of financial planning, valuation, cost of capital investment and depreciation under various conditions. Three credit hours.

MNG4020 Global Business Strategy

This course covers international business operations and the impact of culture, global relations and management practices on domestic and foreign business organizations. Topics include international trade, investment, economics, culture, multi-cultural corporate management environment and other related topics. Three credit hours.

MNG4110 Production and Operation Management

This course is designed to provide the student with a holistic overview of Operations Management (integrating manufacturing and services) and lean concepts for improving processes. Major topic areas will include: Operations Management (OM) in today’s business environment, process decisions, facility decisions, aggregate planning and inventory decisions, daily operations decisions and lean concepts and quality tools for improving processes. Three credit hours.

MNG 4115 Lean Six Sigma

Introduces the key concepts of lean thinking, including studying work processes by direct observation of work activities, studying work flow, and examining processes to systematically eliminate wasteful activities. Six Sigma is a structured, data driven methodological 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

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 (MIS Emphasis)

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. The course covers the 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

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

MNG4200 Principles of Marketing

Introduces key concepts, methods of analysis, strategies and tactics which are critical to managing profitable customer relationships in today’s domestic and foreign marketplaces. The course includes a study of product quality and branding, pricing, distribution and promotion. Three credit hours.

MNG4220 Advertising (Marketing Emphasis)

This course covers topics in advertising, promotion, planning, strategies, personal selling and media selection. Three credit hours.

MNG4221 Sales Management (Marketing Emphasis)

This course covers topics in sales management, sales motivation, budgeting, forecasting, organizational structure, supervision, selection and recruitment, incentive and compensation plans. Three credit hours.

MNG4225 Marketing Strategies (Marketing Emphasis)

This course covers topics in strategic marketing in relation to the marketing mix, marketing communications, pricing strategies, distribution, product selection and other related topics. Three credit hours.

MNG4230 Modern System Analysis and Design (MIS Emphasis)

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 (MIS Emphasis)

Covers fundamental business data communication concepts, beginning with an overview of the companies and government agencies involved in the field, the effects of communications on today’s society, types of networks and security, the importance of wireless technologies, e-business applications and the increased speed in communication services. Three credit hours.

MNG4232 Modern Database Management (MIS Emphasis)

This course begins by explaining why databases are used, how they improve on alternatives such as spreadsheets, which their components are and how they are developed. Next, it introduces the relational model and defines basic relational terminology. It contains a thorough overview discussion of normalization, including a new four-step process that makes it far easier to understand and perform. This course is introducing statements for data definition and modification, as well as SQL SELECT statements. Next, it turns to database design and management, including the entity-relationship (E-R) model and basic data modeling. Three credit hours.

MNG4250 Small Business Management

Reviews the considerations faced by individuals planning to establish and manage a small business venture. Includes business planning, legal forms of ownership, financial planning and resources, tax considerations, insurance issues and basic considerations in operations and control. Three credit hours.

MNG4300 Management Information Systems

Provides students with the necessary knowledge and skills to make sound business decisions relating to information systems and to work with management to resolve problems in this area. Topics include how to develop and implement an information systems strategy. Three credit hours.

MNG4320 Enterprise Resource Planning (ERP) (MIS Emphasis)

This course covers the opportunities for increased productivity by bringing a company’s many different systems together inside one large integrated system. This complete introduction to the world of ERP provides the necessary background for success in today’s marketplace. Three credit hours.

MNG4400 Business Strategy and Implementation

The purpose of this course is to introduce the strategy diamond and the five elements framework and present the three major themes: the dynamic nature of firms and industries, strategy formulation and implementation and strategic leadership. This course focuses on how firms formulate, implement and evaluate strategies. Strategic-management concepts and techniques are studied. Three credit hours.

MNG4500 Capstone Project Course

This project-based course focuses on bringing the management skills together from finance, accounting, human resources, business strategy, communications, marketing, employment law, and more. Students will demonstrate their knowledge of formulating strategies and evaluating decisions necessary to be competent managers and supervisors. Three credit hours.
The Associate of Applied Science degree (AAS) is designed for the adult working in a technical field who wishes to apply their technical training and work experience towards a college degree.

Students who possess either a certificate from Ranken, a certificate from another accredited technical training program, or equivalent work experience can use that training for college credit towards their associate degree at Ranken.

Training programs from other institutions and work experience will be evaluated by the Registrar’s office. Once the technical training aspects are met, students will then focus on completing the general education courses—and could graduate with an associate degree in as few as four semesters. Geared towards the working adult, classes are conveniently offered in the evening and online.

Graduates of the AAS degree program will not only possess the technical skills to advance on the job but will also have the communication and critical thinking skills necessary to further their career. Graduates will also have the opportunity to continue their education further and apply their associate degree towards a bachelor’s degree.

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**MANAGEMENT PROGRAM COURSES**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE NAME</th>
<th>HOURS</th>
<th>PREREQUISITES</th>
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<td>BUS1000</td>
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<tr>
<td>ENG1101</td>
<td>College Composition I</td>
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<td>ENGL101</td>
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<td>College Composition II</td>
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<td>ENGW120</td>
<td>Introduction to Psychology</td>
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<td>MNG1204</td>
<td>Introduction to Business and Management</td>
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<td>SOC1208</td>
<td>Principles of Sociology</td>
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<td>PSY1206</td>
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<tr>
<td>PSY3100</td>
<td>Organizational Behavior</td>
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**CERTIFICATE OF APPLIED MANAGEMENT**

The Certificate of Applied Management comprises the most essential business courses available to teach a student the necessary skills to succeed. Designed for the working adult, the Certificate of Applied Management courses are offered as either evening or online courses, or a combination of both. Students will learn real-world business applications with the convenience of a flexible schedule.

The program is offered in two levels. Level I is the foundation for all general business operations. Once the student has a better business understanding, he or she will be prepared to continue on to Level II, which focuses on management skills. Once both levels have been completed, the student will be prepared for a corporate environment. They will have a good foundation to continue their education and obtain a bachelor’s degree.

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**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.

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**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. 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

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.
GENERAL EDUCATION (CONTINUED)

ENGLISH AND SOCIAL SCIENCES

COM1080 Technical Communications
This course focuses on the reading, writing, listening, and speaking skills needed in a technical field. Upon completion, students will have the basic computer skills necessary to write business correspondence such as letters, emails and reports. They will prepare and give presentations using different delivery styles and visual aids, including PowerPoint. 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.

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.

COM3900 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 interpersonal communication. 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 interpersonal 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.

ENG1101 College Composition I (available online)
This course introduces students to the processes of deliberate and voluntary moral decisions. Upon completion, students will apply strategies for ethical decision-making. They will understand how professional codes of ethics and corruptions are applied in workplace settings. They will develop informed, objective judgments regarding a number of contemporary, controversial issues. Three credit hours.

FNA3002 Digital Photography
This course introduces students to the basic concepts and applications of electronic photography and software. Upon completion, students will be able to use basic photography techniques to produce and edit digital photographic images with focus on archival prints. They will learn about digital negatives and white and color. Students will enhance and retouch photos using Adobe Photoshop.
Three credit hours.

PSY1026 Introduction to Psychology (available online)
This course introduces students to the scientific study of human behavior. Upon completion, students will understand the mind and body of what they experience. They will be able to describe research concepts in psychological science. They will demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings and historical trends in psychology. Prerequisite: ENG1098. Corequisite: ENG1099. Three credit hours.

SOC1026 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 organization. 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
This course gives students practical experience for using research methods to design and plan a research project. Upon completion, students will be able to plan and implement a research project. They will be able to conduct quantitative and qualitative research. Students will be able to apply strategies to conduct qualitative and quantitative research. Each student will write a research proposal or an outline. Upon completion, students will be able to conduct research and write a formal research proposal. This course is a prerequisite for ART4203 Capstone Research Project. Three credit hours.

MTH1099 Basic College Mathematics
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.

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, given 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: MTH212 or equivalent. Three credit hours.
MTH2240 Survey of Calculus
This course introduces students to basic concepts and operations of differential and integral calculus, with applications to a variety of practical situations drawn from social, economic, life and applied physical sciences. Prerequisite: MTH2112. Three credit hours.

PHY2230 College Physics
This course is an algebra/trigonometry-based physics course emphasizing problem-solving. The course is designed to develop mathematical and problem-solving skills by covering various topics in physics. Topics covered include motion in one and two dimensions, Newton’s laws, work and energy, momentum and collisions, circular motion and the law of gravity, statics, rotational dynamics and solids and fluids. Prerequisite: MTH2220. Three credit hours.

BUSINESS AND INFORMATION TECHNOLOGY
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.

BUS1000 Career Success Skills (available online)
This web-blended course focuses on the computer skills and job-readiness attitudes and behaviors necessary for success in a technical career. Upon completion, students will access instruction materials, communication tools and records of individual performance and attendance through the use of a learning management system. Students create and write job-search documents, and develop interview skills. They will understand the importance of good work-ethic traits. They will produce business-style projects using Microsoft Office programs such as Word, Excel, PowerPoint and Outlook. 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.

MNG1244 Automotive Business and Management
This online course provides students with an understanding of the characteristics, organization, structure, operations and management of the automotive service business. Students will gain a sound foundation of the automotive service business world as they prepare for 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 (ASE). Three credit hours.
PROFESSIONAL, HANDS-ON EXPERIENCE, THAT’S THE RANKEN DIFFERENCE.

PROFESSIONAL
At Ranken, our goal is to help students experience success in the real world, therefore each student will be treated as a working professional from day one. Students will be exposed to the values, attitudes and behaviors sought by current employers—these qualities will lead to successful careers in the real world. Our general education courses and emphasis on professionalism ensure that students leave Ranken with the analytical and communication skills necessary to advance their careers or continue their education. Since most of our instructors have worked in the industry, they are able to pass on the skills necessary for students to succeed.

HANDS-ON
Industry leaders help shape our curriculum to ensure that our students are getting highly relevant, cutting-edge training. With an average of at least 15 hours per week of hands-on work in a lab or shop setting, Ranken graduates are highly skilled and fully equipped to launch a successful career.

EXPERIENCE
For more than a century, Ranken has been setting the gold standard in technical education and putting our graduates in the forefront of the industries we serve. Through our partnerships with industry leaders, Ranken is able to give our students the knowledge, skills and experience necessary to remain competitive in an ever-changing, highly technical job market. With 96–98 percent of our graduates receiving jobs in their chosen technical field within six months of graduation, it’s easy to see that we give employers the kind of graduates that they demand.

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WENTZVILLE · 755 PARR ROAD, WENTZVILLE, MO 63385 · (855) RANKENW
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