

removal, T.I.G. welding, and the use of computers and robotics as they relate to these processes. The laboratory approach will be emphasized. Students will apply mathematics and technical knowledge to problem solving.

Length of course: 1 Semester
Credits per semester .5
Grade level: 10, 11 &12

2100 Orientation to Communications Technology (Drafting) IN210 814 Orientation

This introductory course is designed to allow students to develop knowledge of concepts in communications technology. General knowledge and understanding will be developed in telecommunications, computers in communications, graphic communications, photography, and the major Industrial communications tool—drafting. Use of basic drafting skills and care of equipment will be covered, including computers used in computer aided drafting. Activities in drafting skills and equipment will be utilized in applied activities in television and graphic arts communication. Students will develop more awareness of careers in communications—especially those in drafting and drafting related.

Length of course: 1 Semester
Credits per semester .5
Grade level: 10, 11 &12
Prerequisite: None

2200 Orientation to Energy Technology (Electricity) IN220 805 Orientation

This introductory course is designed to allow students to develop a knowledge of concepts in the distribution, conservation, and utilization of energy systems. General knowledge and understanding will be developed in scientific and mathematical concepts that support energy systems. The extraction, processing, and conversion of our energy resources that can produce electricity will also be studied. Application of electrical concepts covering power supplies, relays, control systems, and measurement and indicator devices will also be taught.

Length of course: 1 Semester
Credits per semester .5
Grade level: 10, 11 &12
Prerequisite: None

2300 Orientation to Construction Technology (Construction) IN230 818 Orientation

This introductory course is designed to allow students to develop knowledge and concepts in basic construction technology. General knowledge will be developed in common construction applications used for structures, buildings, bridges, utilities, and unit and modular manufacturing with emphasis on the processes used in the design, preparation, and the building of these structures. Activity models will be utilized to study the strength of materials and structures. The safe use of hand and power tools used in construction will be taught. Students will also develop more awareness of careers in construction technology occupations.

Length of course: 1 Semester
Credits per semester .5
Grade level: 10, 11 &12
Prerequisite: None

2400 Orientation to Transportation Technology (Small Engines) IN240 822 Orientation

This introductory course is designed to allow students to develop knowledge and concepts in transportation technology systems. General knowledge will be developed in land, air, space, and water transportation systems and how these systems impact our lives economically and technologically. Basic instruction in internal power combustion engines will be covered with emphasis on fluid, mechanical, electrical, and thermal systems. Applied learning activities will involve designing and building models to study lift, drag, thrust, power, buoyancy, and resistance. Students will also develop more awareness of careers in transportation.

Length of course: 1 Semester
Credits per semester .5
Grade level: 10, 11 &12
Prerequisite: None

3000 Principles of Technology I (Engineering Related Technology) IN300A/B 825 Skill

This course provides learning experiences related to the principles that underlie today's high technology: Force, work, rate, resistance, energy, power and force transformers. The course deals with these principles as they apply in each of the four kinds of systems that make up both the simplest and the most complex technological devices and equipment: mechanical systems, fluid systems, electrical systems and thermal systems. Learning experiences are designed to allow the student to acquire knowledge and skills which are transferable to postsecondary technical programs. (This course is cross listed under the science department. Southern Illinois University at Carbondale,

Rend Lake Community College, and Illinois State University accept this course for admission in the science area. Consult your counselor regarding other colleges)

Length of course:	2 Semesters
Credits per semester	.5
Grade level:	11 and 12
Prerequisite:	One credit in math and science

3100 Transportation I **IN310A/B** **855** **Skill_AVC**

This course offers both theory and practical experience in servicing and repairing transportation and utility vehicles (auto, diesel, gasoline engine and mower units). Some of the popular learning activities include tune-ups, brake repair, wheel balancing and adjustment, fuel system service and electrical system repair. Constant attention is given to shop safety and techniques in the use of hand tools, service manuals, special tools and diagnostic equipment. This course offers the student an opportunity to establish basic skills and knowledge essential to more advanced training in the transportation field.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	11 &12
Prerequisite:	None

3200 Drafting/CAD I **IN320A/B** **830** **Skill_AVC**

This course is for students who are interested in careers in drafting, design, architecture, construction management, interior design, graphic arts, engineering and other related professions. Students will learn to make drawings and read blueprints in the same manner as professionals in the careers listed above. Students will learn to use drafting tools to make drawings by hand. They will also learn to use computer aided drafting (CAD) to make drawings by computer. The classroom is equipped with professional CAD systems which include some of the latest and most powerful software. No previous experience with computers or drafting is needed. The main requirement for enrollment in the course is a sincere desire to learn the "language of industry"....drafting. Success in college (technology, architecture, engineering) or technical school and success on industrial jobs can be improved by completion of this course.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	11 and 12
Prerequisite:	None
Dual Credit:	Rend Lake College: CAD 1201—Introduction to Computer Aided Drafting (2 credit hours)

3300 Electronics I– Analog **IN330A/B** **840** **Skill_AVC**

A lab based course that utilizes hands-on activities to provide learning experiences in basic electronics. Students will learn the fundamental theories, formulas and concepts of modern electronics. An emphasis is placed on electronic components as they pertain to industrial and commercial circuits. Topics include power supplies, relays, transistor switching, motor controls, robotics and sensors, alarm systems and computer interfacing. Students will design, construct and troubleshoot projects and printed circuit boards throughout the course. This course would provide excellent background for future technicians, electrical engineers, or anyone interested in the field of electronics and computers.

Length of course:	2 Semesters
Credits per semester	.5
Grade level:	11 and 12
Prerequisite:	None

3400 Manufacturing I **IN340A/B** **845** **Skill_AVC**

This course offers a planned sequence of learning experiences which provide students with the opportunities to develop competencies needed for employment in a variety of manufacturing-related occupations. Course content will emphasize competencies common to many occupations such as applying safety practices, selecting materials, performing benchwork operations, performing precision measurement, performing layouts, performing housekeeping activities and setting and operating a variety of tools used for separating, machining, forming and combining materials, blueprint reading and related math.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	11 &12
Prerequisite:	None

3500 3-D Drawing and Animation**IN350A/B 852 Skill_AVC**

The 3-D computer drawing and animation course is designed to provide students with a fundamental knowledge of 3-D modeling (drawing). The application of surfaces materials and textures, and basic animation. Integration of engineering and architectural fundamentals using 2-D to 3-D visualization methods and solid modeling techniques will be explored exposing CAD drafting students to up-to-date industry standard practices in 3D drawing.

Length of course:	2 Semesters
Credits per semester	.5
Grade level:	10, 11 &12
Prerequisite:	None

4000 Principles of Technology II (Engineering Related Technology)**870 Skill**

This course provides learning experiences related to the principles that underlie today's high technology: momentum, waves and vibration, energy convertors, transducers, radiation, optical systems, and time constraints. The course deals with these principles as they apply in each of the four kinds of systems that make up both the simplest and the most complex technological devices and equipment: mechanical systems, fluid systems, electrical systems, and thermal systems. Learning experiences are designed to allow the student to acquire knowledge and skills which are transferable to postsecondary technical programs.

Length of course:	2 Semesters
Credits per semester	.5
Grade level:	12
Prerequisite:	Principles of Technology I

4100 Transportation II**IN410A/B 895 Skill_AVC**

This course is a continuation of Transportation I with special emphasis on troubleshooting skills and diagnostic procedures. Learning activities include: engine overhaul, transmission and drive train repair, air conditioning and electrical system service and trouble-shooting computer controlled fuel and ignition systems. This course offers the student an opportunity to master technical and diagnostic skills for entry level positions in the transportation field.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	12
Prerequisite:	Transportation I

4200 Drafting/CAD II**IN420A/B 875 Skill_AVC**

This course builds on the skills developed in Drafting/CAD I and allows the student to begin learning to perform tasks in a selected specialty. Students who like architecture will learn the skills necessary to draw a set of house plans. Students who like machines will learn skills necessary to complete drawings for manufactured parts for automobiles and other consumer products. Students will learn to plan, research materials, determine requirements, and organize activities to complete a drawing. Students will continue to develop skills and complete drawings with professional computer aided drafting (CAD) systems. Students who successfully complete this course will be prepared for beginning employment and (or) greater success in college or technical school programs. College credit can be received by students who complete this course and achieve a minimum score on a Proficiency Test.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	12
Prerequisite:	Drafting/CAD I

4300 Electronics II – Digital**IN430A/B 885 Skill_AVC**

Designed to meet the needs of students primarily interested in computer electronics and interfacing. Students will design, construct, and evaluate digital circuits and projects. Techniques for computer interfacing and controls will be explored through hands-on activities and programming projects. Students will learn the basics of programming and interfacing single-chip microcontrollers. Topics include digital schematics, truth tables, logic gates, circuit simplification, analog interfacing, digital interfacing, computer number systems, and Boolean Algebra. This course would provide excellent background for future technicians, electrical engineers, or anyone interested in the field of electronics and computers.

Length of course:	2 Semesters
Credits per semester	.5
Grade level:	11 and 12
Prerequisite:	None
Dual Credit:	Rend Lake College: CNS 1240—Digital Fundamentals (3 credit hours)

4400 Manufacturing II**IN440A/B 890 Skill_AVC**

This course offers experiences which expand upon competencies achieved during Manufacturing I. This course will offer students the opportunity to specialize in specific areas of manufacturing such as machine tool set-up and operation, welding, and automated machine set-up and operation. Course content will include the following areas: introduction to metallurgy and heat treatment of metal, advanced machine set-up and operation, introduction to numerical computer control and numerical control machining, performance of supervisory functions, maintenance and repair of machinery, blueprint reading and related math.

Length of course:	2 Semesters
Credits per semester	1
Grade level:	12
Prerequisite:	Manufacturing I

5000 Interrelated Cooperative Education**BU500A/B 900 Skill_AVC**

This course is designed for senior students interested in pursuing careers in occupations related to industrial technology. Students are released from school for their paid cooperative education work experience and participate in 200 minutes per week of related classroom instruction. Classroom instruction focuses on providing students with job survival skills, career exploration skills related to the job, as well as improving students' abilities to interact positively with others. For skills related to the job, refer to the skill development course outlines and the task list of the desired occupational program.

A qualified, certified CTE instructor is responsible for supervision. Written training agreements and individual student training plans are developed and agreed upon by the employer, student and coordinator. The coordinator, student and employer assume compliance with federal, state and local laws and regulations.

The course content includes the following broad areas of emphasis: further career education opportunities, planning for the future, job-seeking skills, personal development, human relationships, legal protection and responsibilities, economics and the job, organizations, and job termination. Classroom and worksite instruction is based on the tasks in an occupation.

Length of course:	2 Semesters
Credits per semester	1.5
Grade level:	12
Prerequisite:	Completion of one credit of skill-specific training in an approved CTE program recommended.

15.1100 Engineering-Related Technology		47.0100 Electrical/Electronics Maintenance and Repair Technology	47.0600 Vehicle Maintenance and Repair Technology	48.0101 Drafting and Design Technology/Technician General	48.0500 Precision Metal Working
--	--	--	--	--	------------------------------------

Orientation Level Courses - (9th and 10th Grade)

Illinois Plan for Industrial Technology Education

- 1000 Agriculture/Industrial Mechanics
- 2300 Orientation to Construction Technology
- 2100 Orientation to Communications Technology
- 2200 Orientation to Energy Technology
- 2000A Orientation to Manufacturing I
- 2000B Orientation to Manufacturing II
- 2400 Orientation to Transportation Technology

Preparation Level Courses - (11th and 12th Grade)

3000 Principles of Technology I		3300 Electronics I- Analog	3100 Transportation I	3500 3-D Drawing and Animation	3400 Manufacturing I
4000 Principles of Technology II		4300 Electronics II - Digital	4100 Transportation II	3200 Drafting/CAD I	4400 Manufacturing II
				4200 Drafting/CAD II	
5000 Interrelated Cooperative Education		5000 Interrelated Cooperative Education	5000 Interrelated Cooperative Education	5000 Interrelated Cooperative Education	5000 Interrelated Cooperative Education

SkillsUSA is the Career and Technical Student Organization for Industrial Technology Education Students.

*At least one credit at the orientation level and two credits at the preparation level.