



# Applied Academics

*Business Education, Family & Consumer Science, Industrial Technology*

Kevin Thomas, Chair kthomas@hfhighschool.org 335-5660

Homewood-Flossmoor  
High School

*H-F Academic*  
School Year 2011-2012

## Program Rationale

The Applied Academics Department is committed to offering all students opportunities for meaningful career-based learning experiences within the confines of a comprehensive high school setting. The roots of this department can be traced to the early 1960's where terms like "Shop Class" and "Home Economics" were common. H-F's current Applied Academics course offerings reflect the economic and educational landscape of the 21st century, encompassing the study of technologies and related sciences, as well as the acquisition of practical skills, attitudes and knowledge relating to occupations in various sectors of economic and social life. As an integral part of H-F's comprehensive education program, Applied Academics constitutes:

- Academic subject matter taught with relevance to the real world;
- Employability skills related to the workplace;
- Education pathways that help students explore career interests.



## Program Goals

*As you review our course offerings, please note that our curriculum is classified in three separate disciplines: Business Education, Family & Consumer Sciences and Career and Technical Education. Our Career Internship Program provides employment opportunities and early release options for seniors — this opportunity is the capstone course for all three of our disciplines and links the classroom with the workplace, completing the training sequence for each of our programs.*

### Business Education

Students will . . .

- Expand their knowledge of essential business-related computer applications;
- Become familiar with the basics of accounting, finance, marketing, and business and personal law;
- Develop interpersonal skills necessary to building successful business-related careers.

### Family & Consumer Sciences

Students will . . .

- Increase their knowledge of nutritional science and develop their culinary skills;
- Learn the essentials of clothing construction and interior design;
- Gain knowledge about the development of young children and apply their learning in a

### Career & Technology

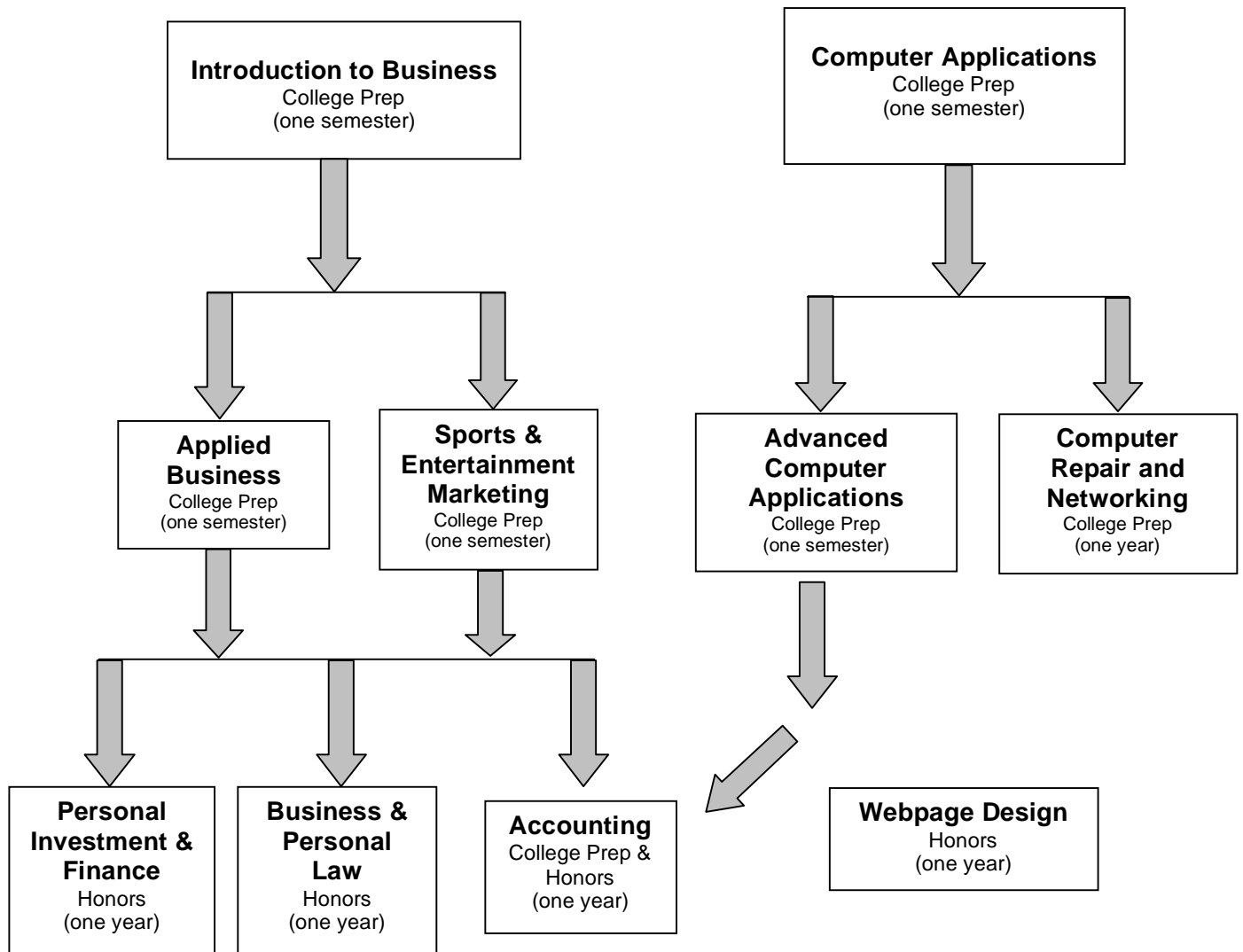
Students will . . .

- Create designs, sketches and schematics in preparation for careers in architecture and engineering;
- Get training in the use of proper operation of various power machines and tools;
- Gain the skills necessary to work with engines, automotive chassis, suspensions, and electrical systems.



# Applied Academics: BUSINESS & COMPUTER EDUCATION

## *Suggested Course Sequence*



**Career Internship & Employment**

## Applied Academics – Business Education

Code	Title – Level	Year	Credit	Prerequisite	Grade
5382	Introduction to Business – CP	.5	.5	No	9-12
5543	Applied Business – CP	.5	.5	Yes	9-12
5316	Computer Applications – CP	.5	.5	No	9-12
5645	Microcomputer Hardware Repair/Intro to Networking (CP)	1	1	No	9-12
5325	Advanced Computer Applications – CP	.5	.5	Yes	9-12
5330	Personal and Business Web Design – H	1	1	Yes	10-12
5416	Sports & Entertainment Marketing - CP	.5	.5	Yes	10-12
5422	Accounting – H	1	1	Yes	10-12
5432	Accounting – CP	1	1	Yes	10-12
5534	Business & Personal Law – H	.5	.5	Yes	10-12
5437	Personal & Financial Investment - H	.5	.5	Yes	10-12
5556	Career Internship Class – CP	1	1	No	12
5567	Career Internship Employment – CP	1	1	No	12



### Business Education

**Kevin Thomas**, Department Chair  
Ext. 5660

Prairie State College credit can be earned by Juniors and Seniors that have successfully completed identified courses.

**Note:** Membership in **D.E.C.A.** (Distributive Education Clubs of America), a club at H-F, is highly recommended for all students interested in Business. **D.E.C.A.** provides leadership activities, meetings, conferences, and competitions which provide many opportunities for application of instructional competencies. See Mr. Patterson if interested.

#### **Introduction to Business 5382**

Level: College Prep  
Prerequisite: None  
Open To: Fr., Soph, Jr., Sr.  
Length: Semester  
Credit: .5 +

If you'd like to major in business and/or someday run your own company than this course is for you. Introduction to Business focuses on the varied activities of the business world and the economic system in which it operates. Many business concepts are covered including: Types of Business Ownership, Advertising / Marketing, Product Development, the Economy and different types of Economic Systems.

Students will learn the essentials for starting a business and how the different facets of business operations work together to create a successful business. Interpersonal skills needed for success in all areas of life, including business, are developed. These include communication, leadership, problem solving, and presentation skills.

This course is recommended for all students as it teaches the basics that the students can start using in their personal lives now and after they leave H-F.

#### **Applied Business 5543**

Level: College Prep  
Prerequisite: Intro to Business  
Open To: Fr, Soph, Jr, Sr  
Length: Semester  
Credit: .5 +

How would you like to start your own business? This course provides opportunities for students to expand their knowledge in the principles of management, marketing, production, finance, and distribution. In this course, students will discover the rewards and risks of starting a business. Students will have the opportunity to create their own business and develop a business plan for it.

They will also have the opportunity to hear first hand testimonies of local entrepreneurs as they establish and evolve their current business practices. This is an essential course for students interested in pursuing a business degree and starting their own business.

#### **Computer Applications 5316**

Level: College Prep  
Prerequisite: None  
Open To: Fr., Soph., Jr., Sr.  
Length: Semester  
Credit: .5 +

This course is devoted to teaching you the basic computer skills necessary to succeed during the rest of your time at H-F as well as the world outside of it. Focus is placed on the development of basic computer skills that are quickly becoming some of the most important skills in today's job market. Student activities related to the computer will include utilizing Microsoft Word for the production and formatting of high quality documents such as personal-business letters, reports, and tables.


In addition, students will be introduced to the basics of the rest of the Microsoft Office Suite, specifically Excel (Spreadsheet and Chart Creation), and PowerPoint (Basic & Effective Presentations). Major emphasis is placed on creativity, composition, editing, and proofreading, during this process. This course is highly recommended for all students.

## Applied Academics – Business Education

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### Advanced Computer Applications

5325


Level: College Prep  
Prerequisite: Computer Applications  
Open To: Fr., Soph, Jr., Sr.  
Length: Semester  
Credit: .5 + 

This course is designed to provide further opportunities for students to improve basic computer capabilities and expand upon the skills and concepts presented in Computer Applications. Students will be introduced to additional components of the Microsoft Office Suite, including Advanced Word (Special Document Creation), PowerPoint (Advanced Presentations), Excel (Spreadsheets & Formula Creation) and Publisher (Desktop Publishing) operations.

A variety of documents and projects will be created as students improve their working knowledge of these programs. The environment and structure of this class is set-up for real world simulation. The students will be working on a project to project basis with deadlines and basic expectations to work from. Emphasis on quality and creativity will be continued.

### Microcomputer Hardware Repair/Introduction to Networking

5645

Level: College Prep  
Prerequisite: None  
Open To: Fr, Soph, Jr, Sr  
Length: Year  
Credit: 1 +  + (\*)

The first semester of this course will be an introduction to personal computer maintenance and repairs. Topics will include theory of operation, parts and computer functions and the proper use of troubleshooting instruments. Lab activities will allow students to do repairs and test equipment. The second semester of the course will emphasize the skills and the concepts needed to configure and operate a variety of networking products. Topics will include networking theory, protocols, connectivity devices, Internet addressing, internetworking servers and security systems. The successful completion of this course will prepare students for the CompTIA's entry-level certification exam.

### Personal and Business Web Design

5330

Level: Honors  
Prerequisite: None  
Open To: Soph., Jr. Sr.  
Length: Year  
Credit: 1

Students enrolled in Personal and Business Web design develop the skills necessary to create their own web pages, utilizing html coding, Javascript for interactivity, audio and video media, and Flash animation. Students also learn how to design a website to generate sales on the Internet. Course topics include Internet security, product marketing, legal issues, databases, and site management.



## Applied Academics – Business Education

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### Sports & Entertainment Marketing

5416

Level: College Prep  
Prerequisite: Intro to Business  
Open To: Soph, Jr, Sr  
Length: Semester  
Credit: .5

How would you like to get an inside look at one of the hottest fields in business? If you do then Sports & Entertainment is designed for you. This course is geared toward all students with interest in an introduction to sports, entertainment, and event marketing with an emphasis placed on the following principles as they apply to the industry: endorsements, branding, licensing, and naming rights; business foundations; concessions and on-site merchandising; and human relations.

This class takes an in-depth look at how you as young adults are targeted by the big marketing establishments. We will learn what it takes to create and trademark a successful brand or product as well as how to establish target markets. Project-based learning strategies utilized in this course include marketing simulations, projects, and teamwork.

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### Accounting

5432

Level: College Prep  
Prerequisite: Computer Applications  
Open To: Soph, Jr, Sr  
Length: Year  
Credit: 1+ (\*)

This course is devoted to acquainting students with general accounting principles. Time is devoted to analyzing and applying the effects of day-to-day business transactions of the corporate world.

The aspects of generally accepted accounting practices are examined including the accounting cycle, utilizing the accounting process (i.e. determination of assets, liabilities and equity), creation and analysis of financial statements, and special applications (i.e. Computer-based Business Simulations).

Over the course of the year, we will use computerized accounting systems for data entry. This will provide the students with a more up-to-date look at what it takes to function and succeed in the exciting and challenging world of Accounting. This course is ideal for students intending to pursue a college degree in Accounting, Business Management, Marketing / Advertising, Finance, and/or Economics.

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### Accounting

5422

Level: Honors  
Prerequisite: Computer Applications or DC Consent  
Open To: Soph, Jr, Sr  
Length: Year  
Credit: 1 + (\*)

This course provides the instruction of principles and concepts similar to those found in Accounting (CP). However, it is much more rigorous in its expectations and grading; requiring even more dedication than does Accounting (CP). *This course is ideal for students intending to pursue a college degree specifically in Accounting, but also in Business Management, Marketing or Advertising, Finance, and/or Economics*

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### Business and Personal Law

5534

Level: Honors  
Prerequisite: Intro. to Business  
Open To: Soph, Jr, Sr  
Length: Semester  
Credit: .5

Do you want to know how the law affects you as a young adult and consumer? This is an orientation to law in our society with an emphasis on business, consumer applications and a citizen's role in the legal system.

Some of the topics covered are the history of today's legal system, sources of today's laws, definitions of particular crimes, the study of contracts, personal property laws, and a variety of other legal topics having to do with our judicial system.

Students apply what they learn through participating in mock trials and studying case laws including: contracts, trial procedures, personal property and consumer protection and rights. *The course gives students a basic understanding of the law in today's society. It is recommended for students planning to be Business majors.*

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### Personal & Financial Investment

5437

Level: Honors  
Prerequisite: Intro to Business  
Open To: Soph, Jr, Sr  
Length: Semester  
Credit: .5

Learning to manage your personal finances, including acquiring the skills necessary to become financially secure, is an extremely valuable tool for young adults to possess. This course will give students a firm grasp of money management and various investing techniques, as well as provide the college or real world bound student alike, with an excellent foundation for success in post-high school business experiences.

The process of taking researched risks and taking charge of one's financial future will be discussed in depth. Students will develop their own personal investment portfolios utilizing a combination of traditional banking investments, stocks, bonds, mutual funds, and various retirement plan options. Fantasy Stock Market participation will allow students to experience real world application of learned materials. *This course is ideal for students intending to pursue a college degree specifically in Accounting, but also in Business Management, Marketing or Advertising, Finance, and/or Economics.*

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## Applied Academics – Business Education

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**Career Internship (Class)**                      **5556**  
*(must be taken simultaneously w/5567)*

Level:                      College Prep  
Prerequisite:              1 Applied  
                                 Academic Class  
Open To:                    Seniors  
Length:                      Year  
Credit:                      1

The Career Internship program at Homewood-Flossmoor High School is like no other. Throughout the academic term, students are exploring career options while devising their educational plans at the college level. In this course, students define their career interest by taking an interest inventory. The inventory assists students in determining their professional strengths and career ambitions. When the inventory is complete, students match their interest to their career choice. When their career has been identified, students then search for academic institutions that support their interest and career ambitions.

This course affords students the following opportunities: job shadowing, college tours, and experiences in etiquette in both casual and professional settings

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**Career Internship (Employment)**                      **5567**  
*(must be taken simultaneously w/5556)*

Level:                      College Prep  
Prerequisite:              None  
Open To:                    Seniors  
Length:                      Year  
Credit:                      1

The employment portion of the Career Internship program provides students with the opportunity to gain valuable work experiences at businesses within the local community. This is an opportunity for students to earn 1 full credit and gain knowledge of essential workplace competencies. Networking opportunities are extended to students as they begin to build their employment portfolios. Career advancement is the focus of this course where students progress from entry-level placements to positions of distinction.

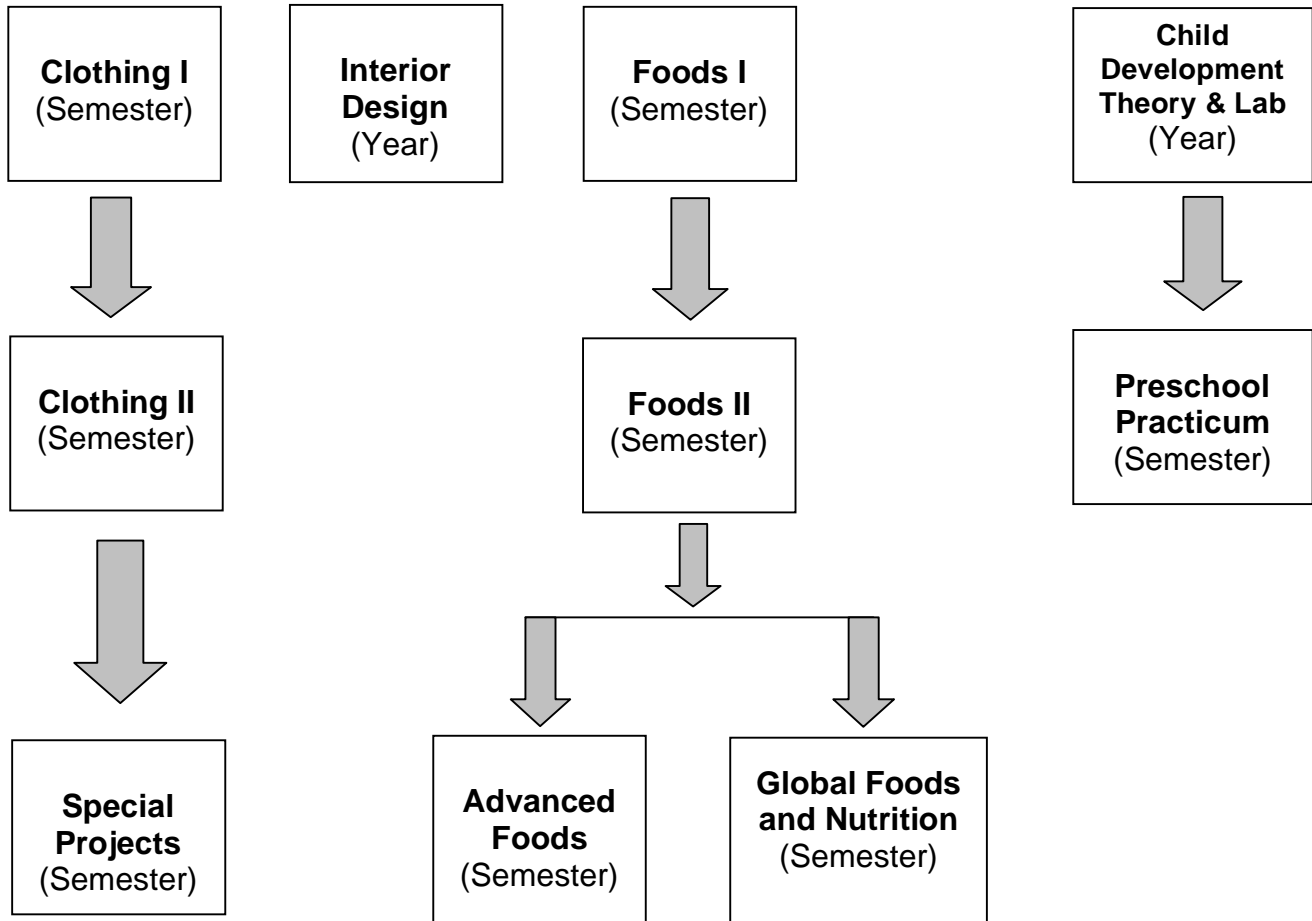
This course must be taken in conjunction with the Career Internship class. A requirement for admittance to the career internship program stipulates that all students are employed in an appropriate worksite and working at least 15 hours per week. The work coordinator must approve the worksite prior to admission into the career internship program. A pay stub must be submitted to the work coordinator by the 3<sup>rd</sup> day of class or the student will be dropped from the course. Each quarter, the work coordinator and the employer will evaluate the performance of the student intern. The student will receive a classroom grade and a grade from the employer. Before the closing of the academic term, all students are required to participate in an Employer Appreciation luncheon.



# Notes

# Applied Academics: Family & Consumer Sciences

## *Suggested Course Sequence*




## Applied Academics – Family & Consumer Sciences

Code	Title-Level	Year	Credit	Prerequisite	Grade
5022	Foods – CP	.5	.5	No	9-12
5025	Foods II - CP	.5	.5	Yes	9-12
5032	Advanced Foods – CP	.5	.5	Yes	10-12
5042	Global Foods and Nutrition – CP	.5	.5	Yes	10-12
5072	Clothing I – CP	.5	.5	No	9-12
5074	Clothing II – CP	.5	.5	Yes	9-12
5153	Interior Design – CP	1	1	No	9-12
5175	Child Development Theory & Lab – CP	1	1	No	10-12
5192	Preschool Practicum – CP	.5	.5	Yes	11-12
5998	Special Projects Family & Consumer Sciences – Clothing– CP	.5	.5	Yes	10-12

### Family & Consumer Sciences

**Kevin Thomas**  
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Ext. 5660



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#### Board Approved Supplementary Fees May Be Charged

<b>Foods</b>	<b>5022</b>	The Foods course has been developed for students who are interested in acquiring food preparation skills. Laboratory work includes preparing, serving and sampling a variety of foods. Menus are developed, prepared and served for easy, nutritious, and satisfying meals. In addition to acquiring basic food preparation skills, students learn the importance of good nutrition in food choices. The management of time, energy, finances, and resources as they relate to food preparation are also covered. Sanitation standards and the prevention of food borne illness are also stressed. Computers are used to analyze individual nutritional needs and for recipe selection.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Foods II</b>	<b>5025</b>	In Foods II, students expand upon the skills gained in Foods I. Laboratory work focuses in sanitation, the proper use of equipment, knife skills, preparation of food, and the ability to work in a group. Classroom work focuses on nutrition, recipe comprehension, food cost, and time-management skills through demonstration and content study. The study of basic proteins, starches, meats, fish, dairy, and desserts are the focus.
Level:	College Prep	
Prerequisite:	Foods I	
Open To:	Fr, Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Advanced Foods</b>	<b>5032</b>	The Advanced Foods course builds off of the skills students obtained in their Foods I and Foods II class. In addition to lab work, classroom time is a major component of this class. Culinary vocabulary, food trends, nutrition, and menu development are all integral parts of each lesson. Time management skills are taught both in the classroom and in the kitchen. Labs focus on both the fundamentals of good cooking and the modern trends of the culinary world. Students are introduced to new ingredients and cooking techniques throughout the semester.
Level:	College Prep	
Prerequisite:	Foods II	
Open To:	Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Global Foods and Nutrition</b>	<b>5042</b>	Global Foods and Nutrition builds off the skills learned in Foods I and II with an emphasis on regional and international culinary traditions. Food preparation, sanitation, time management, and management skills are incorporated into each lesson. Lab work is done in groups and allows students to work with unusual ingredients as well as advanced training in knife skills and cooking techniques. An open mind and discerning palate are a must.
Level:	College Prep	
Prerequisite:	Foods II	
Open To:	Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Clothing I</b>	<b>5072</b>	Students will learn techniques and develop skills that are used in garment construction. They will have the opportunity to learn how to use small sewing equipment, sewing machines, and sergers. Students will also be trained on how to use an embroidery machine. Units will be studied related to what clothing says about the individual, color, and design of the garment. Students will also learn about different fibers and fabrics, and how to select the proper fabric for their projects. Throughout the semester students will make several projects. The first being a pillowcase, the second project is a pair of pajama pants or boxers. The third and final project will be of the student's choice but must include certain challenges such as buttonholes, zippers, etc.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	

## Applied Academics – Family & Consumer Sciences

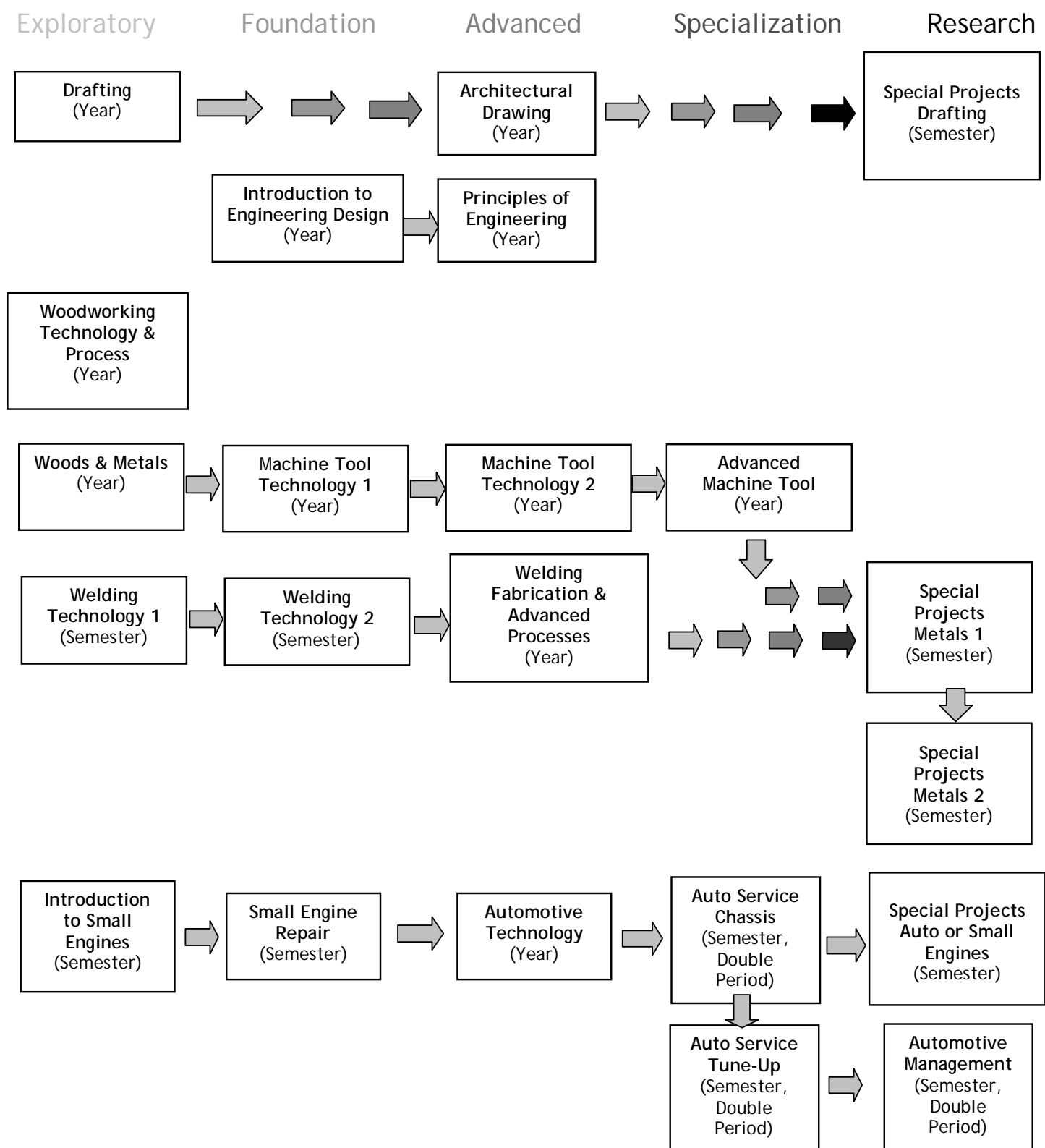
<p><b>Clothing II</b> Level: College Prep Prerequisite: Clothing I Open To: Fr, Soph, Jr, Sr Length: Semester Credit: .5</p>	<p><b>5074</b></p>	<p>This course is designed for students who have an interest in fashion design. Clothing II will give a deeper emphasis on developing further skills and techniques in clothing construction. Time is spent on wardrobe planning, working with special and unique fabrics, and studying specific fitting problems. Careers in the Fashion and Textile Industry will be expanded upon using field trips, guest speakers, and visual aids.</p>
<p><b>Interior Design</b> Level: College Prep Prerequisite: None Open To: Fr, Soph, Jr, Sr Length: Year Credit: 1.0</p>	<p><b>5153</b></p>	<p>Interior Design students will acquire knowledge of design elements and principles, color, backgrounds, fabric selection, and the selection and arrangement of furniture and accessories. Students will apply these principles in a series of projects to produce functional backgrounds for today's living. Speakers and field trips will focus on careers and resources related to Interior Design and Housing.</p>
<p><b>Child Development Theory &amp; Lab</b> Level: College Prep Prerequisite: None Open To: Soph, Jr, Sr Length: Year Credit: 1.0</p>	<p><b>5175</b></p>	<p>Child Development encompasses the study of the maturation of children from birth to age 6. This course focuses on the physical, social, emotional, and intellectual development of children. Students study the theoretical basis of child development and analyze current research in this field. Students also work with 3- and 4-year olds in a laboratory preschool. Here, the students observe, supervise, and conduct classes for the preschoolers. Students compile case studies of the children, charting each child's progress in the areas of physical, social, emotional, and intellectual development.</p>
<p><b>Preschool Practicum &amp; Lab</b> Level: College Prep Prerequisite: Course 5182 &amp; Dept. Consent Open To: Juniors, Seniors Length: Semester Credit: .5 + (*)</p>	<p><b>5192</b></p>	<p>This one semester course involving early childhood education provides additional opportunity for students to prepare for possible careers working with young children. The students, individually, plan, present, and evaluate developmentally appropriate lessons and activities for Pre-K through 2<sup>nd</sup> grade children. Further development of personal skills in relation to interacting with young children is also fostered through observations and evaluations developed from visits to a local Pre-K through 2<sup>nd</sup> grade school center. The compilation of a portfolio is also required.</p>
<p><b>Special Projects Family &amp; Consumer Sciences</b> Level: College Prep Prerequisite: Dept. Consent Open To: Juniors, Seniors Length: Semester Credit: .5</p>	<p><b>5998</b></p>	<p>The Special Problems class provides an opportunity for a student to pursue advanced study in the area of clothing construction. Work in the clothing area is on an individual basis. The student selects projects that build on their skills.</p>



# Applied Academics: Career and Technical Education

## *Suggested Course Sequence*

*The levels below describe a student's developmental progression through the C.&T. curriculum.*



## Applied Academics Career & Technical Education


Code	Title-Level	Year	Credit	Prerequisite	Grade
5604	Drafting – CP	1	1	No	9-12
5584	Drafting – H	1	1	No	9-12
5622	Architectural Drawing – CP	1	1	Yes	10-12
5592	Architectural Drawing – H	1	1	Yes	10-12
5681	Introduction to Engineering Design – H	1	1	No	9-12
5683	Principles of Engineering	1	1	Yes	10-12
5734	Woods & Metal– CP	1	1	No	9-12
5744	Woodworking Technology and Process –CP	1	1	No	9-12
5753	Machine Tool Technology 1 – CP	1	1	Yes	10-12
5763	Machine Tool Technology 2 – CP	1	1	Yes	11-12
5792	Advanced Machine Tools – CP	1	1	Yes	11-12
5775	Welding Technology 1– CP	.5	.5	No	9-12
5785	Welding Technology 2 – CP	.5	.5	Yes	9-12
5777	Welding Fabrication & Advanced Processes - CP	1	1	Yes	10-12
5802	Introduction to Small Engines – CP	.5	.5	No	9-12
5812	Small Engine Repair – CP	.5	.5	Yes	9-12
5822	Automotive Technology – CP	1	1	Yes	10-12
5852	Automotive Service Chassis & Suspension – CP	1	1	Yes	11-12
5862	Automotive Service Tune-Up & Electrical Systems – CP	1	1	Yes	11-12
5987	Automotive Management – H	1	1	Yes	12
5983	Special Projects in Drafting – H	.5	.5	Yes	11-12
5985	Special Projects in Metals – H	.5	.5	Yes	11-12
5991	Special Projects in Auto – H	.5	.5	Yes	11-12
5996	Special Projects in Small Engines – H	.5	.5	Yes	11-12

### Career & Technical Education

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Students selecting technical courses (double period classes) must set aside two periods a day during their Junior and/or Senior year.

 Prairie State College credit can be earned by Juniors and Seniors that have successfully completed identified courses.






<b>Drafting</b>	<b>5604</b>	This course is an introduction to the graphic skills used in communicating ideas and plans related to the areas of architecture, engineering, and manufacturing. Drafting introduces students to modern drafting theory and practice and to career possibilities. Students will be exposed to both classroom theory and laboratory projects. Students will use freehand sketching and the latest editions of CAD (computer aided design) software to complete a variety of technical drawings. Students will have the opportunity to compete in state and area competitions.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Drafting</b>	<b>5584</b>	This course is an introduction to the graphic skills used in communicating ideas and plans related to the areas of architecture, engineering, and manufacturing. Drafting introduces students to modern drafting theory and practice and to career possibilities. Students will be exposed to both classroom theory and laboratory projects. Students will be required to use freehand sketching and the latest editions of CAD (computer aided design) software to complete a variety of technical drawings. <i>Students at the honors level will be expected to exhibit a greater understanding of the course content and to work at a higher level of independence.</i> Students will have the opportunity to compete in state and area competitions.
Level:	Honors	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Year	
Credit:	1	

## Applied Academics – Career & Technical Education

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<b>Architectural Drawing</b>	<b>5622</b>	This is a comprehensive introduction into architectural drafting and design. Students will be exposed to both classroom theory and laboratory projects designed to familiarize the student with design standards, conventional symbols, spatial concepts, building codes, and use of building materials. Students will use some freehand sketching as well as the latest editions of both 2-D and 3-D CAD (computer aided design) software to complete several drawings required in a set of working architectural drawings. The opportunity for students to generate original designs will be allowed after a mastery of fundamental principles has been exhibited. Students will have the opportunity to compete in state and area competitions.
Level:	College Prep	
Prerequisite:	Drafting	
Open To:	Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Architectural Drawing</b>	<b>5592</b>	This is a comprehensive introduction into architectural drafting and design. Students will be exposed to both classroom theory and laboratory projects designed to familiarize the student with design standards, conventional symbols, spatial concepts, building codes, and use of building materials. Students will use some freehand sketching as well as the latest editions of both 2-D and 3-D CAD (computer aided design) software to complete several drawings required in a set of working architectural drawings. The opportunity for students to generate original designs will be allowed after a mastery of fundamental principles has been exhibited. However this course level is intended for students that are seriously considering the field of architecture as a career choice. Therefore students will be required to exhibit a mastery of the concepts presented and be able to integrate their talent and imagination into their designs. Students will have the opportunity to compete in state and area competitions.
Level:	Honors	
Prerequisite:	Drafting	
Open To:	Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Introduction to Engineering Design</b>	<b>5681</b>	This course provides students with opportunities to be creative and apply decision-making skills to the design process. Powerful computer hardware and software (Inventor) are used by the students to develop 3-D models. The course introduces students to the scope, rigor and discipline of engineering prior to entering a post-secondary institution. Students use problem solving to improve existing products and invent new ones. This is the first course in the Project Lead the Way program which is a sequence of courses designed to prepare students to be successful in science, engineering and engineering technology. Project Lead the Way has agreements with many colleges and universities, such as Purdue and University of Iowa, in which credits earned in this course can be transferred and counted as college credit.
Level:	College Prep	
Prerequisite:	Algebra 1 or concurrent enrollment	
Open To:	Fr, Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Principles of Engineering</b>	<b>5683</b>	This survey course of engineering exposes students to major concepts they'll encounter in a postsecondary engineering course of study. Students employ engineering and scientific concepts in the solution of engineering design problems. They develop problem-solving skills and apply their knowledge to research and design to create solutions to various challenges, documenting their work and communicating solutions to peers and members of the professional community. Project Lead the Way has agreements with many colleges and universities, such as Purdue and University of Iowa, in which credits earned in this course can be transferred and counted as college credit.
Level:	Honors	
Prerequisite:	Algebra	
Open To:	Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Woods &amp; Metal 1 (Manufacturing)</b>	<b>5734</b>	This introductory course provides the student with the essential principals of woodworking and metalworking. Topics include the use of hand tools, portable power tools and basic machinery. Manufacturing systems, tools, and processes are introduced. Students will make products that they can then take home and use. Student must pass first semester to continue in the second semester.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Year	
Credit:	1	
<b>Woods Technology and Process</b>	<b>5744</b>	Woodworking Technology is a full-year, comprehensive course designed to develop students' skills in woodworking as it relates to the technological world. Students use all major woodworking machinery to produce individual projects created by following detailed plans. The skills students develop include the ability to follow sequential plans of procedure, machine operations, measurement and computation, cooperative work, project design and joinery, finish techniques, safe work practices, and self-direction. Following the construction of required individual projects, students produce additional projects from available project plans or from plans which they develop themselves.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Year	
Credit:	1	

## Applied Academics – Career & Technical Education

<p><b>Machine Tool Technology 1 5753</b>            Level: College Prep            Prerequisite: Manufacturing, Drafting, or Small Engines            Open To: Soph, Jr, Sr            Length: Year            Credit: 1 + (*) + </p>	<p>Course content is focused on introducing students to basic technologies, equipment and machining processes that are widely used in the machine tool industry. Emphasis is placed on lab and project-based student activities highlighting the processes of using hand tools and machine tools such as the power hack saw, drill presses, engine lathes and vertical milling machines. Students will make products that they can then take home and use. This course also requires a metalworking competition project to be created and kept by each student.</p>
<p><b>Machine Tool Technology 2 5763</b>            Level: College Prep            Prerequisite: Machine Shop 1            Open To: Juniors, Seniors            Length: Year            Credit: 1 + (*) + </p>	<p>This course further expands the student's basic knowledge of machining processes. An in-depth study of advanced machine tool operations will be introduced. Units of study include heat treatment, metallurgy, surface grinding, precision layout and set-up operations, tool sharpening, precision milling and lathe operations. Both laboratory and project-based learning will be used for practical skills application. A metalworking competition project created and kept by each student is required.</p>
<p><b>Advanced Machine Tools 5792</b>            Level: College Prep            Prerequisite: Manufacturing, Machine Shop 1&amp;2            Open To: Juniors, Seniors            Length: Year            Credit: 1</p>	<p>This course is designed to give students experiences in advanced precision machining operations as required by local industry. Included in the course content are basic concepts in computerized manufacturing, jig and fixture design and advanced cutting tool technology. Work-based strategies are emphasized to prepare the student for a career, apprenticeship, or advanced college study. Students will have the opportunity to make more advanced projects that they may take home and use and a competition project is required. This course provides essential training for both college and career bound students. Students interested in pursuing a bachelor's degree in manufacturing technology/engineering are strongly encouraged to enroll in this course.</p>
<p><b>Welding Technology 1 5775</b>            Level: College Prep            Prerequisite: None            Open To: Fr, Soph, Jr, Sr            Length: Semester            Credit: .5 + (*) + </p>	<p>This is the first course in the welding technology sequence. Students will be introduced to basic welding technology, safety, equipment, and welding practices. Emphasis is placed on lab activities that include: oxy-fuel welding and cutting, arc welding, and gas metal arc welding. The flat welding position is taught. Students will utilize welding skills to make a required project(s) that they may take home and use.</p>
<p><b>Welding Technology 2 5785</b>            Level: College Prep            Prerequisite: Welding Tech 1            Open To: Fr, Soph, Jr, Sr            Length: Semester            Credit: .5 + (*) + </p>	<p>Welding Technology 2 will provide the students with advanced skills in welding technology. Emphasis is placed on "out-of-position" welding. This type of welding will include horizontal, vertical and overhead welding positions. Skills and techniques for these positions will be taught for shield metal arc welding, gas metal arc welding and oxy-fuel welding. Students also will be introduced to Gas Tungsten Arc Welding and advanced flame cutting techniques. This course provides essential training for both college and career bound students.</p>
<p><b>Welding Fabrication &amp; Advanced Processes 5777</b>            Level: College Prep            Prerequisite: Welding Tech 1            Open To: Soph., Jr, Sr            Length: Year            Credit: 1 + </p>	<p>This course deals with the fundamentals of welding fabrication, welding repair and advanced welding processes. Emphasis will be on structural metal materials and how they are employed to build objects. Students will be working on a variety of welding projects including computer operated plasma cutter, metal art sculpture, pipe welding, and brazing. Students will gain experience with all major fabrication areas including design and development, estimating, layout, cutting, forming, fit up, tack welding and product assessment. Practical application and creative expression will allow the student to develop their abilities.</p>

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<b>Introduction to Small Engines</b>	<b>5802</b>	This course familiarizes students with the use of hand tools and small engines. Units of study include engine parts, systems and the operation of the small engine. Lab orientation emphasizes safety, maintenance, and organization while allowing the student to disassemble and reassemble small engines. Students learn how to communicate on a technical level. Proper techniques and procedures in using tools, gauges, and precision measuring devices are followed. This course provides the entry-level skills required for more advanced study of engine and automotive technology.
Level:	College Prep	
Prerequisite:	None	
Open To:	Fr, Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Small Engine Repair</b>	<b>5812</b>	Motorcycles, chainsaws, and lawnmowers are just a few of the many types of recreational vehicles that students will work on in the course. In lab, the students will have hands-on experiences in disassembly, assembly, and analysis of his or her projects. Emphasis is placed on the use of specialized and common tools and equipment used by the service industry. Information from the computer, and parts and service manuals are applied in trouble-shooting and reconditioning engines. Part and full time employment opportunities are discussed. Students are invited to bring in their own projects to work on after school.
Level:	College Prep	
Prerequisite:	Intro to Small Engines	
Open To:	Fr, Soph, Jr, Sr	
Length:	Semester	
Credit:	.5	
<b>Automotive Technology</b>	<b>5822</b>	Automotive technology gives the student an opportunity to disassemble and reassemble an automotive engine. While doing this, the students learn how all the systems operate and communicate knowledgeably about them. The student is given information and lab experiences pertaining to the chassis, suspension, electrical, and computerized components used on modern automobiles. Computer and DVD information systems are used in lab. This is a basic automotive-orientation course. Lab engines are supplied by the school. On occasion, students may bring in their own cars for servicing. This is a credit course with Prairie State College.
Level:	College Prep	
Prerequisite:	Introduction to Small Engines	
Open To:	Soph, Jr, Sr	
Length:	Year	
Credit:	1 + (*) + 	
<b>Automotive Service Chassis &amp; Suspension</b>	<b>5852</b>	Chassis & Suspension is a high technology, advanced skill course that will provide each student with the background necessary to pursue a career in the automotive field. This particular course is concerned primarily with the in-depth servicing of the parts and systems of the automobile: tires, wheels, cooling, brakes, steering, suspension, exhaust, and alignment. Different types of drive trains and rear axle assemblies are covered including: universal joint, axle bearing, differential, and service. The student learns about computerized ABS brakes, computerized wheel balancing and how computerized suspension systems operate. Computer and DVD ROM information systems are used in the lab.
Level:	College Prep	
Prerequisite:	Intro to Small Engines	
Open To:	Juniors, Seniors	
Length:	Semester, Double Periods	
Credit:	1 + (*)	
<b>Automotive Service Tune-Up &amp; Electrical Systems</b>	<b>5862</b>	Tune-up and Electrical Systems is a high technology, advanced skill course that will provide each student with the background necessary to pursue a career in the automotive field. This particular course will provide students with hands-on experience in the specialty areas of engine tune-up, emission control systems, chassis electrical systems, starting and charging systems, and computerized engine systems. Students will learn to diagnose problems with computerized test equipment. Industry standard computerized systems will be used in the diagnosis and repair of the automobile. Students will perform job estimating and billing of repairs completed in the lab. Computer and DVD ROM information systems are used in the lab.
Level:	College Prep	
Prerequisite:	Intro to Small Engines	
Open To:	Juniors, Seniors	
Length:	Semester, Double Periods	
Credit:	1+ (*)	
<b>Automotive Management</b>	<b>5987</b>	This course is intended for the fourth year automotive student that is seriously thinking about continuing their education in the automotive field after graduation. The course is designed to train students in the aspects of service management. The students assist the instructor in the areas of diagnosis and repair of vehicles, billing and inventory, set-up of computerized equipment and interpretation of technical procedures. The class runs concurrently with the Automotive Service classes. The enrollment is limited to six students. May be repeated for credit.
Level:	Honors	
Prerequisite:	Dept. Consent	
Open To:	Seniors	
Length:	Semester, Double Periods	
Credit:	1	

## ***Applied Academics – Career & Technical Education***

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<b>Special Projects in Career &amp; Technical Education</b>	
<b>Drafting</b>	<b>5983</b>
<b>Metals</b>	<b>5985</b>
<b>Auto</b>	<b>5991</b>
<b>Small Engines</b>	<b>5996</b>
Level:	Honors
Prerequisite:	Dept. Consent
Open To:	Seniors
Length:	Semester
Credit:	.5

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Each student will design and complete a major project in his/her particular area of interest. This research project must meet with the approval of the area instructor for consent to enroll in the course. Students enrolled in this course are expected to have completed the advanced level courses in their areas and have proven competence. Special Projects students will present his/her project to Department Faculty during year-end seminar.



# Notes