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Trade and Education at Henry Ford Community College

Combining Tradition, Innovation and Pride

As the metropolitan Detroit area enters a new era of job opportunities and an increasingly diversified economy, Henry Ford Community College continues to be a leader in helping employers meet their training needs. Because of HFCC's convenient location in the heart of the metropolitan area and its long tradition of outstanding career training, major employers rely on HFCC for highly trained, skilled workers. HFCC makes it convenient for today's students, busy with work and family concerns, to attend college, with day, evening, and Saturday classes. The main campus is at 5101 Evergreen Road, just south of Ford Road, in Dearborn. The Trade and Apprenticeship Education Division is located in the Technology Building, on the western side of the campus.

2006-2007 Trade and Apprenticeship Calendar

August 31, 2006	Thursday	Fall semester classes begin
September 4, 2006	Monday	Labor Day - College closed
November 22, 2006	Wednesday	Classes recessed following evening sessions
November 27, 2006	Monday	Classes resume
December 18, 2006	Monday	Fall semester classes end
December 19, 2006	Tuesday	Grades due - 6:00 p.m.
January 8, 2007	Monday	Winter semester classes begin
January 15, 2007	Monday	College closed: Martin Luther King, Jr. Day
April 23, 2007	Monday	Winter semester classes end
April 24, 2007	Tuesday	Grades due - 6:00 p.m.
May 7, 2007	Monday	Summer semester classes begin
May 28, 2007	Monday	College closed: Memorial Day
July 4, 2007	Wednesday	College closed: Independence Day
August 22, 2007	Wednesday	Summer semester classes end
August 23, 2007	Thursday	Grades due - 6:00 p.m.

Note: The college will be closed to the public on Fridays and Saturdays during the summer semester from May 19 through August 11, 2007.

REGISTRATION

NEW STUDENTS

Students new to the College and/or the Trade and Apprenticeship Education Division must come to the Trade and Apprenticeship Office (T-115 in the Technology Building) to complete registration forms and verify the apprentice's plan of work. When completed, the forms must be taken to the Registrar's Office. During the fall and winter semesters the Trade and Apprenticeship Office is open Monday through Thursday from 8:00 a.m.- 5:00 p.m. and from 8:00 a.m.- 4:30 p.m. on Friday. During the summer semester, the Office is open Monday through Thursday from 8:00 a.m.-6:30 p.m. and closed on Friday.

RETURNING STUDENTS

Returning students may register on-line through Web Advisor, located on the College web site www.hfcc.edu. Computers are available in the advising area of the Trade and Apprenticeship Education Office during office hours for those students who do not have a computer at home or at work. Any student experiencing difficulty in using Web Advisor should come to the Office for assistance. Remember that Web Advisor can be used not only to register for classes, but also to access schedules, grades, unofficial transcripts and plans of work.

USING THE SCHEDULE

This book provides you with schedules of classes for the entire 2006-2007 academic year – fall, winter, and summer. Sections will be added as needed and courses will be added, if needed for a group of apprentices to finish their programs. You are also provided with a Program Planning Chart that indicates which courses are being offered, day-time and evening, each semester. Use this chart to plan your schedule for the entire year.

Below is an excerpt from the schedule with an explanation of how it can be read:

SYNONYM COURSE SEC DAYS TIMES ROOM DATES

TAEL 200 Ladder Diagrams & Motor Controls 2 Cr

Lab Fee: \$15

145009 T AEL 200 50 M 5:00p-8:40p T230 9/12-12/19/05

M = Monday R = Thursday
T = Tuesday F = Friday
W = Wednesday S = Saturday

Note: When entering your course/class selection into Web Advisor, you need only to enter the synonym, the six digit number that appears on the far left. Once the synonym is entered, all of the rest of the information for that course/class will automatically be entered.

Please call the Trade and Apprenticeship Education Office at (313) 845-9609 with any questions you might have regarding registration.

USING WEBADVISOR

WebAdvisor is a secure internet program that allows HFCC students to access safely their college-related information.

Through WebAdvisor, current students may

- Register for classes
- Drop and add classes (prior to beginning of semester)
- Pay for classes,
- Retrieve grades
- Check schedules
- Check account balances
- Check program status
- Update addresses and telephone numbers.

Registering

You should know exactly what sections of what classes you intend to take prior to registering in WebAdvisor. You can search for the schedule on WebAdvisor or use the Trade and Apprentice Education schedule catalog. **If you are searching for the schedule, be sure that you identify the Trade and Apprentice semester (the letter T appears at the end) and not the semester for the general college.**

Finding WebAdvisor

From the HFCC website (www.hfcc.edu), click the Current Students link. Then click WebAdvisor.

User ID

Your User ID is assigned when you first enroll. From the WebAdvisor menu, click on **What's My User ID?** You will be asked to provide your last name and either your social security number or your student number. After you submit this information, a screen will appear that gives your User ID.

Password

The first time you access WebAdvisor, your password is the month and date of your birthday (not the year) i.e. June 5 = 0605. When you enter this 4 digit number, you will immediately be asked to change your password to one of your choice. **The password must contain both letters and numbers and must be a minimum of 6 characters and a maximum of 9.** You will be asked to enter the password twice, for verification. You have the option of entering a password hint as well.

Once you have gone into WebAdvisor and changed the initial password, you will not use that 4 digit password again for WebAdvisor. That 4 digit password, however (month and date of your birthday i.e. June 5 = 0605), is still used for accessing computers (Novell server), Ucompass (for online classes) and e-mail (Groupwise Webaccess through the HFCC website).

Changing Passwords

In the event that you forget your password for WebAdvisor or want to change it for any reason, you can change it by clicking on **What's My Password** on the WebAdvisor menu. You will be given two options; select **Reset My Password**. Once you have provided your name and either social security number or student number, or HANK ID and Submitted, you will be provided with a drop-down box where you will choose your e-mail address. If you do not have an e-mail address on file, you will receive an error message that says you do not have an e-mail address. You should then come into the Trade and Apprentice Education office for assistance (Room T-115). You will be asked to provide an e-mail address where verification of your new password will be sent. If you do not have an e-mail address to provide, you should come into the Trade and Apprentice office for assistance.

To Register

Click on **Register for Sections**. At the bottom of the page, click on **Express Registration**. Once the grid appears that allows you to enter your class selections, make entries only in the far left hand column labeled **Synonym**. The **Synonym** is the six digit number that identifies the particular class session you wish to select. It tells the database which semester you wish to register for and the course and section of that course you have chosen. Do not fill in any additional information - just the synonym. **Once you have clicked on Submit at the bottom of the page, a screen indicating Preferred Sections will appear. You must click on the Action icon and indicate that you want to Register for the selected classes. Click on Submit again and your schedule will appear.** The schedule will show the classes for which you are enrolled for all semesters. By clicking on **My Schedule**, at the bottom of the page, and selecting the semester schedule you wish to see, your schedule for that semester will appear, with your name and student number on it. This page can be printed for your record.

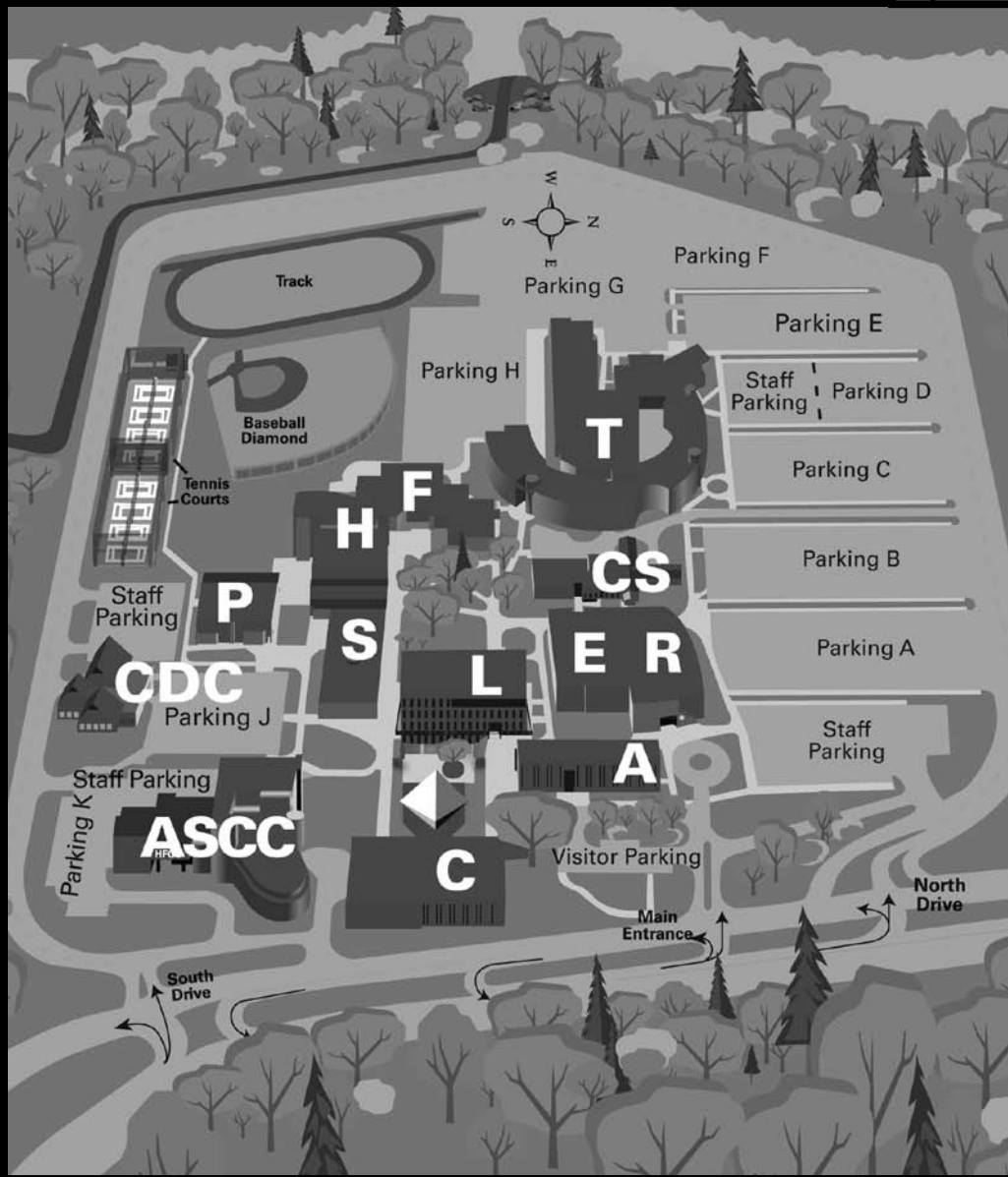
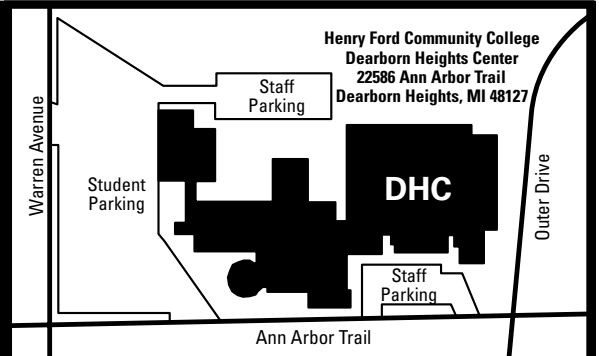
Please note:

At certain times during each semester, the volume of traffic on WebAdvisor is substantial. This slows down the system. If you are experiencing delays in screens appearing or changing, please be patient. If you double click, thinking that the system is not responding, you are likely to be exited from the system and will have to start over again. As long as the figure at the top right hand corner of the screen is revolving, the system is processing your request.



Henry Ford Community College

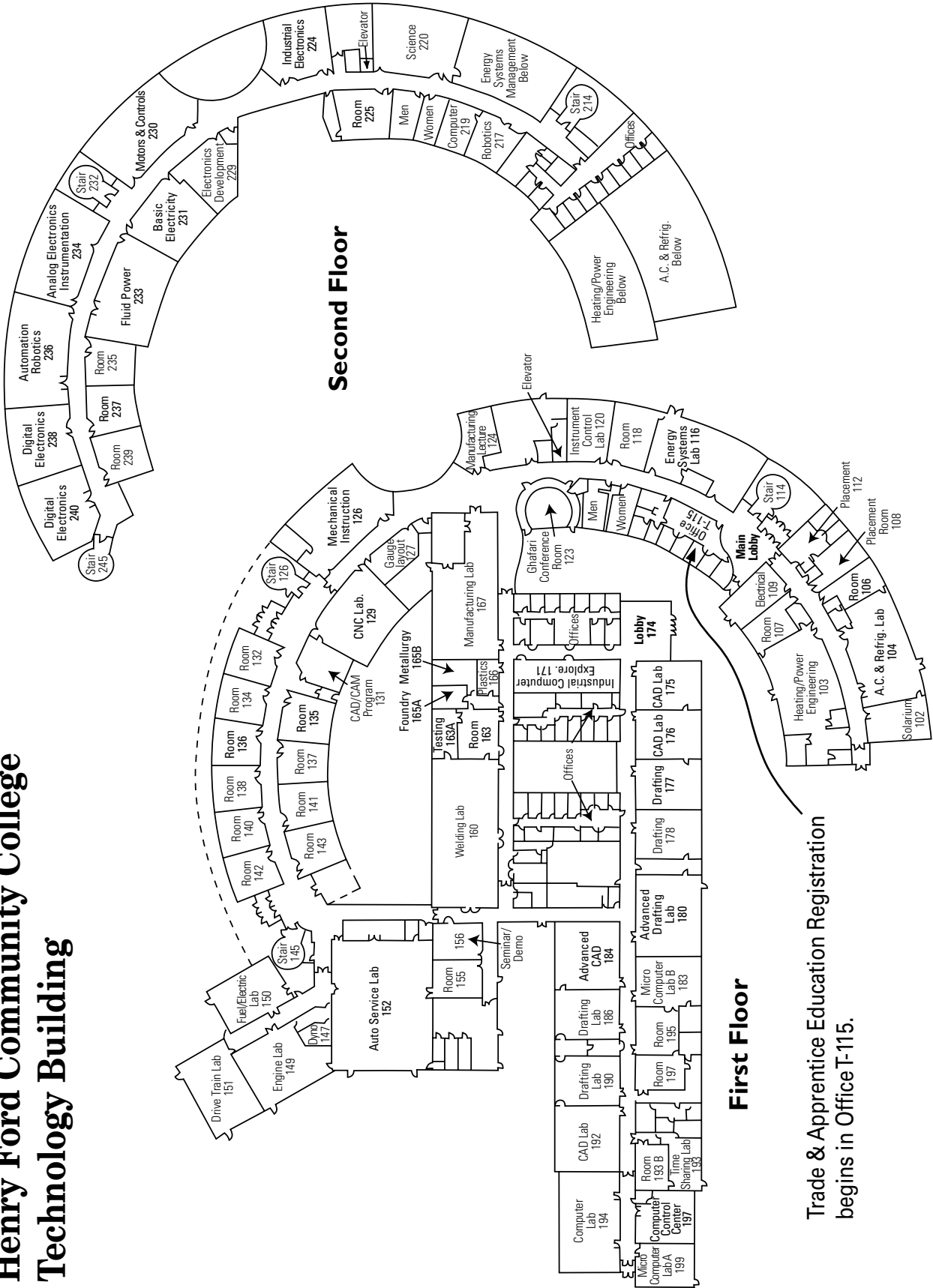
Main Campus
 5101 Evergreen Road
 Dearborn, Michigan 48128-1495



Location Codes

- A Learning Technology Center**
Campus Safety
- ASCC Andrew A. Mazzara Administrative Services and Conference Center**
Eugene A. Forfa Auditorium
Michael Berry Amphitheater
Rosenau Board Room (A, B, C)
- B Facilities Management Building**
Purchasing
Shipping and Receiving
- C Student and Culinary Arts Center**
Fifty-One O One Restaurant
Skylight Café
Student Activities
- CDC Child Development Center**
- CS College Store**
- D Dearborn Heights Center**
- E Eshleman Library**
Media Center
- F MacKenzie Fine Arts Center**
Adray Auditorium
Sisson Art Gallery
- H Health Careers Education Center**
Hackett Conference Room H-150
- L Reuther Liberal Arts Building**
English Language Institute
Welcome Center - First Floor
- M M-TECsm**
- P Athletic Memorial Building**
Fitness Center
- R Learning Resources Center**
Hallissey Hall
Admissions, Records and Registration
Assessment Center
Assisted Learning Services
Career Resource Center
Cashier's Office
Counseling
Enrollment Development
Financial Aid
Focus on Women
Learning Lab
Welcome Center
- S Science Building**
Planetarium
- T Technology Building**
Distance Learning Center T-217
Ghafari Conference Room T-123
Job Placement T-112

Henry Ford Community College Technology Building



Trade & Apprenticeship Education Registration
begins in Office T-115.

PROGRAM PLANNING CHART

Course Offerings by Semester

Course	Fall 06		Winter 07		Summer 07	
	Day	Eve	Day	Eve	Day	Eve
TADV 060		•	•	•		•
100		•	•	•	•	•
TAEL 102	•	•	•	•	•	•
105		•		•		•
106		•				
115				•		
145		•		•		
150						
200	•	•		•		
205				•		
245	•	•	•	•		
260		•		•		
270		•		•		
275		•		•		
278		•		•		
280		•		•		
285						
290		•		•		
295						
TAFD 112		•		•		•
115	•	•	•	•	•	•
120	•	•	•	•	•	•
130		•		•		
150	•	•		•		•
TAFP 150		•		•		
160		•		•		
260				•		
270		•				
280		•				
TAGD 110		•		•		
120				•		•
130		•				
140				•		
150		•				
155				•		
160		•				
165				•		
171						
172						
280						
TAIM 100	•	•		•		•
200						

Course	Fall 06		Winter 07		Summer 07	
	Day	Eve	Day	Eve	Day	Eve
TAMA 110	•	•	•	•		•
115						
120	•	•	•	•		•
130		•		•		
200				•		•
TAMJ 110	•	•	•	•	•	•
112	•	•	•	•		
115	•	•	•	•		•
116		•		•		
120		•		•		•
125		•		•		•
145		•		•		•
230		•		•		•
235		•		•		•
240				•		
TAMN 100	•	•	•	•		•
120	•	•	•	•		•
125						
130	•	•				
135						
200	•	•				
220						
TAMT 110		•		•		•
115		•		•		
123		•				
126				•		
200		•		•		•
210		•				
220		•		•		
260						
TAPI 105				•		
120				•		
TAPP 100		•				•
110		•				
120				•		
250		•				
TASM 100		•		•		•
110		•		•		•
120		•				•
130						
140						
REEN 101		•		•		

Energy Technology/HVAC

There are three levels available to students in the Energy Technology/HVAC area. They are: Energy Technology Heating and Cooling Basic certificate, Energy Technology Heating and Cooling Advanced certificate and Energy Technology/HVAC Associate of Applied Science Degree.



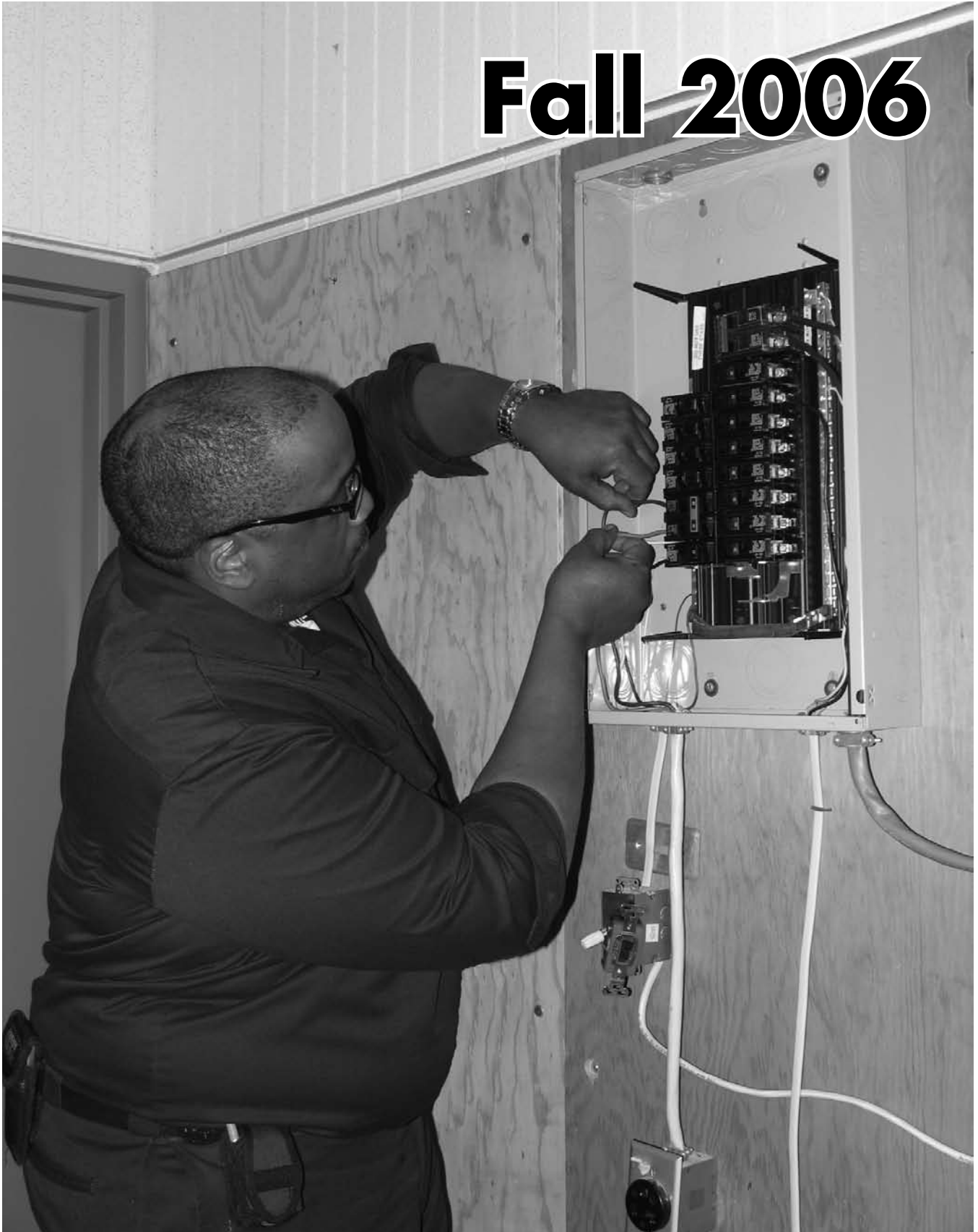
Energy Technology Heating and Cooling Basic is a 19 credit hour, job entry preparation certificate in heating and cooling for residential service. The courses provide theory and hands-on exposure to the basics of electricity, air conditioning, heating and refrigeration technology. Sheet metal fabrication, heating and cooling installation, troubleshooting and design are included.

Energy Technology Heating and Cooling Advanced is a 35 credit hour certificate program that is intended for the student who would like to take the next step into the advanced residential and light commercial heating and cooling industry. Entry-level theory and hands-on experiences are provided as well as advanced courses in HVAC.

Energy Technology/HVAC Associate of Applied Science Degree presents an overall study of the principles of energy production and its uses. It provides the student with a rounded background in the principles of measurement, conservation and operation and repair of residential/commercial heating, air conditioning and refrigeration equipment.



Fall 2006



HENRY FORD COMMUNITY COLLEGE
Trade & Apprentice Education Division

FALL 2006
Schedule Request

Please note: This is not an official registration form. This form is to indicate the classes you are interested in for Fall 2006 which do not currently appear on the fall schedule.

Name _____
Last First

Address _____

City _____ State _____ Zip _____

Phone () _____ () _____

COMPANY _____

Schedule Request

The following CLASS or CLASSES are requested for the Fall 2006 Semester:

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

Please return to the Trade & Apprentice Education Division Office T-115.

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
---------	--------	-----	------	-------	------	-------	---------	--------	-----	------	-------	------	-------

FALL 2006

SPECIAL OFFERINGS

TADV 060 Basic Skills for the Skilled Trades 4 Cr

Prerequisite: None

Lab Fee: \$25

146501 TADV 060 50 W 5:00p-8:40p T217 9/6-12/13/06

TADV 100 Print Reading Fundamentals 2 Cr

Prerequisite: None

Lab Fee: \$10

146502 TADV 100 50 R 4:00p-5:50p T134 8/31-12/14/06

REEN 101 Fundamentals of Renewable Energy 2 Cr

Prerequisite: None

Lab Fee: \$25

146574 REEN 101 50 T 8:00p-9:50p T116 9/5-12/12/06

ELECTRICITY

TAEL 102 DC and AC Electricity 3 Cr

Prerequisite: None

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

146503 TAEL 102 11 R 9:00a-11:45a T225 8/31-12/14/06

146504 TAEL 102 50 M 5:00p-7:45p T225 9/11-12/18/06

TAEL 105 AC Theory and Equipment 4 Cr

Prerequisite: TAEL 102

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

146505 TAEL 105 50 R 5:00p-8:40p T224 8/31-12/14/06

TAEL 106 Electronics Theory 4 Cr

Prerequisite: TAEL 102

Lab Fee: \$20

146506 TAEL 106 50 T 5:00p-8:40p T224

9/5-12/12/06

TAEL 145 DC and AC Motors 4 Cr

Prerequisite: TAEL 105

Lab Fee: \$15

146507 TAEL 145 50 W 5:00p-8:40p T230

9/6-12/13/06

TAEL 200 Ladder Diagrams & Motor Controls 4 Cr

Prerequisite: TAEL 145

Lab Fee: \$15

146508 TAEL 200 11 M 9:00a-12:40p T-230

9/11-12/18/06

146509 TAEL 200 50 M 5:00p-8:40p T230

9/11-12/18/06

TAEL 245 Programmable Logic Controllers 4 Cr

Prerequisite: TAEL 200

Lab Fee: \$15

146510 TAEL 245 11 M 9:00a-12:00p T236

9/11-12/18/06

146511 TAEL 245 50 R 5:00p-8:40p T236

8/31-12/14/06

TAEL 260 Robotics and Automation 4 Cr

Prerequisite: TAEL 245

Lab Fee: \$15

146512 TAEL 260 50 W 5:00p-8:40p T236 9/6-12/13/06

TAEL 270 Industrial & Commercial Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$10

146513 TAEL 270 50 M 7:00p-8:50p T142 9/11-12/18/06

TAEL 275 Residential Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$10

146514 TAEL 275 50 W 5:00p-6:50p T142 9/6-12/13/06

TAEL 278 NC Review & License Test Prep 3 Cr

Prerequisite: TAEL 270 and TAEL 275

Lab Fee: \$10

146515 TAEL 278 50 T 5:00p-7:45p T142 9/5-12/12/06

TAEL 280 Low Voltage and Communication Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$20

146516 TAEL 280 50 W 7:00p-8:40p T224 9/6-12/13/06

TAEL 290 High Voltage Power Distribution 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$3

146517 TAEL 290 50 M 5:00p-6:50p T224 8/31-12/14/06

FOUNDATION OF APPRENTICESHIP

TAFD 112 Construction Blue Print Reading 2 Cr

Prerequisite: None

Lab Fee: \$30

146518 TAFD 112 50 W 4:00p-5:50p T134 9/6-12/13/06

TAFD 115 Computer App. for the Skilled Trades 2 Cr

Prerequisite: None

Lab Fee: \$20

146519 TAFD 115 11 T 10:00a-11:50a T220 9/5-12/12/06

146520 TAFD 115 50 T 6:00p-7:50p T220 9/5-12/12/06

TAFD 120 Industrial Safety Awareness 2 Cr

Prerequisite: None

Lab Fee: \$15

146521 TAFD 120 11 R 10:00a-11:50a T217 8/31-12/14/06

146522 TAFD 120 50 T 4:00p-5:50p T217 9/5-12/12/06

FALL 2006

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
TAFD 130 Industrial App. of Physical Science 3 Cr Prerequisite: TAMA 120 Lab Fee: \$25 146523 TAFD 130 50 R 6:00p-8:45p T233 8/31-12/14/06							INDUSTRIAL MATERIALS						
TAFD 150 Applied Technology 3 Cr Prerequisite: None Lab Fee: \$25 146524 TAFD 150 11 R 8:00a-10:45a T171 8/31-12/14/06 146525 TAFD 150 50 R 6:00p-8:45p T171 8/31-12/14/06							TAIM 100 Industrial Materials 3 Cr Prerequisite: None Lab Fee: \$30 146533 TAIM 100 11 R 9:00a-11:45 T163 8/31-12/14/06 146534 TAIM 100 50 M 5:00p-7:45p T163 9/11-12/18/06						
FLUID POWER							MATHEMATICS						
TAFP 150 Fluid Power Systems 4 Cr Prerequisite: TAMA 120 Lab Fee: \$20 146526 TAFP 150 50 M 5:00p-8:40p T233 9/11-12/18/06							TAMA 110 Industrial App. of Basic Math Principles 2 Cr Prerequisite: None Lab Fee: \$3 146535 TAMA 110 11 T 12:00p-1:50p T137 9/5-12/12/06 146536 TAMA 110 50 M 8:00p-9:50p T137 9/11-12/18/06						
TAFP 160 Pneumatic Power & Control 4 Cr Prerequisite: TAFP 150 Lab Fee: \$20 146575 TAFP 160 50 W 5:00p-8:40p T233 9/6-12/13/06							TAMA 120 Industrial App. of Algebraic Principles 3 Cr Prerequisite: TAMA 110 Lab Fee: \$3 146537 TAMA 120 11 R 12:00p-2:45p T143 8/31-12/14/06 146538 TAMA 120 52 M 5:00p-7:45p T143 9/11-12/18/06						
TAFP 270 Fluid Power Troubleshooting 4 Cr Prerequisite: TAFP 150 Lab Fee: \$20 146527 TAFP 270 50 T 5:00p-8:40p T233 9/5-12/12/06							TAMA 130 Industrial App. of Geometric Principles 2 Cr Prerequisite: TAMA 120 Lab Fee: \$3 146539 TAMA 130 50 M 5:00p-6:50p T141 9/11-12/18/06						
TAFP 280 Applied Electrohydraulics 3 Cr Prerequisite: TAFP 150 Lab Fee: \$10 146528 TAFP 280 50 T 5:00p-7:45p T235 9/5-12/12/06							SHOP THEORY						
DRAFTING							TAMN 100 Shop Tools & Techniques 3 Cr Prerequisite: TAMA 110 and TAGD 110 Lab Fee: \$20 146552 TAMN 100 11 W 9:00a-11:45a T126 9/6-12/13/06 146553 TAMN 100 50 R 5:00p-7:45p T126 8/31-12/14/06						
TAGD 110 Basic Shape and Size Interpretation 3 Cr Prerequisite: None Lab Fee: \$20 146529 TAGD 110 50 T 6:00p-8:45p T177 9/5-12/12/06							TAMN 120 Machine Tool Applications 2 Cr Prerequisite: TAMA 120 Lab Fee: \$10 146554 TAMN 120 11 W 12:00p-1:50p T126 9/6-12/13/06 146555 TAMN 120 50 R 8:00p-9:50p T126 8/31-12/14/06						
TAGD 130 Assembly Detailing 2 Cr Prerequisite: TAGD 120 Lab Fee: \$20 146530 TAGD 130 50 T 4:00p-5:50p T176 9/5-12/12/06							TAMN 130 Advanced Manufacturing Processes 2 Cr Prerequisite: TAMN 120 Lab Fee: \$10 146556 TAMN 130 11 F 10:00a-11:50a T220 9/1-12/15/06 146557 TAMN 130 50 W 5:00p-6:50p T220 9/6-12/13/06						
TAGD 150 Tool, Jig and Fixture Design 2Cr Prerequisite: TAGD 130 and TAGD 140 Lab Fees: \$20 146531 TAGD 150 50 R 6:00p-7:50p T175 8/31-12/14/06							TAMN 200 Numerical Control Fundamentals 2 Cr Prerequisite: TAMN 120 Lab Fees: \$20 146558 TAMN 200 11 F 12:00p-1:50p T220 9/1-12/15/06 146559 TAMN 200 50 W 7:00p-8:50p T220 9/6-12/13/06						
TAGD 160 Press Working Fundamentals 2 Cr Prerequisite: TAGD 130 Lab Fee: \$20 146532 TAGD 160 50 W 7:00p-8:50p T175 9/6-12/13/06													

FALL 2006

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
MAINTENANCE													
TAMT 110	Mechanical Power Transmission					2 Cr	TAMT 210	Predictive Maintenance: Vibration Analysis					2 Cr
Prerequisites: TAMA 120 Lab Fees: \$15 146560 TAMT 110 50 T 5:00p-6:50p T178 9/5-12/12/06							Prerequisite: TAMT 110 and TAMA 130 Lab Fee: \$15 146564 TAMT 210 50 R 4:00p-5:50p T140 8/31-12/14/06						
TAMT 115	Maintenance Trades Print Reading					3 Cr	TAMT 220	Advanced Rigging					2 Cr
Prerequisite: TAGD 110 Lab Fee: \$20 146561 TAMT 115 50 R 5:00p-7:45p T134 8/31-12/14/06							Prerequisite: TAMA 130 Lab Fee: \$20 146565 TAMT 220 50 W 8:00p-9:50p T171 9/6-12/13/06						
TAMT 123	Maintenance Print Reading: Structural Steel & Conveyors					2 Cr	PLUMBING/PIPEFITTING						
Prerequisite: TAMA 120 and TAGD 110 Lab Fee: \$20 146562 TAMT 123 50 M 7:00p-8:50p T178 9/11-12/18/06							TAPP 100	Fundamentals of Plumbing & Pipefitting					3 Cr
TAMT 200	Predictive Maintenance: Shaft Alignment					2 Cr	Prerequisite: None Lab Fee: \$20 146568 TAPP 100 50 T 5:00p-7:45p T126 9/5-12/12/06						
Prerequisite: TAMA 130 and TAMT 110 Lab Fees: \$15 146563 TAMT 200 50 T 7:00p-8:50p T178 9/5-12/12/06							TAPP 110	Drains, Waste and Vents					2 Cr
							Prerequisite: None Lab Fee: \$20 146569 TAPP 110 50 T 8:00p-9:50p T126 9/5-12/12/06						
							TAPP 250	Plumbing Code					2 Cr
							Prerequisite: TAPP 100 Lab Fee: \$5 146570 TAPP 250 50 R 4:00p-5:50p T118 8/31-12/14/06						
							SHEET METAL						
							TASM 100	Basic Sheet Metal Layout & Fabrication					3 Cr
							Prerequisite: TAMA 120 Lab Fee: \$32 146571 TASM 100 50 M 4:00p-6:45p T104 9/11-12/18/06						
							TASM 110	Blank Development					2 Cr
							Prerequisite: TASM 100 Lab Fee: \$15 146572 TASM 110 50 M 4:00p-5:50p T104 9/11-12/18/06						
							TASM 120	Sheet Metal Layout: Radial & Triangulation					2 Cr
							Prerequisite: TASM 100 Lab Fee: \$15 146573 TASM 120 50 M 4:00p-5:50p T104 9/11-12/18/06						



Creative Metals

Join us in these new and interesting classes, Creative Metals I and II. Students will learn how to weld, cut and form metal into creative shapes while working in a fun and relaxed shop setting. Creative Metals I will teach the basic skills and safety techniques needed in order for your metallic ideas to be created. Creative Metals II will refine your newly-learned skills.

FALL 2006

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
WELDING													
TAMJ 110 Materials Joining & Fabrication Fundamentals 3 Cr							TAMJ 120 Materials Joining & Fabrication: GTAW/GMAW 2 Cr						
Prerequisite: None							Prerequisite: TAMJ 110						
Lab Fee: \$69							Lab Fee: \$69						
146540	TAMJ 110	11	M	12:00p-2:45p	T163	9/11-12/18/06	146547	TAMJ 120	50	W	4:00p-5:50p	T163	9/6-12/13/06
146541	TAMJ 110	50	T	6:00p-8:45p	T163	9/5-12/12/06	TAMJ 125 ASME Pipe & Pressure Vessel Welding 2 Cr						
Prerequisite: None							Prerequisite: TAMJ 115						
Lab Fee: \$69							Lab Fee: \$69						
146542	TAMJ112	11	W	12:00p-2:45p	T163	9/6-12/13/06	146548	TAMJ 125	50	W	4:00p-5:50p	T163	9/6-12/13/06
146543	TAMJ112	50	R	5:00p-7:45p	T163	8/31-12/14/06	TAMJ 145 Advanced Gas Torch Techniques 2 Cr						
Prerequisite: None							Prerequisite: TAMJ 115						
Lab Fee: \$69							Lab Fee: \$69						
146544	TAMJ 115	11	T	9:00a-10:50a	T163	9/5-12/12/06	146549	TAMJ 145	50	W	6:00p-7:50p	T163	9/6-12/13/06
146545	TAMJ 115	50	T	4:00p-5:50p	T163	9/5-12/12/06	TAMJ 230 ASME Pipe & Pressure Vessel Certification 2 Cr						
Prerequisite: TAMJ 110							Prerequisite: TAMJ 125						
Lab Fee: \$69							Lab Fee: \$69						
146546	TAMJ116	50	R	5:00p-7:45p	T163	8/31-12/14/06	146550	TAMJ 230	50	W	6:00p-7:50p	T163	9/6-12/13/06
Prerequisite: None							Prerequisite: TAMJ 120 and TAMJ 125						
Lab Fee: \$69							Lab Fee: \$69						
TAMJ 116 Creative Metals II 3 Cr							TAMJ 235 GTAW & GMAW Certification 2 Cr						
Prerequisite: None							Prerequisite: TAMJ 120 and TAMJ 125						
Lab Fee: \$69							Lab Fee: \$69						
146546	TAMJ116	50	R	5:00p-7:45p	T163	8/31-12/14/06	146551	TAMJ 235	50	W	6:00p-7:50p	T163	9/6-12/13/06

RENEWABLE ENERGY CERTIFICATE

The Trade and Apprenticeship Education Division of Henry Ford Community College is excited to present this new program, a ten-credit hour Renewable Energy Certificate. The content of the courses will be structured to inform the student of both present and upcoming concepts in renewable energy. This certificate should interest students who are looking for an alternative to the current reliance on fossil fuels.

Course #	Course Title	Credit Hours	Contact Hours
REEN 101	Fundamentals of Renewable Energy	2	30
REEN 110	Geothermal Systems and Water Furnace Technology	2	30
REEN 120	Wind, Solar, and Fuel Cell Technology	2	30
REEN 130	Smart Home Control Technology	2	30
REEN 140	Co-Generation and Back-Up Power	2	30
Total Hours		10 cr.	150 hr.

Winter 2007



HENRY FORD COMMUNITY COLLEGE

Trade & Apprentice Education Division

WINTER 2007 Schedule Request

Please note: This is not an official registration form. This form is to indicate the classes you are interested in for Winter 2007 which do not currently appear on the winter schedule.

Name _____
Last First

Address _____

City _____ State _____ Zip _____

Phone () _____ () _____

COMPANY _____

Schedule Request

The following **CLASS** or **CLASSES** are requested for the Winter 2007 Semester:

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

Please return to the Trade & Apprentice Education Division Office T-115.

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
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WINTER 2007

SPECIAL OFFERINGS

TADV 060 Basic Skills for the Skilled Trades 4 Cr

Prerequisite: None

Lab Fee: \$25

147000 TADV 060 11 T 8:00a-11:40a T217 1/9-4/17/07

147001 TADV 060 50 W 5:00p-8:40p T217 1/10-4/18/07

TADV 100 Print Reading Fundamentals 2 Cr

Prerequisite: None

Lab Fee: \$10

147002 TADV 100 11 R 8:00a-9:50a T140 1/11-4/19/07

147003 TADV 100 50 T 4:00p-5:50p T134 1/9-4/17/07

REEN 101 Fundamentals of Renewable Energy 2 Cr

Prerequisite: None

Lab Fee: \$25

147073 REEN 101 50 T 8:00p-9:50p T116 1/9-4/17/07

ELECTRICITY

TAEL 102 DC and AC Electricity 3 Cr

Prerequisite: None

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

147004 TAEL 102 11 R 9:00a-11:45a T225 1/11-4/19/07

147005 TAEL 102 50 M 5:00p-7:45p T225 1/8-4/23/07

TAEL 105 AC Theory and Equipment 4 Cr

Prerequisite: TAEL 102

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

147007 TAEL 105 50 R 5:00p-8:40p T224 1/11-4/19/07

TAEL 115 Digital Theory 2 Cr

Prerequisite: None

Lab Fee: \$20

147008 TAEL 115 50 T 5:00p-6:50p T225 1/9-4/17/07

TAEL 145 DC and AC Motors 4 Cr

Prerequisite: TAEL 105

Lab Fee: \$15

147009 TAEL 145 50 W 5:00p-8:40p T230 1/10-4/18/07

TAEL 200 Ladder Diagrams & Motor Controls 4 Cr

Prerequisite: TAEL 145

Lab Fee: \$15

147011 TAEL 200 50 M 5:00p-8:40p T230 1/8-4/23/07

TAEL 205 Industrial Electronic Controls 2 Cr

Prerequisite: TAEL 106

Lab Fee: \$15

147012 TAEL 205 50 T 7:00p-8:50p T224 1/9-4/17/07

TAEL 245 Programmable Logic Controllers 4 Cr

Prerequisite: TAEL 200

Lab Fee: \$15

147013 TAEL 245 11 M 9:00a-12:40p T236 1/8-4/23/07

147014 TAEL 245 50 R 5:00p-8:40p T236 1/11-4/19/07

TAEL 260 Robotics and Automation 4 Cr

Prerequisite: TAEL 245

Lab Fee: \$15

147015 TAEL 260 50 W 5:00p-8:40p T236 1/10-4/18/07

TAEL 270 Industrial & Commercial Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$10

147016 TAEL 270 50 M 5:00p-6:50p T142 1/8-4/23/07

TAEL 275 Residential Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$10

147017 TAEL 275 50 W 5:00p-6:50p T142 1/10-4/18/07

TAEL 278 NC Review & License Test Prep 3 Cr

Prerequisite: TAEL 270 and TAEL 275

Lab Fee: \$10

147018 TAEL 278 50 T 5:00p-7:45p T142 1/9-4/17/07

TAEL 280 Low Voltage and Communication Wiring 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$20

147019 TAEL 280 50 W 7:00p-8:50p T224 1/10-4/18/07

TAEL 290 High Voltage Power Distribution 2 Cr

Prerequisite: TAEL 105

Lab Fee: \$3

147020 TAEL 290 50 M 7:00p-8:50p T224 1/8-4/23/07

FOUNDATION OF APPRENTICESHIP

TAFD 112 Construction Blue Print Reading 2 Cr

Prerequisite: None

Lab Fee: \$30

147022 TAFD 112 50 W 4:00p-5:50p T134 1/10-4/18/07

TAFD 115 Computer App. for the Skilled Trades 2 Cr

Prerequisite: None

Lab Fee: \$20

147023 TAFD 115 11 T 10:00a-11:50a T220 1/9-4/17/07

147024 TAFD 115 50 T 6:00p-7:50p T220 1/9-4/17/07

TAFD 120 Industrial Safety Awareness 2 Cr

Prerequisite: None

Lab Fee: \$15

147025 TAFD 120 11 R 10:00a-11:50a T217 1/11-4/19/07

147026 TAFD 120 50 T 4:00p-5:50p T217 1/9-4/17/07

WINTER 2007

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
TAFD 130	Industrial Applications of Physical Science					3 Cr	INDUSTRIAL MATERIALS						
Prerequisite: TAMA 120 Lab Fee: \$25							TAIM 100	Industrial Materials					3 Cr
147027	TAFD 130	50	R	6:00p-8:45p	T233	1/11-4/19/07	Prerequisite: None Lab Fee: \$30						
TAFD 150	Applied Technology					3 Cr	147038	TAIM 100	50	M	7:00p-9:45p	T163	1/8-4/23/07
Prerequisite: None Lab Fee: \$25							INSTRUMENTATION						
147028	TAFD 150	50	W	6:00p-8:45p	T171	1/10-4/18/07	TAPI 105	Industrial & Pneumatic Controls					3 Cr
FLUID POWER							Prerequisite: None Corequisite: TAPI 120 Lab Fee: \$30						
TAFP 150	Fluid Power Systems					4 Cr	147039	TAPI 105	50	F	7:00p-9:40p	T224	1/12-4/20/07
Prerequisites: TAMA 120 Lab Fees: \$20							TAPI 120	Instrumentation Print Reading					2 Cr
147029	TAFP 150	50	M	5:00p-8:00p	T233	1/8-4/23/07	Prerequisite: None Lab Fee: \$20						
TAFP 160	Pneumatic Power & Control					4 Cr	147040	TAPI 120	50	F	5:00p-6:50p	T224	1/12-4/20/07
Prerequisite: TAFP 150 Lab Fee: \$20							MAINTENANCE						
TAFP 260	Fluid Power Systems - Advanced					4 Cr	TAMT 110	Mechanical Power Transmission					2 Cr
Prerequisite: TAFP 150 Lab Fee: \$20							Prerequisites: TAMA 120 Lab Fees: \$15						
147032	TAFP 260	50	T	5:00p-8:45p	T233	1/11-4/19/07	147065	TAMT 110	50	M	7:00p-8:50p	T178	1/8-4/23/07
DRAFTING							TAMT 115	Maintenance Trades Print Reading					3 Cr
TAGD 110	Basic Shape and Size Interpretation					3 Cr	Prerequisite: TAGD 110 Lab Fee: \$20						
Prerequisite: None Lab Fee: \$20							147066	TAMT 115	50	R	5:00p-7:45p	T134	1/11-4/19/07
147033	TAGD 110	50	T	6:00p-8:45p	T177	1/9-4/17/07	TAMT 126	Maintenance Print Reading: Plant Lay-out					2 Cr
TAGD 120	Advanced Graphic Interpretation					3 Cr	Prerequisite: TAGD 110 Lab Fee: \$20						
Prerequisite: TAGD 110 Lab Fee: \$20							147067	TAMT 126	50	M	8:00p-9:50p	T178	1/8-4/23/07
147034	TAGD 120	50	M	4:00p-6:45p	T177	1/8-4/23/07	TAMT 200	Predictive Maintenance: Shaft Alignment					2 Cr
TAGD 140	Compound Angles & Advanced Projection					3 Cr	Prerequisite: TAMA 130 and TAMT 110 Lab Fees: \$15						
Prerequisite: TAMA 200 and TAGD 120 Lab Fee: \$20							147068	TAMT 200	50	T	6:00p-7:50p	T178	1/9-4/17/07
147035	TAGD 140	50	R	4:00p-6:45p	T175	1/11-4/19/07	TAMT 220	Advanced Rigging					2 Cr
TAGD 155	Gage Cam Layout and Fixture					2 Cr	Prerequisite: TAMA 130 Lab Fee: \$20						
Prerequisite: TAGD 150 Lab Fees: \$20							147069	TAMT 220	50	T	4:00p-5:50p	T171	1/9-4/17/07
147036	TAGD 155	50	R	7:00p-8:00p	T175	1/11-4/19/07	TAGD 165	Cutting and Forming Dies					3 Cr
Prerequisite: TAGD 160 Lab Fee: \$20							Prerequisite: TAGD 160 Lab Fee: \$20						
147037	TAGD 165	50	W	7:00p-9:50p	T175	1/10-4/18/07							

WINTER 2007

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
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MATHEMATICS**TAMA 110 Industrial App. of Basic Math Principles 2 Cr**

Prerequisite: None

Lab Fee: \$3

147041	TAMA 110 11	T		12:00p-1:50p	T137	1/9-4/17/07
147042	TAMA 110 52	M		8:00p-9:50p	T137	1/8-4/23/07

TAMA 120 Industrial App. of Algebraic Principles 3 Cr

Prerequisite: TAMA 110

Lab Fee: \$3

147043	TAMA 120 11	R		12:00p-2:45p	T143	1/11-4/19/07
147044	TAMA 120 50	W		5:00p-7:45p	T143	1/10-4/18/07
147045	TAMA 120 52	M		5:00p-7:45p	T143	1/8-4/23/07

TAMA 130 Industrial App. of Geometric Principles 2 Cr

Prerequisite: TAMA 120

Lab Fee: \$3

147046	TAMA 130 50	M		5:00p-6:50p	T141	1/8-4/23/07
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TAMA 200 Industrial App. of Trigonometric Principles 3Cr

Prerequisite: TAMA 130

Lab Fee: \$3

147047	TAMA 200 52	W		4:00p-6:45p	T140	1/10-4/19/07
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PLUMBING/PIPEFITTING**TAPP 120 Heating Systems 2 Cr**

Prerequisite: None

Lab Fee: \$20

147070	TAPP 120 50	R		8:00p-9:50p	T106	1/11-4/19/07
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SHOP THEORY**TAMN 100 Shop Tools & Techniques 3 Cr**

Prerequisite: TAMA 110 and TAGD 110

Lab Fee: \$20

147061	TAMN 100 11	W		9:00a-11:45a	T126	1/10-4/18/07
147062	TAMN 100 50	R		5:00p-7:45p	T126	1/11-4/19/07

TAMN 120 Machine Tool Applications 2 Cr

Prerequisite: TAMA 120

Lab Fee: \$10

147063	TAMN 120 11	W		12:00p-1:50p	T126	1/10-4/18/07
147064	TAMN 120 50	R		8:00p-9:50p	T126	1/11-4/19/07

SHEET METAL**TASM 100 Basic Sheet Metal Layout & Fabrication 3 Cr**

Prerequisite: TAMA 120

Lab Fee: \$32

147071	TASM 100 50	M		4:00p-6:45p	T104	1/8-4/23/07
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TASM 110 Blank Development 2 Cr

Prerequisite: TASM 100

Lab Fee: \$15

147072	TASM 110 50	M		4:00p-5:50p	T104	1/8-4/23/07
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**Plumbing, Pipefitting & License Prep**

This program will prepare students for the Michigan plumbing license exam. Students will be introduced to the types of materials used for plumbing and pipefitting. Hands-on exercises in soldering and bending of tubing and piping will be performed as well as design and layout of typical plumbing systems. Safety and health issues are taught based on the Michigan plumbing code.

WELDING**TAMJ 110 Materials Joining & Fabrication Fundamentals 3 Cr**

Prerequisite: None

Lab Fee: \$69

147048	TAMJ 110 11	M		12:00p-2:45p	T163	1/8-4/23/07
147049	TAMJ 110 50	T		6:00p-8:45p	T163	1/9-4/17/07

TAMJ 112 Creative Metals I 3 Cr

Prerequisite: None

Lab Fee: \$69

147050	TAMJ 112 11	W		12:00p-2:45p	T163	1/10-4/18/07
147051	TAMJ 112 50	R		5:00p-7:45p	T163	1/11-4/19/07

NEW COURSE

WINTER 2007

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
TAMJ 115	Advanced Materials Joining & Fabrication					2 Cr							
Prerequisite: TAMJ 110 Lab Fee: \$69													
147052	TAMJ 115 11	T		9:00a- 10:50a	T163	1/9-4/17/07							
147053	TAMJ 115 50	T		4:00p-5:50p	T163	1/9-4/17/07							
TAMJ 116	Creative Metals II					3 Cr							
Prerequisite: None Lab Fee: \$69													
147054	TAMJ 116 50	R		5:00p-7:45p	T163	1/11-4/19/07							
TAMJ 120	Materials Joining & Fabrication: GTAW/GMAW					2 Cr							
Prerequisite: TAMA 110 Lab Fee: \$69													
147055	TAMJ 120 50	W		4:00p-5:50p	T163	1/10-4/18/07							
TAMJ 125	ASME Pipe & Pressure Vessel Welding					2 Cr							
Prerequisite: TAMJ 115 Lab Fee: \$69													
147056	TAMJ 125 50	W		4:00p-5:50p	T163	1/10-4/18/07							
TAMJ 145	Advanced Gas Torch Techniques					2 Cr							
Prerequisite: TAMJ 115 Lab Fee: \$69													
147057	TAMJ 145 50	W		6:00p-7:50p	T163	1/10-4/18/07							
TAMJ 230	ASME Pipe & Pressure Vessel Certification					2 Cr							
Prerequisite: TAMJ 125 Lab Fee: \$69													
147058	TAMJ 230 50	W		6:00p-7:50p	T163	1/10-4/18/07							
TAMJ 235	GTAW & GMAW Certification					2 Cr							
Prerequisite: TAMJ 120 and TAMJ 125 Lab Fee: \$69													
147059	TAMJ 235 50	W		6:00p-7:50p	T163	1/10-4/18/07							
TAMJ 240	Tool & Die Welding					3 Cr							
Prerequisite: TAMJ 120 Lab Fee: \$69													
147060	TAMJ 240 50	M		4:00p-6:40p	T163	1/8-4/23/07							

Energy Technology – Power/Building Engineer

There are three levels available to students in the Energy Technology Power/Building Engineer area. They are Energy Technology Boiler License Review Basic certificate, Energy Technology Power/Building Engineer Advanced certificate and Energy Technology Power/Building Engineer Associate of Applied Science degree.

Energy Technology Boiler License Review Basic

is a 17 credit hour certificate program. Students completing this program will receive a certificate which may be presented to local license examiners to be used toward meeting minimum experience requirements needed to sit for the exam for a High Pressure Boiler Operator license, a Low Pressure Boiler Operator license, 4th class N.I.U.L.P.E. license or a Refrigeration Operator license.

Energy Technology Power/Building Engineer

Advanced is a minimum 32 credit hour certificate program. This certificate provides the opportunity for students to gain knowledge and skills in the area of commercial and industrial building maintenance. Completion of this certificate will help prepare the student to qualify for licensing exams. Power plant, process plant and heating plant visits are mandatory requirements in courses qualifying students to take license exams. Students must attend 4-6 plant visits as part of their class attendance.



Energy Technology Power/Building Engineer Associate of Applied Science degree

is designed to provide the necessary background skills, concepts and practical laboratory experience to enter the field of power engineering or assume a position in the building or small plant operation and maintenance areas. The program is designed for students who want to become operating engineers, boiler operators, building engineers, and/or refrigeration and air conditioning engineers in generating plants, pumping stations, steam plants, heating plants, water treatment facilities, industrial refrigeration plants and/or commercial and industrial buildings.

Summer 2007



HENRY FORD COMMUNITY COLLEGE
Trade & Apprentice Education Division

SUMMER 2007
Schedule Request

Please note: This is not an official registration form. This form is to indicate the classes you are interested in for Summer 2007 which do not currently appear on the fall schedule.

Name _____
Last First

Address _____

City _____ State _____ Zip _____

Phone () _____ () _____

COMPANY _____

Schedule Request

The following **CLASS** or **CLASSES** are requested for the Summer 2007 Semester:

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

TA _____

Day _____ Time _____

Please return to the Trade & Apprentice Education Division Office T-115.

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
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SUMMER 2007

SPECIAL OFFERINGS

TADV 060 Basic Skills for the Skilled Trades 4 Cr

Prerequisite: None

Lab Fee: \$25

147501 TADV 060 50 W 5:00p-8:40p T217 5/9-8/22/07

TADV 100 Print Reading Fundamentals 2 Cr

Prerequisite: None

Lab Fee: \$10

147502 TADV 100 11 R 8:00a-9:50a T140 5/10-8/16/07

147503 TADV 100 50 T 4:00p-5:50p T134 5/8-8/14/07

ELECTRICITY

TAEL 102 DC and AC Electricity (8 week schedule) 3 Cr

Prerequisite: None

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

147506 TAEL 102 11 M/W 9:00a-11:45 T225 5/7-6/27/07

147545 TAEL 102 50 M/W 5:00p-7:45p T225 5/7-6/27/07

TAEL 105 AC Theory and Equipment (8 week Schedule) 4 Cr

Prerequisite: TAEL 102

Completion of High School Algebra or a College Math suggested

Lab Fee: \$15

147507 TAEL 105 50 T/R 5:00p-8:40p T224 5/8-6/26/07

FOUNDATION OF APPRENTICESHIP

TAFD 112 Construction Blue Print Reading 2 Cr

Prerequisite: None

Lab Fee: \$30

147510 TAFD 112 50 T 5:00p-7:45p T220 5/8-8/14/07

TAFD 115 Computer Applications for the Skilled Trades 2 Cr

Prerequisite: None

Lab Fee: \$20

147511 TAFD 115 11 T 10:00a-11:50a T220 5/8-8/14/07

147512 TAFD 115 50 T 6:00p-7:50p T220 5/8-8/14/07

TAFD 120 Industrial Safety Awareness 2 Cr

Prerequisite: None

Lab Fee: \$15

147515 TAFD 120 11 R 10:00a-11:50a T217 5/10-8/16/07

147516 TAFD 120 50 T 4:00p-5:50p T217 5/8-8/14/07

TAFD 150 Applied Technology 3 Cr

Prerequisite: None

Lab Fee: \$25

147517 TAFD 150 50 W 6:00p-8:45p T171 5/9-8/22/07

DRAFTING

TAGD 120 Advanced Graphic Interpretation 3 Cr

Prerequisite: TAGD 110

Lab Fee: \$20

147520 TAGD 120 50 R 4:00p-6:45p T177 5/10-8/16/07

INDUSTRIAL MATERIALS

TAIM 100 Industrial Materials 3 Cr

Prerequisite: None

Lab Fee: \$30

147522 TAIM 100 50 M 5:00p-7:45p T163 5/7-8/20/07

MAINTENANCE

TAMT 110 Mechanical Power Transmission 2 Cr

Prerequisite: TAMA 120

Lab Fee: \$15

147539 TAMT 110 50 T 6:00p-7:50p T178 5/8-8/14/07

TAMT 200 Predictive Maintenance: Shaft Alignment 2 Cr

Prerequisite: TAMT 110 and TAMA 130

Lab Fee: \$15

147540 TAMT 200 50 T 8:00p-9:50p T178 5/8-8/14/07

MATHEMATICS

TAMA 110 Industrial App. of Basic Math Principles 2 Cr

Prerequisite: None

Lab Fee: \$3

147523 TAMA 110 50 M 8:00p-9:50p T137 5/7-8/20/07

TAMA 120 Industrial App. of Algebraic Principles 3 Cr

Prerequisite: TAMA 110

Lab Fee: \$3

147524 TAMA 120 50 W 5:00p-7:45p T143 5/9-8/22/07

147525 TAMA 120 52 M 5:00p-7:45p T143 5/7-8/20/07

SUMMER 2007

SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES	SYNONYM	COURSE	SEC	DAYS	TIMES	ROOM	DATES
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TAMA 200 Industrial Applications of Trigonometric Principles 3 Cr

Prerequisite: TAMA 130

Lab Fee: \$3

147526 TAMA 200 50 W 4:00p-6:45p T140 5/9-8/22/07

SHEET METAL

TASM 100 Basic Sheet Metal Layout & Fabrication 3 Cr

Prerequisite: TAMA 120

Lab Fee: \$32

147542 TASM 100 50 M 4:00p-6:45p T104 5/7-8/20/07

TASM 110 Blank Development 2 Cr

Prerequisite: TASM 100

Lab Fee: \$15

147543 TASM 110 50 M 4:00p-6:45p T104 5/7-8/20/07

TASM 120 Sheet Metal Layout: Radial & Triangulation 2 Cr

Prerequisite: TASM 100

Lab Fee: \$15

147544 TASM 120 50 M 4:00p-5:50p T104 5/7-8/20/07

SHOP THEORY

TAMN 100 Shop Tools & Techniques 3 Cr

Prerequisite: TAMA 110 and TAGD 110

Lab Fee: \$20

147537 TAMN 100 50 R 7:00p-9:45p T126 5/10-8/16/07

TAMN 120 Machine Tool Applications 2 Cr

Prerequisite: TAMA 120

Lab Fee: \$10

147538 TAMN 120 50 R 5:00p-6:50p T126 5/10-8/16/07

PLUMBING/PIPEFITTING

TAPP 100 Fundamentals of Plumbing & Pipefitting 3 Cr

Prerequisite: None

Lab Fee: \$ 20

147541 TAPP 100 50 R 5:00p-7:45p T118 5/10-8/16/07

WELDING

TAMJ 110 Materials Joining & Fabrication Fundamentals 3 Cr

Prerequisite: None

Lab Fee: \$69

147529 TAMJ 110 11 M 12:00p-2:45p T163 5/7-8/20/07

147530 TAMJ 110 50 T 6:00p-8:45p T163 5/8-8/14/07

TAMJ 115 Advanced Materials Joining & Fabrication 2 Cr

Prerequisite: TAMJ 110

Lab Fee: \$69

147531 TAMJ 115 50 T 4:00p-5:50p T163 5/8-8/14/07

TAMJ 120 Materials Joining & Fabrication: GTAW/GMAW 2 Cr

Prerequisite: TAMA 110

Lab Fee: \$69

147532 TAMJ 120 50 W 4:00p-5:50p T163 5/9-8/22/07

TAMJ 125 ASME Pipe & Pressure Vessel Welding 2 Cr

Prerequisite: TAMJ 115

Lab Fee: \$69

147533 TAMJ 125 50 W 4:00p-5:50p T163 5/9-8/22/07

TAMJ 145 Advanced Gas Torch Techniques 2 Cr

Prerequisite: TAMJ 115

Lab Fee: \$69

147534 TAMJ 145 50 W 4:00p-5:50p T163 5/9-8/22/07

TAMJ 230 ASME Pipe & Pressure Vessel Certification 2 Cr

Prerequisite: TAMJ 125

Lab Fee: \$69

147535 TAMJ 230 50 W 6:00p-7:50p T163 5/9-8/22/07

TAMJ 235 GTAW & GMAW Certification 2 Cr

Prerequisite: TAMJ 120 and TAMJ 125

Lab Fee: \$69

147536 TAMJ 235 50 W 6:00p-7:50p T163 5/9-8/22/07

Course Descriptions

Trade and Apprentice Education

The following is a list of the courses taught through the Trade and Apprentice Education Division.

SPECIAL OFFERINGS

TADV 060 Basic Skills For The Skilled Trades 4 Cr

Prerequisite: None

Designed to provide a comprehensive review of mathematical and algebraic skills as well as knowledge of the industrial workplace in order to prepare the student for an employer-administered apprenticeship test. This review includes measuring devices, spatial relations, blueprint reading, mechanical aptitude, manufacturing materials, and manufacturing processes.

TADV 100 Print Reading Fundamentals 2 Cr

Prerequisite: None

Designed to familiarize students with the fundamentals needed for presenting concepts and techniques to various segments of today's industry. Topics include the alphabet (use) of lines; the projection of various shapes and surfaces; the presentation of hidden details; and the methods, units of measurement, and techniques used for locating details in a variety of drawings.

ELECTRICAL/ELECTRONICS

TAEL 102 DC and AC Electricity 3 Cr

Prerequisite: TAMA 110 (Pre-requisite or Co-requisite)

This is an introductory course in electricity, covering the fundamentals of DC and AC circuits and circuit calculations. Included are electrical definitions, units of electrical measure, series and parallel resistive circuits, capacitance, and inductance. The use of meters and oscilloscopes will be included during lab experiences, along with an introduction to basic wiring and the troubleshooting of circuit faults.

TAEL 105 AC Theory and Equipment 4 Cr

Prerequisite: TAEL 102, TAMA 120 (Pre-requisite or Co-requisite)

Covers advanced AC theory. The topics of right triangle trig and complex numbers are included in the class to be used for reactance and impedance calculations. Three-phase power applications with delta and wye distribution and calculations are included. The electrical equipment discussed in this class includes single- and three-phase transformers, induction heating equipment, and several types of AC lighting equipment.

TAEL 106 Electronics Theory 4 Cr

Prerequisite: TAEL 105

This is a laboratory-oriented course that stresses the fundamental theories of electronic components and elementary circuit applications. The use of test equipment, including the oscilloscope and meters, is an essential part of the course.

TAEL 115 Digital Theory 2 Cr

Prerequisite: None

A theory and laboratory course covering the fundamental concepts of digital theory. Topics include gates, logic circuits, counters, timers, and display circuits.

TAEL 145 DC and AC Motors 4 Cr

Prerequisite: TAEL 105

Includes the fundamentals of both DC and AC motors. DC generators are included along with series, shunt, and compound DC motors. Basic DC starters and control circuits are covered. Both single-phase and three-phase AC induction motors are included along with synchronous, wound-rotor, and universal motors. AC alternators are compared to DC generators.

TAEL 150 DC Motors and Controls 2 Cr

Prerequisite: TAEL 102

Explains the theory of operation of DC motors and generators. DC motor starters and control circuits are covered. Laboratory experiences help the student understand the concepts presented in class. Maintenance and installation of DC machines is also a part of this course.

TAEL 200 Ladder Diagrams and Motor Controls 4 Cr

Prerequisite: TAEL 145

Covers the fundamentals of electrical ladder diagrams and motor control circuits. Ladder logic, as well as labels, documentation, and symbology of electrical drawings, is presented along with the use of ladder diagrams as a troubleshooting tool. Students design and draw several control circuits for three-phase induction motors and wire these circuits in the motor control lab.

TAEL 205 Industrial Electronic Controls 2 Cr

Prerequisite: TAEL 106

This course provides an overview of industrial electronic control circuits and electronic and electrical sensor circuits. This includes a review of semiconductor and digital theory, troubleshooting techniques, and electronic components including transistors, diodes, SCRs, DIACs, TRIACs, and various ICs. The control circuits discussed include three-phase and switching power supplies, DC motor drives, AC variable frequency motor drives, and resistance welding controllers.

TAEL 245 Programmable Logic Controllers 4 Cr

Prerequisite: TAEI 200

This is a laboratory-oriented course that emphasizes programming and industrial applications of programmable control equipment.

TAEL 260 Robotics and Automation 4 Cr

Prerequisite: TAEI 245

This is a lab-oriented course utilizing actual machines that represent many operations in automated manufacturing. Students prepare programs to operate the machines using Allen Bradley PLC-5 processors.

TAEL 270 Industrial and Commercial Wiring 2 Cr

Prerequisite: TAEI 105

Designed to acquaint the student with the materials and calculations related to lighting, motor distribution, and other circuit locations in general and hazardous locations as defined by the National Electrical Code.

TAEL 275 Residential Wiring 2 Cr

Prerequisite: TAEI 105

Covers the fundamentals of residential wiring, especially the aspects of the National Electrical Code specifically applying to residential construction and repairs. Electrical supplies and hardware appropriate for residential applications are included, and residential wiring techniques are explained.

TAEL 278 NEC Review & License Test Prep 3 Cr

Prerequisite: TAEI 270 and TAEI 275

This course teaches apprentice electricians and others the applications of the National Electrical Code as it relates to the electrician. Topics include the design of electrical power systems and the factors relating to a safe and reliable installation as required by the code. Testing strategies will be taught to prepare electrical apprentices to take the journeyman license test.

TAEL 280 Low Voltage and Communication Wiring 2 Cr

Prerequisite: TAEI 105

Designed to give students working knowledge and practical experience in installation and maintenance of signal/low voltage wiring and signal transmission, including PC board and fiber optic repair and maintenance. The laboratory consists of experiments designed to give the student practice in the use of test equipment, basic troubleshooting, installation procedures, and repair techniques. Safety is emphasized throughout the curriculum.

TAEL 285 Industrial Truck Controls 2 Cr

Prerequisite: TAEI 102

Designed to explain the operation of SCR solid state truck controls to industrial truck apprentices. Topics include review of basic electrical theory, DC generators and motors, batteries and battery chargers, silicon-controlled rectifier theory, SCR truck control operation, and troubleshooting.

TAEL 290 High Voltage Power Distribution 2 Cr

Prerequisite: TAEI 105

Covers the generation, transmission, and distribution of primary electrical power. Topics include underground and overhead distribution systems, types of wire and cables, switching equipment, protective devices, test equipment, personal safety items, OSHA safety rules, and methods of providing protection when working on de-energized electrical equipment.

TAEL 295 Microprocessors 2 Cr

Prerequisite: TAEI 115

Covers the fundamentals of microprocessor circuits and microprocessor programming, including the interfacing of the microprocessor with the 'outside world' through the handling of input and output data with a Peripheral Interface Adapter (PIA).

FOUNDATION OF APPRENTICESHIP**TAFD 112 Construction Blueprint Reading 2 Cr**

Prerequisite: None

This course introduces students to the prints used in the construction trades, such as plumbing, electrical, carpentry, welding, and energy technology. Students will learn the fundamentals and languages required to read construction drawings. Topics will include measurement, lines, symbols, drawing views, working notes, and the importance of title blocks.

TAFD 115 Computer Applications For Skilled Trades 2 Cr

Prerequisite: None

An introductory course providing familiarity rather than proficiency and stressing industrial applications. This course explores software, programming, storage/input/output devices, and controls as they apply to industry. Experiences and demonstrations in keyboarding, DOS, word processors, spreadsheets, data bases, computer graphics, basic programming, and two-dimensional computer-aided drafting are included.

TAFD 120 Industrial Safety Awareness 2 Cr

Prerequisite: None

Presents a comprehensive approach to safety, designed to give the skilled tradesperson the knowledge of safety fundamentals and practices, from the causes of accidents to the study of safety hazards and rules associated with equipment and tools utilized in modern industrial facilities.

TAFD 130 Applied Industrial Applications of Physical Science 3 Cr

Prerequisite: TAMA 120

Offers the apprentice an exposure to the applications of physics and chemistry found in the industrial workplace. Topics include the six elemental machines, applications of forces, motion, and work, as well as the chemistry of industrial materials and chemical interactions in the environment.

TAFD 150 Applied Technology 3 Cr
Prerequisite: None

An introductory course, appropriate for all trades, using practical concepts and examples to provide knowledge of fluid power, electricity, mechanical power transfer, and rigging. Safety is stressed throughout.

FLUID POWER

TAFP 150 Fluid Power Systems 4 Cr
Prerequisite: TAMA 120

Provides an introduction to the principles of fluid power as they apply to industrial systems. Various hydraulic components are presented and studied in terms of their functions within fluid power systems. This course includes both lecture and laboratory work.

TAFP 160 Pneumatic Power/Pneumatic Control 4 Cr
Prerequisite: TAFP 150

Explores the principles of fluid power pneumatics as they apply to industrial systems. Various pneumatic components are presented and studied with respect to their functions within pneumatic power and control systems. This course includes both lecture and laboratory work.

TAFP 260 Fluid Power Systems - Advanced 4 Cr
Prerequisite: TAFP 150

Continues the exploration of the principles of fluid power as they apply to industrial systems. Various hydraulic components are presented and studied in greater depth with respect to their functions within fluid power systems. This course includes both lecture and laboratory work.

TAFP 270 Fluid Power Systems: Circuit Design/Troubleshooting 4 Cr

Prerequisite: TAFP 150

Explores the principles of fluid power design and troubleshooting as they apply to industrial systems. Various hydraulic circuits are presented and studied with respect to their functions, efficiencies, and troubleshooting guidelines within fluid power systems.

TAFP 280 Applied Electrohydraulics 3 Cr
Prerequisite: TAFP 150

Introduces basic electrohydraulic fundamentals, components, and procedures relative to troubleshooting, maintenance, and set-up of proportional and servo valves. The theory and practice of electrohydraulics are taught with hands-on laboratory experience emphasized.

GRAPHIC DESIGN

TAGD 110 Basic Shape and Size Interpretation 3 Cr
Prerequisite: None

Designed to introduce the concepts of shape and size description of normal surfaced, inclined (single-angle) surfaced, and cylindrical objects. Students use traditional and computer-based drafting techniques. This course covers projection of three-dimensional objects into two-dimensional representations and also the reverse process. Sketching and modeling of objects is covered.

TAGD 120 Advanced Graphic Interpretation 3 Cr
Prerequisite: TAGD 110

Designed to introduce the concepts of size and shape description of oblique surfaced objects. Students are introduced to sectioning and processes used in the manufacturing environment. Geometric and traditional tolerancing is studied. The work is accomplished using traditional and computer-based drafting techniques.

TAGD 130 Assembly Detailing 2 Cr
Prerequisite: TAGD 120

Designed to introduce the concepts of detailing of assembly drawings, including modeling of complex shapes and pictorial drawings of details. The students draw individual parts in their proper orientation. The work is accomplished using traditional and computer-based drafting techniques.

TAGD 140 Compound Angles and Advanced Projection 3 Cr

Prerequisite: TAMA 200 AND TAGD 120

Focuses on the mastery of solid trigonometric principles as they apply to the industrial workplace. Topics include solution of solid trigonometry problems using graphic and analytical solutions and problem-solving techniques.

TAGD 150 Tool, Jig and Fixture Design 2 Cr
Prerequisite: TAGD 130 AND TAGD 140

Focuses on the mastery of tool-design principles as they apply to the industrial workplace. Topics include tolerances, fits, principles of tool design, template jigs and fixtures, plate and channel jigs, and Welding fixtures. Economical design principles are discussed, and projects requiring team approaches are used.

TAGD 155 Gage, Cam Layout and Fixture Design 2 Cr
Prerequisite: TAGD 150

Focuses on the mastery of gage design principles as they apply to the industrial workplace. Topics include gage design theory, computer-aided manufacturing, cam layout procedures, and fixturing. Projects requiring team approaches are used.

TAGD 160 Press Working Fundamentals 2 Cr
Prerequisite: TAGD 130

Designed to familiarize the apprentice with basic metal deformation theory, presses and ancillary equipment, die construction, and die component identification. The student is introduced to the various die types and draws the various detail components using both traditional and computer-aided drafting.

TAGD 165 Cutting and Forming Dies 3 Cr

Prerequisite: TAGD 160

Designed to introduce the apprentice to basic die design criteria and methods. The student is introduced to the various die types and draws the various die assemblies using both traditional and computer-aided drafting.

TAGD 171 Descriptive Geometry: Lines and Planes 3 Cr

Prerequisite: TAGD 120

Designed to familiarize the apprentice with basic descriptive geometry theory and practice. The student uses orthographic principles to find true views of lines and planes.

TAGD 172 Descriptive Geometry: Planes, Solids, and Developments 2 Cr

Prerequisite: TAGD 171

Designed to familiarize the apprentice with basic descriptive geometry theory and practice. The student uses orthographic principles to find true views of planes and solids and their intersections.

TAGD 280 Panel Tipping 2 Cr

Prerequisite: TAGD 172

Designed to develop the ability to convert vehicle body position drawings to required die positions in various die operations. In addition, the student learns various concepts involving strip stock development and part clearance-interference conditions. Problems include practical applications of descriptive geometry.

INDUSTRIAL MATERIALS**TAIM 100 Industrial Materials** 3 Cr

Prerequisite: None

Prepares students for the advance of technology beyond metallurgy in the structure of modern materials and substances. This course includes knowledgeable and practical applications of new materials as well as traditional ones. Topics include extraction of metals, identification of ferrous and non-ferrous metals, non-metals (e.g. plastics, elastomers, ceramics, wood, and paper), mechanical and physical properties of materials, non-destructive testing procedures, crystalline and crystalline structures of materials, materials forming operations, and heat treatment theory and practice.

TAIM 200 Industrial Applications of Strength of Materials 2 Cr

Prerequisite: TAMA 200

An introduction to strength of material that covers force systems, vectors, free body diagrams, statically determinate and statically indeterminate numbers, centroids, moments of inertia, friction, stress-strain relationships, resolved stresses, physical properties, fatigue stress, stress at elevated temperature, stresses caused by thermal change, and stresses due to combined loading and temperature.

MATHEMATICS**TAMA 110 Industrial Applications of Basic Mathematical Principles** 2 Cr

Prerequisite: None

Utilizes industrial shop problems to help students relate math to job situations. Topics include addition, subtraction, multiplication, and division of whole and mixed numbers and common and decimal fractions; percents, averages, and estimates; graphs, tables, and statistical measure; powers and roots; linear, angular, and circular measure; surface area, volume, and cubic measure; ratios and proportion; and metrics and metric conversion.

TAMA 115 Metric Systems and Conversions 2 Cr

Prerequisite: TAMA 110

Designed for students in the apprenticeship program. They are exposed to the history of measurement systems with an emphasis on the metric system and conversion techniques between metric and English systems. Applications are shop-related.

TAMA 120 Industrial Applications of Algebraic Principles 3 Cr

Prerequisite: TAMA 110

Focuses on mastery of the basic algebraic principles as they relate to the industrial environment. Topics include symbols, positive and negative numbers, equations, exponents, roots, and formulas. Practical shop problems are solved.

TAMA 130 Industrial Applications of Geometric Principles 2 Cr

Prerequisite: TAMA 120

Covers the fundamental principles of plane geometry with emphasis on application to the industrial environment. Angular, circular, linear, area, and volume measurement is explored in relation to the types of geometric figures and configurations found in industry.

TAMA 200 Industrial Applications of Trigonometric Principles 3 Cr

Prerequisite: TAMA 130

Focuses on the mastery of trigonometric principles as they apply to the industrial workplace. Topics include trigonometric functions, solution of right triangles, solution of oblique triangles, and problem-solving techniques.

MANUFACTURING

TAMN 100 Shop Tools and Techniques 3 Cr

Prerequisite: TAMA 110, TAGD 110

Introduces the basic tools and safety and technical information required by the skilled trades. Topics covered include non-precision and precision measurement tools and methods, layout tools and techniques, hand and bench tools, drills and drilling machines, principles of metal cutting and metal cutting saws, and pedestal grinders. Manufacturing processes are discussed.

TAMN 120 Machine Tool Applications 2 Cr

Prerequisite: TAMA 120

Presents the mechanisms, operation, tooling, and accessories of the lathe and milling machine in a lecture/demonstration format. Topics covered include precision measurement and precision measuring devices, basic machine tool operations, the theory of metal cutting, cutting tools and cutting tool materials, and cutting fluids. Safety, as it relates to the shop environment, is stressed throughout the course.

TAMN 125 Lathe, Shaper, and Mill with Laboratory 4 Cr

Prerequisite: TAMN 120

An introduction to machines used in a modern machine shop. Technical knowledge and operating skills relating to shapers, lathes, and milling machines are emphasized along with safe working practices and inspection.

TAMN 130 Advanced Manufacturing Processes 2 Cr

Prerequisite: TAMN 120

Explains the use of conventional abrasives and super abrasives, as well as traditional grinding machines. Advanced milling applications are covered utilizing the horizontal boring mill. The application of basic and advanced cutting tool materials is covered in depth. Some of the more popular non-traditional processes are also explained, including electrical discharge machining and wire cutting; electrochemical, abrasive flow, ultrasonic, and abrasive water jet machining; electromagnetic, electro spark, and powder metallurgy forming; and various laser applications. Additional topics include rapid prototype development and robotics/automation. Students use various software in the computer laboratory related to the above topics.

TAMN 135 Jig Bore and Grinder with Laboratory 4 Cr

Prerequisite: TAMN 130

A continuation of TAMN 125 that includes layout and bench procedures along with more advanced operations of machines. Threading, taper turning, boring and safe working practices are emphasized.

TAMN 200 Numerical Control Fundamentals 2 Cr

Prerequisite: TAMN 120

Covers the fundamentals of the principles of numerical control (NC) with emphasis on application to the industrial environment. Topics include the history of NC, how NC operates, and simple part programming. The primary NC machine features are explained. NC lathes, turning centers, and their respective tooling are discussed. On-line and off-line programming is demonstrated.

TAMN 220 Advanced Computer Numerical Control Techniques 2 Cr

Prerequisite: TAMA 200 and TAMN 200

Covers the fundamentals of computer numerical control (CNC), with emphasis on generic application to both vertical and horizontal milling machines. A review of the fundamentals of numerical control and programmer math is provided. Off-line computerized CNC software enables students to program CNC operations involving linear, circular, and helical interpolation. Canned cycles, auto routines, and various preparatory functions are used in programming. These programs are then utilized to machine functional work pieces on a fully operational CNC trainer.

MAINTENANCE TECHNOLOGY

TAMT 110 Mechanical Power Transmission 2 Cr

Prerequisite: TAMA 120

Provides specialized instruction and discussion concerning installation and maintenance of mechanical transmission systems. Areas to be covered include bearings, couplings, belts, chains, shafts, pulleys, and speed reducers used in the modern factory by mechanical trades.

TAMT 115 Maintenance Trades Print Reading 3 Cr

Prerequisite: TAGD 110

Designed to meet the needs of apprentices and trainees in industrial plant maintenance trades. Topics include shape description; conventions and symbols; size description; notes and instruction associated with manufacturers' and maintenance-related drawings, including castings, weldments, and machined parts; electrical/electronic schematics and ladder diagrams; piping and fluid power-related drawings and schematics; structural and architectural drawings; and sheet-metal and plant layout.

TAMT 123 Maintenance Print Reading: Structural Steel & Conveyors 2 Cr

Prerequisite: TAMA 120, TAGD 110

Responds to a request by skilled trades for a course focusing on making a basic shop drawing of structural steel shapes and print reading of conveyor structures. This course provides an introduction to steel detail drawings and print reading techniques as they relate to conveyors.

**TAMT 126 Maintenance Print Reading:
Plant Layout****2 Cr**

Prerequisite: TAGD 110

Introduces the techniques and procedures of plant layout and material handling. The student is led through the analysis and development of information to produce a plant layout and develops print reading skills with emphasis on reading industrial equipment drawings. Students practice making simple plant layout drawings for the production of a part using basic drafting techniques.

**TAMT 200 Predictive Maintenance -
Shaft Alignment****2 Cr**

Prerequisite: TAMT 110, TAMA 130

Provides specialized instruction in the practices and equipment used in shaft alignment, the end-to-end and parallel alignments of machines. Also studied are machine failures due to rotating shaft misalignment and vibration created from shaft center lines not being in the same plane. Areas covered include inefficiencies and increased wear due to misalignment, shaft alignment methods, soft foot, thermal growth, graphing methods, and the use of computers for math calculations. Rim and Face, Reverse Dial Indicator, and Visible Laser equipment is used. This course is a 40-percent hands-on laboratory experience.

**TAMT 210 Predictive Maintenance-Vibration
Analysis****2 Cr**

Prerequisite: TAMT 110, TAMA 130

Provides specialized instruction in understanding machinery vibration in rotating equipment, the most cost-effective method to reduce maintenance costs and extend machinery life. Through demonstrations and case histories, students develop a method of thinking required to sort through various symptoms to determine the root cause of vibration.

TAMT 220 Advanced Rigging**2 Cr**

Prerequisite: TAMA 130

Provides a study of safe rigging practices and equipment used by mechanical trades people. Topics of study include fiber and wire rope, block and tackle, lift and rigging chain, proof test, safe working load, design factor, sling geometry, fittings, and lifting and moving equipment. This course is a 40-percent hands-on laboratory experience.

TAMT 260 Gearing**2 Cr**

Prerequisite: TAMA 200

Covers the calculation of standard screw threads such as American National, United States V, Metric, Acme, and Worm. Standard notations and formulas for spur gears, bevel gears, worm and worm wheels, and helical gears are also covered. This course also explains replacement of spur gears with helical gears, the use of idler gears, and calculations for plain and differential indexing.

PROCESS INSTRUMENTATION**TAPI 105 Introduction to Industrial Instrumentation
and Pneumatic Controls****3 Cr**

Prerequisite: TAPI 120 (Corequisite)

Covers the basic principles and techniques used in the measuring and controlling of an industrial process: measuring, tuning, and calibration of pneumatic instrumentation and controls. The student will study pressure, temperature level, flow, and analytic control systems. Fundamental control techniques including open loop and closed loop control, three modes of control, cascade, adaptive, feed forward and feed back. Fundamental methods of calibration and repair of pneumatic controllers, transducers, transmitters, and control valves are covered in laboratory exercises.

TAPI 120 Instrumentation Print Reading**2 Cr**

Prerequisite: None Covers the principal aspects of drawing, reading, and interpreting of standard instrumentation and electrical drawing, diagrams, and schematics used in industry. Emphasis is placed on using ANSI, ISA, SAMA, IEEE standard symbols and standards accepted by the industry. Techniques in using drawings, diagrams, and schematics to troubleshoot and locate equipment are stressed in the course.

PLUMBING/PIPEFITTING**TAPP 100 Fundamentals of Plumbing and
Pipefitting****3 Cr**

Prerequisite: None

Explains the development of the proper procedures for the sizing, selection, and installation of pipe and fittings. Included are the development of pipe welding templates and hands-on exercises in the bending of tubing and pipe.

TAPP 110 Drains, Waste and Vents**2 Cr**

Prerequisite: None

Introduction to the proper selection of materials for the installation and repair of sewer, soil, waste and vent systems. Proper procedures for the design and layout of residential and commercial systems are also covered. The use of blueprints and isometric diagrams is reviewed throughout the course.

TAPP 120 Heating Systems**2 Cr**

Prerequisite: None

Introduces the principles of steam and hydronic heating systems. Proper sizing and selection of converters, traps, and boilers are covered. Applications exercises allow students the opportunity to design and lay out typical systems.

TAPP 250 Plumbing Code**2 Cr**

Prerequisite: TAPP 100

Introduces the use and application of the Michigan Plumbing Code. The student reviews each article for its content and application. Exercises provide real-life situations. The student interprets plans and drawings as they relate to plumbing and pipefitting.

RENEWABLE ENERGY

REEN 101 Fundamentals of Renewable Energy 2 Cr

Prerequisite: None

This course is a survey course to introduce the student to the concept of Renewable Energy. It will identify Renewable Energy Sources that are available today, as well as look at those sources of energy which are predicted to become available in the near future. The topics to be covered will include solar and photovoltaic systems, geothermal systems, wind systems, energy from bio-mass, and fuel cell systems. This course will identify how these systems function technically, and will also discuss how they will affect both our environment and economy. Demonstrations of the various energy sources as well as lab exercises are included.

REEN 110 Geothermal Systems and Water Furnace Technology 2 Cr

Prerequisite: None

This course will introduce the student to the topic of Geothermal Energy. It will identify geothermal energy sources and give an overview of how geothermal energy is being used today. A major emphasis of the course will be residential heating using geothermal technology. The installation of a geothermal furnace in a residential application will be covered. This will include and initial survey of the home and property, sizing of the unit, and the choice of the type of loop system to use. Installation and maintenance of a geothermal heating system will be covered. A working Water Furnace system will be available for laboratory activities.

REEN 120 Wind, Solar and Fuel Cell Technology 2 Cr

Prerequisite: None

This course is designed to explore the theory of operation and applications of the following technologies: passive and active solar collectors, photovoltaic cells, wind generators, and fuel cells. All of these technologies are available today in limited applications, but any or all of them could hold the promise of being able to supply a major portion of tomorrow's renewable energy needs.

REEN 130 Smart Home Control Technology 2 Cr

Prerequisite: None

This course will help the student identify both the advantages and drawbacks of using Smart Home Technology. It will let the student explore all of the options currently available in the different types of systems and technologies available. The topics discussed will include the economics of Smart Home Technology, Smart Home Technology and conservation of energy, and how Smart Home Technology can improve a standard of living. Demonstrations of the Technology and laboratory exercises will be included.

REEN 140 Co-Generation and Back-up Power 2 Cr

Prerequisite: None

This course is designed to introduce the student to the topics of Co-Generation and Back Up Power for use in a residence or business. The cost of energy today has become an incentive for many to look to alternative energy sources for both home and business. Increased pressures on the power grid have resulted in power failures that have convinced some to install Back Up Power systems. This course will look at the various types of both Back Up Power Units and Uninterruptible Power Units available today. Site survey, planning, cost, and the installation and maintenance of the units will be covered.

SHEET METAL

TASM 100 Basic Sheet Metal Layout and Fabrication 3 Cr

Prerequisite: TAMA 120

Covers layout, forming, and fabrication of basic sheet metal ductwork fittings and use of hand/power tools and equipment to accomplish this task. Topics include how to fabricate square/round sheet metal ductwork, tapers, transitions, and offsets. Methods of fastening ductwork together and to each other are also explained.

TASM 110 Sheet Metal: Blank Development 2 Cr

Prerequisite: TASM 100

The theory and practices of sheet metal blank development by use of the empirical bend allowance formula.

TASM 120 Sheet Metal Layout: Radial And Triangulation 2 Cr

Prerequisite: TASM 100

Covers the development of geometrical elements of structures, their intersections by the radial line, triangulation methods of sheet metal layout, the drawing of development layouts, and the forming of cardboard or sheet metal models.

TASM 130 Sheet Metal Layout: Applied Triangulation 2 Cr

Prerequisite: TASM 120

Covers the development of geometrical elements of structures by the triangulation method of sheet metal layout. Students encounter practical problems requiring development of stretch-outs and making of cardboard or sheet metal models of transition pieces.

WELDING**TAMJ 110 Materials Joining and Fabrication Fundamentals****3 Cr**

Prerequisite: None

Covers adhesion and cohesion fundamentals, equipment, and procedures relative to shielded metal arc welding (SMAW), oxy-fuel soldering (TS) and brazing (TB), gas metal arc welding (GMAW), oxy-fuel cutting (OFC), resistance spot welding (RSW), torch plastic welding, and PVC pipe joining. Topics include oxy-fuel cutting, soldering and brazing theory and practice, AC and DC welding equipment and applications, flat and horizontal welding techniques, arc welding electrodes, and gas metal arc welding principles and practice. Theory and practice of resistance spot welding, torch plastic welding, and plastic pipe joining are covered. This course is an 85-percent hands-on laboratory experience.

TAMJ 112 Creative Metals I**NEW COURSE****3 Cr**

Prerequisite: None

An introductory course in welding and metal forming. The focus is on the safety, the introduction of metal forming with Oxy/Fuel torch and Plasma Arc cutting, and the metal joining processes of Oxy/Fuel welding, SMAW stick welding, GMAW wire feed welding, and GTAW arc welding. The safety and use of shop tools will be covered.

TAMJ 115 Advanced Materials Joining and Fabrication**2 Cr**

Prerequisite: TAMJ 110

Extends skill development of shielded metal arc and gas metal arc welding (SMAW & GMAW), and gas and electric arc cutting. This course continues to build on the structure of cohesion, cutting theory, and the transfer of knowledge to shop applications for people who will use these processes in their work. It is an 85-percent hands-on laboratory experience.

TAMJ 116 Creative Metals II**NEW COURSE****3 Cr**

Prerequisite: TAMJ 112

An advanced course in welding and metal forming. The focus is on the safety, the advanced techniques of metal forming with Oxy/Fuel torch and Plasma Arc cutting, the metal joining processes of Oxy/Fuel welding, SMAW stick welding, GMAW wire feed welding, and GTAW arc welding, and how to use these techniques in a creative way.

TAMJ 120 Materials Joining and Fabrication: GTAW/GMAW Techniques**2 Cr**

Prerequisite: TAMJ 110

Covers the theoretical knowledge as well as manipulative skills needed to utilize inert arc welding equipment. Topics include inert arc welding equipment; gas tungsten arc welding (GTAW); gas metal arc welding (GMAW); special welding processes; mechanical testing of welds; metal surfacing; and welding in flat, horizontal, and vertical positions. This course is a 90-percent hands-on laboratory experience.

TAMJ 125 MJ&F: ASME Pipe and Pressure Vessel Welding**2 Cr**

Prerequisite: TAMJ 115

Provides, in a preparatory fashion, the theoretical knowledge and the practice for skill development for people interested in becoming welders qualified by the American Society of Mechanical Engineers (ASME). Topics include procedures in setup, welding, electrodes, and the ASME test. This is a 95-percent hands-on laboratory course.

TAMJ 145 MJ&F: Advanced Gas Torch Techniques**2 Cr**

Prerequisite: TAMJ 115

An advanced course designed to increase oxy-fuel gas torch techniques and procedures used in welding, brazing, and soldering. Topics include preparation of gray iron castings with process procedures for welding and brazing, welding of wire rope/cable, silver brazing of stainless steel, and oxy-acetylene welding of thin wall/small diameter steel pipe and pressure vessels. This course is a 95-percent hands-on experience.

TAMJ 230 MJ&F: ASME Pipe and Pressure Vessel Certification**2 Cr**

Prerequisite: TAMJ 125 or Permission

Designed for people experienced in all-position shielded metal arc welding who wish to acquire American Society of Mechanical Engineers (ASME) qualification papers. All welding test procedures conform to the ASME standards. Submitting test specimens to the local materials laboratory, an optional segment of the course, requires an additional fee.

TAMJ 235 MJ&F: GTAW And GMAW Certification**2 Cr**

Prerequisite: TAMJ 120, TAMJ 125

Prepares students to become certified in all-position Gas Tungsten Arc Welding (GTAW) and/or Gas Metal Arc Welding (GMAW) in accordance with the standards of the American Society of Mechanical Engineers (ASME) or the American Welding Society (AWS). Submitting test specimens to a licensed local materials laboratory is optional and requires an additional fee. This is a 95-percent hands-on laboratory course.

TAMJ 240 MJ&F: Tool And Die Welding**3 Cr**

Prerequisite: TAMJ 120 or Permission

A study of cast iron and alloy steels used in the tool and die industry, the effects of the alloys on tools and dies, and successful use of the welding process. Skill development in welding and repair of these cast irons and steels incorporate SMAW, GMAW, and GTAW processes. This is a 70-percent hands-on laboratory course.

TRADE AND APPRENTICE CROSS OVER LIST

New Number	Course Title	Old Number	New Number	Course Title	Old Number
TADV 060	BASIC SKILLS FOR THE SKILLED TRADES	TAE 060	TAPP 100	FUNDAMENTALS OF PLUMBING & PIPEFITTING	TAE 405
TADV 100	PRINT READING FUNDAMENTALS	TADV 090	TAPP 110	DRAINS, WASTE AND VENTS	TAE 415
TAMA 110	INDL APP'S OF BASIC MATH PRINCIPLES	TAE 110	TAPP 120	HEATING SYSTEMS	TAE 425
TAMA 115	METRIC SYSTEM AND CONVERSIONS	TAE 115	TAPP 250	PLUMBING CODE	TAE 430
TAMA 120	INDL APPLICATIONS OF ALGEBRAIC PRIN	TAE 120	TAFP 150	FLUID POWER SYSTEMS	TAE 450
TAMA 130	INDUSTRIAL APPL OF GEOMETRIC PRINC	TAE 130	TAFP 260	FLUID POWER SYSTEMS-ADVANCED	TAE 460
TAMA 200	INDL APPL OF TRIGONOMETRIC PRINC	TAE 140	TAFP 270	FLUID POWER TROUBLESHOOTING	TAE 470
TAIM 200	IND'L APPL OF STRENGTH OF MAT'LS I	TAE 150	TAFP 280	APPLIED ELECTROHYDRAULICS	TAE 480
TAMT 260	GEARING	TAE 160	TAFP 160	PNEUMATIC POWER & CONTROL	TAE 490
TAGD 110	BASIC SHAPE AND SIZE INTERPRETATION	TAE 210	TAMJ 110	MAT'L'S JOINING & FABRICATION FUNDA.	TAE 510
TAMT 115	MAINTENANCE TRADES PRINT READING	TAE 215	TAMJ 112	CREATIVE METALS I	<u>NEW</u>
TAGD 120	ADVANCED GRAPHIC INTERPRETATION	TAE 220	TAMJ 115	ADV MAT'LS JOINING & FABRICATION	TAE 515
TAMT 123	MAINT PRTRD-STR STEEL AND CONVEYORS	TAE 223	TAMJ 116	CREATIVE METALS II	<u>NEW</u>
TAMT 126	MAINT PRINTREADING: PLANT LAYOUT	TAE 226	TAMJ 120	Welding & FAB (GTAW/GMAW)	TAE 520
TAGD 130	ASSEMBLY DETAILING	TAE 230	TAMJ 125	ASME PIPE&PRESSURE VESSEL WELDING	TAE 525
TAGD 140	COMPOUND ANGLES & ADV PROJECTION	TAE 240	TAMJ 230	ASME PIPE & PRESSURE VESSEL CERT	TAE 530
TAGD 150	TOOL JIG & FIXTURE DESIGN	TAE 250	TAMJ 235	GTAW & GMAW CERTIFICATION	TAE 535
TAGD 155	GAGE CAM LAYOUT & FIXTURE	TAE 255	TAMJ 240	MAT'L'S JOINING & FABRICATION: TOOL AND DIE WELDING	TAE 540
TAGD 160	PRESS WORKING FUNDAMENTALS	TAE 260	TAMJ 145	ADVANCED GAS TORCH TECHNIQUES	TAE 545
TAGD 165	CUTTING AND FORMING DIES	TAE 265	TAMT 110	MECHANICAL POWER TRANSMISSION	TAE 610
TAGD 171	DESCRIPTIVE GEOMETRY: LINES & PLANES	TAE 271	TAMT 200	PREDICTIVE MAINT-SHAFT ALIGNMENT	TAE 620
TAGD 172	DESCRIPTIVE GEOMETRY: PLANES,SOLIDS	TAE 272	TAMT 210	PREDICTIVE MAINT-VIBRATION ANALYSIS	TAE 630
TASM 100	BASIC SHEETMETAL LAYOUT&FABRICATION	TAE 274	TAMT 220	ADVANCED RIGGING	TAE 640
TASM 120	SHEET METAL LAYOUT-RAD & TRIANGULAT	TAE 275	TAFD 112	CONSTRUCTION BLUEPRINT READING	<u>NEW</u>
TASM 130	SHEET METAL LAYOUT-APP TRIANGULAT	TAE 276	TAFD 115	COMPUTER APPL. FOR SKILLED TRADES	TAE 715
TAGD 280	PANEL TIPPING	TAE 280	TAFD 120	INDUSTRIAL SAFETY AWARENESS	TAE 720
TAGD 290	AUTOMOTIVE BODY	TAE 290	TAFD 130	INDL APPLICATIONS OF PHYSICAL SCI	TAE 730
TAEL 102	DC AND AC ELECTRICITY	TAEL 103	TAIM 100	INDUSTRIAL MATERIALS	TAE 740
TAEL 105	AC THEORY AND EQUIPMENT	TAE 315	TAFD 150	APPLIED TECHNOLOGY	TAE 750
TAEL 145	DC AND AC MOTORS	TAE 320	TAMN 100	SHOP TOOLS AND TECHNIQUES	TAE 810
TAEL 200	LADDER DIAGRAMS & MOTOR CONTROLS	TAE 325	TAMN 120	MACHINE TOOL APPLICATIONS	TAE 820
TAEL 106	ELECTRONICS THEORY	TAE 330	TAMN 130	ADVANCED MANUFACTURING PROCESSES	TAE 830
TAEL 115	DIGITAL THEORY	TAE 335	TAMN 200	NUMERICAL CONTROL FUNDAMENTALS	TAE 840
TAEL 280	LOW VOLTAGE & COMMUNICATION WIRING	TAE 340	TAMN 220	ADVANCED CNC TECHNIQUES	TAE 845
TAEL 265	NATIONAL ELECTRICAL CODE	TAE 345	TAPI 105	INDUSTRIAL AND PNEUMATIC CONTROLS	TAE 905
TAEL 205	INDUSTRIAL ELECTRONIC CONTROLS	TAE 350	TAPI 120	INSTRUMENTATION PRINT READING	TAE 920
TAEL 245	PROGRAMMABLE LOGIC CONTROLLERS	TAE 355	TASM 110	SHEET METAL - BLANK DEVELOPMENT	RTI 1457
TAEL 260	ROBOTICS AND AUTOMATION	TAE 360	TAMN 125	LATHE, SHAPER, AND MILL WITH LABORATORY	RTI 3112
TAEL 150	DC MOTORS AND CONTROLS	TAE 365	TAMN 135	JIG BORE AND GRINDER WITH LABORATORY	RTI 3113
TAEL 270	INDUSTRIAL & COMMERCIAL WIRING	TAE 370	TAMN 280	FOUNDRY PROCEDURES & PRACTICES	RTI 3325
TAEL 275	RESIDENTIAL WIRING	TAE 375	TAMN 285	JOB MOLD & COREMAKING PRACTICES	RTI 3335
TAEL 278	NEC REVIEW AND LICENSE TEST PREP	<u>NEW</u>	TAMN 290	WOOD PATTERNMAKING TOOLS & MATERIAL	RTI 3315
TAEL 285	INDUSTRIAL TRUCK CONTROLS	TAE 385			
TAEL 290	HIGH VOLTAGE POWER DISTRIBUTION	TAE 390			
TAEL 295	MICROPROCESSORS	TAE 295			

CURRICULUM

CERTIFICATE TRAINING PROGRAMS

Students interested in enrolling in any of the courses listed below or for any certificate program (except Welding) who are not currently enrolled in a company-sponsored apprenticeship program, must take the Reading Placement Test and the Math Placement Test in the Counseling Department.

To be eligible for enrollment in these certificate programs, students must score high enough on the Reading Placement Test to be placed above English-081 Developmental College Reading. Students scoring below English-081 will be required to complete English-081 and need a grade of "S" prior to enrolling in any TAE certificate program (except Welding).

To be eligible for enrollment in TAMA-110, students must score high enough to be placed in Math-100 or above. Anyone placing below Math-100 must successfully complete the identified level prior to being enrolled in TAMA-110.

Advanced Pathways

The Advanced Pathways in Educational Career Excellence certificate program is intended to develop the basic foundation skills necessary to pass employer delivered selection tests and prepare students for employment in apprenticeship programs.

The sequence of classes shown below (Figure 1) has been set to allow students to successfully complete this series of classes in one year while working part or full-time. The order in which the classes are taken has a logical pattern, building skills as the classes progress. This particular series of classes, when completed successfully, will provide the student with a certificate of completion of the Henry Ford Community College Advanced Pathways Program.

If a student chooses, extra classes may be taken in any semester to accelerate his or her progress through the program. When this is done, pre-requisites must be observed. It is recommended, however, that a student not enroll for more than nine (9) credit hours in a semester if he or she is working full-time.

Industrial Distribution Certificate - Business Concentration

Industrial distributors are highly trained and educated professionals who help their manufacturing and service customers to analyze and solve their most challenging demands. Distributors service the industrial market by providing a variety of products, including electronics/electric, power transmission/motion control, plastics, gases/welding supplies, machine/cutting tools, cleaning solvents, and more. Gain the skills you need to excel as an industrial distributor and position yourself for a professional career in a fast-paced environment with great potential for growth, dedicated to helping customers keep their businesses running cost efficiently.

BCA 140	Microcomputer Applications for Business	3 Cr
BBA 131	Introduction to Business	4 Cr
BBA 133	Business Behavior and Communication	3 Cr
BBA 155	Customer Service and Salesmanship	3 Cr
BBA 157	Call Center/Help Desk Practicum	1 Cr
BBA 232	Business Office Communication	4 Cr
BCA 101	Computer Keyboarding	3 Cr
	(Or documented proficiency in computer keyboarding)	
BMA 110	Business Math	3 Cr
BBA 161	Intro to Industrial Distribution	1 Cr

Total Credit Hours 24/27
(27 with BCA 101)

Figure 1

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 150	Applied Technology	3	45
2	TADV 100	Print Reading Fundamentals	2	30
	TAMA 120	Industrial Application of Algebraic Principles	3	45
	TAFD 120	Industrial Safety Awareness	2	30
3	TAEL 102	DC and AC Electricity	3	45
	TAMN 100	Shop Tools and Techniques	3	45
Total Hours			20	300

Industrial Distribution Certificate - Technical Concentration

Take your industrial distribution career to the next level as a technical representative. Combining product specification and application with customer service, this is a rewarding and challenging career for those with both technical aptitude and an interest in sales.

TAMA 110	Industrial Applications of Basic Math	2 Cr
TADV 100	Print Reading Fundamentals	2 Cr
Or		
TAGD 110	Basic Shape and Size Interpretation	3 Cr
TAFD 120	Industrial Safety Awareness	2 Cr
TAMA 120	Industrial Applications of Algebraic Principles	3 Cr
TAFD 150	Applied Technology	3 Cr
TAMN 100	Shop Tools and Techniques	3 Cr

Select four credits from the following: TAEL 102, TAMT 110, TAIM 100, TAFP 150, TAMT 200

Total Credit Hours 22

Renewable Energy Certificate

The Trade and Apprentice Education Division of Henry Ford Community College is excited to present this new program, a ten-credit hour Renewable Energy Certificate. The content of the courses will be structured to inform the student of both present and upcoming concepts in renewable energy. This certificate should interest students who are looking for an alternative to the current reliance on fossil fuels.

REEN 101	Fundamentals of Renewable Energy	2 Cr
REEN 110	Geothermal Systems and Water Furnace Technology	2 Cr
REEN 120	Wind, Solar, and Fuel Cell Technology	2 Cr
REEN 130	Smart Home Control Technology	2 Cr
REEN 140	Co-Generation and Back-Up Power	2 Cr

Total Hours 10 Cr.

Welding and Fabrication Basic Certificate

The manufacturing and service industries use welding as a means to build and repair products. The courses included in this certificate focus on the skills needed in Electric Arc Welding, MIG Welding, and Oxygen Fuel Gas Cutting. You will learn to weld in all four positions (flat, horizontal, vertical and overhead) using the latest technology and equipment. Upon successful completion of this certificate, you will have the skills necessary for a job entry position.

TADV 100	Print Reading Fundamentals	2 Cr
TAMJ 110	Materials Joining and Fabrication Fundamentals	3 Cr
TAMJ 115	Advanced Materials Joining and Fabrication	2 Cr
TAMJ 145	Advanced Gas Torch Techniques	2 Cr

Total Credit Hours 9 Cr

Welding and Fabrication GTAW/GMAW Certificate

The courses in this program extend your skills learned in the Welding and Fabrication Basic Certificate to include one of the most advanced welding techniques required in the manufacture and repair of products made from materials requiring special fabricating procedures. The skills acquired will enable you to pursue welding jobs that require advanced knowledge and skills with higher pay.

* TADV 100	Print Reading Fundamentals	2 Cr
* TAMJ 110	Materials Joining and Fabrication Fundamentals	3 Cr
* TAMJ 115	Advanced Materials Joining and Fabrication	2 Cr
* TAMJ 145	Advanced Gas Torch Techniques	2 Cr
TAMJ 120	Materials Joining and Fabrication: GTAW/GMAW	2 Cr
TAFD 150	Applied Technology	3 Cr

Total Credit Hours 14 Cr

* Courses carry over from the Welding and Fabrication Basic Certificate.

Welding and Fabrication: Tool and Die Welding Certificate

The courses in this certificate extend the knowledge and skill development learned in the two previous certificates. The courses cover a highly specialized area in welding concerning alloys, steels, and cast irons that are used in the tool and die industries. All manufacturing and service companies require tooling and dies that perform specific functions. These objects require special materials for their construction and require sophisticated welding procedures to ensure successful production and repair.

* TADV 100	Print Reading Fundamentals	2 Cr
* TAMJ 110	Materials Joining and Fabrication Fundamentals	3 Cr
* TAMJ 115	Advanced Materials Joining and Fabrication	2 Cr
* TAMJ 145	Advanced Gas Torch Techniques	2 Cr
** TAMJ 120	Materials Joining and Fabrication: GTAW/GMAW	2 Cr
** TAFD 150	Applied Technology	3 Cr
TAMJ 240	Materials Joining and Fabrication: Tool and Die	3 Cr
TAIM 100	Industrial Materials	3 Cr

Total Credit Hours **20 Cr**

* Courses carry over from Welding and Fabrication Basic Certificate.

** Courses carry over from Welding and Fabrication: GTAW/GMAW Certificate.

Welding and Fabrication Welder Certificate with Certification

The courses in this certificate will aid in developing the necessary skills for people interested in becoming welders qualified in a specific welding area. Such welders are known as Certified Welders. The two primary agencies used by welders for certification are the American Society of Mechanical Engineers (ASME) and the American Welding Society (AWS). You will perform the qualifying procedures in the college welding labs, and when completed, your test pieces will be processed at a local private testing lab.

* TADV 100	Print Reading Fundamentals	2 Cr
* TAMJ 110	Materials Joining and Fabrication Fundamentals	3 Cr
* TAMJ 115	Advanced Materials Joining and Fabrication	2 Cr
* TAMJ 145	Advanced Gas Torch Techniques	2 Cr
** TAMJ 120	Materials Joining and Fabrication: GTAW/GMAW	2 Cr
** TAFD 150	Applied Technology	3 Cr
*** TAMJ 240	Materials Joining and Fabrication: Tool and Die	3 Cr
*** TAIM 100	Industrial Materials	3 Cr
TAMJ 125	Materials Joining and Fabrication: ASME Pipe and Pressure Vessel	2 Cr
TAMJ 230	Materials Joining and Fabrication: ASME Pipe and Pressure Vessel Certification	2 Cr
TAMJ 235	Materials Joining and Fabrication: GTAW/GMAW Certification	2 Cr

Total Credit Hours **26**

* Courses carry over from Welding and Fabrication Basic Certificate.

** Courses carry over from Welding and Fabrication: GTAW/GMAW Certificate.

*** Courses carry over from Welding and Fabrication Tool and Die Welding Certificate.

Associate Degree Programs

Three Associate in Applied Science Degree programs are available for those who have successfully completed the requirements of an industrial apprenticeship program registered with the Bureau of Apprenticeship and Training, U.S. Department of Labor, or a bona-fide program recognized by Henry Ford Community College.

The degrees granted are:

Associate in Applied Science - Manufacturing Trades
Associate in Applied Science - Plant Maintenance Trades
Associate in Applied Science - Building Construction Trades

Information regarding Associate in Applied Science degrees can be obtained in the Trade and Apprentice Education Office, T-115.

Articulation Agreements

Information regarding application of Trade and Apprentice credits toward a Bachelor's Degree can be obtained in the Trade and Apprentice Education Office, T-115.

SKILLED TRADES APPRENTICESHIP PROGRAMS

Sample curricula for a variety of skilled trades apprenticeship programs are shown on the pages that follow. These curricula are recommended to meet the related instruction requirements for apprenticeship programs that are registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training. However, since apprenticeship programs are employer-based training programs, they must meet the specific training requirements of each employer. Therefore, the curricula may be modified as necessary.

Typical Skilled Trades Apprenticeship programs consist of 8,000 hours. Programs must meet the minimum related instruction contact hour requirement of 576 hours (144 hours per year) as established by the Bureau of Apprenticeship and Training. You will receive a program certificate for a generic program after the completion of 576 contact hours. Any combination of classes from both the suggested program list or the optional classes list will satisfy this requirement. Totals for credit hours and contact hours are shown in the Total Hours row.

AUTOMOTIVE / TRUCK MECHANIC

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	AUTO 100	Internal Combustion Engines	3	92
3	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	AUTO 120	Fuel Management Systems	2	62
4	AUTO 110	Automotive Electricity	3	92
5	AUTO 140	Automotive Transmission	3	92
6	AUTO 160	Chassis Units	2	62
	AUT 130	Auto Ignition Systems	2	32
7	AUTO 150	Diagnosis & Engine Evaluation	2	62
	AUT 230	Automotive Diesel Principles	2	32
Total Hours:			28	661

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAGD 110	Basic Shape & Size Interpretation	3	45
TAEL 102	DC and AC Electricity	3	45
TAEL 106	Electronics Theory	4	60
TAFP 150	Fluid Power Systems	4	60
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMT 220	Advanced Rigging	2	30
AUTO 187	Automotive Engine Tune Up	2	32
AUTO 227	Automotive Air Conditioning	2	32
AUTO 142	Electronically Controlled Transmissions/Transaxles	2	32
AUTO 237	Computerized Engine/Vehicle Emission Control Systems	2	32
HPE 142	Advanced First Aid	3	47

DIE MAKER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAGD 120	Advanced Graphic Interpretation	3	45
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAGD 130	Assembly Detailing	2	30
5	TAGD 140	Advanced Projection/Compound Angles	3	45
	TAMN 100	Shop Tools and Techniques	3	45
6	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
	TAMN 120	Machine Tool Applications	2	30
	TAMT 220	Advanced Rigging	2	30
7	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
	TAMN 130	Advanced Manufacturing Processes	2	30
	TAGD 160	Press Working Fundamentals	2	30
8	TAIM 100	Industrial Materials	3	45
	TAMN 200	Numerical Control Fundamentals	2	30
9	TAGD 280	Panel Tipping	2	30
	TAMN 220	Advanced CNC Techniques	2	30
	TAGD 165	Cutting and Forming Dies	3	45
Total Hours			53	795

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAGD 290	Automotive Body	2	30
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 120	Materials Joining and Fabrication (GTAW/GMAW) Techniques	2	30
TAMJ 240	MJ&F: Tool and Die Welding	2	30
MPS 120	Practical Problems in Machine Tool I (MET120)	4	62
MPS 125	Practical Problems in Machine Tool II (MET 125)	4	62
HPE 142	Advanced First Aid	3	47

ELECTRICIAN / COMMERCIAL & RESIDENTIAL

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAFD 120	Industrial Safety Awareness	2	30
	TAMA 110	Incl Applications of Basic Math Principles	2	30
2	TAEL 102	DC and AC Electricity	3	45
	TAMA 120	Incl Applications of Algebraic Principles	3	45
3	TAEL 105	AC Theory and Equipment	4	60
	TAFD 115	Computer Applications for Skilled Trades	2	30
4	TAEL 145	DC and AC Motors	4	60
	TAEL 280	Low Voltage and Communication Wiring	2	30
5	TAEL 200	Ladder Diagrams and Motor Controls	4	60
	TAEL 290	High Voltage Power Distribution	2	30
6	ACT 110	Basic Architectural Drafting	3	77
7	TAEL 270	Industrial and Commercial Wiring	2	30
	TAEL 275	Residential Wiring	2	30
8	TAEL 278	NEC Review and Journeyman Test Preparation	3	45
Total Hours:			38	602

Optional Courses:

HPE 142	Advanced First Aid	3	47
TAEL 106	Electronics Theory	4	60
TAEL 115	Digital Theory	2	30
TAEL 205	Industrial Electronic Controls	2	30
TAEL 245	Programmable Logic Controllers	4	60
TAEL 260	Robotics and Automation	4	60
TAEL 295	Microprocessors	2	30
TAFD 130	Incl Applications of Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAFP 150	Fluid Power Systems	4	60
TAFP 160	Pneumatic Power/Pneumatic Control	4	60
TAMA 115	Metric Systems and Conversions	2	30
TAMA 130	Industrial Application of Geometric Principles	2	30
TAMA 200	Industrial Application of Trigonometry Principles	3	45
TAMJ 110	Materials Joining and Fabrication Fundamentals	3	45
TAMN 100	Shop Tools and Techniques	3	45
TAMT 110	Mechanical Power Transmission	2	30
TAMT 200	Predictive Maintenance - Shaft Alignment	2	30
TAMT 210	Predictive Maintenance Vibration Analysis	2	30
TAMT 220	Advanced Rigging	2	30
REEN 101	Fundamentals of Renewable Energy	2	30
REEN 110	Geothermal Systems and Water Furnace Technology	2	30
REEN 120	Wind, Solar and Fuel Cell Technology	2	30
REEN 130	Smart Home Control Technology	2	30
REEN 140	Co-Generation and Back-up Power	2	30

ELECTRICIAN / INDUSTRIAL

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
	TAMA 110	Industrial Applications of Math Principles	2	30
2	TAEL 102	DC and AC Electricity	3	45
	TAMA 120	Industrial Applications of Algebraic Principles	3	45
3	TAEL 105	AC Theory and Equipment	4	60
	TAEL 115	Digital Theory	2	30
4	TAEL 106	Electronics Theory	4	60
	TAEL 145	DC and AC Motors	4	60
5	TAEL 200	Ladder Diagrams and Motor Controls	4	60
	TAEL 205	Industrial Electronic Controls	2	30
6	TAEL 245	Programmable Logic Controllers	4	60
	TAEL 280	Low Voltage and Communication Wiring	2	30
7	TAEL 260	Robotics and Automation	4	60
	TAEL 290	High Voltage Power Distribution	2	30
8	TAEL 270	Industrial and Commercial Wiring	2	30
	TAEL 278	NEC Review and Journeyman Test Preparation	3	45
Total Hours:			49	735

Optional Courses:

HPE 142	Advanced First Aid	3	47
TAEL 150	DC Motors and Controls	2	30
TAEL 275	Residential Wiring	2	30
TAEL 295	Microprocessors	2	30
TAFD 130	Individual Applications of Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAFP 150	Fluid Power Systems	4	60
TAFP 160	Pneumatic Power/Pneumatic Control	4	60
TAGD 110	Basic Shape and Size Interpretation	3	45
TAMA 115	Metric Systems and Conversions	2	30
TAMA 130	Industrial Application of Geometric Principles	2	30
TAMA 200	Industrial Application of Trigonometry Principles	3	45
TAMJ 110	Material's Joining and Fabrication Fundamentals	3	45
TAMN 100	Shop Tools and Techniques	3	45
TAMT 110	Mechanical Power Transmission	2	30
TAMT 115	Maintenance Trades Print Reading	3	45
TAMT 200	Predictive Maintenance - Shaft Align	2	30
TAMT 210	Predictive Maintenance - Vibration Analysis	2	30
TAMT 220	Advanced Rigging	2	30
REEN 101	Fundamentals of Renewable Energy	2	30
REEN 110	Geothermal Systems and Water Furnace Technology	2	30
REEN 120	Wind, Solar and Fuel Cell Technology	2	30
REEN 130	Smart Home Control Technology	2	30
REEN 140	Co-Generation and Back-up Power	2	30

INDUSTRIAL HYDRAULICS

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAGD 110	Basic Shape & Size Interpretation	3	45
	TAMA 120	Industrial Applications of Algebraic Principles	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAFP 150	Fluid Power Systems	4	60
4	TAFP 260	Fluid Power Systems - Advanced	4	60
	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
5	TAFP 270	Fluid Power Systems - Troubleshooting	4	60
	TAEL 102	DC and AC Electricity	3	45
6	TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
	TAFP 280	Applied Electrohydraulics	3	45
7	TAFP 160	Pneumatics	4	6
Total Hours			42	630

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAIM 100	Industrial Materials	3	45
TAEL 105	AC Theory and Equipment	4	60
TAMT 110	Mechanical Power Transmission	2	30
TAMT 200	Shaft Alignment	2	30
TAMT 210	Predictive Maintenance Vibration Analysis	2	30
TAMT 220	Advanced Rigging	2	30
TAMN 100	Shop Tools and Techniques	3	45
HPE 142	Advanced First Aid	3	47

INDUSTRIAL TRUCK REPAIR

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAEL 102	DC and AC Electricity	3	45
	TAMA 120	Industrial Applications of Algebraic Principles	3	45
3	TAEL 150	DC Motors and Controls	2	30
	TAEL 200	Ladder Diagrams and Motor Controls	4	60
4	TAEL 106	Electronics Theory	4	60
	TAMN 100	Shop Tools and Techniques	3	45
5	AUTO 100	Internal Combustion Engines	3	92
6	AUT 230	Auto Diesel Principles	2	32
	TAFP 150	Fluid Power Systems	4	60
7	TAFP 260	Fluid Power Systems - Advanced	4	60
	TAEL 285	Industrial Truck Controls	2	30
Total Hours			39	634

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAIM 100	Industrial Materials	3	45
TAGD 110	Basic Shape & Size Interpretation	3	45
TAEL 105	AC Theory and Equipment	4	60
TAEL 145	DC and AC Motors	4	60
TAEL 115	Digital Theory	2	30
TAEL 205	Industrial Electronic Controls	2	30
TAEL 295	Microprocessors	2	30
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMT 110	Mechanical Power Transmission	2	30
TAMT 200	Shaft Alignment	2	30
TAMT 210	Predictive Maintenance Vibration Analysis	2	30
TAMT 220	Advanced Rigging	2	30
HPE 142	Advanced First Aid	3	47

INSTRUMENTATION

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAEL 102	DC and AC Electricity	3	45
	TAMA 120	Industrial Applications of Algebraic Principles	3	45
3	TAEL 105	AC Theory and Equipment	4	60
	TAFD 130	Applied Industrial Applications of Physical Science	3	45
4	TAPI 105	Introduction to Industrial and Pneumatic Controls	3	45
	TAPI 120	Instrumentation Print Reading	2	30
5	TAEL 106	Semiconductor Electronics	4	60
	ENT 231	Applied Digital Control Systems	3	47
6	ENT 235	Industrial Controls Calibration Techniques	3	47
	TAEL 280	Low Voltage and Communication Wiring	2	30
7	ENT 240	Control Systems - Micro-based	3	47
Total Hours			39	591

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 150	Applied Technology	3	45
TAEL 200	Ladder Diagrams and Motor Controls	4	60
TAEL 115	Digital Theory	2	30
TAEL 265	National Electrical Code	2	30
TAEL 205	Industrial Electronic Controls	2	30
TAEL 245	Programmable Logic Controllers	4	60
TAEL 260	Robotics and Automation	4	60
TAEL 270	Industrial and Commercial Wiring	2	30
TAEL 295	Microprocessors	2	30
ELEC 255	Instrumentation Systems	3	62
ELEC 295	Microprocessor Systems	3	62
HPE 142	Advanced First Aid	3	47

MACHINE REPAIR / MAINTENANCE

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAEL 102	DC and AC Electricity	3	45
	TAMA 120	Industrial Applications of Algebraic Principles	3	45
3	TAEL 105	AC Theory and Equipment	4	60
	TAMT 200	Shaft Alignment	2	30
4	TAEL 145	DC and AC Motors	4	60
	TAMT 210	Predictive Maintenance Vibration Analysis	2	30
5	TAEL 200	Ladder Diagrams and Motor Controls	4	60
	TAFP 150	Fluid Power Systems	4	60
6	TAEL 245	Programmable Logic Controllers	4	60
	TAFP 160	Pneumatics	4	60
7	TAMT 220	Advanced Rigging	2	30
	TAEL 270	Industrial and Commercial Wiring	2	30
Total Hours			44	660

Optional Courses:

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principle	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAIM 100	Industrial Materials	3	45
TAGD 110	Basic Shape & Size Interpretation	3	45
TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
TAEL 106	Semiconductor Electronics	4	60
TAEL 115	Digital Theory	2	30
TAEL 260	Robotics and Automation	4	60
TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
TAFP 260	Fluid Power Systems - Advanced	4	60
TAFP 270	Fluid Power Systems - Troubleshooting	4	60
TAFP 280	Applied Electrohydraulics	3	45
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMN 100	Shop Tools and Techniques	3	45
HPE 142	Advanced First Aid	3	47
TAEL 275	Residential Wiring	2	30
TAEL 278	NEC Review and License Test Preparation	3	45

MACHINE REPAIR / MACHINIST

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAGD 120	Advanced Graphic Interpretation	3	45
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAGD 130	Assembly Detailing	2	30
5	TAMN 100	Shop Tools and Techniques	3	45
	TAGD 140	Advanced Projection/Compound Angles	3	45
6	TAMN 120	Machine Tool Applications	2	30
	TAIM 100	Industrial Materials	3	45
7	TAMN 130	Advanced Manufacturing Processes	2	30
	TAMN 200	Numerical Control Fundamentals	2	30
8	TAMN 220	Advanced CNC Techniques	2	30
	TASM 100	Basic Sheet Metal Layout and Fabrication	3	45
Total Hours			42	630

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMT 260	Gearing	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAGD 171	Descriptive Geometry: Lines and Planes	3	45
TAGD 172	Descriptive Geometry: Planes and Solids	2	30
TAEL 102	DC and AC Electricity	3	45
TAMT 110	Mechanical Power Transmission	2	30
TAMT 200	Shaft Alignment	2	30
TAMT 210	Predictive Maintenance Vibration Analysis	2	30
TAMT 220	Advanced Rigging	2	30
TAFP 150	Fluid Power Systems	4	60
TAFP 160	Pneumatics	4	60
MPS 120	Practical Problems in Machine Tool I	4	62
MPS 125	Practical Problems in Machine Tool I	4	62
HPE 142	Advanced First Aid	3	47

MACHINIST

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAGD 120	Advanced Graphic Interpretation	3	45
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAGD 130	Assembly Detailing	2	30
5	TAMN 100	Shop Tools and Techniques	3	45
	TAGD 140	Advanced Projection/Compound Angles	3	45
6	TAMN 120	Machine Tool Applications	2	30
	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
7	TAMN 130	Advanced Manufacturing Processes	2	30
	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
	TAGD 150	Tool, Jig & Fixture Design	2	30
8	TAMN 200	Numerical Control Fundamentals	2	30
	TAGD 155	Gage, Cam Layout & Fixture Design	2	30
9	TAIM 100	Industrial Materials	3	45
	TAMN 220	Advanced CNC Techniques	2	30
Total Hours			48	720
Optional Courses				
	TAMA 115	Metric System and Conversion	2	30
	TAMT 260	Gearing	2	30
	TAFD 130	Applied Industrial Applications - Physical Science	3	45
	TAFD 150	Applied Technology	3	45
	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
	TAMT 220	Advanced Rigging	2	30
	MPS 120	Practical Problems in Machine Tool I	4	62
	MPS 125	Practical Problems in Machine Tool II	4	62
	MPS 250	Advanced Manufacturing Independent Study	4	62
	HPE 142	Advanced First Aid	3	47

MAINTENANCE

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
	TAMT 110	Mechanical Power Transmission	2	30
4	TAEL 102	DC & AC Electricity	3	45
	TAMT 200	Shaft Alignment	2	30
5	TAMN 100	Shop Tools and Techniques	3	45
	TAMT 210	Predictive Maintenance Vibration Analysis	2	30
6	TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
	TAMT 220	Advanced Rigging	2	30
7	TAFP 150	Fluid Power Systems	4	60
	TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
8	TAFP 160	Pneumatics	4	60
Total Hours			43	645

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAIM 100	Industrial Materials	3	45
TAEL 105	AC Theory and Equipment	4	60
TAEL 145	DC and AC Motors	4	60
TAEL 200	Ladder Diagrams and Motor Controls	4	60
TAFP 260	Fluid Power Systems - Advanced	4	60
TAFP 270	Fluid Power Systems - Troubleshooting	4	60
TAFP 280	Applied Electrohydraulics	3	45
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMN 120	Machine Tool Applications	2	30
HPE 142	Advanced First Aid	3	47

METAL MODEL MAKER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAGD 120	Advanced Graphic Interpretation	3	45
	TAMA 130	Industrial Applications of Geometric Principles	2	30
4	TAGD 130	Assembly Detailing	2	30
	TAMA 200	Industrial Application of Trigonometric Principles	3	45
5	TAGD 140	Compound Angles & Advanced Projection	3	45
	TAIM 100	Industrial Materials	3	45
6	TAMN 100	Shop Tools and Techniques	3	45
	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
7	TAMN 120	Machine Tool Applications	2	30
	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
8	TAMN 130	Advanced Manufacturing Processes	2	30
	TAGD 290	Automotive Body	2	30
9	TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
	TAGD 160	Press Working Fundamentals	2	30
Total Hours			47	705

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAGD 280	Panel Tipping	2	30
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 120	Materials Joining and Fabrication (GTAW/GMAW) Techniques	2	30
TAMT 220	Advanced Rigging	2	30
HPE 142	Advanced First Aid	3	47

METAL PATTERNMAKER**PATTERN MAKER'S ASSOCIATION**

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAGD 120	Advanced Graphic Interpretation	3	45
	TAMA 130	Industrial Applications of Geometric Principles	2	30
4	TAGD 130	Assembly Detailing	2	30
	TAMA 200	Industrial Application of Trigonometric Principles	3	45
5	TAGD 140	Compound Angles & Advanced Projection	3	45
	TAMN 100	Shop Tools and Techniques	3	45
6	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
	TAMN 120	Machine Tool Applications	2	30
7	TAMN 290	Fundamentals of Pattern Making	2	30
	TAMN 130	Advanced Manufacturing Processes	2	30
8	TAMN 200	Numerical Control Fundamentals	2	30
	TAMN 280	Foundry Practice Fundamentals	2	30
Total Hours			41	615

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAGD 172	Descriptive Geometry: Planes and Solids	2	30
TAGD 280	Panel Tipping	2	30
TAGD 290	Automotive Body	2	30
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 120	Materials Joining and Fabrication(GTAW/GMAW)Techniques	2	30
TAMT 220	Advanced Rigging	2	30
TAMN 220	Advanced CNC Techniques	2	30
HPE 142	Advanced First Aid	3	47

MILLWRIGHT

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
	TAMA 130	Industrial Applications of Geometric Principles	2	30
4	TAMT 123	Maintenance Print Reading: Structural Steel & Conveyors	2	30
	TAMT 126	Maintenance Print Reading: Plant Layout	2	30
	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
5	TAMT 110	Mechanical Power Transmission	2	30
	TAMT 260	Gearing	2	30
6	TAMT 200	Shaft Alignment	2	30
	TAMN 100	Shop Tools and Techniques	3	45
7	TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
	TAMT 210	Predictive Maintenance Vibration Analysis	2	30
8	TAIM 100	Industrial Materials	3	45
	TAMT 220	Advanced Rigging	2	30
Total Hours			43	645

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
HPE 142	Advanced First Aid	3	47

PLUMBER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
3	TAPP 110	Drains, Wastes, and Vents	2	30
	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAPP 120	Heating Systems	2	30
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAMN 100	Shop Tools and Techniques	3	45
5	TAPP 250	Plumbing Code	2	30
	TAFP 150	Fluid Power Systems	4	60
6	TAFP 260	Fluid Power Systems - Advanced	4	60
	TAGD 110	Basic Shape and Size Interpretation	3	45
7	TAFP 160	Pneumatics	4	60
	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
Total Hours			44	660

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAEL 102	DC and AC Electricity	3	45
TAFP 280	Applied Electrohydraulics	3	45
TAMJ 110	Materials Joining and Fabrication Fundamentals	3	45
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 125	MJ&F: A.S.M.E. Pipe & Pressure Vessel Welding	2	30
TAMJ 230	MJ&F: A.S.M.E. Pipe Certification	2	30
TAMT 220	Advanced Rigging	2	30
HPE 142	Advanced First Aid	3	47

PLUMBER / PIPE FITTER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
3	TAPP 110	Drains, Wastes, and Vents	2	30
	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAMT 220	Advanced Rigging	2	30
4	TAMJ 110	Materials Joining and Fabrication Fundamentals	3	45
	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
5	TAMJ 115	Advanced Materials Joining and Fabrication	2	30
	TAPP 120	Heating Systems	2	30
6	TAMJ 125	MJ&F: A.S.M.E. Pipe & Pressure Vessel Welding	2	30
	TAGD 110	Basic Shape and Size Interpretation	3	45
7	TAMJ 230	MJ&F: A.S.M.E. Pipe Certification	2	30
	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
8	TAPP 250	Plumbing Code	2	30
	TAFP 150	Fluid Power Systems	4	60
Total Hours			43	660

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAEL 102	DC and AC Electricity	3	45
TAFP 260	Fluid Power Systems - Advanced	4	60
TAFP 270	Fluid Power Systems - Troubleshooting	4	60
TAFP 280	Applied Electrohydraulics	3	45
TAFP 160	Pneumatics	4	60
TAMN 100	Shop Tools and Techniques	3	45
HPE 142	Advanced First Aid	3	47

POWER HOUSE MECHANIC

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
	TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
4	TAEI 102	DC & AC Electricity	3	45
	TAMN 100	Shop Tools and Techniques	3	45
5	ENT 105	Introduction to RACH	2	32
	ENT 141	Power Engineering I - Energy Conversion Fundamentals	2	32
6	ENT 145	Power Engineering II - Boilers and Auxiliaries	4	62
7	ENT 256	Power Engineering III - Steam Plant Operation Lab	4	62
Total Hours			36	548

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAEI 102	DC and AC Electricity	4	60
TAEI 145	DC and AC Motors	4	60
TAEI 200	Ladder Diagrams and Motor Controls	4	60
TAEI 106	Semiconductor Electronics	4	60
TAEI 115	Digital Theory	2	30
TAEI 245	Programmable Logic Controllers	4	60
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
ENT 104	Heating Technology	4	62
ENT 119	Air Conditioning Technology	3	47
ENT 108	Introduction to Heating and Cooling Codes	2	32
ENT 113	Refrigeration Technology	4	62
HPE 142	Advanced First Aid	3	47

REFRIGERATION AND AIR CONDITIONING

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	ENT 103	DC and AC Electricity	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	ENT 105	Introduction to RACH	2	32
4	ENT 104	Heating Technology	4	62
5	ENT 113	Refrigeration Technology	4	62
6	ENT 119	Air Conditioning Technology	3	47
7	ENT 108	Introduction to Heating and Cooling Codes	2	32
	ENT 212	Light Commercial Heating Systems	3	47
8	ENT 216	Light Commercial Refrigeration Systems	3	47
Total Hours			35	539

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAGD 110	Basic Shape and Size Interpretation	3	45
TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
TAEL 105	AC Theory and Equipment	4	60
TAEL 145	DC and AC Motors	4	60
TAEL 200	Ladder Diagrams and Motor Controls	4	60
TAEL 106	Semiconductor Electronics	4	60
TAEL 270	Industrial and Commercial Wiring	2	30
TAEL 265	National Electrical Code	2	30
TAEL 115	Digital Theory	2	30
TAEL 245	Programmable Logic Controllers	4	60
TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMN 100	Shop Tools and Techniques	3	45
HPE 142	Advanced First Aid	3	47
REEN 101	Fundamentals of Renewable Energy	2	30
REEN 110	Geothermal Systems and Water Furnace Technology	2	30
REEN 120	Wind, Solar and Fuel Cell Technology	2	30
REEN 130	Smart Home Control Technology	2	30
REEN 140	Co-Generation and Back-up Power	2	30

SHEET METAL WORKER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
	TAMA 130	Industrial Applications of Geometric Principles	2	30
4	TAMT 123	Maintenance Print Reading: Structural Steel & Conveyors	2	30
	TAMT 126	Maintenance Print Reading: Plant Layout	2	30
	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
5	TASM 100	Basic Sheet Metal Layout and Fabrication	3	45
	TAIM 100	Industrial Materials	3	45
6	TASM 120	Sheet Metal: Radial Line & Triangulation Layout	2	30
	TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
7	TAMJ 115	Advanced Materials Joining and Fabrication	2	30
	TASM 130	Sheet Metal: Triangulation Layout Applied	2	30
	TASM 140	Sheet Metal: Triangulation Shortcuts	2	30
8	TAMT 220	Advanced Rigging	2	30
	TAMN 100	Shop Tools and Techniques	3	45
Total Hours			46	690

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAMJ 125	MJ&F: A.S.M.E. Pipe & Pressure Vessel Welding	2	30
TAMJ 230	MJ&F: A.S.M.E. Pipe Certification	2	30
HPE 142	Advanced First Aid	3	47

STATIONARY STEAM ENGINEERING

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	ENT 103	DC and AC Electricity	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	ENT 105	Introduction to RACH	2	32
4	ENT 104	Heating Technology	4	62
5	ENT 113	Refrigeration Technology	4	62
6	ENT 108	Introduction to Heating and Cooling Codes	2	32
	ENT 141	Power Engineering I - Energy Conversion Fundamentals	2	32
7	ENT 145	Power Engineering II - Boilers and Auxiliaries	4	62
8	ENT 256	Power Engineering III - Steam Plant Operation Lab	4	62
Total Hours			36	569

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMA 130	Industrial Applications of Geometric Principles	2	30
TAMA 200	Industrial Applications of Trigonometric Principles	3	45
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAGD 110	Basic Shape and Size Interpretation	3	45
ENT 101	Introduction to Energy Technology	2	32
TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
TAEL 106	Semiconductor Electronics	4	60
TAEL 115	Digital Theory	2	30
TAPP 100	Fundamentals of Plumbing and Pipefitting	3	45
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMN 100	Shop Tools and Techniques	3	45
HPE 142	Advanced First Aid	3	47
TAEL 105	AC Theory and Equipment	4	60
TAEL 145	DC and AC Motors	4	60
TAEL 200	Ladder Diagrams and Motor Controls	4	60

TOOL & DIE MAKER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAGD 120	Advanced Graphic Interpretation	3	45
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAGD 130	Assembly Detailing	2	30
5	TAGD 140	Advanced Projection/Compound Angles	3	45
	TAMN 100	Shop Tools and Techniques	3	45
6	TAMN 120	Machine Tool Applications	2	30
	TAGD 150	Tool, Jig, and Fixture Design	2	30
	TAMT 220	Advanced Rigging	2	30
7	TAMN 130	Advanced Manufacturing Processes	2	30
	TAGD 155	Gage, Cam Layout & Fixture Design	2	30
	TAGD 160	Press Working Fundamentals	2	30
8	TAMN 200	Numerical Control Fundamentals	2	30
	TAGD 165	Cutting and Forming Dies	3	45
9	TAMN 220	Advanced CNC Techniques	2	30
	TAIM 100	Industrial Materials	3	45
Total Hours			50	750

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAGD 171	Descriptive Geometry: Lines and Planes	3	45
TAGD 172	Descriptive Geometry: Planes and Solids	2	30
TAGD 280	Panel Tipping	2	30
TAGD 290	Automotive Body	2	30
TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 120	Materials Joining and Fabrication (GTAW/GMAW)Techniques	2	30
TAMJ 240	MJ&F: Tool and Die Welding	2	30
MPS 120	Practical Problems in Machine Tool I	4	62
MPS 125	Practical Problems in Machine Tool II	4	62
HPE 142	Advanced First Aid	3	47

TOOL MAKER

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAGD 120	Advanced Graphic Interpretation	3	45
4	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAGD 130	Assembly Detailing	2	30
5	TAGD 140	Advanced Projection/Compound Angles	3	45
	TAMN 100	Shop Tools and Techniques	3	45
6	TAMN 120	Machine Tool Applications	2	30
	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
7	TAMN 130	Advanced Manufacturing Processes	2	30
	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
	TAGD 150	Tool, Jig & Fixture Design	2	30
8	TAMN 200	Numerical Control Fundamentals	2	30
	TAGD 155	Gage, Cam Layout & Fixture Design	2	30
9	TAMN 220	Advanced CNC Techniques	2	30
	TAIM 100	Industrial Materials	3	45
Total Hours			48	720

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAMT 260	Gearing	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAGD 171	Descriptive Geometry: Lines and Planes	3	45
TAGD 172	Descriptive Geometry: Planes and Solids	2	30
TAMT 220	Advanced Rigging	2	30
MPS 120	Practical Problems in Machine Tool I	4	62
MPS 125	Practical Problems in Machine Tool II	4	62
HPE 142	Advanced First Aid	3	47

WELDING

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAGD 110	Basic Shape and Size Interpretation	3	45
	TAMJ 110	Materials Joining & Fabrication: Fundamentals	3	45
3	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAMT 115	Advanced Graphic Interpretation for Maintenance Trades	3	45
	TAMJ 115	Advanced Materials Joining and Fabrication	2	30
4	TAMA 130	Industrial Applications of Geometric Principles	2	30
	TAMJ 120	Materials Joining and Fabrication(GTAW/GMAW)Techniques	2	30
	TAMT 123	Maintenance Print Reading: Structural Steel & Conveyors	2	30
5	TAMA 200	Industrial Applications of Trigonometric Principles	3	45
	TAMJ 235	MJ&F: GTAW & GMAW Certification	2	30
	TAIM 100	Industrial Materials	3	45
6	TAMN 100	Shop Tools and Techniques	3	45
	TAMJ 145	MJ&F: Advanced Gas Welding	2	30
7	TAMJ 125	MJ&F: Welding Certification Preparation	2	30
	TAMT 220	Advanced Rigging	2	30
8	TAMJ 230	MJ&F: A.S.M.E. Pipe Certification	2	30
	TAEL 102	DC and AC Electricity	3	45
Total Hours			47	705

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAFD 150	Applied Technology	3	45
TAMT 126	Maintenance Print Reading: Plant Layout	2	30
TASM 100	Sheet Metal: Parallel & Radial Line Layout	3	45
TAMJ 240	MJ&F: Tool and Die Welding	2	30
HPE 142	Advanced First Aid	3	47

WOOD PATTERNMAKER
PATTERN MAKER'S ASSOCIATION

Semester	Course #	Course Title	Credit Hours	Contact Hours
1	TAMA 110	Industrial Applications of Math Principles	2	30
	TAFD 115	Computer Applications for Skilled Trades	2	30
	TAFD 120	Industrial Safety Awareness	2	30
2	TAMA 120	Industrial Applications of Algebraic Principles	3	45
	TAGD 110	Basic Shape and Size Interpretation	3	45
3	TAGD 120	Advanced Graphic Interpretation	3	45
	TAMA 130	Industrial Applications of Geometric Principles	2	30
4	TAGD 130	Assembly Detailing	2	30
	TAMA 200	Industrial Application of Trigonometric Principles	3	45
5	TAGD 140	Compound Angles & Advanced Projection	3	45
	TAMN 100	Shop Tools and Techniques	3	45
6	TAGD 171	Descriptive Geometry: Lines and Planes	3	45
	TAMN 200	Numerical Control Fundamentals	2	30
7	TAGD 172	Descriptive Geometry: Planes and Solids	2	30
	TAMN 220	Advanced CNC Techniques	2	30
8	TAMN 280	Foundry Practice Fundamentals	2	30
	TAMN 290	Fundamentals of Pattern Making	2	30
Total Hours			41	615

Optional Courses

TAMA 115	Metric System and Conversion	2	30
TAFD 130	Applied Industrial Applications - Physical Science	3	45
TAIM 100	Industrial Materials	3	45
TAFD 150	Applied Technology	3	45
TAGD 290	Automotive Body	2	30
TAMJ 115	Advanced Materials Joining and Fabrication	2	30
TAMJ 120	Materials Joining and Fabrication(GTAW/GMAW)Techniques	2	30
TAMT 220	Advanced Rigging	2	30
HPE 142	Advanced First Aid	3	47

POLICIES AND PROCEDURES

Admission with Advanced Standing

Entering students who wish to receive credit for post-secondary courses satisfactorily completed with a C grade or better outside the Trade and Apprentice Education Division must ask the institutions in which such credits were earned to send official transcripts to:

Associate Dean, Trade and Apprentice Education Division
Henry Ford Community College
5101 Evergreen Road, Room T-115
Dearborn, Michigan 48128-1495

Advanced standing will be granted only to students whose transcripts are received no later than the end of the 10th week of classes following initial enrollment. Students whose transcripts are not received by the deadline and who have temporarily by-passed classes will be scheduled into by-passed classes starting with the second semester of their enrollment. Advanced standings will be evaluated and credited only once. Evaluations are done by appointment only and must be scheduled by calling (313) 845-9609.

Attendance, Tardiness, Absence

Students are expected to attend all sessions of the classes in which they are enrolled. Absences, regardless of reason, are understood but not excused. This includes absences due to late registration. Students who exceed three absences in a class may continue to attend the class but will automatically receive a failing grade. No student who misses the first three sessions of a class will be allowed to continue in that class.

Time involved in arriving late to a class or leaving early is cumulative. Sixty accumulated minutes is the equivalent of one absence. It is the responsibility of students arriving late to a class to notify the instructor of their attendance before leaving the class. Failure to do so may result in a recorded absence.

Cell Phones

The recent changes in cell phone technology and the integration of digital imaging have challenged our efforts to maintain classroom integrity while providing an effective learning environment for students. We have experienced an increase in student use of cell phones and pagers during class that is deemed disruptive to the learning process. Most students are cognizant of proper cell phone/pager etiquette but some choose to ignore the rights of classmates. The technology is capable of storing messages until breaks or after class.

Effective January 1, 2004: The use of cell phones, pagers, digital image capturing devices is prohibited in Trade and Apprentice Education Division classrooms. Violation of policy will result in a recorded absence.

Certificate of Achievement

A "Certificate of Achievement" is available for each student in the Trade and Apprentice Education Division who completes a minimum of 576 contact hours in a specific program of study or meets their employers' specific related instruction course training requirements. All students who are in their last semester of coursework – including those only requiring a letter of completion – should obtain a request form available in the Trade and Apprentice Education office. Complete the form and return it to the Trade and Apprentice Education office. You will be provided with a copy of your degree audit. The form and the degree audit should be taken to the cashier's office. A \$10 fee is required. Please check with your plant Joint Apprenticeship Committee representative or Program Coordinator relative to the completion status of the related training requirements for your company.

Class Cancellations, Instructors, and Meeting Times

The college reserves the right to: (1) cancel any class where enrollment does not justify its existence; (2) change the instructor; (3) change meeting times. The Trade and Apprentice Education Division will, at all times, keep these changes to an absolute minimum.

College Store

The College Store carries textbooks, computer software, supplies, soft goods, and miscellaneous items. Staff members are available to answer questions and give assistance. The Store accepts cash, personal checks, and VISA/MC/and Discover, as well as HFCC Gift Certificates. Orders are also accepted on-line. Check out the College Store website at www.hfcc.edu/collegestore or pick up a Textbook Express order form at the College Store, Welcome Centers, Registration & Records or the Cashier's Office. For College Store hours call (313) 845-9603.

For College Store Return Policy and Book Buy Back Policy, check the general college catalog.

Computer Literacy Requirement

The degree requirement of basic computer literacy can be satisfied by successful completion of a College approved course in which the computer literacy outcomes are embedded or by passage of a computer literacy test. Specific information about the competency is included in the general college catalog. The Trade and Apprentice Education Division offers a College approved course that meets the requirement, TAFD 115–Computer Applications for Skilled Trades.

Course Prerequisites

Most courses have prerequisites or co-requisites. Both have been established to ensure that students are adequately prepared to take a particular course. It is the responsibility of the student to make sure that prerequisites have been met. WebAdvisor will not allow a student to register for a class if the prerequisites have not been met. In some cases, the prerequisite may be waived, but the waiver can only be provided by the lead faculty in the instructional area. A signature will be required.

Dropping a Class

Students must assume responsibility for dropping a class should it be necessary. Drops cannot be processed by phone. They must be done through WebAdvisor or by securing the appropriate form from the Trade and Apprentice Office. A failing grade will be given to any student who does not process an official drop form.

Apprentices who are requesting to drop a class (other than for shift change) must secure written permission from their company representatives. Permission may be faxed or e-mailed by the representative directly to the Trade and Apprentice Office. The permission document will be attached to the drop form completed in the Office.

A grade of DR (dropped without prejudice) is recorded on a student's transcript whenever a class is officially dropped before the end of the 10th week of the semester. If a class is dropped after the 10th week, the Grade E or DR will be recorded at the discretion of the instructor.

Grading Scale

The Trade and Apprentice Education Division has a standard grading scale that applies to all classes taught within the Division.

Grade Percentage

A = 95% - 100%

B = 85% - 94%

C = 75% - 84%

D = 70% - 74%

E = Less than 70%

Immediate Repeating of Failed Courses

Students who are apprentices have the responsibility to immediately repeat failed courses. Students are to reschedule their courses due to failure during open enrollment or during the first week of the new semester. Apprentices financially responsible for failed courses must pay for the repeats at the time of rescheduling.

Payment Terms

Students paying for their own classes are expected to pay for tuition and fees prior to the beginning of the semester. Payment must be made in order to ensure the student's enrollment in registered classes. HFCC accepts cash, checks, MasterCard, Visa, Discover, and official written company authorization for tuition and fee payments. Students wishing to utilize company sponsored Employee Tuition Assistant Plans are required to obtain the necessary forms from their employer. Checks returned to the College for insufficient funds will result in a charge of \$20 for each check returned and may result in the student being dropped from classes.

Probation and Dismissal Policy

Apprentices and trainees enrolled in the Trade and Apprentice Education Division whose cumulative grade point average (GPA) is below these levels will be placed on academic probation:

Amount of Credits	GPA should be above
5-11 credits.....	1.50
12-19 credits.....	1.75
20-28 credits.....	1.85
29-and more credits.....	2.00

Students will be notified of their probationary status by letter directing them to meet with a designated Trade and Apprentice Education Division representative who will assist them in developing an appropriate educational plan before being permitted to register for the next semester.

Based on his or her assessment of each student's needs, the designated Trade and Apprentice Education Division representative may require enrollment in the tutorial program before releasing the student to register. Students may appeal the decision, in writing, to the Associate Dean. Returning probationary students who have not enrolled for one or more semesters will be permitted to register only after meeting with a designated Trade and Apprentice Education Division representative

Students on probation who have attempted more than 28 hours will be dismissed from the college for one full semester (Fall, Winter or Summer) unless they maintain a per semester GPA of 2.0 or above. Students on probation who are placed on academic dismissal, if currently enrolled, will be permitted to complete the semester, but will not be pre-enrolled and cannot register for the following semester. Dismissal may be appealed, in writing, to the Associate Dean.

Student appeal letters may be directed to the Associate Dean of Trade and Apprentice Education. In many instances, probation and dismissal letters are unnecessary if a student will petition grade changes for repeated courses as described in REPEATED COURSES.

Tuition Costs							
By Credit Hour		Dearborn Resident	Out of District Resident	Out of State & International Students	Tech. Invest. Fee	Reg. Fee	Service Fee
	1	57.00	112.00	120.00	2.00	36.00	9.00
	2	114.00	224.00	240.00	4.00	36.00	18.00
	3	171.00	336.00	360.00	6.00	36.00	27.00
	4	228.00	448.00	480.00	8.00	36.00	36.00
	5	285.00	560.00	600.00	10.00	36.00	45.00
	6	342.00	672.00	720.00	12.00	36.00	54.00
	7	399.00	784.00	840.00	14.00	36.00	63.00
	8	456.00	896.00	960.00	16.00	36.00	72.00
	9	513.00	1008.00	1080.00	18.00	36.00	81.00
	10	570.00	1120.00	1200.00	20.00	36.00	90.00
	11	627.00	1232.00	1320.00	22.00	36.00	99.00
	12	684.00	1344.00	1440.00	24.00	36.00	108.00
	13	741.00	1456.00	1560.00	26.00	36.00	117.00
	14	798.00	1568.00	1680.00	28.00	36.00	126.00
	15	855.00	1680.00	1800.00	30.00	36.00	135.00
	16	912.00	1792.00	1920.00	32.00	36.00	144.00
	17	969.00	1904.00	2040.00	34.00	36.00	153.00
	18	1029.00	2016.00	2160.00	36.00	36.00	162.00

Repeated Courses

A course for which a failing or passing grade has been recorded may be repeated. The higher grade earned will become the only officially recorded grade after the student completes the Repeated Course Grade Change Request form available in the Trade and Apprenticeship Office.

Transcripts

Official transcripts can be obtained through the Office of the Registrar. A student must complete a Transcript Request Form and pay the necessary fee before the transcript can be mailed. Generally, a copy of the transcript will be mailed within 48 hours. Official transcripts are sent directly to a receiving institution and are not issued to students. A student copy may be issued to a student but will not carry the official College seal. Grade reports and unofficial transcripts are available to students through Web Advisor.

- Technology Investment fee PER CREDIT HOUR..... 2.00
- Lab Tuition..... See class schedule
- Course fees..... See class schedule
- Transcript fee..... 3.00
- Certificate fee..... 10.00
- Graduation fee..... 25.00

** Tuition and fees are subject to change, without notice, by action of the HFCC Board of Trustees.*

Returned Check Fee: \$ 20.00

Tuition Refund Policy

Refunds on tuition and fees (except registration fees) may be obtained on any or all classes dropped according to the following schedule:

- 100% - before the semester begins
- 100% - during the first week of classes
- 50% - during the second week of classes

No tuition refunds are given after the end of the second week of classes. No exceptions are made for students who enter late or for classes dropped, regardless of when a class begins. Courses of other than fifteen-week duration have differing refund schedules. Contact the Trade and Apprenticeship Office for details.

Tuition and Fee Schedule

TUITION AND FEES ARE SUBJECT TO CHANGE WITHOUT NOTICE BY THE BOARD OF TRUSTEES.

- Admission application fee..... \$30.00
- Registration fee (Mandatory and NONREFUNDABLE)..... 36.00
- Tuition per credit hour
 - *Dearborn School District Resident 57.00
 - *Out-of-District Resident: 112.00
 - *Out-of-State/International Students 120.00
- Service fee PER CREDIT HOUR 9.00

Work Shift Change

A student with a work shift change may attend an associated section, if seats are available, for one session without notifying the office. It is the student's responsibility to identify himself/herself to the instructor. Should the shift change last longer than a two-week period, the student must report the change at the Trade and Apprenticeship Office during regular office hours.

Additional Information

Other information, policies, and procedures that apply to all Henry Ford Community College students appear in the general college catalog. Included are:

- Alcoholic Beverages and Illegal Drugs Policy
- Child Activity Center Information
- College Store Return Policy
- Book Buy Back Policy
- Computer Literacy Requirements
- Computer Systems Use Policy
- Financial Aid
- Focus on Women
- Library
- Academic Dishonesty (Cheating) Policy
- Residency Regulations
- Student Complaint Policy
- Student Conduct Policy and Due Process Procedure

Administrative Staff, Support Staff, and Faculty Directory

Administrative Staff

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B.B.A., University of Michigan-Ann Arbor; M.A., Western Michigan University, Ph.D., Wayne State University
Interim Vice President/Dean, Career Education

Robert Morrish, M.S.

B.S., Baker College; M.S., Ferris State University
Associate Dean, Trade and Apprenticeship Education/Technology

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