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# **PROGRAM REVIEW REPORT**

**on the**

# **HEAVY DUTY MECHANICS PROGRAM**

**JANUARY, 1997**

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**EXECUTIVE SUMMARY**

**To the Heavy Duty Mechanics Program Evaluation Committee, the HDMEC program appears to have had mixed fortunes since its last review in 1990. Employment rates reported by former students have improved: 92% of responding former apprentices reported being employed in 1996 as compared with 86% in 1990, and 84% of trade entry leavers were in jobs as opposed to 72% in 1990. Prospects for graduates look good, thanks to the imminent retirement bulge caused by an ageing workforce, and if provincial program rationalization takes place, the UCC HDMEC programs are better positioned to become the principal providers in the Interior than those at Okanagan University College and the College of New Caledonia because of the new Applied Industrial Technology Centre and a tradition of strong instruction at apprenticeship level.**

**Yet in spite of its good reputation, the HDMEC program seems to be suffering from a degree of inertia. Problems identified six years ago in the 1990 review, such as tool distribution and the readiness and aptitude of incoming trade entry students, have not been addressed. The provincial curriculum has been re-written since the last review, but the re-write is fraught with as many problems as its predecessor was. Enrolments, particularly at trade entry level, have followed an ominous downward trend for the last five years. Lack of up-to-date equipment remains a bugbear, and the Williams Lake arm of the program has its own set of problems.**

**The Committee recognizes two factors that have contributed to this loss of vitality in the program. The first is the tragic on-site death in June, 1994, of a HDMEC student, which traumatized program personnel; vestiges of that trauma remain. The second is instructor Art Meger's three-year secondment from the program on various projects between 1993 and 1996. Hopefully, his return will bring with it the kind of energy that the HDMEC program needs to address the challenges it faces.**

**HEAVY DUTY MECHANICS  
PROGRAM REVIEW**

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**HEAVY DUTY MECHANICS EVALUATION COMMITTEE MEMBERS**

**CHAIR**

**Greg Scriver,  
Assistant Director, Counselling**

**ASSISTANT CHAIR**

**John Petri,  
Co-ordinator, Extension Services (AIT)**

**EXTERNAL REP.**

**Jim Kirk, Shop Manager,  
Coast Tractor,  
Kamloops, B.C.  
Member of Heavy Duty Mechanics  
Advisory Committee**

**RESOURCE PERSON**

**Gordon Tordoff,  
Chairperson, Mechanical Trades**

**DIVISIONAL DEAN**

**Ralph Finch,  
Dean, AITD**

**REVIEW CO-ORDINATOR**

**Alastair Watt,  
Associate Director,  
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**GRAPHICS & ANALYSIS**

**Heather Shand  
Research Analyst**

**DATA ENTRY**

**Liv Andrew  
Institutional Research Clerk**

## INTRODUCTION

The review of the Heavy Duty Mechanics Program was begun on May 17, 1996. A planning meeting between the Heavy Duty Mechanics faculty and A. Watt (Associate Director, Institutional Research and Planning) was held on June 17 to discuss program review procedures and questionnaire design, with a further meeting held on July 15 to refine and finalize the questionnaire design.

Using student lists generated from Colleague (UCC's student information system), the Office of Institutional Research and Planning sent questionnaires to former Heavy Duty Mechanics trade entry and apprentice students on August 2. Employer and advisory committee surveys (with lists obtained from the program faculty) were mailed on August 8, and Heavy Duty Mechanics faculty surveys were sent out on August 26.

On August 26, a second mailing was sent to those former students, employers and advisory committee members who had not yet responded. Telephonic follow-up with former student non-respondents took place between September 30 and October 2, and with employers and advisory committee members between October 3 and 9.

Current students in the Heavy Duty Mechanic Program were surveyed at apprenticeship level on October 23, and at trade entry level on November 4. The cut-off date for all responses was November 4. The Heavy Duty Mechanics Evaluation Committee met on December 11-12 to analyze the data and formulate its report on the program.

## BACKGROUND

January, 1973, marked the inception of the Heavy Duty Mechanics pre-apprentice program, and April, 1974, the apprenticeship program. January, 1983, saw the implementation of the Trades Access (TRAC) curriculum at entry level, characterized by a continuous entry/exit format, and this mode of delivery has remained essentially unchanged into the mid-1990's.

The Heavy Duty Mechanics Program underwent its first review in 1990. The findings of the Evaluation Committee were that the curriculum was essentially sound but in need of updating, and that the duration of certain modules needed to be adjusted. There was considerable concern about space limitations on the shop floor area in C wing, and in the Learning Resource Centre. These concerns will not be addressed when the program moves to the new Applied Industrial Technology building in Spring, 1997. Another concern was with outdated equipment and tools--a perennial challenge which is being addressed by close liaison with industry; the imminent UCC equipment campaign may also have impact on this deficiency. Finally, the need for a Job Placement Centre was raised, and that is only now (1996) being addressed by the creation of the Student Employment Centre in September, 1996.

The challenges that face the HDMEC Program as it approaches the millennium are several. Currency of curriculum and lack of input from industry seem to top the list. As well, capital equipment costs are escalating, and the "shelf-life" of training aids diminishes as the industry becomes electronicized. This move to sophisticated electronic equipment necessitates the program's attracting students with better academic preparation than in the past and shedding the old mechanical trades image. The challenge is intensified by the decreasing trend in enrolments over the past five years (see graphs pp. 5-6). Another challenge connected to the previous one is the age demographics of Heavy Duty Mechanics: many older journeymen are retiring or moving on, leaving not only vacancies for younger HD mechanics but also a mentorship vacuum.

## BACKGROUND

January 1977 marked the beginning of the Heavy Duty Mechanic pre-apprentice program and April 1984 the apprenticeship program. January 1983 saw the implementation of the Trade Access (TRA) curriculum at entry level, characterized by a continuous entry level format and the mode of delivery has remained essentially unchanged into the mid 1990's. The Heavy Duty Mechanic Program underwent its first review in 1990. The findings of the Evaluation Committee were that the curriculum was essentially sound but in need of updating and that the duration of certain modules needed to be adjusted. There was considerable concern about three transitions on the shop floor: from in-classroom to the shop floor, from Resource Centre. These concerns will not be addressed when the program moves to the new Apprenticeship format in Spring 1997. Another concern was with outdated equipment and tools - general challenges which is being addressed by close liaison with industry. The maintenance of equipment is also being updated on the shop floor. Finally, the need for a job placement Centre was raised and that is only now (1990) being addressed by the creation of the Student Employment Centre in September 1991.

## ADMISSIONS DATA AND PERFORMANCE STATISTICS

### Admissions Requirements:

#### a) **Educational Requirements**

- 1) BC Grade 10, but Grade 12 strongly recommended, or mature student status;
- 2) Successful completion of CAT 19 test.

#### b) **General Requirements**

- 1) Good health;
- 2) Mechanical aptitude;
- 3) Must have safety boots and glasses;
- 4) Interview with Program Coordinator.

### Program Capacity:

The Kamloops program is funded for 20 FTE (full-time equivalent) per annum, the Williams Lake operation for 10 FTE per annum, for a total of 30 FTE. Apprenticeship classes last for six weeks each and class maximum is 16 students.

### Program Demand:

#### Heavy Duty Mechanics Trade Entry

<u>Year</u> <u>(Sept-Aug)</u>	<u>Enrollment*</u>	<u>Wait listed</u>	<u>Incomplete/Denied</u>	<u>Total Appl's</u>
1991-92	46	0	0	46
1993 -93	43	15	1	59
1993-94	26	0	7	33
1994-95	23	0	0	23
1995-96	34	0	0	34
1996-97	28	0	2	30
<b>TOTAL</b>	<b>200</b>	<b>15</b>	<b>10</b>	<b>225</b>

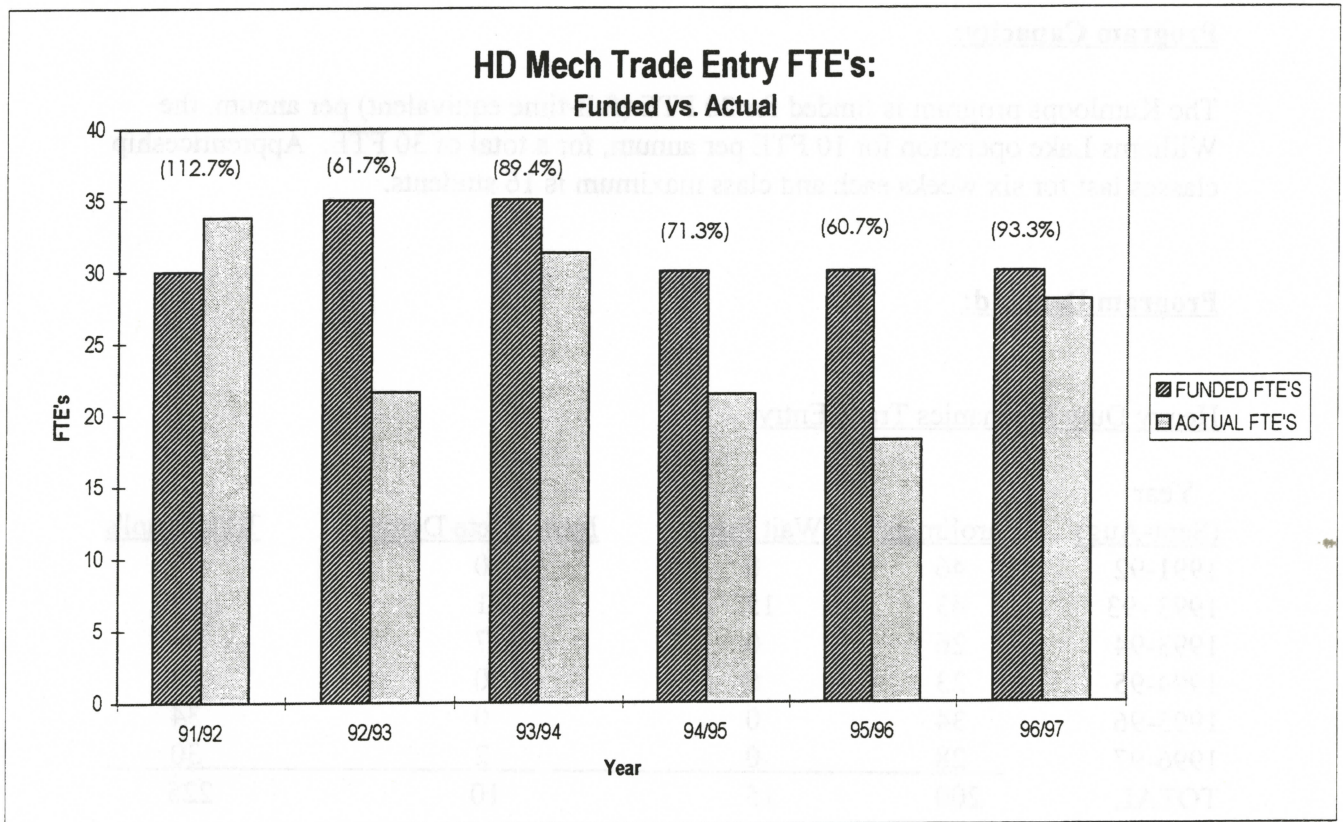
\*figures provided by AIT Learning Resource Centre



**Heavy Duty Mechanics Program Utilization Rates: 1990-1996**

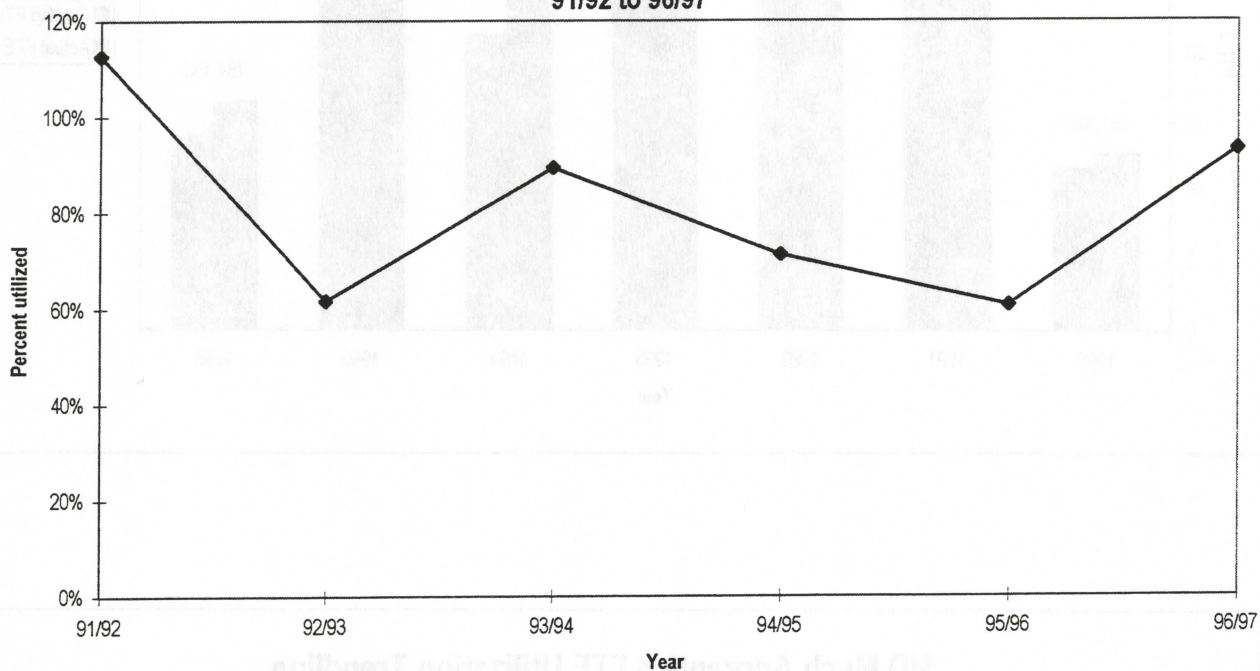
**Trade Entry:**

	1990	1991	1992	1993	1994	1995	1996
Funded FTE:	0.0	30.0	35.0	35.0	30.0	30.0	30.0
Actual FTE:	0.0	33.8	21.6	31.3	21.4	18.2	28.0
Utilization Rate:	0.0	112.7	61.7	89.4	71.3	60.7	93.0



### HD Mech Trade Entry FTE Utilization Trendline

91/92 to 96/97

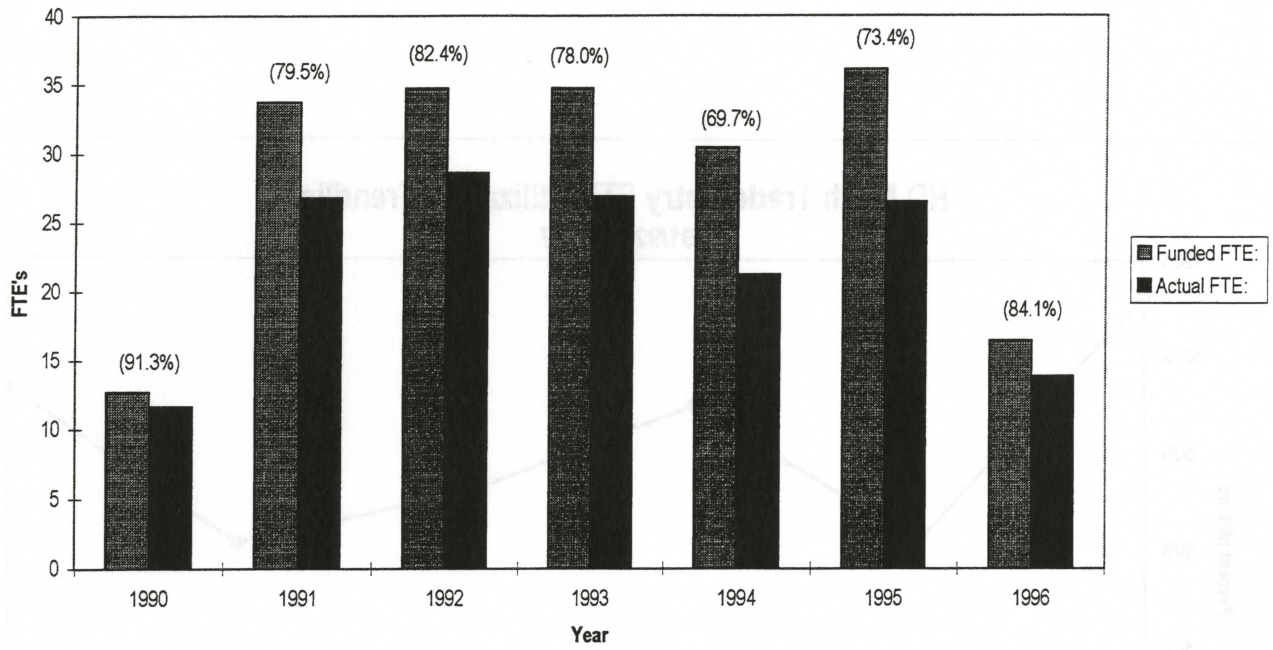


#### Apprentice:

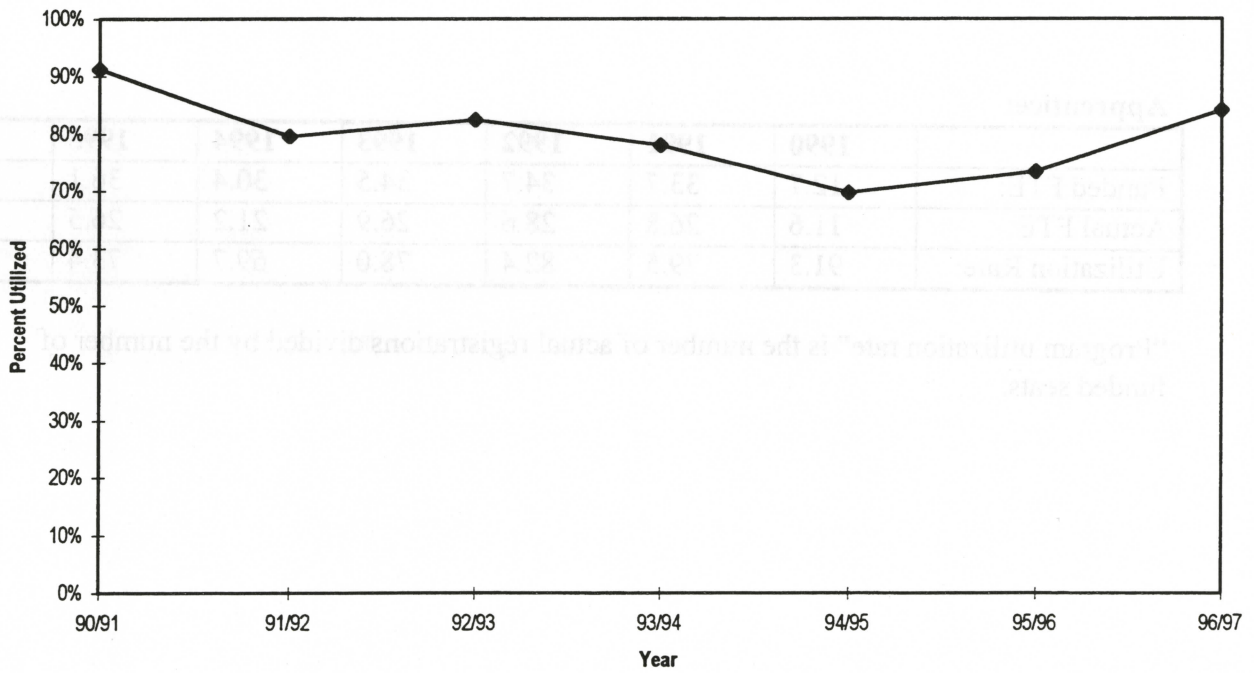
	1990	1991	1992	1993	1994	1995	1996
Funded FTE:	12.7	33.7	34.7	34.5	30.4	36.1	16.4
Actual FTE:	11.6	26.8	28.6	26.9	21.2	26.5	13.8
Utilization Rate:	91.3	79.5	82.4	78.0	69.7	73.4	84.5

“Program utilization rate” is the number of actual registrations divided by the number of funded seats.

### HD Mech Apprentice FTE's: Funded vs. Actuals



### HD Mech Apprentice FTE Utilization Trendline 90/91 to 96/97



**Gender Ratio:**

**1992-1996 Heavy Duty Mechanics**

**Apprentice:**

Female: 2  
Male: 88

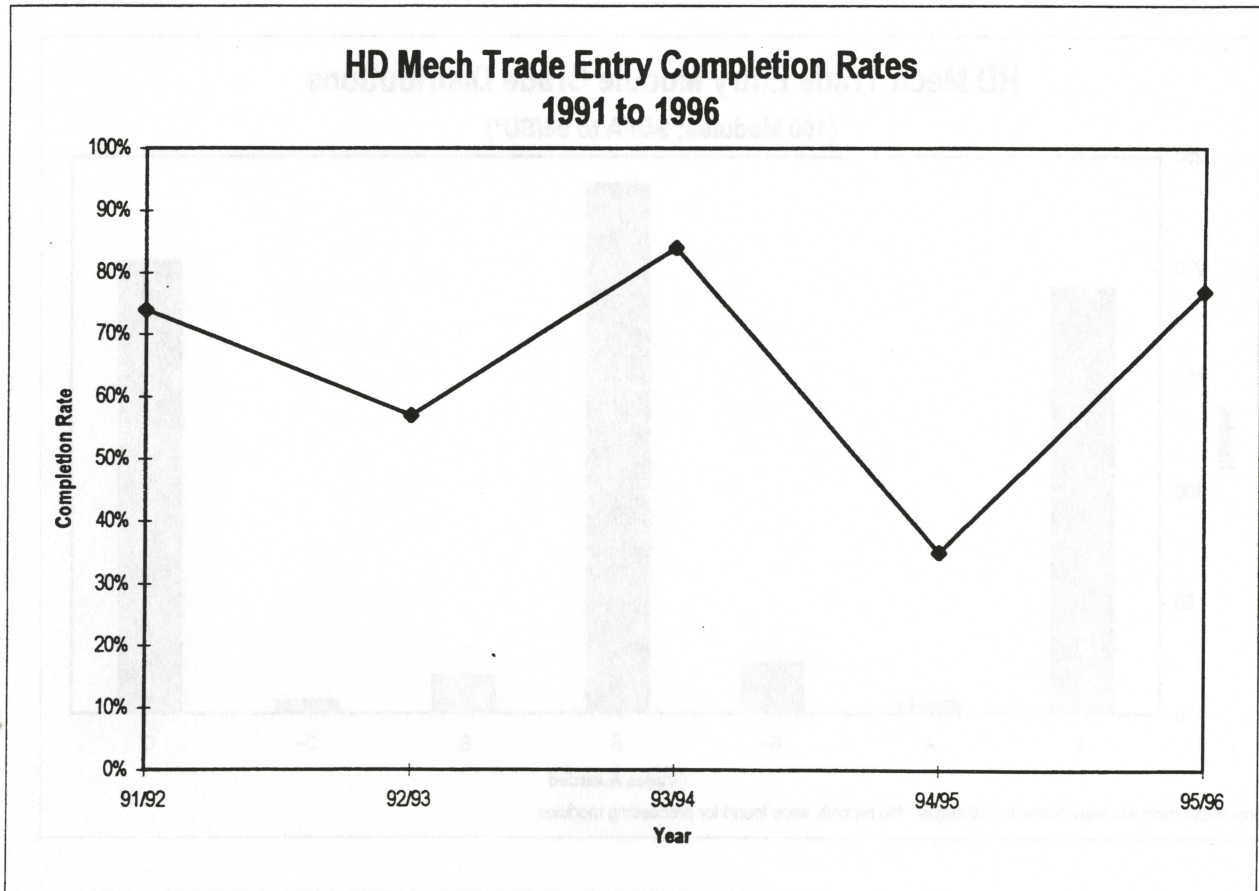
**Entry Level**

Female: 0  
Male: 37

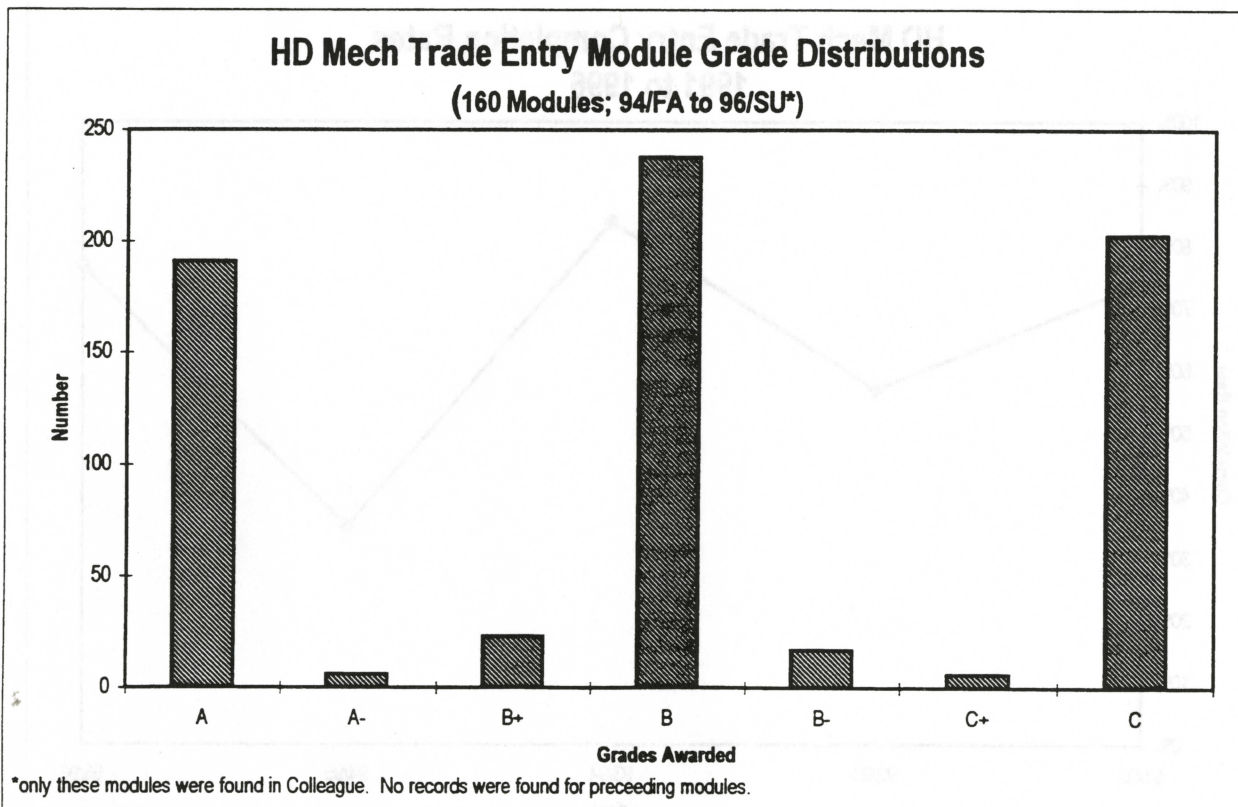
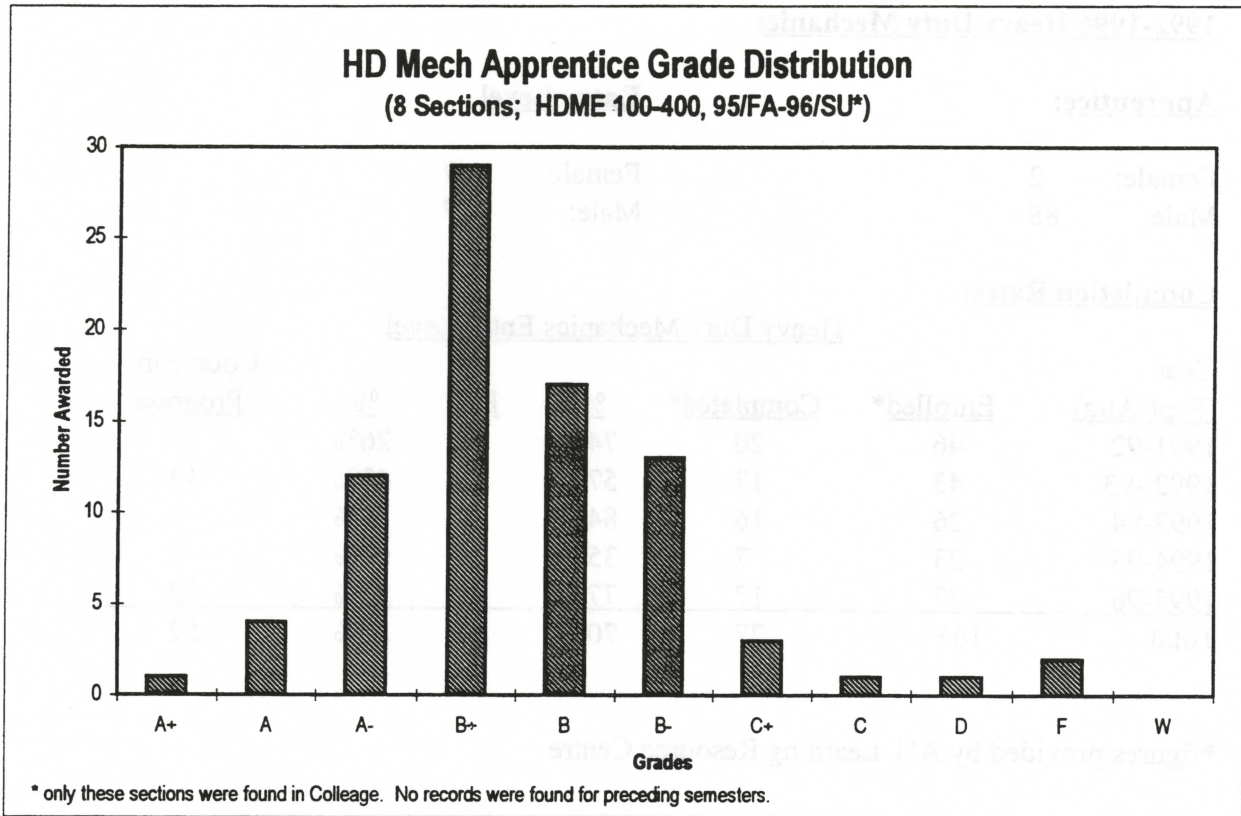
**Completion Rates:**

Year (Sept-Aug)	<u>Heavy Duty Mechanics Entry Level</u>					Course in Progress
	<u>Enrolled*</u>	<u>Completed*</u>	<u>%</u>	<u>F/W</u>	<u>%</u>	
1991-92	46	20	74%	7	26%	17
1992 -93	43	17	57%	13	43%	13
1993-94	26	16	84%	3	16%	7
1994-95	23	7	35%	13	65%	3
1995-96	27	17	77%	5	23%	12
Total	165	77	70%	41	30%	52

\*figures provided by AIT Learning Resource Centre



**GRADE DISTRIBUTION: HEAVY DUTY MECHANICS PROGRAM**



## EMPLOYMENT PROSPECTS

### Types of Employment:

Heavy Duty Mechanics repair, overhaul and maintain mobile heavy-duty equipment used in construction, forestry, mining, material handling, landscaping, land clearing, farming and similar activities.

### Nature of Work:

Heavy Duty Mechanics are required to clean, lubricate and maintain equipment, and to test and diagnose malfunctions and adjust or repair equipment.

### Job Prospects:

According to the 1996 edition of Job Futures: Volume 1: Occupational Outlooks, 41,000 workers were employed nation-wide in this occupation in 1994. Employment declined 5% over the 1984-94 period while economy-wide employment grew by 17%.

- 97% of workers in this occupation are employed full-time
- Less than 1% of workers in this occupation are female
- There are few young workers, due to apprenticeship requirements in this occupation
- However, the unemployment rate is lower than average for all occupations
- Full-time earnings are above average
- Employment growth for this occupation is expected to occur in only a few industries as the total number of workers falls slightly over the next five years. Industries where employment may increase include construction, mining, agriculture, and logging.

### Looking to the Year 2001

#### **B.C. Employment Trends & Projections**

	1986	1992	2001
Number Employed	13,390	13,940	15,420

Annual Growth 1992-2001: 1.1%

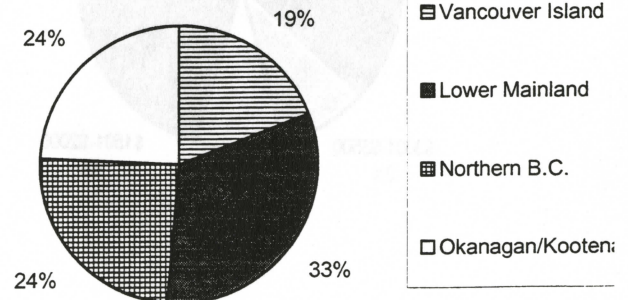
#### **Main Industries of Employment**

Wood, Pulp & Paper	31%
Mining	13%
Forestry	9%

#### **Estimated Job Openings in B.C. 1992-2001**

Growth (Net)	Attrition	Total
1,480	2,090	3,570

#### **Employment by Region**



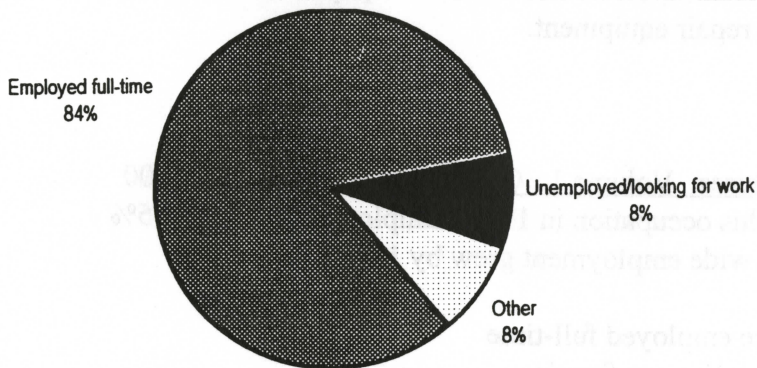
**Further Education Opportunities:**

None beyond apprenticeship.

**Employment Rates of Former Students:**

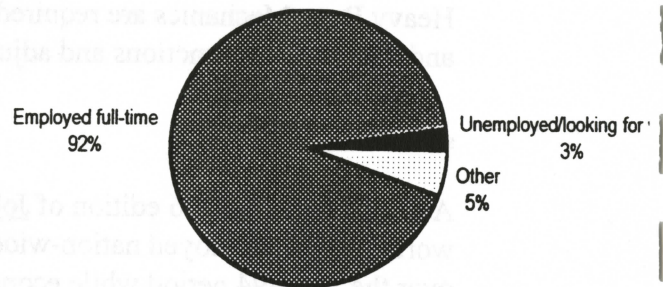
**HD Mech Former Trade Entry - Current Activity**

n=12



**HD Mech Former Apprentice - Current Activity**

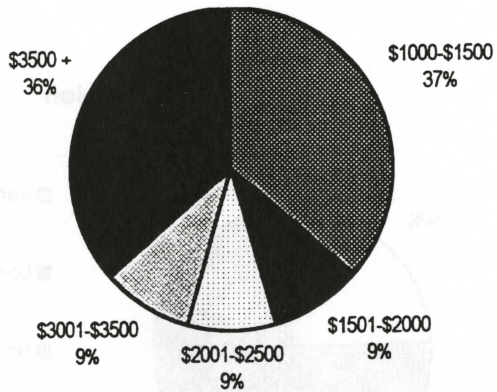
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**Current Salaries:**

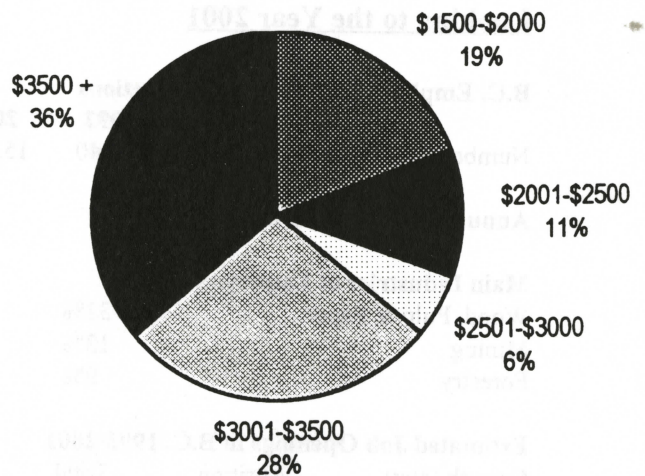
**HD Mech Former Trade Entry Salaries**

n=12



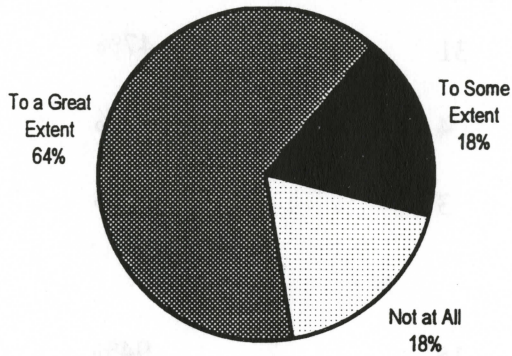
**HD Mech Former Apprentice Salaries**

n=36

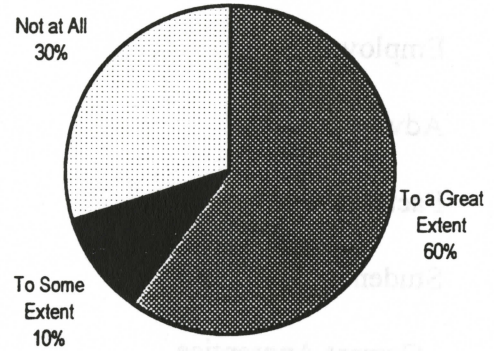


**Training in Relation to Employment:**

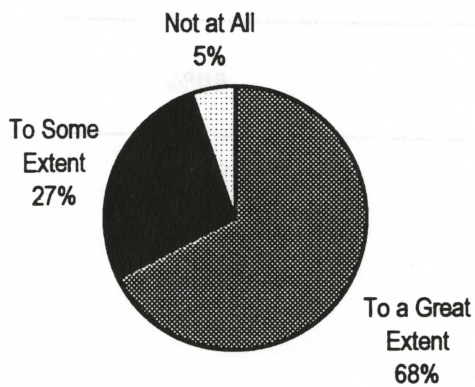
**HD Mech Former Trade Entry**  
**Extent to which job is related to training**  
**n=11**



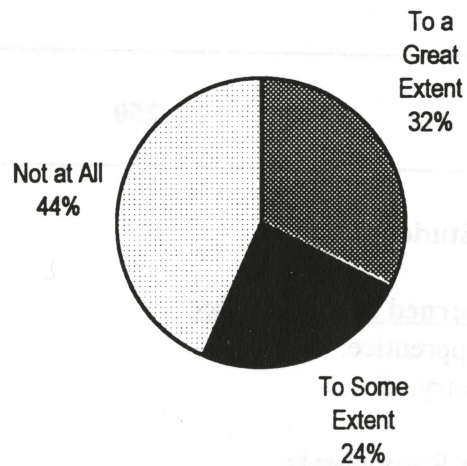
**HD Mech Former Trade Entry**  
**Extent to which training helped get job**  
**n=10**



**HD Mech Former Apprenticice**  
**Extent to which job is related to training**  
**n=37**



**HD Mech Former Apprenticice**  
**Extent to which training helped get job**  
**n=37**





**TABULAR SUMMARY OF QUESTIONNAIRE RESPONSES**  
**HEAVY DUTY MECHANIC PROGRAM REVIEW**

The categories and quantities of responses are tabled below:

<b>Recipient</b>	<b># Sent</b>	<b># Completed &amp; Returned</b>	<b>% Returned</b>
Employer:	66	31	47%
Advisory:	10	4	40%
Faculty:	3	3	100%
Students:			
- Current Apprentice	16	15	94%
- Current Entry Level	18	13	72%
- Current Wm. Lake	10	8	80%
Former Student:			
- Apprentice:	90	38	42%
- Entry Level:	37	12	32%
<b>TOTAL</b>	<b>250</b>	<b>124</b>	<b>50%</b>

**Former Students:**

**Returned by Post Office:**

- Apprentice: 5
- Entry: 5

**Non-Respondents:**

- Apprentice: 47
- Entry: 20

## SUMMARY OF QUESTIONNAIRE RESPONSES

### 1. Advisory Committee

Only four questionnaires from 10 committee members were completed and returned. There were six areas of concern noted. Of the four respondents reporting, only one agreed that the goals and objectives of the program are current. There appears to be a need to put more emphasis on report writing, organization skills, and customer relations. All committee members felt that the program needs to put more emphasis on computer skills. Only 25% of the committee members agreed that equipment is adequate for the training it offers; tools and equipment are often obsolete.

There were also concerns expressed regarding the primary focus of UCC's Heavy Duty Mechanics Program. While it addresses needs in mining and industry, the goals and objectives of the current program do not appear to be meeting the needs associated with heavy duty equipment required for farming, ranching and/or agriculture.

### 2. Employers

A total of 31 employers responded to the surveys sent out. Twenty-eight of those employers indicated that they had hired UCC Heavy Duty Mechanic graduates within the last five years.

Employers strongly suggested that there needs to be more focus on report writing, computer skills, and hydraulics. There also appears to be more need for training in the area of "trouble shooting of electrical systems and electronic diesel engines" as electronics seem to be the wave of the future.

The demographics of employed heavy duty mechanics (average journeyman age is 55 years) suggest that a retirement bulge will occur within the next five to ten years. Forty-two percent of employers said that more graduate mechanics will be needed. The external representative, Jim Kirk, suggested that although automation would shrink the number of generalists in the HDMEC sector, specialization would increase and bring the numbers back up.

On the question of merging the entry level HDMEC with the entry level Commercial Transport Technician courses, employers were split: 39% of respondents favoured the move, 36% were opposed, and 19% did not know or care. The remainder were "missing cases".

### 3. Former Students: Apprentice and Entry Level

A total of 50 former students responded. Of those responding, 45 (90%) were employed full time, with 44 of those 45 working in jobs related to their UCC training. They suggested that more emphasis needs to be put on report writing skills, customer relations, computer skills, and work rate.

Major strengths of the program were identified to be "good and knowledgeable instructors" and the "hands on training in the shop." Apprentices found the equipment to be rather out-dated and the time frame of 6 weeks to be very challenging. Comments suggest that more electronics and trouble shooting would be an asset.

The former entry level students felt that the program lacked updated equipment and needed more focus on hydraulics and electronics. The learning guides need to be improved and training aids need to be updated.

#### **4. Current Students: Apprentice and Level Entry**

Current students at apprentice and trade entry level indicated that the emphasis placed on report writing was insufficient (2.39, 2.15, 2.14 - Williams Lake); computer skills were also perceived to be under-emphasized (1.67, 2.3, 2.67 - Williams Lake); supplies and equipment received low ratings (2.20, 2.54, 2.63), as did the learning guides (2.67, 2.67, 2.38) and the audio-visual aids at trade entry level (2.67 in Kamloops and 2.7 in Williams Lake).

The Kamloops apprentice class lauded the quality of instructors and the balance between theory and practice, but expressed reservations about the quality of the shop equipment and the tool distribution system. The learning guides also were criticized roundly.

The Kamloops trade entry class was complimentary about the instructor (3 mentions) and the practical aspect of the program (6 mentions), but criticized the audio-visual aids, the equipment, and the one-hour lunch break (too long); learning guides and texts also came under fire.

Williams Lake trade entry students liked the competency-based instruction, but commented that it was open to abuse by less-motivated students. Lack of equipment (only two pieces of equipment are available at Williams Lake) was seen as detrimental, as were the learning guides; extended toolroom hours were called for.

#### **5. Faculty**

Three faculty (one from Williams Lake) responded to the survey indicating a number of concerns related to facilities, equipment, and the curriculum of the trade entry program. It appears that technological advancement in industry is outstripping our training's ability to respond: "The curriculum responds far too slowly."

Faculty members unanimously agreed that shop facilities in Williams Lake and Kamloops are not satisfactory for their programs. Lack of space and limited door entrance way (Williams Lake) were cited as primary concerns. Training on old equipment and having inadequate handling and lifting devices were highlighted as additional problems regarding the Kamloops facility.

## STRENGTHS OF THE PROGRAM

Although there is support for entry level training on a continuous intake basis, there is a need to improve orientation and support services for entry level students. In addition, audio visual aids together with the learning guides for entry level need to be drastically updated and improved. It was agreed that the concept of a competency based training program is good, but there should be an attempt at aligning assignment work rates with the flat rate for jobs.

### Strategic Initiatives

It is proposed that a strategic plan for program enhancement be implemented, the UCC  
HDVET program is better positioned than Ontario University Colleges and the  
College of New Caledonia to ensure the program provides in the future because of  
its broad new applied Industrial Technology Centre and its reputation for strong  
reputation in apprenticeship level.

### Practical Component

UCC provides more hands-on training in the shop than other HCOL or CMC. As a result  
of the 2001 survey, 50% practice is maintained whereas the two other institutions the  
rate is about 30-50.

### Employment Rates

The employment rate of graduates respondents stands at 75% at the end of entry  
respondents at 75%. These figures suggest that Heavy Duty Mechanics was in high  
demand. The points are that the demand will continue for the next 5-10 years given  
that the average age of heavy duty mechanic respondents is in the 35-40 range and that  
most of them will be retiring in the next 10 years.

### Curriculum

With the exception of instruction in repair writing computer skills and computer  
diagnostics and work organization (see Areas of Interest - shop), the Heavy Duty  
Mechanics program curriculum provides sound training for entry level and apprentice  
trades. The shop is central to the program and the majority of their apprentices and  
employees from UCC.

### Faculty of Employment

It is noted that the program is a desirable student commented on the pleasing  
quality and variety of resources available in the Heavy Duty Mechanics shop at UCC.

## **STRENGTHS OF THE PROGRAM**

The Evaluation Committee identified the following strengths in the program:

### **1. Quality of Instruction**

The instructors received accolades for their instruction from former and current students alike. Former apprentice students rated the quality of instructors at 3.22 on a scale of 4, and former trade entry students gave a rating of 3.25. Current apprentice students gave ratings of 3.33, and current trade entry 2.85 (Kamloops) and 3.25 (Williams Lake).

### **2. Strategic Positioning**

If provincial government plans for program rationalization are implemented, the UCC HDMEC program is better positioned than Okanagan University College's and the College of New Caledonia's to become the principal provider in the Interior because of its brand-new Applied Industrial Technology Centre and its tradition of strong instruction at apprenticeship level.

### **3. Practical Component**

UCC provides more hands-on training in the shop than either BCIT or CNC. At UCC, a ratio of 50% theory, 50% practice is maintained whereas the two other institutions the ratio is closer to 80-20.

### **4. Employment Rates**

The employment rate of apprentice respondents stands at 92% and of trade entry respondents at 84%. These figures suggest that Heavy Duty Mechanics are in high demand. The portents are that this demand will continue for the next 5-10 years, given that the average age of heavy duty mechanic journeymen is in the 50-55 range, and that most of them will be retiring in the next 10 years.

### **5. Curriculum**

With the exceptions of instruction in report writing, computer skills and computer diagnostics, and work organization (see Areas of Improvement), the Heavy Duty Mechanics provincial curriculum provides sound training for entry level and apprentice classes. Employers testified to the good quality of the majority of their apprentices and employees from UCC.

### **6. Variety of Equipment**

While it may not be as up-to-date as is desirable, students commented on the pleasing diversity and variety of machinery available in the Heavy Duty Mechanics shop at UCC.

**AREAS OF HEAVY DUTY MECHANIC WHICH CAN BE IMPROVED**  
**(WITH RECOMMENDATIONS)**

The Evaluation Committee identified the following aspects of the Heavy Duty Mechanic program as being in need of improvement.

**1. PROGRAM MARKETING AND ENROLMENT:**

Although they have not yet reached a critical stage, the enrolment trend lines over the last five years for both HDMEC Trade Entry and HDMEC Apprentice (see pp. 5-6) have been moving ominously downward. In addition, both faculty and student questionnaires drew attention to the unsuitability of some students, particularly at Trade Entry level, for the program. This seems to be borne out by Trade Entry level program completion rates over the period 1991-95 (see p. 7): whereas Mechanical Trades completion rates as a whole run between 85% and 90%, HDMEC Trade Entry languishes at just below a 70% average over the five-year period. It appears that the HDMEC program is in decline, and that decisive action will be required to reverse this trend.

The Program Evaluation Committee considered two other factors that have a bearing on the HDMEC Program's future:

(i) Demographics:

With HDMEC journeymen's average age being 54-55, the imminent retirement bulge will create an upswing in vacancies;

(ii) Electronicization:

Against this should be posited job shrinkage that will occur as the HDMEC industry becomes fully electronicized; however, while this trend may signal the decline of the generalist journeyman, it may also create new jobs for specialists within the trade.

Another effect of electronicization will be on the academic preparation of apprentices. HDMEC programs have long suffered the image of being the dumping ground of the academically ungifted. But as the training becomes more complex with electronics, more rigorous entry level academic qualifications will be required; this will improve the academic preparation of HDMEC program applicants. In addition, apprenticeship programs have hitherto countenanced "bidding in" by union members on the basis of seniority, but this may change as higher academic qualifications become the prerequisite for program entry.

With these factors in mind, the Committee recommends the following:

- (a) that the Dean, Applied Industrial Technology, and the Chair, Mechanical Trades, secure the active support of the reconstituted HDMEC Program Advisory Committee (see also "HDMEC Program Advisory Committee") in promoting the HDMEC program to the industry and the public in general;

**ACTION:**  
Dean, AIT;  
Chair, Mechanical Trades

- (b) that the Dean, Applied Industrial Technology, the Chair, Mechanical Trades and the HDMEC faculty ensure that the Public Relations Department advertises the program on an aggressive, province-wide basis;

**ACTION:**  
Dean, AIT;  
Chair, Mechanical Trades;  
HDMEC faculty

- (c) that the HDMEC Trade Entry Level instructor secure funding from the Dean, AIT, to engage in annual high school visitations to refurbish the image of the program and attract better qualified students to it;

**ACTION:**  
HDMEC Trade Entry  
Instructor (Steve Palmer)

- (d) that the Dean, Applied Industrial Technology, the Chair, Mechanical Trades and the HDMEC faculty vigorously pursue the implementation of partnerships with regional high schools (as in the UCC-Columnetza experience at Williams Lake), whereby students may take part of their training at UCC while still attending high school, so as to create a network of high schools feeding into the program;

**ACTION:**  
Dean, AIT; Chair,  
Mechanical Trades;  
HDMEC faculty

- (e) that HDMEC faculty and the HDMEC Program Advisory Committee review Trade Entry Level admission standards and decide whether the CAT 19 score is sufficiently rigorous and whether a mechanical aptitude test should be added to the program's entrance requirements. (This same recommendation was made in 1990).

**ACTION:**  
HDMEC faculty;  
HDMEC PAC

## 2. STUDENT SUCCESS STRATEGIES:

While apprenticeship classes are short, concentrated and instructor-driven, the Trade Entry Level Heavy Duty Mechanics program operates on a competency-based, continuous entry/exit format. This format works to the advantage of motivated students, but it is not the best learning environment for poor students, who tend to fritter away their time, or (as Williams Lake current students pointed out) do not bother attending. The 30% non-completion rate (see p. 7) testifies that above-average numbers of weak students gravitate to the program. To address these problems, the Committee makes two recommendations:

- (a) **that HDMEC instructors place all Trade Entry students on learning contracts to provide goals, objectives, timelines and motivation for them; this practice should be implemented especially in William Lake, where poor student attendance is reported;**

**ACTION:**

**HDMEC Trade Entry**

**Instructors (S. Palmer, D. Schalm)**

- (b) **that the Counselling Department run monthly orientation sessions for all new continuous entry students (not just those from HDMEC); these sessions should covers note-taking, study skills, test-taking, time and money management and perhaps nutrition.**

**ACTION:**

**Assistant Director,**

**Counselling (G. Scriver)**

## 3. CURRICULUM:

Although the provincial curriculum is judged by industry to be basically sound, certain aspects of it could be improved. Faculty and current Heavy Duty Mechanics students in particular drew attention to four deficiencies: the learning guides that accompany each module are riddled with errors and non-sequiturs; the learning guides are not self-contained, and the cross-references to the textbook, Schulz, Fundamentals of Service, are inaccurate; the practicum instructions for each module contained in the previous learning guides have been eliminated in the current versions; and the Computer Managed test bank contains erroneous answers. While responsibility for the accuracy of the learning guides lies with the Provincial Advisory Board, funding exigencies preclude any help from this quarter. Corrective action must be at the institutional level; the Heavy Duty Mechanics Program Evaluation Committee therefore recommends:



- (a) that the Heavy Duty Mechanics faculty approach the V-P Instruction and Student Services with a proposal for release time to re-write those parts of the HDMEC learning guides that are in error; release may be granted in one or in several smaller blocs, depending on the availability of relief instructors;

**ACTION:**

**HDMEC Instructors; Dean, AIT;  
V-P Instruction & Student  
Services**

- (b) that the HDMEC faculty re-insert practicum instructions for each module in the new learning guides;

**ACTION:**

**HDMEC instructors**

- (c) that all three HDMEC instructors track and correct errors in the CML testbank as they work through the curriculum each year; corrections should be communicated to the Learning Resources Centre clerk for input into the testbank.

**ACTION:**

**HDMEC instructors;  
Learning Resources Centre clerk**

Apart from these pressing changes, other aspects of the curriculum were seen as needing adjustment. Employers assigned less than satisfactory ratings to the emphasis placed on the following curricular elements: report writing skills (2.5), diagnostic skills (2.61), work organization skills (2.71), computer skills (1.96), hydraulics (2.67), airbrakes (2.58), electronics (2.24) and customer relations (2.74). Former and current students felt that report writing and computer skills were not being addressed, and former students were concerned about the lack of emphasis on completing work projects in times close to standard industry flat rates. While customer relations skills are not critical in the Heavy Duty industry, the other items are essential to the job. The Committee accordingly recommends:

- (d) that the HDMEC instructors place explicit emphasis on report writing diagnostic and trouble-shooting skills, work organization and work rate, computer skills, hydraulics, airbrakes and electronics while delivering the curriculum. Word-processing and inventory-accessing skills (as opposed to lap-top diagnostic computer skills) may be facilitated by arranging for students to use the Partsperson Laboratory computers in the new Applied Industrial Technology Centre.

**ACTION:**

**HDMEC instructors, particularly  
those doing Trade Entry HDMEC;  
Chair, Mechanical Trades**

Finally, a general complaint among students both current and former was the state of visual aids for the program. The Committee recommends:

- (e) **that HDMEC faculty undertake a review of the films, videos and other visual aids currently in the Learning Resources Centre inventory, and systematically set about ordering new and updated materials from trade and visual aid catalogues.**

**ACTION:  
HDMEC faculty**

#### **4. EQUIPMENT:**

Obsolete equipment has been a perennial bugbear in Heavy Duty Mechanics--and indeed in all Applied Industrial Technology programs--and UCC cannot look to the Ministry for salvation. Alternative strategies need to be developed, such as the UCC Equipment Campaign slated for Spring, 1997; faculty and administrators at both Kamloops and Williams Lake should also pursue loan agreements with government and industry to access equipment on a short-term basis. Apart from the big money items, lap-top diagnostic computers are becoming essential as the HDMEC industry moves into the electronic age. Finally, some immediate purchases are necessary in preparation for the HDMEC program's transfer to the limited floor space of the new AIT Centre in Spring, 1997. Recommendations are as follows:

- (a) **that the HDMEC faculty participate enthusiastically in the upcoming UCC Equipment Campaign and stake its share in the money raised;**

**ACTION:  
HDMEC faculty**

- (b) **that HDMEC faculty, the Chair, Mechanical Trades, the Dean, Williams Lake, and the Dean, AIT pursue the strategy of securing short-term equipment loans from industry;**

**ACTION:  
HDMEC faculty; Chairperson.  
Mechanical Trades; Dean, AIT  
Dean, Williams Lake**

- (c) **that, given the imminent transfer of the HDMEC program to a facility with considerably less shop space than the old one, the Dean, AIT, expedite the purchase of a crane and handling devices to facilitate the movement of engines and increase safety in the new HDMEC shop.**

**ACTION:  
Dean, AIT**

## 5. TOOL ROOM ACCESS:

As in the 1990 HDMEC Program Review Report, former and current students recorded several criticisms of the tool room attendant. The Evaluation Committee, however, feels that these are in many cases unfounded, and that the students' frustration is caused by other factors: for example, students' failure to communicate precisely what tool they want; a non-standard tool nomenclature that varies across the trades (remember that the tool room serves five Trades programs: Automotive Mechanic, Commercial Transport Mechanic, Marine/Small Engine Technician, Partsperson and Heavy Duty Mechanic); and the failure of the AIT division to deal with the congestion caused at the toolroom at the peak demand times of 8:00 am and 11:00 am, 12:30 pm and 3:00 pm, when five classes descend on the toolroom to either take out or return tools. Under such pressure, it is not surprising that the tool room attendant is sometimes gruff.

The Committee recommends that the following measures be taken to alleviate the situation:

- (a) **that HDMEC instructors at all times impress upon their students the need for precision in the use of tool nomenclature, to minimize miscommunication with the tool room attendant;**  
**ACTION:**  
**HDMEC Faculty**
- (b) **that the Chairperson, Mechanical Trades, supervise the creation of a tool chart for the new toolroom in the AIT Centre, listing tools by their recognizable names and corresponding shelf numbers, and that copies of this chart be placed in each student tool box. (This is a repeat of Recommendation 6 (d), p.23, "Commercial Transport Technician Program Review Report [January, 1997]);**  
**ACTION:**  
**Chairperson, Mechanical Trades**
- (c) **that the Mechanical Trades Department consider and implement some or all of the following strategies to solve the toolroom congestion problem:**
  - (i) **staggering of the Mechanical Trades instructional schedule so that shop classes do not all start at 8:00 am and 12:30 pm but at 20 minute intervals;**
  - (ii) **preparation of student tool boxes for specific modules, so that students do not have to access the tool room all the time; this would require instructors to communicate their schedule of modules to the toolroom attendant in advance, and specify the tools that will be required for each module;**

- (iii) **instructor emphasis on "work organization" (see also "CURRICULUM"), so that students do a complete overview of each mechanical project and list all the tools required for the job before approaching the tool room, rather than accessing tools piecemeal.**

**The Department should move to speedy resolution of this problem, preferably by Spring, 1997.**

**ACTION:**

**Dean, AIT; Chair, Mechanical Trades**

**6. HDMEC PROGRAM ADVISORY COMMITTEE:**

Program Advisory Committees (PACs) are seen by both UCC and the Ministry of Education, Skills and Training as the critical point of interface between industry and public sector training. The role of the PAC is to ensure that the training offered at the institution reflects industry standards, to forecast market demand for graduates of the program, to promote the program through its connections with industry, and to assist in the program review process.

The HDMEC Program Evaluation Committee noted the disappointing Advisory Committee response rate to the survey (40%) and queried why a PAC which is reportedly so energetic when it does meet should show so little interest in the review process. It was pointed out that the members of the HDMEC PAC are "action-oriented" and may see the review process as a bureaucratic function outside their terms of reference. To capitalize on the action-oriented nature of the HDMEC PAC, the Program Evaluation Committee suggests the following:

- (a) **that the Dean, Applied Industrial Technology, endeavour to make HDMEC Program Advisory Committee agendas "hands-on" rather than informational: e.g. critical examination of the HDMEC learning guides and identification of the errors in them;**

**ACTION:**

**Dean, AIT**

- (b) **that the HDMEC Program Advisory Committee Chairperson ensure that minutes of each PAC meeting are forwarded to the VP Instruction and Student Services along with any recommendations emerging from the meeting;**

**ACTION:**

**Chairperson, HDMEC PAC**

- (c) that the Dean, Applied Industrial Technology, review the timing of meetings to facilitate maximum attendance by members;

**ACTION:**

**Dean, AIT**

- (d) that the Dean, Applied Industrial Technology, review the HDMEC PAC's membership to ensure former student and current student representation, and apply Regulation R-2013's attendance clause ("Two consecutive unexcused absences from Committee meetings by a member will be interpreted as that member's resignation from the Committee") to all committee members;

**ACTION:**

**Dean, AIT**

- (e) that the HDMEC PAC Committee be re-constituted as a separate entity from the Commercial Transport Technician Program Advisory Committee (q.v. "Commercial Transport Technician Program Review Report", p.21, Recommendation 4 (a)).

**ACTION:**

**Dean, AIT**

#### **7. PROFESSIONAL DEVELOPMENT:**

Faculty expressed concern about the inadequacy of professional development funding for attending courses and conferences outside BC. In addition, D. Schalm made issue of the lack of information at Williams Lake on professional development opportunities. The Committee recommends

- (a) that HDMEC faculty avail themselves not only of divisional professional development funds, but that they apply to the Scholarly Activity and Short Term Leave Committees for funding for course and conference opportunities;

**ACTION:**

**HDMEC faculty**

- (b) that the Kamloops HDMEC instructors make a point of communicating P.D. opportunities to D. Schalm at Williams Lake.

**ACTION:**

**Kamloops HDMEC faculty**

**( A. Meger, S. Palmer)**

The following recommendations apply specifically to the Williams Lake Campus:

**8. WILLIAMS LAKE/KAMLOOPS LIAISON:**

UCC's organizational renewal in April, 1996, shifted the line of authority for the Williams Lake HDMEC instructor, who now reports to the Dean, Williams Lake Campus rather than the Chair, Mechanical Trades, and the Dean, Applied Industrial Technology in Kamloops. The change has exacerbated the Williams Lake instructor's sense of isolation and eroded his sense of a support network of colleagues; to alleviate these feelings, the Committee recommends:

- (a) **that the Williams Lake HDMEC instructor set up monthly teleconferences with his Mechanical Trades colleagues in Kamloops, and keep in touch via e-mail;**

**ACTION:**

**Williams Lake HDMEC  
instructor (D. Schalm)**

**9. WILLIAMS LAKE JOINT AUTOMOTIVE/HDMEC ADVISORY COMMITTEE:**

The Williams Lake Joint Automotive /HDMEC Advisory has reportedly not met for two years or more. The HDMEC Program Evaluation Committee draws the attention of Williams Lake personnel to the preamble to Recommendations 6 in this report, and suggests that the same critical interface between industry and training that has been called for in Kamloops should pertain in Williams Lake. The Committee recommends:

- (a) **that the Dean, Williams Lake Campus, make it a priority to resuscitate the Williams Lake Joint Automotive/Advisory Committee for the same reasons that a revitalized Kamloops HDMEC Committee is advised.**

**ACTION:**

**Dean, Williams Lake Campus (L.  
Wilson)**

**10. FULL-TIME WILLIAMS LAKE TOOLROOM ATTENDANT:**

At present, the Williams Lake toolroom attendant is part-time, operating the tool crib only between 10:00 and 2:30. The effect of this is to curtail shop hours at Williams Lake, and, worse, to encourage students to take out tools when there is no supervision. This leads to tools going missing and being unaccounted for: tool replacement costs ran to \$5,000 for the Fall Semester, 1996, alone. It appears to the Evaluation Committee that under this system, whatever is saved by the part-time

appointment of the toolroom attendant is offset by the replacement cost of misplaced and pilfered tools, and for that reason as well as the pedagogical reason of extending instructional hours in the shop, the position should be converted to a full-time one. It recommends, therefore,

- (a) **that the Dean, Williams Lake Campus, allocate funding for a full-time toolroom attendant position, or make strong representations to the VP, Community and Distributed Learning for the provision of such funding.**

**ACTION:**

**Dean, Williams Lake Campus**

#### **11. WILLIAMS LAKE FACILITY:**

The door of the Williams Lake Automotive/HDMEC shop is 9 1/2' wide by 10' high; the shop floor is sufficient, but to reach it entails a very tight turn to the left on entry. While these dimensions can accommodate small Heavy Duty equipment such as D7 dressers, larger types of HDMEC equipment cannot gain access to the shop. The Committee is aware that the renovations to the Williams Lake facility in December, 1996, are now complete, but suggests that future renovations include the construction of a lane to the back of the shop and the creation of a bigger door to accommodate larger HDMEC equipment. The recommendation is:

- (a) **that the VP, Community and Distributed Learning, in conjunction with the Dean, Williams Lake Campus, incorporate an access lane to the back of the Automotive/HDMEC shop and a bigger door to accommodate larger equipment into his plans for the Williams Lake facility.**

**ACTION:**

**VP, Community & Distributed Learning;**

**Dean, Williams Lake Campus**

## APPENDIX A

### METHODOLOGY

The data were collected in the following ways:

- 1) Consultation took place with Steve Palmer, Instructor, Heavy Duty Mechanics, and Gordon Tordoff, Chairperson, Mechanical Trades, Piping and Welding on the design of the questionnaires.
- 2) Standard questionnaires were administered to Heavy Duty Mechanics former students, employers, faculty, current students and Advisory Committee members. All data were processed using SPSS for Windows to achieve mean, mode and standard deviation responses. Verbal comments for each group were recorded separately and anonymously.
- 3) "Descriptive Data" on the Heavy Duty Mechanics Program's history, description, objectives, budget, etc., were solicited from Art Meger and Steve Palmer, Instructors, Heavy Duty Mechanics.
- 4) Statistical data on annual FTE utilization, graduation rates, gender and grade distributions were provided by the Office of Institutional Research.
- 5) The following people associated with the program participated in the review process or were interviewed:

Steve Palmer, Instructor, Heavy Duty Mechanics  
David Schalm, Instructor, Heavy Duty Mechanics, Williams Lake (by teleconference)  
Brent Cairns, Level 3 Heavy Duty Mechanics Apprentice  
Rob Colnar, Level 3 Heavy Duty Mechanics Apprentice  
Kirk Hanf, Trade Entry Heavy Duty Mechanics Student  
Dale Thurlow, Trade Entry Heavy Duty Mechanics Student



APPENDIX A  
METHODOLOGY

The data were collected in the following way:

1. Consultation took place with Steve Palmer, Instructor, Heavy Duty Mechanics, and Boston Tech, Inc. (Chapman Mechanical Trades Program) and Weising on the design of the questionnaire.

2. Standard questionnaires were distributed to all students, employees, faculty, current students and faculty of various members. All data were processed using SPSS for Windows to achieve means, mode and standard deviation responses. Verbal comments for each group were recorded separately and anonymously.

3. Descriptive data on the Heavy Duty Mechanics Program history, description, objectives, budget, etc., were solicited from Art Meyer and Steve Palmer, Instructor, Heavy Duty Mechanics.

4. Historical data on normal FTE utilization, graduation rates, gender and grade distribution were provided by the Office of Institutional Research.

5. The following people associated with the program participated in the review process or were interviewed:

- Steve Palmer, Instructor, Heavy Duty Mechanics
- David Perkins, Instructor, Heavy Duty Mechanics, Williams Lake City Technicians
- Robert King, Level 3 Heavy Duty Mechanics Apprentice
- Bob Cohen, Level 1 Heavy Duty Mechanics Apprentice
- Eric Hurd, Trade Entry Heavy Duty Mechanics Student
- Dale Thurlow, Trade Entry Heavy Duty Mechanics Student



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