



DIESEL TECHNOLOGY AS A CAREER

Program Advisor/Instructor, Brion Buisman: (360) 538-4184 or 538-4011
bbuisman@ghc.edu



<http://www.ghc.edu/voc/diesel.pdf>

Students learn by doing, not by listening. Rod McDonald, Welding, 2 February, 2005

DIESEL MECHANICS AS A CAREER

The Diesel Technology program at Grays Harbor College prepares students for a career working as a diesel-powered equipment mechanic on trucks, construction equipment, buses, farm equipment, and some marine engines. Students learn preventive maintenance as well as diesel overhaul and installation procedures. They receive practical work experience by working on vehicles and equipment. Training is geared to provide the basic skills, knowledge, and professional attitude required to eventually become a journey-level diesel mechanic. GHC offers an Associate in Technology Degree in Diesel Technology, as well as several certificates of achievement and certificates of completion in the Diesel Mechanics field. For more information on the Diesel Technology program, contact the instructor, Brion Buisman, at 360-538-4184.

Diesel Technology is becoming more sophisticated and diesel engines increasingly use electronic components to control a growing variety of functions. Knowledge of basic electronics is becoming essential for diesel mechanics to diagnose whether a malfunction is caused by an electronic component or whether it can be traced to another source. A formal diesel mechanic training program is recommended by training authorities for those seeking a Diesel Mechanics job. This provides a foundation in the basics of the latest diesel technology and electronics, and will enable trainees to more quickly master the service and repair of the actual vehicles and equipment encountered on the job. Typical apprenticeship programs for diesel truck and bus mechanics consist of approximately 8,000 hours of practical experience working on transmissions, engines, and other components.

Mechanics advance to increasingly difficult jobs as skills are learned; mastering the repair and service of brakes, diesel engines, transmissions, or electrical systems. Generally, at least 3 to 4 years of on-the-job experience is necessary to qualify as an all-around diesel truck or bus mechanic. Additional training on other components, such as hydraulic systems, may be necessary for mechanics who wish to specialize in other types of diesel equipment.

Employers generally look for applicants who have mechanical aptitude and are in good physical condition. Courses in Diesel Technology, electronics, English, and mathematics provide a good basic educational background for a career as a diesel mechanic. Good reading and basic mathematics skills are needed to study technical manuals to keep abreast of new technology and learn new service and repair procedures and specifications. Employers sometimes send experienced mechanics to special training classes conducted by truck, bus, diesel engine, parts, and equipment manufacturers where they learn the latest technology or receive special training in subjects such as diagnosing engine malfunctions. Mechanics also must read service and repair manuals to keep abreast of engineering changes. Voluntary certification by the National Institute for Automotive Service Excellence (ASE) is recognized as a standard of achievement for diesel mechanics. Mechanics may be certified as Master Heavy-Duty Truck Technician or may be certified in one or more of eight different areas of heavy-duty truck repair: Brakes, gasoline engines, diesel engines, drive trains, electrical systems, preventive maintenance inspection, heating ventilation and A/C, and suspension and steering. For certification in each area, mechanics must pass a written examination and have at least 2 years of experience. High school, vocational or trade school, or community or junior college training in gasoline or diesel engine repair may substitute for up to 1 year of experience. To retain certification, mechanics must retake the tests at least every 5 years.

Most mechanics buy their own hand tools and often have thousands of dollars invested in tools as they gain experience. Experienced mechanics that have leadership ability may advance to shop supervisors or service managers. Mechanics who have sales ability sometimes become sales representatives. A few mechanics open their own repair shops. There are job opportunities for diesel mechanics, both locally and nationally. A state commercial driver's license is needed for test driving trucks or buses on public roads.

Salary Expectations: For job opportunities and salary expectations, please see: <http://www.workforceexplorer.com/>

Funding Opportunity: Students who are interested in completing the Diesel program may qualify for an additional funding option. Please see: <http://ghc.edu/Opportunity> for details.

What Do I Need To Do First? Apply for admission (<https://admissions.ctc.edu/applicant/welcome.cfm>), **request official transcripts from high school, previous colleges or GED certificate** (have them sent directly to GHC), **take the College Placement Test (CPT) by making an appointment at GHC Counseling Center** (360-538-4099 or toll-free 1-800-562-4830), **meet with an entry advisor.**



DIESEL TECHNOLOGY

Associate in Technology Degree

Recommended Preparation for DT programs

Prerequisite requirements must be fulfilled prior to enrollment in most required program courses. Prerequisite requirements are listed together with course titles and descriptions in the general college catalog.

Prerequisite Requirements

Instructor permission is required prior to enrollment in core courses in this program.

Core Courses

		<u>Credits</u>
DT 121	Introduction to Diesel Technology	16
DT 122	Intermediate Diesel Technology	16
DT 123	Advanced Diesel Technology	16
DT 221	Diagnostics, Testing, and Repair	16
DT 222	Advanced Diagnostics, Testing, and Repair	16
DT 223	Certification and Testing	16
	<i>Credits Required</i>	<i>96</i>

Support Courses

WELD 101	Related Welding I	6
	<i>Credits Required</i>	<i>6</i>

General Education Courses

ENGL& 101	English Composition I	5
or		
ENGL 150	Vocational/Technical/Business Writing	5
MATH 100	Vocational/Technical Math (or higher)	5
PSYC& 100	General Psychology	
or		
PSYCH 106	Applied Psychology	3-5
or		
SOC& 101	Introduction to Sociology	
	<i>Credits Required</i>	<i>13-15</i>

Minimum Credits Required

***115 +
3 PE credits***

Grays Harbor College complies with all Federal and State rules and regulations and does not discriminate on the basis of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled or Vietnam era veteran.



DIESEL TECHNOLOGY FUNDAMENTALS

Certificate of Completion

Recommended Preparation for DT programs

Prerequisite requirements must be fulfilled prior to enrollment in most required program courses. Prerequisite requirements are listed together with course titles and descriptions in the general college catalog.

Prerequisite Requirements

Instructor permission is required prior to enrollment in the core courses for this program.

<i>Core Courses</i>	<i>Credits</i>	
DT 121	Introduction to Diesel Technology	16
DT 122	Intermediate Diesel Technology	16
DT 123	Advanced Diesel Technology	16

Credits Required 48

Support Courses

WELD 101	Related Welding I	6
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Credits Required 6

General Education Courses

ENGL& 101	English Composition I	
or		5
ENGL 150	Vocational/Technical/Business Writing	
MATH 100	Vocational/Technical Math (or higher)	5
PSYC& 100	General Psychology	
or		
PSYCH 106	Applied Psychology	3-5
or		
SOC& 101	Introduction to Sociology	

Credits Required 13-15

Minimum Credits Required 67

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ADVANCED DIESEL TECHNOLOGY

Certificate of Completion

Recommended Preparation for DT programs

Prerequisite requirements must be fulfilled prior to enrollment in most required program courses. Prerequisite requirements are listed together with course titles and descriptions in the general college catalog.

Prerequisite Requirements

Instructor permission is required prior to enrollment in the core courses for this program.

<i>Core Courses</i>	<i>Credits</i>	
DT 221	Diagnostics, Testing, and Repair	16
DT 222	Advanced Diagnostics, Testing, and Repair	16
	<i>Credits Required</i>	32

Support Courses

WELD 101	Related Welding I	6
	<i>Credits Required</i>	6

General Education Courses

ENGL& 101	English Composition I	
or		5
ENGL 150	Vocational/Technical/Business Writing	
MATH 100	Vocational/Technical Math (or higher)	5
PSYC& 100	General Psychology	
or		
PSYCH 106	Applied Psychology	3-5
or		
SOC& 101	Introduction to Sociology	
	<i>Credits Required</i>	13-15

Minimum Credits Required 51

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DIESEL TECHNOLOGY – CERTIFICATES OF ACHIEVEMENT LEVELS 1-5

Recommended Preparation for Diesel Technology programs

Prerequisite requirements must be fulfilled prior to enrollment in most required program courses. Prerequisite requirements are listed together with course titles and descriptions in the general college catalog.

Prerequisite Requirements

Instructor permission is required prior to enrollment in each of the core courses for this program.

Typical Student Schedule

All the core Diesel Technology courses are offered each quarter. Students who meet the prerequisites for the individual courses may take them during any quarter (fall, winter, and spring). Upon successful completion of each core course (except for DT 223), students may apply for the corresponding Certificate of Achievement.

Diesel TECHNOLOGY, LEVEL 1 - Certificate of Achievement

Core Courses

DT 121 Introduction to Diesel Technology

Credits

16

Diesel TECHNOLOGY, LEVEL 2 - Certificate of Achievement

Core Courses

DT 122 Intermediate Diesel Technology

Credits

16

Diesel TECHNOLOGY, LEVEL 3 - Certificate of Achievement

Core Courses

DT 123 Advanced Diesel Technology

Credits

16

Diesel TECHNOLOGY, LEVEL 4 - Certificate of Achievement

Core Courses

DT 221 Diagnostics, Testing, and Repair

Credits

16

Diesel TECHNOLOGY, LEVEL 5 - Certificate of Achievement

Core Courses

DT 222 Advanced Diagnostics, Testing, and Repair

Credits

16

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DIESEL TECHNOLOGY PROGRAM COURSE DESCRIPTIONS

DT 121 **16 Credits** **Introduction to Diesel Technology**

Prerequisite: Placement in MATH 060 and ENGL 060; and instructor permission.

A lecture-lab course to provide an introduction to safe shop work practices, work ethics, basic tool use, and introduction to basic mechanical tasks. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

DT 122 **16 Credits** **Intermediate Diesel Technology**

Prerequisite: Completion of DT 121 with a grade of "C" or better.

A lecture-lab course to build upon skills learned in DT 121. The course promotes work habits and safe work practices. Training increases skills and expands tasks learned in DT 121. Projects are completed to industry standards. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

DT 123 **16 Credits** **Advanced Diesel Technology**

Prerequisite: Completion of DT 122 with a grade of "C" or better.

A lecture-lab course to build upon skills learned in DT 122. This course continues to promote work habits and safe work practices. Advanced Diesel Technology projects are completed to industry standards. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

DT 221 **16 Credits** **Diagnostics, Testing and Repair**

Prerequisite: Completion of DT 123 with a grade of "C" or better.

A lecture-lab course to build upon skills learned in DT 121 through DT 123. Individual projects are assigned that will challenge the student and expand upon the skills learned in DT 121 through DT 123 and introduces diagnostics, testing, and problem solving to the student. Individual projects are completed to industry standards. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

DT 222 **16 Credits** **Advanced Diagnostics, Testing and Repair**

Prerequisite: Completion of DT 221 with a grade of "C" or better.

A lecture-lab course to build upon skills learned in DT 121 through DT 221. This course will see Advanced Individual Projects assigned to students that will emphasize diagnostics, testing, and problem solving by the student and will replicate, as close as possible, real world shop conditions for the student to work in. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

DT 223 **16 Credits** **Certification and Testing**

Prerequisite: Completion of DT 222 with a grade of "C" or better.

A lecture-lab course to build upon and confirm the diesel mechanics skills learned in DT 121 through DT 222. Course covers selected industry certification test requirements, procedures, and standards. Successful students will practice and pass selected ASE certification tests. Testing fees may apply for each certification test. Course includes a written and performance capstone exam to ensure retention of competency in previous Diesel Technology program course topics. 8 lecture hours; 16 lab hours. Vocational program course. May be used as a general elective in the AA degree.

ENGL& 101 **5 Credits** **English Composition I**

Prerequisite: Appropriate English placement test score or a grade of "C-" or better in ENGL 095.

ENGL 101 emphasizes the basic rhetorical principles and development of expository and argumentative prose. Included is an introduction to the research methods necessary for evidence-backed writing. Skills gained in this course should help students improve their performance of such tasks as writing for a variety of purposes and audiences, as well as writing informative and persuasive essays and research-backed reports, projects and papers. 5 lecture hours. Satisfies writing skills requirement for the AA degree.

ENGL 150 **5 Credits** **Vocational/Technical and Business Writing**

Recommended Preparation: Competence in basic computer operation or concurrent enrollment in CIS 100.

Prerequisite: Appropriate English placement score or a grade of "C-" or better in ENGL 095.

This course is designed for both vocational/technical and business students. It emphasizes written and oral communication required in the world of work. Major topics include business letters and memorandums, formal and informal reports, computer graphics, basic principles of technical writing, and oral presentations. 5 lecture hours. Vocational program course. May be used as a general elective in the AA degree.

MATH 100 **5 Credits** **Vocational Technical Mathematics**

Prerequisites: A grade of "C-" or better in MATH 059 or MATH 060 or appropriate placement score.

This course is designed to meet the needs of the vocational-technical student. Topics will include powers and roots, signed numbers, formulae manipulation, plane and solid geometry, trigonometry and specialized formulae. 5 lecture hours. Vocational program course. May be used as a general elective in the AA degree.

DIESEL TECHNOLOGY PROGRAM COURSE DESCRIPTIONS

PSYC& 100

5 Credits

General Psychology

Recommended Preparation: Placement in ENGL& 101.

An introduction to psychology utilizing lectures and group exercises. Deals with the psychology of behavior, development, learning, cognition, motivation and emotion, perception, memory, and both normal and abnormal personalities. Provides an overview of modern psychology in terms of biological, social and intrapsychic factors. 5 lecture hours. Satisfies social science distribution area D requirement or specified elective for the AA degree.

PSYCH 106

3 Credits

Applied Psychology

Applications of theory and current research in psychology with major topics of personality, decision making, communications, motivation, learning and the workplace. Focuses on individual and group thought and behavior in the world of work. Emphasis is placed on change, personal and professional growth. 3 lecture hours. May be used as a general elective in the AA degree.

SOC& 101 (formerly SOC 110)

5 Credits

Introduction to Sociology

Recommended Preparation: ENGL 095 or placement in ENGL& 101.

An introduction to the principles, concepts, theories and methods of the sociological perspective. Emphasis is placed upon relating sociological ideas to national, community, and individual levels. 5 lecture hours. Satisfies social science distribution area C requirement or specified elective for the AA degree.

WELD 101

6 Credits

Related Welding I

Students are given an overview of welding employment opportunities, the most common welding processes (SMAW, GMAW, FCAW, and GTAW), and oxyacetylene cutting and heating. 3 lecture hours; 6 lab hours. Vocational program course. May be used as a general elective in the AA degree

DIESEL TECHNOLOGY TOOL LIST

The suggested list of tools and supplies will be needed to complete the Diesel Technology program. You may purchase additional tools of your own choice, after consulting your instructor for advice or questions. Please consult your instructor for information on tool types, equivalents, area suppliers, and special on-going programs for students through local suppliers that will save you money on tool purchases.

Tools made in the USA are recommended. Tools of any reasonable quality are satisfactory. Ask tool suppliers about their warranty. It is **strongly** suggested to stay away from any import tools or tools sold by mail order. These tools should be readily replaceable.

Item #	Description
1	Standard Combination wrench set: 3/8" - 1-1/8",
2	METRIC Combination wrench set: 8MM thru 19, include 15mm
3	Standard socket set - 1/2" drive: 7/16" - 1-1/4" (6 or 12 point), drive ratchet, breaker bar, universal joint, 3 extensions (approx. 3", 6", and 10" long), speed handle,
4	Standard socket set - 3/8" drive: 3/8" - 13/16" (6 or 12 point, , deep sockets 3/8" - 3/4", including drive ratchet, universal joint, drive handle, and 3 extensions (approx. 3", 6", and 10" long)
5	Metric sockets 8MM thru 19MM, 3/8 drive
6	Flex sockets 7/16" - 3/4", 3/8 drive
7	Torex drivers T-15 thru T-55, 1/4 or 3/8 drive
8	Standard socket set - 1/4" drive: 3/16" - 1/2" (6 or 12 point - 1/4" socket should be 12 point), , drive ratchet, universal joint, drive handle, and 2 extensions (approx. 2" and 4" long)
9	Metric sockets 5MM to app 10MM, 1/4 drive
10	Spark plug socket, 3/8" drive, 5/8" and 13/16"
11	Crescent style wrench (approx. 6" and 12")
12	Small Allen wrench set (up to approx. 3/8")
13	Small Metric Allen wrench set
14	Feeler gauge set (approx. 25 blades)
15	Gasket scraper or putty knife
16	Straight tip screwdriver set (approx. 6 pieces including Stubby)
17	Phillips tip screwdriver set (approx. 6 pieces including Stubby)
18	Punch and chisel set (approx. 12 pieces including center punch)
19	Snap ring pliers, internal and external

DIESEL TOOL LIST (continued)

20	Diagonal cutting pliers (approx. 7")
21	Needle nose pliers (approx. 6")
22	Adjustable joint pliers (approx. 10")
23	2 pair standard pliers (approx. 6" and 8")
24	2 pair vise grip style pliers (approx. 7-1/2" and 10")
25	Plastic tip hammer (approx. 12 oz.)
26	Ball peen hammer (approx. 16 oz.)
27	Rolling head pry bar (approx. 18")
28	Aligning pry bar (approx. 18")
29	Steel tape measure (approx. 10')
30	Telescoping magnet,
31	Telescoping mirror (rectangular if available)
32	Flashlight, standard size
33	Heavy duty "Brake Spring Pliers"
34	Machinist file (approx. 10"-14"), File card, and Wire brush
35	4 piece "O" ring pick set
36	Tool box capable of holding all tools (lockable)
37	6" pocket ruler
38	2 pair of Safety goggles or safety glasses
39	2 pair of coveralls in serviceable condition (NO large holes, tears, or frayed cuffs)
40	Hat or hair net (baseball type, only needed if your hair hangs lower than your collar)
41	Electrical test light (continuity tester)
42	DVOM multimeter capable of testing low voltage circuits and resistance with a temperature probe (a quality DVOM is approximately \$100)
43	Brass drift (approx. 10" long by 3/4" diameter)
44	Steel toe boots or heavy work boots providing protection for your feet and toes
45	2 padlocks (one for your locker and one for your tool box)
46	Torque Angle Gauge, OTC 4554 or equivalent
47	Dial Indicator, Magnetic Base (Empire 27088 sold by Sears or equivalent)
48	Dial Indicator Gauge (Empire 2788 sold by Sears or equivalent)

GRAYS HARBOR COLLEGE - Typical Student Schedule

DIESEL TECHNOLOGY - ASSOCIATE IN APPLIED TECHNOLOGY DEGREE

1st Quarter

Course #	Course Title	Credits
DT 121	Introduction to Diesel Technology	16
ENGL 150	Vocational/Technical/Business Writing	5
TOTAL QUARTER CREDITS		21

2nd Quarter

Course #	Course Title	Credits
DT 122	Intermediate Diesel Technology	16
Weld 101	Related Welding I	6
TOTAL QUARTER CREDITS		22

3rd Quarter

Course #	Course Title	Credits
DT 123	Advanced Diesel Technology	16
MATH 100	Vocational/Technical Math (or higher)	5
TOTAL QUARTER CREDITS		21

4th Quarter

Course #	Course Title	Credits
DT 221	Diagnostics, Testing, and Repair	16
PSYCH 106	Applied Psychology	3
TOTAL QUARTER CREDITS		19

5th Quarter

Course #	Course Title	Credits
DT 222	Advanced Diagnostics, Testing and Repair	16
TOTAL QUARTER CREDITS		16

6th Quarter

Course #	Course Title	Credits
DT 223	Certification and Testing	16
TOTAL QUARTER CREDITS		16

PLEASE NOTE: Students may substitute ENGL 101 for ENGL 150; PSYCH 100 or SOC 110 for PSYCH 106.

GRAYS HARBOR COLLEGE - Typical Student Schedule
DIESEL TECHNOLOGY FUNDAMENTALS - CERTIFICATE OF COMPLETION

1st Quarter

Course #	Course Title	Credits
ENGL 150	Vocational/Technical/Business Writing	5
DT 121	Introduction to Diesel Technology	16
TOTAL QUARTER CREDITS		21

2nd Quarter

Course #	Course Title	Credits
WELD 101	Related Welding	6
DT 122	Intermediate Diesel Technology	16
TOTAL QUARTER CREDITS		22

3rd Quarter

Course #	Course Title	Credits
DT 123	Advanced Diesel Technology	16
MATH 100	Vocational/Technical Math (or higher)	5
PSYCH 106	Applied Psychology	3
TOTAL QUARTER CREDITS		24

GRAYS HARBOR COLLEGE - Typical Student Schedule
ADVANCED DIESEL TECHNOLOGY - CERTIFICATE OF COMPLETION

1st Quarter

Course #	Course Title	Credits
ENGL 150	Vocational/Technical/Business Writing	5
DT 221	Diagnostics, Testing, and Repair	16
TOTAL QUARTER CREDITS		21

2nd Quarter

Course #	Course Title	Credits
WELD 101	Related Welding	6
DT 222	Advanced Diagnostics, Testing, and Repair	16
TOTAL QUARTER CREDITS		22

3rd Quarter

Course #	Course Title	Credits
Math 100	Vocational/Technical Math (or higher)	5
PSYCH 106	Applied Psychology	3
TOTAL QUARTER CREDITS		8

PLEASE NOTE: Students may substitute ENGL 101 for ENGL 150; PSYCH 100 or SOC 110 for PSYCH 106.

DIESEL TECHNOLOGY CAREER PATHWAY

