Environmental Systems Technology
Major Highlights
March 2007

Overview

The information contained within this binder represents supporting reports and data associated with the CRC's review of the Environmental Systems Technology curriculum*. These documents are intended to provide a historical perspective, as well as an idea of current and future issues which may impact the short and long term viability of the curriculum.

Major Highlights

- During academic year 2005-06 one out of the seven Program Dashboard measures exceeded the established target score, while three dashboard measures under performed when compared to their benchmarks. Specifically, sections filled to capacity, the percent of minority students, and the percent of incompletes fell short when compared to established trouble scores.

- Over the last three years (2003-04 to 2005-06), TER courses have consistently fallen below the established benchmark of 75% filled to capacity. In 2005-06, of all seats available in TER courses, only 54% were filled, compared to a college-wide average of 83%. The benchmark for this measure ranges from a trouble score of 75% to a target of 90%.

- The percent of TER sections that were not cancelled was 86%, which is in line with the college-wide average of 87%. The benchmark for this measure ranges from a trouble score of 75% to a target of 90%.

- Over the last three years, the number of students in Environmental Systems courses and the number of TER credit hours have increased and have exceeded the college-wide rate of change.

- Compared to the college-wide average 28%, Environmental Systems attracts a lower percentage of minority students (16%). The benchmark for this measure ranges from a trouble score of 16.9% to a target of 18.8%. As a result, minority student enrollment in these courses fell below the established benchmark.

- From 2003-04 to 2005-06, the percent of students withdrawing from TER courses has been decreasing and falls within the benchmark measure range. Only 10% of the students withdrew from TER courses, well below the college-wide 18%. This also falls below the benchmark trouble score of 15%.

- The percent of incompletes in TER courses has remained consistently higher than the college-wide average (5% compared to 2%). This is also above the benchmark trouble score of 3%. On the other hand, students seem to be more successful in completing the courses, with 81% of students receiving a grade of "C" or higher. College-wide, student success rate averages 68%, while the benchmark for this measure ranges from a trouble score of 75% to a target of 90%.

- When taking into consideration all seven Program Dashboard measures along with their relative weights and benchmarks, Environmental Systems Technology has experienced an increasing overall dashboard score over the last three years.

- During academic year 2005-06 five out of the seven AET Program Dashboard measures under performed when compared to established benchmarks. Specifically, percent of completed sections, the percent of minority students, the percent of withdrawals and incompletes, along with the student course completion rate fell below established trouble scores. The other two benchmarks, sections filled to capacity and the credit hour ratio exceeded established benchmarks.

- Over the last three years, the number of students in AET courses and the number of credit hours have increased and as a result, sections have been filling at higher levels of capacity (96%). On the other hand, one-third of all AET sections were canceled during 2005-06, which far exceeds the college-wide average of 13%.

- Although there was an increase of minority students in AET courses in 2004-05, this percent fell to only 10% in 2005-06, which also falls below the 17% trouble score for this measure.

- All three of the scores measuring student success in AET courses fell below the established troubles scores. Nearly 31% of the students had withdrawn from the courses in 2005-06 and only about half (52%) of the students completed the courses with a grade of "C" or higher. Also, about 13% of students received an incomplete in AET courses in 2005-06, compared to 2% college-wide.

- Over the past ten years a total of 47 awards have been granted across all four options in the Environmental Systems Technology program. The HVAC Technician option has granted the largest number of awards, while the other three options have seen fewer graduates.

- The number of Environmental Systems (previously Climate Control Technology) credit hours has also fluctuated over the last ten years and reached a peak in 1996-97. The number of credit hours in TER courses has increased and remained slightly higher from 2003-04 to 2005-06, nearing the previous peak. The number of Alternative Energy (AET) courses fluctuated until 2000-01, then experienced a sharp increase to reach a peak for the most recent academic year.

- The occupations relating to Environmental Systems are Heating, Air Conditioning, and Refrigeration Mechanics and Installers. In a ten-year span, it's projected that there will be an increase of 352 new jobs in the four-county region of southeast Michigan. Also, an increase is projected for replacement workers due to retirement, out-migration, death, etc. These occupations show earnings of about $45,000 annually.

- Currently, the Environmental Systems Program Assessment Plan has four Learning Outcomes, in which three of them have one benchmark relating to each. The last Learning Outcome has three identical benchmarks with three different assessment methods.

- Historically, the program has not demonstrated on-going implementation of its Program Assessment Plan. In 2004, findings for several benchmarks were submitted; however these were statements pertaining more to the program themselves and were not in line with the assessment methods. Since that time, no other benchmarks have been assessed.

Oakland Community College
Program Dashboard

The purpose of the program dashboard is to provide a data driven tool designed for the systematic and objective review of all curriculum offerings. Based on a common set of measures which apply to all programs/disciplines the program dashboard facilitates the systematic identification of well performing as well as ailing curriculum so early intervention (triage) efforts can be undertaken.

In a rapidly changing economic and competitive environment it is necessary if not imperative to continually review curriculum offerings annually. Dashboard reports are a useful tool for monitoring program performance. In addition, they allow for an integrated approach for collecting, presenting, and monitoring data to meet long and short-term programmatic decision-making needs. As in an airplane, the dashboard consists of a variety of indicator lights to provide the "pilot" information about the overall performance of the highly complex machine.

Oakland Community College
Program Dashboard Report
2005-06

Environmental Systems - HVACR TER
Dashboard Score: 8.98

Measures	Current Score	Benchmarks Trouble Score	Target Score	Percent of Target Achieved	Weight	Weighted Score
Sections Filled to Capacity	54.3%	75.0%	90.0%	60.3%	18.0%	1.09
Percent of Completed Sections	86.4%	75.0%	90.0%	96.0%	14.2%	1.36
Credit Hour Trend Ratio	1.07	0.71	1.25	85.6%	15.3%	1.31
Percent of Minority Students	16.1%	16.9%	18.8%	85.6%	6.1%	0.52
Percent of Withdrawals	9.7%	15.0%	0.0%	90.3%	12.0%	1.08
Percent of Incompletes	5.2%	3.0%	0.0%	94.8%	7.9%	0.75
Student Course Completion Rate	81.0%	60.0%	75.0%	108.0%	26.5%	2.86

Oakland Community College
Percent of Target Achieved
2005-06

Environmental Systems - HVACR TER

Source: Office of Assessment and Effectiveness
Updated On: 1/10/2007
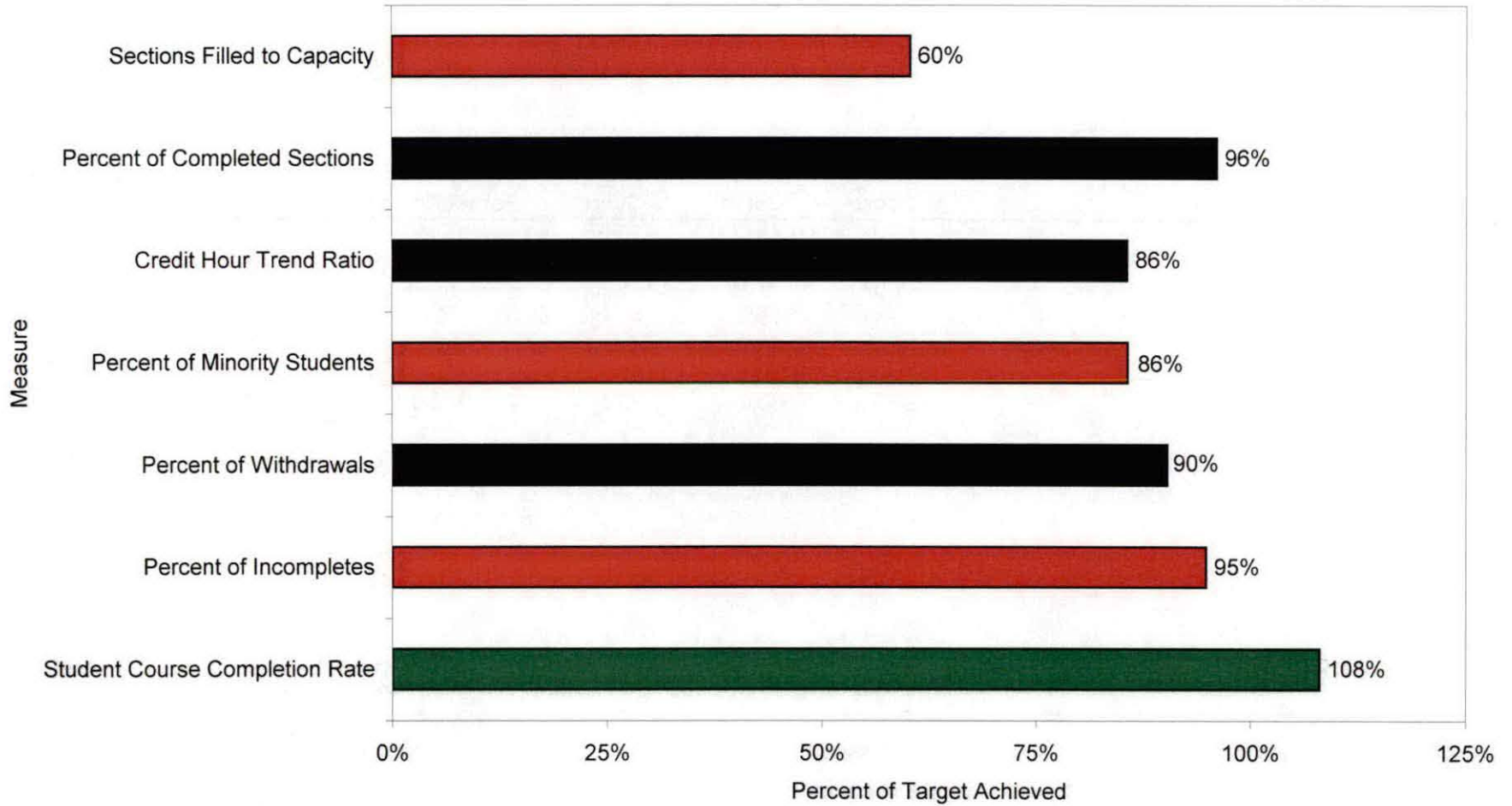
Program Dashboard

Prefix   TER
Title   Environmental Systems–HVACR

	2005-06	Program 2004-05	2003-04	College Wide 2005-06
Sections Filled to Capacity	54.3%	62.8%	55.8%	83.2%
Percent of Completed Sections	86.4%	78.6%	90.5%	86.6%
Headcount Trend Ratio	1.07	1.09	1.09	1.02
Credit Hour Trend Ratio	1.07	1.10	1.10	1.02
Percent of Minority Students	16.1%	18.5%	17.8%	27.9%
Percent of Withdrawals	9.7%	13.9%	17.2%	17.8%
Percent of Incompletes	5.2%	5.4%	4.8%	1.6%
Student Course Completion Rate	81.0%	78.2%	70.0%	68.2%
Dashboard Score	8.98	8.94	8.64	

Sections Filled to Capacity

Prefix	TER
Prefix Title	Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Total Students	275	284	286
Total Capacity	506	452	513
Sections Filled To Capacity	54.3%	62.8%	55.8%

Definition:
The percent of all available seats which are filled on the terms official census date. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:
Total number of sections (credit courses only) that are filled to their designated capacity e.g. allocated seats divided by the total number of available seats in all sections throughout the academic year (July 1 through June 30). In other words, how many sections are filled to their capacity on the sections 1/10 day out of all sections? Include sections that are more than filled / overflowing in calculation.

One-Tenth Day data shows the capacity filled numbers at approximately 3 weeks after the Fall and Winter terms begin; and 1 week after the Summer I and II terms begin. This data will not provide additional enrollment data if the sections begin after the one-tenth day.

While a section may only have a few students enrolled in it the college is able to designate some sections as 'full' so that they are not cancelled (per OCCFA Master Agreement). Therefore some disciplines may show low fill capacity rates, and the college never cancelled the sections or condense the students into fewer sections offering the same course.

Percent of Completed Sections

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Active Sections	19	22	19
Cancelled Sections	3	6	2
Total Sections	22	28	21
Percent of Completed Sections	86.4%	78.6%	90.5%

Definition:
Of all offered sections, the percent of sections that are completed (not cancelled). Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session, after grades are posted.

Methodology:
Annually, the total number of offered credit sections that are completed. Formula = number of completed credit sections divided by the total number of offered credit sections. In other words, the percent of these sections that are not cancelled.

Headcount Trend Ratio

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Headcount Year 1	216	222	224
Headcount Year 2	286	216	222
Headcount Year 3	290	286	216
Headcount Year 4	274	290	286
Headcount Period 1	264	241	221
Headcount Period 2	283	264	241
Headcount Ratio	1.07	1.09	1.09

Definition:
Trend in student headcount based on a three year rolling average. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term. (Note: this measure is not used in the calculation of the Program Dashboard score since it parallels trends depicted in Credit Hours.)

Methodology:
In order to establish a meaningful enrollment statistic which applies to large as well as small disciplines/programs a "ratio" was calculated based on a three year rolling average of student headcount.

The formula used to calculate this measure involves three simple steps:

a. Year 1 + Year 2 + Year 3 / 3 = Period 1
b. Year 2 + Year 3 + Year 4 / 3 = Period 2
c. Period 2 / Period 1 = Ratio

If the ratio is greater than "1" this means there has been an enrollment increase. On the other hand, if the ratio is less than "1" this translates into an enrollment decline. The larger the number the larger the enrollment increase. Likewise, the lower the number the greater the enrollment decline.

Credit Hour Trend Ratio

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Credit Hour Year 1	780	805	786
Credit Hour Year 2	1,032	780	805
Credit Hour Year 3	1,064	1,032	780
Credit Hour Year 4	982	1,064	1,032
Credit Hour Period 1	959	872	790
Credit Hour Period 2	1,026	959	872
Credit Hour Ratio	1.07	1.10	1.10

Definition:
Trend in student credit hours based on a three year rolling average. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:
In order to establish a meaningful enrollment statistic which applies to large as well as small disciplines/programs a "ratio" was calculated based on a three year rolling average of student credit hours.

The formula used to calculate this measure involves three simple steps:

a. Year 1 + Year 2 + Year 3 / 3 = Period 1
b. Year 2 + Year 3 + Year 4 / 3 = Period 2
c. Period 2 / Period 1 = Ratio

If the ratio is greater than "1" this means there has been an enrollment increase. On the other hand, if the ratio is less than "1" this translates into an enrollment decline. The larger the number the larger the enrollment increase. Likewise, the lower the number the greater the enrollment decline.

Percent of Minority Students

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Minority Students	18	24	23
Total Students	112	130	129
Percent of Minority Students	16.1%	18.5%	17.8%

Definition:
The percent of students who are minority. Minority status is self-reported by the student and includes: African American, Asian, Hispanic, Native American Indian and Other. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:
Percentages are based on those students enrolled on the terms official census date (one tenth day) and excludes missing data.

Percent of Withdrawals

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Total Withdrawals	26	39	43
Total Grades	269	280	250
Percent of Withdrawals	9.7%	13.9%	17.2%

Definition:
The percent of students who withdraw from their course after the term begins. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:
Percent of withdrawals is derived by dividing the total number of student initiated withdrawals by the total number of grades and marks awarded throughout the academic year. The Withdrawal-Passing (WP), and Withdrawal-Failing (WF) are considered Withdrawals (W). Meanwhile, calculations exclude: Audit (AU), Not Attended (N), and Not Reported (NR).

Percent of Incompletes

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Total Incompletes	14	15	12
Total Grades	269	280	250
Percent of Incompletes	5.2%	5.4%	4.8%

Definition:
The percent of students who receive an incomplete in their course. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:
Percent of incompletes is derived by dividing the total number of incompletes by the total number of grades and marks awarded throughout the academic year. The Continuous Progress (CP) grade is considered an Incomplete (I). Meanwhile, calculations exclude: Audit (AU), Not Attended (N), and Not Reported (NR).

Student Course Completion Rate

Prefix   TER
Prefix Title   Environmental Systems–HVACR

	2005-06	2004-05	2003-04
Successful Grades	218	219	175
Total Student Grades	269	280	250
Student Course Completion Rate	81.0%	78.2%	70.0%

Definition:
The percent of students who successfully complete a course with a grade of "C" or higher.
Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:
Student success rates are based on end of session data after all grades have been posted.
Data includes grades from the entire academic year (Summer II, Fall, Winter, and Summer I).
The following grades/marks are excluded from the calculation: Audit (AU), Not Attended (N) and Not Reported (NR).
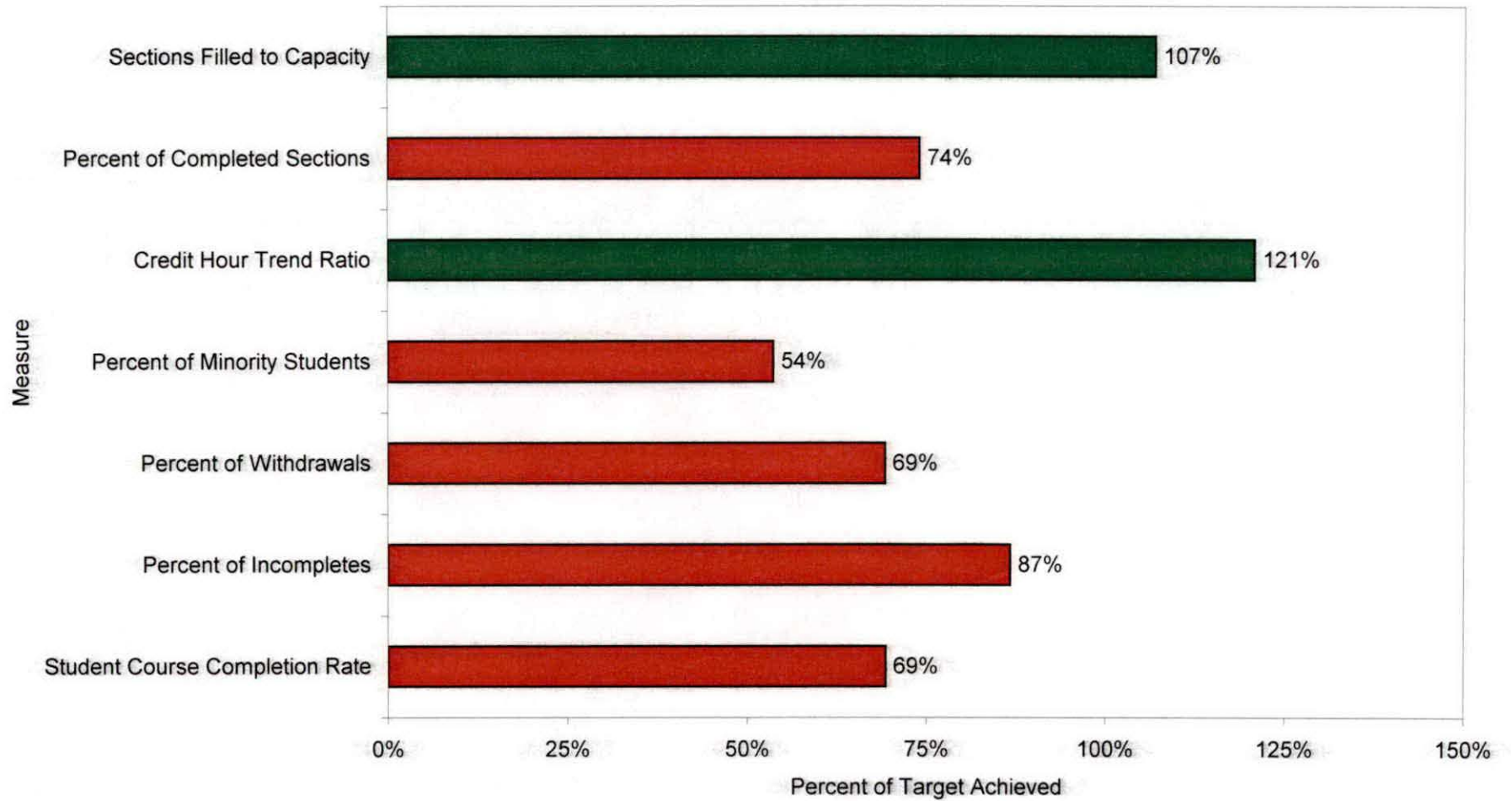
Oakland Community College
Program Dashboard Report
2005-06

Alternate Energies AET
Dashboard Score: 8.51

Measures	Current Score	Benchmarks Trouble Score	Target Score	Percent of Target Achieved	Weight	Weighted Score
Sections Filled to Capacity	96.3%	75.0%	90.0%	107.0%	18.0%	1.93
Percent of Completed Sections	66.7%	75.0%	90.0%	74.1%	14.2%	1.05
Credit Hour Trend Ratio	1.51	0.71	1.25	120.8%	15.3%	1.85
Percent of Minority Students	10.1%	16.9%	18.8%	53.7%	6.1%	0.33
Percent of Withdrawals	30.7%	15.0%	0.0%	69.3%	12.0%	0.83
Percent of Incompletes	13.3%	3.0%	0.0%	86.7%	7.9%	0.68
Student Course Completion Rate	52.0%	60.0%	75.0%	69.3%	26.5%	1.84

Oakland Community College
Percent of Target Achieved
2005-06

Alternate Energies AET

Measure / Percent of Target Achieved

- Sections Filled to Capacity — 107%
- Percent of Completed Sections — 74%
- Credit Hour Trend Ratio — 121%
- Percent of Minority Students — 54%
- Percent of Withdrawals — 69%
- Percent of Incompletes — 87%
- Student Course Completion Rate — 69%

Program Dashboard
Detail Report

Prefix AET
Title Alternate Energies

		Program		College Wide
	2005-06	**2004-05**	**2003-04**	**2005-06**
Sections Filled to Capacity	96.3%	55.3%	36.5%	83.2%
Percent of Completed Sections	66.7%	83.3%	60.0%	86.6%
Headcount Trend Ratio	1.51	1.69	1.46	1.02
Credit Hour Trend Ratio	1.51	1.69	1.46	1.02
Percent of Minority Students	10.1%	23.3%	14.8%	27.9%
Percent of Withdrawals	30.7%	30.9%	19.2%	17.8%
Percent of Incompletes	13.3%	34.5%	7.7%	1.6%
Student Course Completion Rate	52.0%	34.5%	65.4%	68.2%
Dashboard Score	8.51	7.74	7.89	

Sections Filled to Capacity

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Total Students	77	63	27
Total Capacity	80	114	74
Sections Filled To Capacity	96.3%	55.3%	36.5%

Definition:

The percent of all available seats which are filled on the terms official census date. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:

Total number of sections (credit courses only) that are filled to their designated capacity e.g. allocated seats divided by the total number of available seats in all sections throughout the academic year (July 1 through June 30). In other words, how many sections are filled to their capacity on the sections 1/10 day out of all sections? Include sections that are more than filled / overflowing in calculation.

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While a section may only have a few students enrolled in it the college is able to designate some sections as 'full' so that they are not cancelled (per OCCFA Master Agreement). Therefore some disciplines may show low fill capacity rates, and the college never cancelled the sections or condense the students into fewer sections offering the same course.

Percent of Completed Sections

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Active Sections	4	5	3
Cancelled Sections	2	1	2
Total Sections	6	6	5
Percent of Completed Sections	66.7%	83.3%	60.0%

Definition:

Of all offered sections, the percent of sections that are completed (not cancelled). Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session, after grades are posted.

Methodology:

Annually, the total number of offered credit sections that are completed. Formula = number of completed credit sections divided by the total number of offered credit sections. In other words, the percent of these sections that are not cancelled.

Headcount Trend Ratio

Prefix AET

Prefix Title Alternate Energies

	2005-06	2004-05	2003-04
Headcount Year 1	21	19	6
Headcount Year 2	27	21	19
Headcount Year 3	65	27	21
Headcount Year 4	79	65	27
Headcount Period 1	38	22	15
Headcount Period 2	57	38	22
Headcount Ratio	1.51	1.69	1.46

Definition:

Trend in student headcount based on a three year rolling average. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term. (Note: this measure is not used in the calculation of the Program Dashboard score since it parallels trends depicted in Credit Hours.)

Methodology:

In order to establish a meaningful enrollment statistic which applies to large as well as small disciplines/programs a "ratio" was calculated based on a three year rolling average of student headcount.

The formula used to calculate this measure involves three simple steps:

a. Year 1 + Year 2 + Year 3 / 3 = Period 1
b. Year 2 + Year 3 + Year 4 / 3 = Period 2
c. Period 2 / Period 1 = Ratio

If the ratio is greater than "1" this means there has been an enrollment increase. On the other hand, if the ratio is less than "1" this translates into an enrollment decline. The larger the number the larger the enrollment increase. Likewise, the lower the number the greater the enrollment decline.

Credit Hour Trend Ratio

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Credit Hour Year 1	84	76	24
Credit Hour Year 2	108	84	76
Credit Hour Year 3	260	108	84
Credit Hour Year 4	316	260	108
Credit Hour Period 1	151	89	61
Credit Hour Period 2	228	151	89
Credit Hour Ratio	1.51	1.69	1.46

Definition:

Trend in student credit hours based on a three year rolling average. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:

In order to establish a meaningful enrollment statistic which applies to large as well as small disciplines/programs a "ratio" was calculated based on a three year rolling average of student credit hours.

The formula used to calculate this measure involves three simple steps:

a. Year 1 + Year 2 + Year 3 / 3 = Period 1
b. Year 2 + Year 3 + Year 4 / 3 = Period 2
c. Period 2 / Period 1 = Ratio

If the ratio is greater than "1" this means there has been an enrollment increase. On the other hand, if the ratio is less than "1" this translates into an enrollment decline. The larger the number the larger the enrollment increase. Likewise, the lower the number the greater the enrollment decline.

Percent of Minority Students

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Minority Students	7	14	4
Total Students	69	60	27
Percent of Minority Students	10.1%	23.3%	14.8%

Definition:

The percent of students who are minority. Minority status is self-reported by the student and includes: African American, Asian, Hispanic, Native American Indian and Other. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: One-tenth-day of each term.

Methodology:

Percentages are based on those students enrolled on the terms official census date (one tenth day) and excludes missing data.

Percent of Withdrawals

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Total Withdrawals	23	17	5
Total Grades	75	55	26
Percent of Withdrawals	30.7%	30.9%	19.2%

Definition:

The percent of students who withdraw from their course after the term begins. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:

Percent of withdrawals is derived by dividing the total number of student initiated withdrawals by the total number of grades and marks awarded throughout the academic year. The Withdrawal-Passing (WP), and Withdrawal-Failing (WF) are considered Withdrawals (W). Meanwhile, calculations exclude: Audit (AU), Not Attended (N), and Not Reported (NR).

Percent of Incompletes

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Total Incompletes	10	19	2
Total Grades	75	55	26
Percent of Incompletes	13.3%	34.5%	7.7%

Definition:

The percent of students who receive an incomplete in their course. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:

Percent of incompletes is derived by dividing the total number of incompletes by the total number of grades and marks awarded throughout the academic year. The Continuous Progress (CP) grade is considered an Incomplete (I). Meanwhile, calculations exclude: Audit (AU), Not Attended (N), and Not Reported (NR).

Student Course Completion Rate

Prefix   AET

Prefix Title   Alternate Energies

	2005-06	2004-05	2003-04
Successful Grades	39	19	17
Total Student Grades	75	55	26
Student Course Completion Rate	52.0%	34.5%	65.4%

Definition:

The percent of students who successfully complete a course with a grade of "C" or higher. Time Frame: Academic Year (Summer II, Fall, Winter, Summer I). Data Source: End of session files, after grades are posted.

Methodology:

Student success rates are based on end of session data after all grades have been posted. Data includes grades from the entire academic year (Summer II, Fall, Winter, and Summer I). The following grades/marks are excluded from the calculation: Audit (AU), Not Attended (N) and Not Reported (NR).
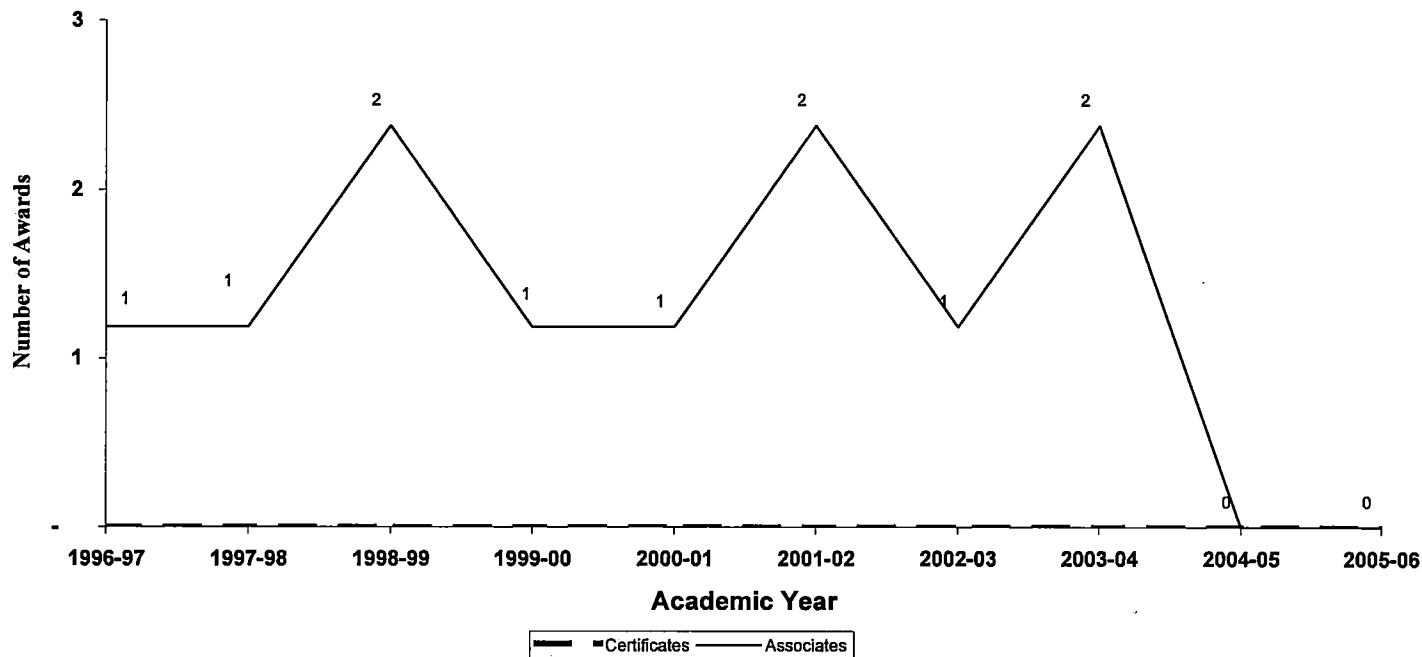
Institutional Research Report

Environmental Systems Technology
Degree and Credit Hour Trends Reports
for
Curriculum Review Committee

**OAKLAND
COMMUNITY
COLLEGE**

Oakland Community College
Associate Degrees and Certificates Awarded
## Environmental Sys Tech-Facilities
1996-97 through 2005-06

Academic Yr.	Certificates	Associates
1996-97	0	1
1997-98	0	1
1998-99	0	2
1999-00	0	1
2000-01	0	1
2001-02	0	2
2002-03	0	1
2003-04	0	2
2004-05	0	0
2005-06	0	0

Oakland Community College
Associate Degrees and Certificates Awarded
Environmental Sys Tech-Advanced
1996-97 through 2005-06
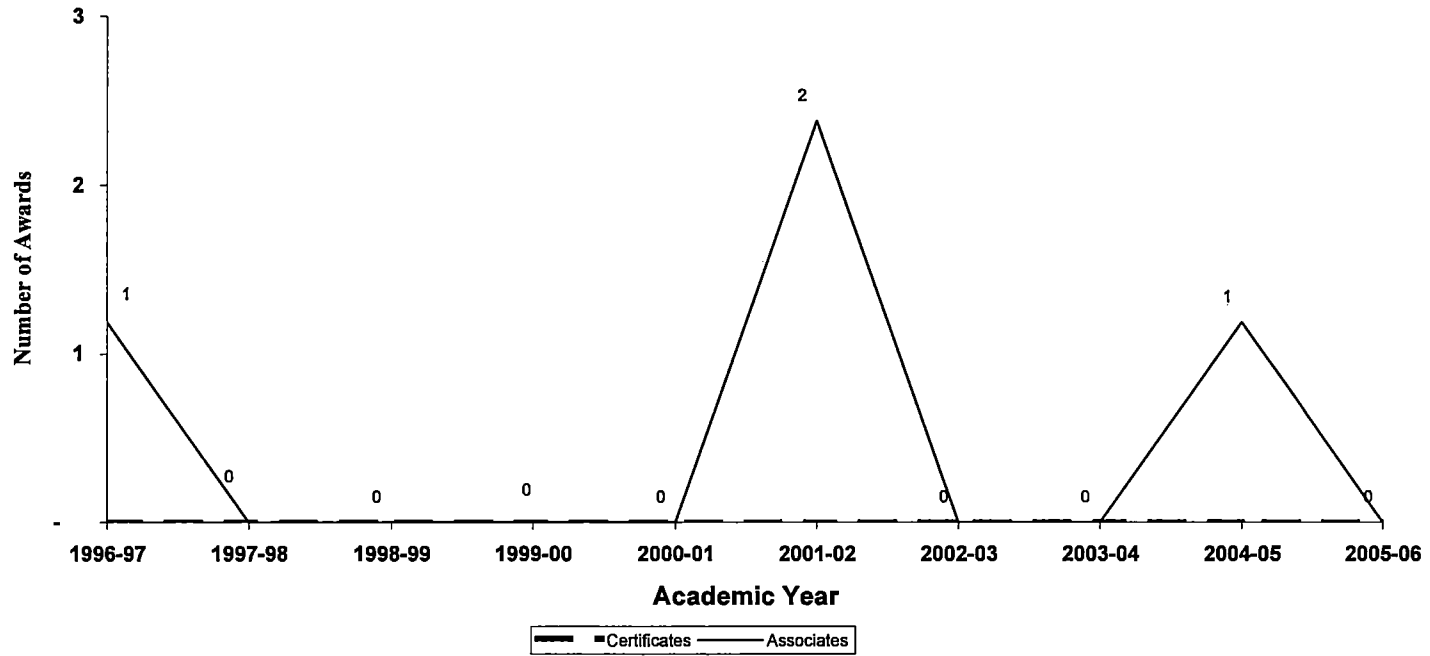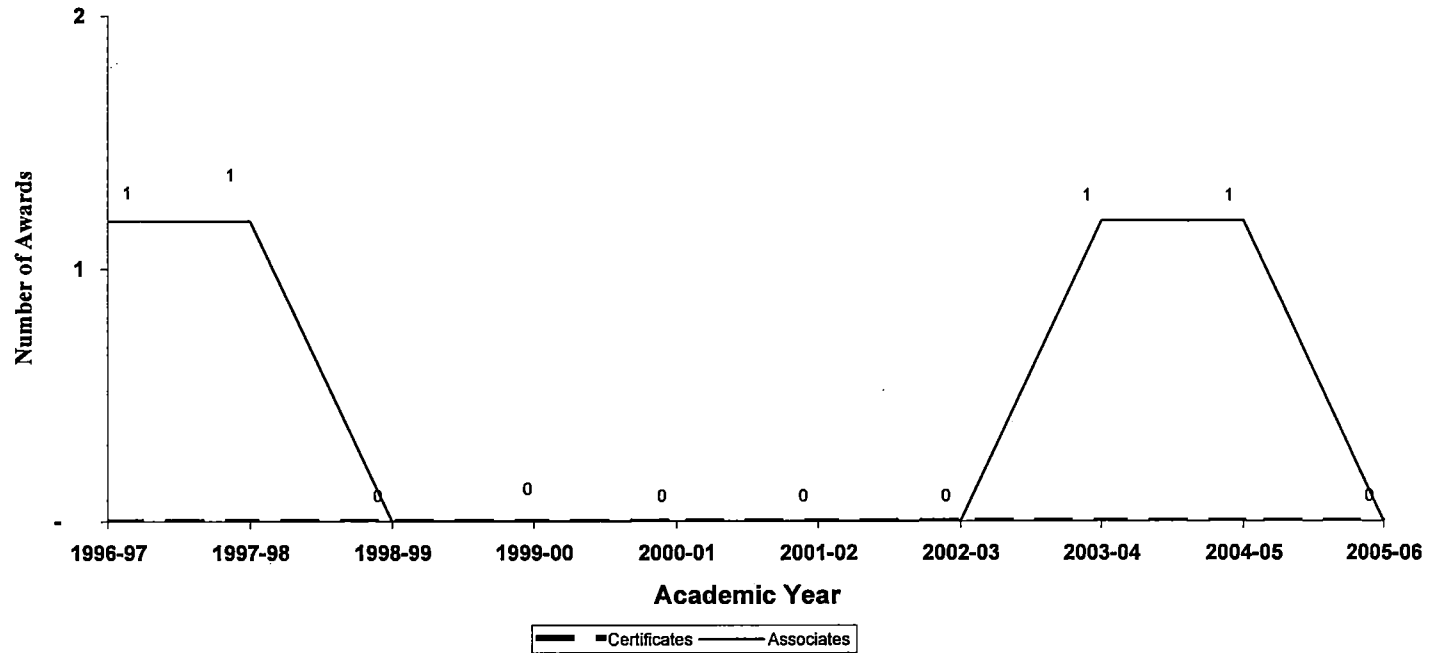

Academic Yr.	Certificates	Associates
1996-97	0	1
1997-98	0	0
1998-99	0	0
1999-00	0	0
2000-01	0	0
2001-02	0	2
2002-03	0	0
2003-04	0	0
2004-05	0	1
2005-06	0	0

Oakland Community College
Associate Degrees and Certificates Awarded
Env. Sys Tech-Heat, Vent.
1996-97 through 2005-06
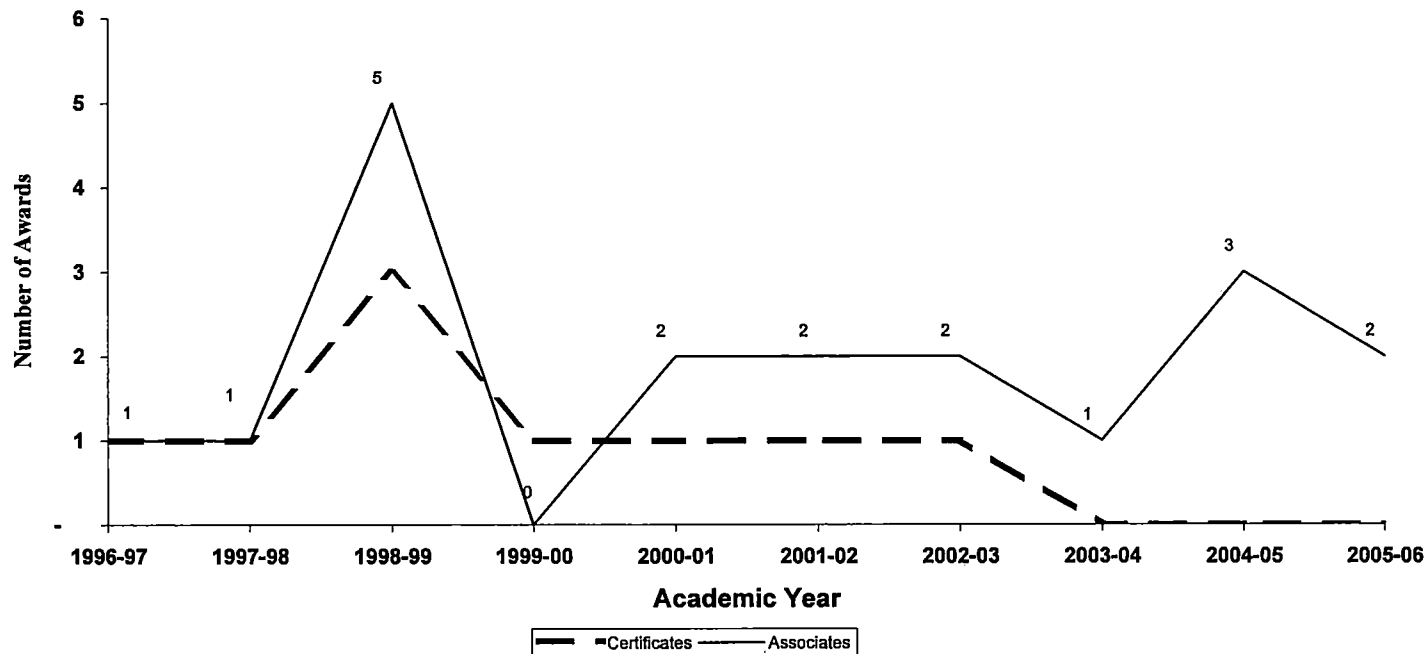
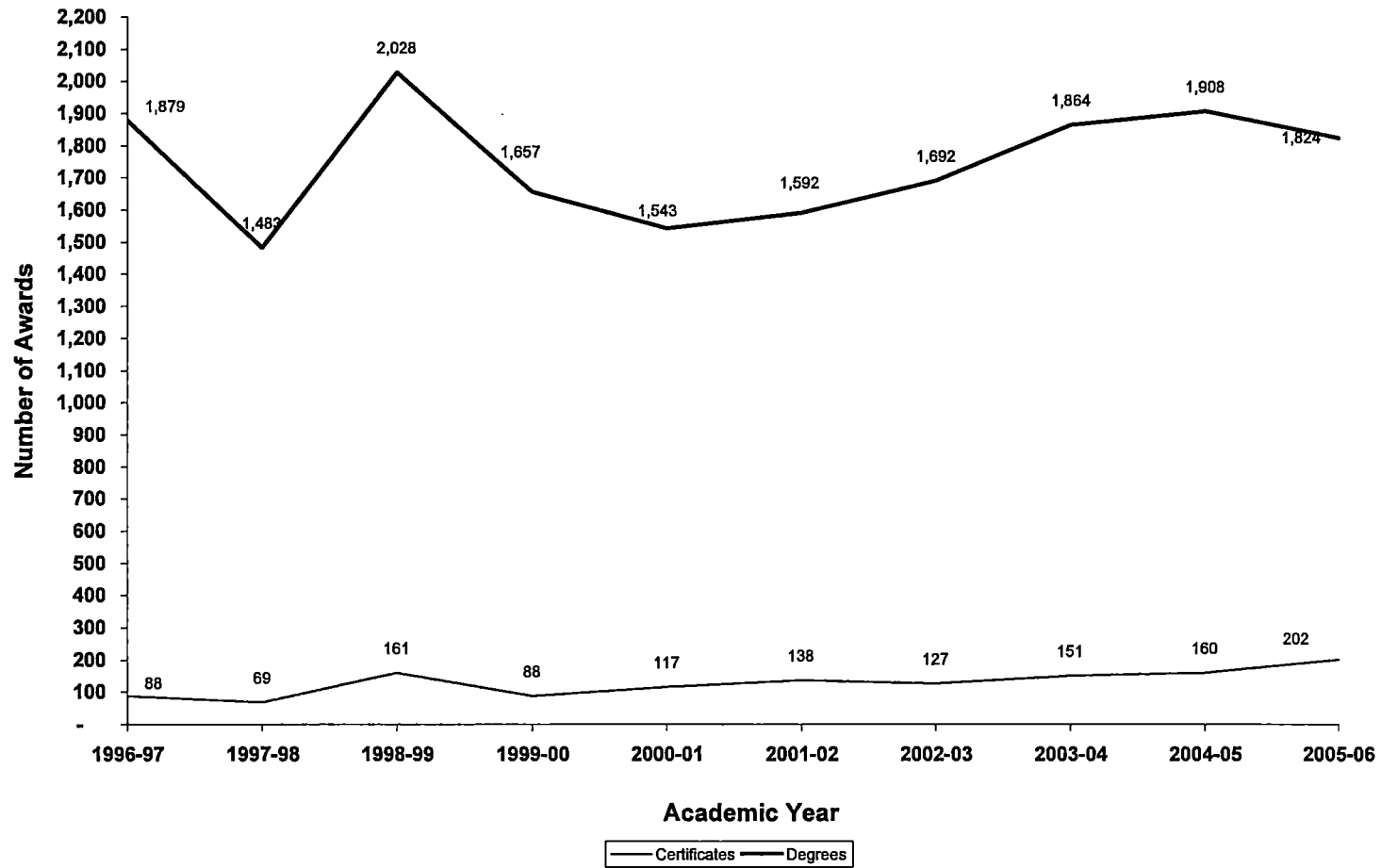| Academic Yr.	Certificates	Associates
1996-97	1	1
1997-98	1	1
1998-99	3	5
1999-00	1	0
2000-01	1	2
2001-02	1	2
2002-03	1	2
2003-04	0	1
2004-05	0	3
2005-06	0	2

Oakland Community College
Associate Degrees and Certificates Awarded
Environmental Sys Tech-Special
1996-97 through 2005-06

Academic Yr.	Certificates	Associates
1996-97	0	1
1997-98	0	1
1998-99	0	0
1999-00	0	0
2000-01	0	0
2001-02	0	0
2002-03	0	0
2003-04	0	1
2004-05	0	1
2005-06	0	0

12/20/2006

Oakland Community College
Associate Degrees and Certificates Awarded
College-Wide
1996-97 through 2005-06

Number of Awards / Academic Year

Degrees:
- 1996-97: 1,879
- 1997-98: 1,483
- 1998-99: 2,028
- 1999-00: 1,657
- 2000-01: 1,543
- 2001-02: 1,592
- 2002-03: 1,692
- 2003-04: 1,864
- 2004-05: 1,908
- 2005-06: 1,824

Certificates:
- 1996-97: 88
- 1997-98: 69
- 1998-99: 161
- 1999-00: 88
- 2000-01: 117
- 2001-02: 138
- 2002-03: 127
- 2003-04: 151
- 2004-05: 160
- 2005-06: 202

Legend: Certificates — Degrees

Oakland Community College
Degree Trends Report
Environmental Systems Technology
1996-97 through 2005-06

The Degree Trends Report is developed by the Office of Institutional Research based
on data compiled from official college records which are submitted to the State
of Michigan for the IPEDS (Integrated Post-Secondary Education System) Annual Degrees
Conferred Report. The Degree Trends Report examines trends of OCC degrees,
based on specific programs. The standard format offers information about certificates and
associate degrees awarded. In the event that a given program offers only a
certificate or an associate degree, information describing the other type of award
will not be shown.

Trends over a specified period of time are illustrated by the following graphs for
Environmental Sys Tech-Facilities (ENV.FAC)

- Ten-year trend showing the annual awards conferred in
  Environmental Sys Tech-Facilities

- Rate of change in annual awards conferred in
  Environmental Sys Tech-Facilities

- The three-year Moving Mean for annual awards conferred in
  Environmental Sys Tech-Facilities

- Ten-year trend in awards conferred collegewide.

Questions regarding this report can be forwarded to the Office of Institutional Research
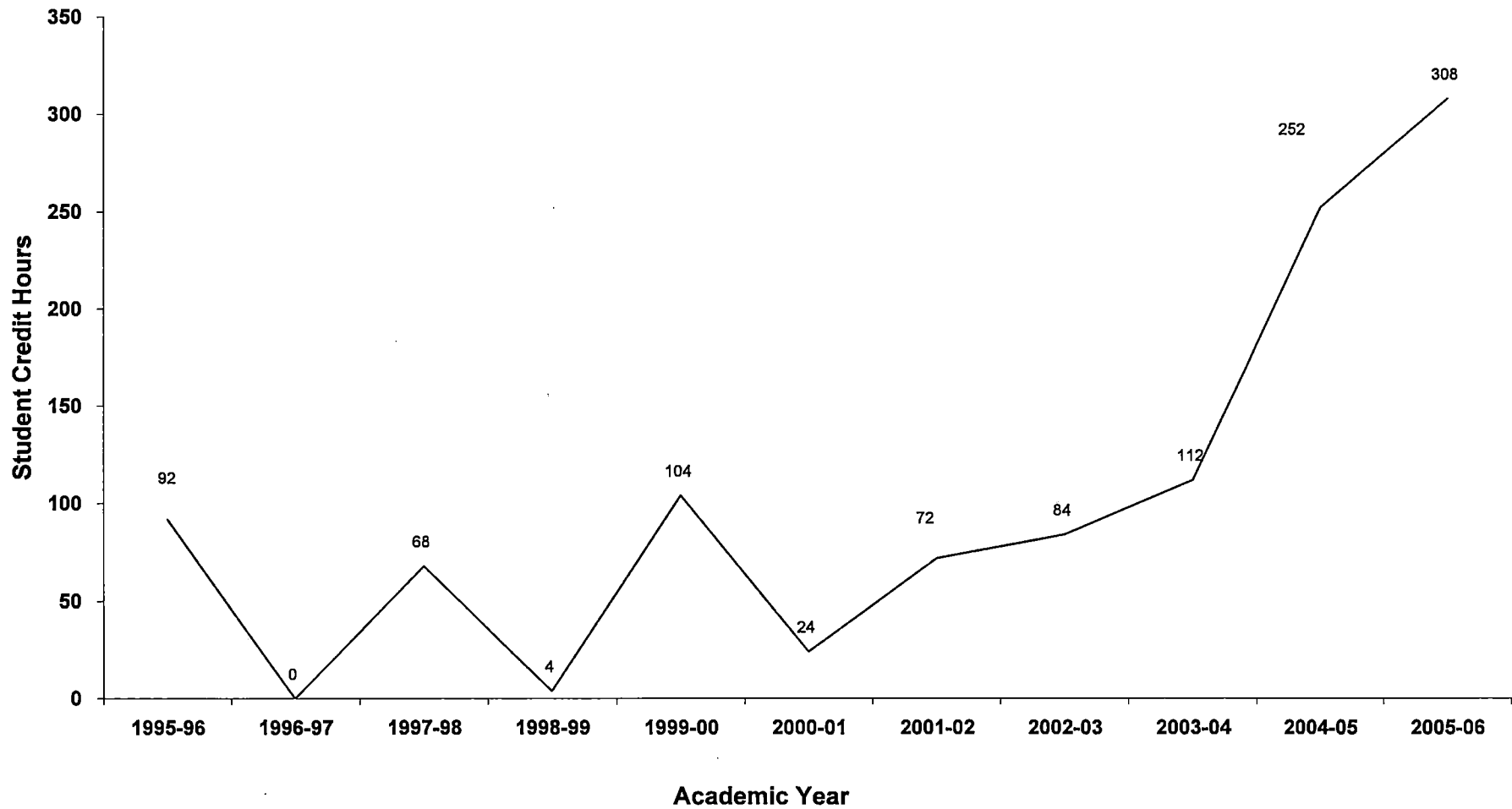at (248) 341-2123.

Oakland Community College
Ten-Year Trend in Student Credit Hours
Climate Control Tech
1995-96 through 2005-06

|	1995-96 SCH	1996-97 SCH	1997-98 SCH	1998-99 SCH	1999-00 SCH	2000-01 SCH	2001-02 SCH	2002-03 SCH	2003-04 SCH	2004-05 SCH	2005-06 SCH	5-Year % Change	10-Year % Change
Climate Control Tech	852	1,063	828	727	933	771	785	766	1,016	1,040	985	27.8	15.6
College Wide Totals	451,159	443,471	431,521	440,448	438,997	453,054	447,928	478,827	468,777	472,892	487,597	7.6	8.1

Academic Year
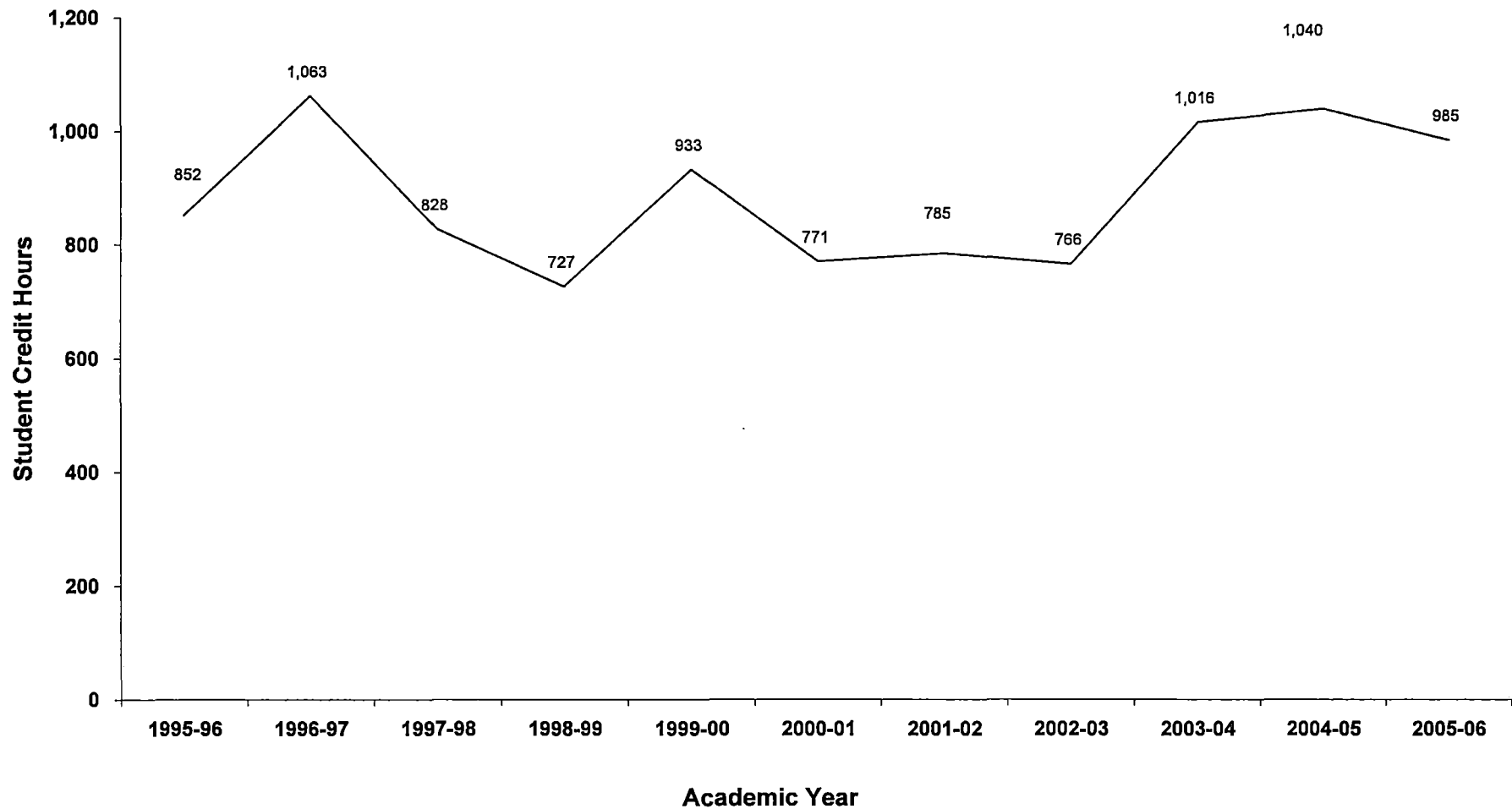
Oakland Community College
Ten-Year Trend in Student Credit Hours
Alternative Energy Tech
1995-96 through 2005-06

	1995-96 SCH	1996-97 SCH	1997-98 SCH	1998-99 SCH	1999-00 SCH	2000-01 SCH	2001-02 SCH	2002-03 SCH	2003-04 SCH	2004-05 SCH	2005-06 SCH	5-Year % Change	10-Year % Change
Alternative Energy Tech	92	0	68	4	104	24	72	84	112	252	308	1,183.3	234.8
College Wide Totals	451,159	443,471	431,521	440,448	438,997	453,054	447,928	478,827	468,777	472,892	487,597	7.6	8.1

Y-axis: Student Credit Hours; X-axis: Academic Year. Data points: 1995-96: 92; 1996-97: 0; 1997-98: 68; 1998-99: 4; 1999-00: 104; 2000-01: 24; 2001-02: 72; 2002-03: 84; 2003-04: 112; 2004-05: 252; 2005-06: 308

12/19/2006

Oakland Community College
Ten-Year Trend in Student Credit Hours
College-Wide
1995-96 through 2004-05
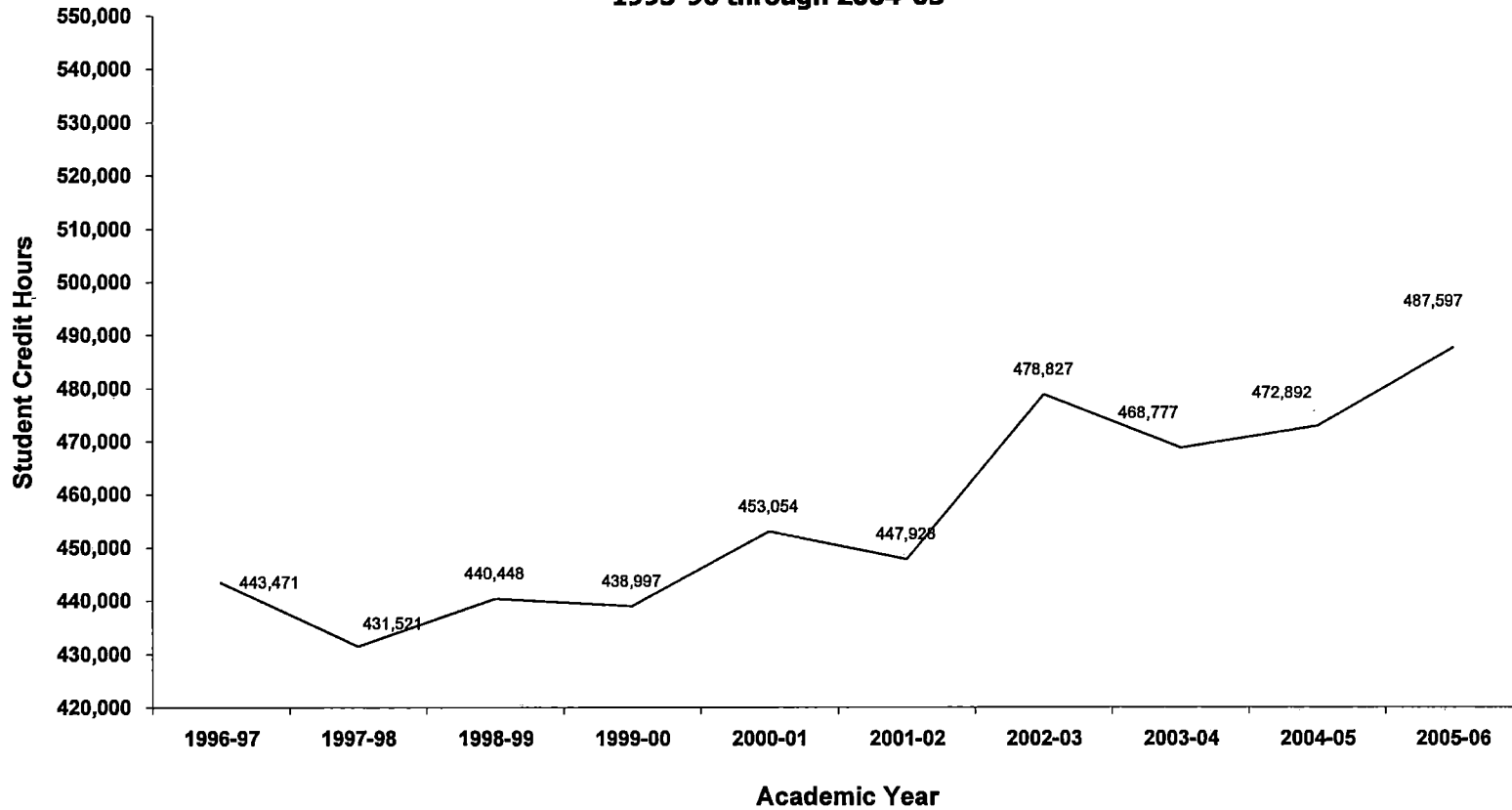
1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
443,471	431,521	440,448	438,997	453,054	447,928	478,827	468,777	472,892	487,597

Oakland Community College
Credit Hour Trends Report
1995-96 through 2005-06

Each year the Office of Institutional Research prepares the Credit Hour Trends Report, based on data submitted to the State of Michigan in the annual ACS-6 (Activities Classification Structure) process. This report is based on each course section's official count date (1/10th Day). The Credit Hour Trends Report examines annual (July 1 - June 30) enrollment trends of OCC disciplines, based on course prefix codes.

Trends over a specified period of time are illustrated by the following graphs for

Alternative Energy Tech.

- Graph depicting ten-year trend in student credit hours generated by Alternative Energy Tech

- Graphs depicting three-year moving mean and rate of change in student credit hours for Alternative Energy Tech.

- Ten-year trend in annual credit hours generated Collegewide.

Questions regarding this report can be forwarded to the Office of Institutional Research at (248) 341-2123.

Occupational Projections
(2005–2015)

The following projections are for those occupations most closely associated with this program. However, the extent to which specific OCC programs lead to jobs reflected within a given Standard Occupational Code (SOC) is dependent upon the way in which the U.S. Department of Labor groups specific occupations.

Occupational projections are presented at the "Detailed Standard Occupational Code" (N = 749) level according to the U.S. Department of Labor.

Projections are subject to change based on emerging economic, political and social forces.

These projections reflect the four county region of Oakland, Macomb, Livingston and Wayne counties.

Projections are based on data from 24 major data sources, including the U.S. Department of Commerce, Bureau of Labor Statistics (BLS), Internal Revenue Service (IRS), and Census data. To forecast occupational demand at the county level, BLS data are regionalized and adjusted for emerging technological changes, the age of workers by occupation, and other factors affecting occupational demand.

This information was obtained from CCbenefits Inc. Community College Strategic Planner (CCSP).

Data presented in the following tables include:
- Base Year: Current number of jobs in 2005.
- Five Year: Number of projected jobs in 2010.
- Ten Year: Number of projected jobs in 2015.
- New Jobs: Projected number of new jobs between 2005 and 2015.
- Replacement Jobs: Projected number of replacement jobs between 2005 and 2015.
- % New Jobs: Percent of projected new jobs in 2015 using 2005 as the base year.
- % Replacement Jobs: Percent of projected replacement jobs in 2015 using 2005 as the base year.
- % New and Replacement Jobs: Percent of projected new and replacement jobs in 2015 using 2005 as the base year.
- Earnings: Average annual earnings within the SOC code in 2005.

Note: Percent change figures must be interpreted carefully since they are based on actual number of jobs. In some cases the actual number of jobs may be quite low, thereby giving a misleading picture if only the percentage was considered.

Environmental Systems Related Occupations (2005 to 2015)

SOC Code	Name	Base Year	Five Year	Ten Year	New Jobs	Rplmnt Jobs	% New Jobs	% Rplmnt Jobs	% New && Rplmnt	Earnings
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	4,338	4,620	4,689	352	591	8.0%	14.0%	22.0%	$44,970
Totals:		4,338	4,620	4,689	352	591				

SOC Code 49-9021
Name   Heating, Air Conditioning, and Refrigeration Mechanics and Installers

Definition
Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves. Examples: Furnace Converter, Gas Furnace Installer, Oil Burner Repairer

Source: OCC, Office of Assessment & Effectiveness (CCSP)

Occupational Skills Report
Heating and Air Conditioning Mechanics and Installers (49-9021.01)

Occupational Description

Install, service, and repair heating and air conditioning systems in residences and commercial establishments.

Occupational Knowledge

Knowledge	Importance	Imp (0-100)	Level	Lvl (0-100)
Mechanical	Very Important	91	Expert	79
Customer and Personal Service	Very Important	75	Advanced	65
Building and Construction	Important	62	Advanced	62
Design	Important	66	Advanced	62
Engineering and Technology	Important	71	Advanced	58
Mathematics	Important	61	Advanced	54
Physics	Important	52	Advanced	53
Education and Training	Important	52	Advanced	51
Computers and Electronics	Important	53	Intermediate	48
Sales and Marketing	Important	54	Intermediate	47
English Language	Important	65	Intermediate	45
Administration and Management	Important	51	Intermediate	42
Law and Government	Somewhat Important	44	Intermediate	41
Public Safety and Security	Important	52	Intermediate	41
Chemistry	Somewhat Important	39	Intermediate	40
Personnel and Human Resources	Somewhat Important	31	Intermediate	32
Production and Processing	Somewhat Important	39	Intermediate	32
Transportation	Somewhat Important	32	Intermediate	31
Economics and Accounting	Somewhat Important	35	Intermediate	31
Clerical	Somewhat Important	34	Intermediate	28
Psychology	Somewhat Important	30	Intermediate	27
Communications and Media	Somewhat Important	26	Intermediate	26
Geography	Not Important	12	Basic	22
Telecommunications	Not Important	19	Basic	20
Therapy and Counseling	Not Important	14	Basic	18
Biology	Not Important	15	Basic	13
Foreign Language	Not Important	5	Basic	10
Medicine and Dentistry	Not Important	9	Basic	10
Sociology and Anthropology	Not Important	6	Basic	9
History and Archeology	Not Important	4	Basic	7
Philosophy and Theology	Not Important	5	Basic	7
Food Production	Not Important	8	Basic	6
Fine Arts	Not Important	0	Basic	0

Source: O*NET Database 11

Occupational Skills

Skill	Importance	Imp (0-100)	Level	Lvl (0-100)
Coordination	Important	70	Advanced	73
Repairing	Very Important	83	Advanced	67
Active Learning	Important	71	Advanced	66
Troubleshooting	Very Important	84	Advanced	65
Installation	Important	73	Advanced	65
Equipment Maintenance	Very Important	76	Advanced	64
Critical Thinking	Important	73	Advanced	63
Mathematics	Important	60	Advanced	61
Learning Strategies	Important	68	Advanced	60
Systems Evaluation	Important	62	Advanced	60
Reading Comprehension	Important	69	Advanced	58
Time Management	Important	69	Advanced	57
Persuasion	Important	60	Advanced	57
Complex Problem Solving	Important	64	Advanced	56
Active Listening	Very Important	77	Advanced	55
Negotiation	Important	57	Advanced	55
Writing	Important	51	Advanced	54
Equipment Selection	Important	64	Advanced	54
Instructing	Important	58	Advanced	53
Monitoring	Important	59	Advanced	53
Speaking	Important	67	Advanced	52
Systems Analysis	Important	60	Advanced	50
Service Orientation	Important	56	Advanced	50
Operation Monitoring	Important	65	Intermediate	49
Science	Important	62	Intermediate	49
Social Perceptiveness	Important	73	Intermediate	48
Operations Analysis	Somewhat Important	46	Intermediate	47
Quality Control Analysis	Important	50	Intermediate	43
Technology Design	Somewhat Important	44	Intermediate	42
Operation and Control	Somewhat Important	43	Intermediate	40
Judgment and Decision Making	Important	56	Intermediate	37
Management of Material Resources	Somewhat Important	45	Intermediate	35
Management of Personnel Resources	Somewhat Important	38	Intermediate	34
Management of Financial Resources	Somewhat Important	33	Intermediate	29
Programming	Not Important	14	Basic	12

Source: O*NET Database 11

Occupational Abilities

Ability	Importance	Imp (0-100)	Level	Lvl (0-100)
Extent Flexibility	Very Important	75	Advanced	73
Manual Dexterity	Important	72	Advanced	61
Finger Dexterity	Important	72	Advanced	61
Visualization	Important	56	Advanced	61
Control Precision	Important	66	Advanced	55
Near Vision	Important	63	Advanced	55
Oral Expression	Important	66	Advanced	55
Hearing Sensitivity	Important	53	Advanced	54
Information Ordering	Important	66	Advanced	54
Problem Sensitivity	Important	72	Advanced	54
Inductive Reasoning	Important	69	Advanced	54
Reaction Time	Important	50	Advanced	52
Visual Color Discrimination	Important	53	Advanced	52
Oral Comprehension	Important	66	Advanced	52
Deductive Reasoning	Important	66	Advanced	52
Written Comprehension	Important	53	Advanced	52
Speed of Closure	Somewhat Important	47	Advanced	50
Arm-Hand Steadiness	Important	69	Advanced	50
Trunk Strength	Important	69	Intermediate	48
Flexibility of Closure	Somewhat Important	47	Intermediate	46
Far Vision	Somewhat Important	47	Intermediate	46
Auditory Attention	Somewhat Important	47	Intermediate	46
Static Strength	Important	60	Intermediate	46
Multilimb Coordination	Important	63	Intermediate	46
Wrist-Finger Speed	Somewhat Important	44	Intermediate	45
Category Flexibility	Somewhat Important	47	Intermediate	45
Speech Recognition	Important	50	Intermediate	45
Time Sharing	Somewhat Important	41	Intermediate	45
Written Expression	Somewhat Important	47	Intermediate	43
Perceptual Speed	Important	50	Intermediate	43
Depth Perception	Somewhat Important	44	Intermediate	43
Gross Body Equilibrium	Important	56	Intermediate	43
Selective Attention	Important	60	Intermediate	41
Stamina	Important	53	Intermediate	39
Gross Body Coordination	Important	56	Intermediate	39
Speech Clarity	Important	56	Intermediate	39
Memorization	Somewhat Important	41	Intermediate	39
Fluency of Ideas	Somewhat Important	44	Intermediate	38
Originality	Somewhat Important	44	Intermediate	38
Response Orientation	Somewhat Important	35	Intermediate	38
Glare Sensitivity	Somewhat Important	41	Intermediate	38
Speed of Limb Movement	Important	50	Intermediate	36
Dynamic Strength	Somewhat Important	44	Intermediate	36
Sound Localization	Somewhat Important	38	Intermediate	34
Spatial Orientation	Somewhat Important	35	Intermediate	30
Night Vision	Somewhat Important	31	Intermediate	29
Peripheral Vision	Somewhat Important	28	Intermediate	29
Rate Control	Somewhat Important	31	Intermediate	29
Mathematical Reasoning	Somewhat Important	28	Intermediate	25
Number Facility	Not Important	22	Intermediate	25
Explosive Strength	Not Important	3	Basic	4
Dynamic Flexibility	Not Important	0	Basic	0

Source: O*NET Database 11

CCbenefits Job Skills Report

This report provides detailed information on the knowledge, skills and abilities required for a given occupation. Consideration of these different competencies and levels of attainment while designing and reviewing curriculum will ensure that students are adequately prepared for employment.

Tables in the Job Skills report include:

- *Competency* which is required of the occupation. This is a subcategory of knowledge, skill, or ability.

- *Importance* of the competency to the occupation (in general terms)

    - Not important
    - Somewhat important
    - Important
    - Very important
    - Extremely important

- *Importance* of the competency to the occupation (in specific terms).

    - 0 to 20 = not important
    - 21 to 40 = somewhat important
    - 41 to 60 = important
    - 61 to 80 = very important
    - 81 to 100 = extremely important

- *Level of Attainment* in the competency required by the occupation:

    - Basic = 0 to 24
    - Intermediate = 25 to 49
    - Advanced = 50 to 74
    - Expert = 75 to 100

Program Assessment Plan

ENV Advanced HVACR Technician

Statement of Purpose

The purpose of this program is to prepare students for careers in industry and business, to update students' education for an existing career, or to prepare students for transfer to baccalaureate programs. Students are provided with both a theoretical and a practical knowledge base. The specific goal of the program is to graduate competent technicians in Heating, Ventilating, Air Conditioning and Refrigeration.

Catalog Description

This program leads to an Associate in Applied Science Degree with specialization in Environmental Systems Technology. It is designated as an Extended Degree Program because the student must complete a minimum of 73 or more required credit hours. Program graduates are encouraged to transfer to a four-year college or university to complete their education in Engineering Technology or Energy Management. However, program graduates may qualify for occupations and careers in heating, ventilating and air conditioning such as systems designers, technicians, estimators, sales engineers and manufacturers' representatives.

Program Assessment Plan
ENV Advanced HVACR Technician

Learning Outcomes

Students will master communication skills through field service environmental audit experiences in AET 2400.

Benchmark	Assessment Method	Timeline
1. "Clients" being interviewed and working with students on their environmental audits will rate their communication / presentation skills above 85% for clarity, articulation, politeness.	Surveys completed by field service audit "clients".	06/06
2.		
3.		
4.		
5.		

Program Assessment Plan
ENV Advanced HVACR Technician

Learning Outcomes

Students will demonstrate installation and troubleshooting skills on HVACR equipment trainers.

Benchmark	Assessment Method	Timeline
1. 90% of the students will complete 90% of the labs.	Sample of lab experiments to assess troubleshooting and installation knowledge in TER 1650, TER 1210, TER 1430, TER 1610, TER 1630, TER 1150, TER1114.	06/06
2.		
3.		
4.		
5.		

Program Assessment Plan

ENV Advanced HVACR Technician

Learning Outcomes

Students will master problem analysis and solving skills in order to complete energy efficiency assignments.

Benchmark	Assessment Method	Timeline
1. 80% of students complete assignments.	Lab samples on DDC controls and energy management systems for AET 2510.	06/06
2. 80% of students complete assignments.	Lab samples to measure controls knowledge from TER 1430, TER 1800, and TER 2510.	06/06
3. 80% of students complete assignments.	Samples of energy audits produced in AET 2400.	05/06
4.		
5.		

Program Assessment Plan
ENV Advanced HVACR Technician

Learning Outcomes

Students will obtain technical knowledge required to pass certification testing in areas of Heating, Ventilation, Air Conditioning and Refrigeration, and refrigerant handling. [This outcome encompasses all three Certificate levels.]

	Benchmark	Assessment Method	Timeline
1.	80% pass rate on EPA Section 608-ESCO Institute, NATE, and HVAC Excellence.	Student pass rates on certification exams reported to the college. This benchmark is based on graduates and non-graduates. Also, the information is provided to the college by the testing agency. Sub test scores are also available.	06/06
2.			
3.			
4.			
5.			

Program Findings Report

ENV Advanced HVACR Technician

Statement of Purpose

The purpose of this program is to prepare students for careers in industry and business, to update students' education for an existing career, or to prepare students for transfer to baccalaureate programs. Students are provided with both a theoretical and a practical knowledge base. The specific goal of the program is to graduate competent technicians in Heating, Ventilating, Air Conditioning and Refrigeration.

Catalog Description

This program leads to an Associate in Applied Science Degree with specialization in Environmental Systems Technology. It is designated as an Extended Degree Program because the student must complete a minimum of 73 or more required credit hours. Program graduates are encouraged to transfer to a four-year college or university to complete their education in Engineering Technology or Energy Management. However, program graduates may qualify for occupations and careers in heating, ventilating and air conditioning such as systems designers, technicians, estimators, sales engineers and manufacturers' representatives.

Program Findings Report
ENV Advanced HVACR Technician

Learning Outcomes

Students will master communication skills through field service environmental audit experiences in AET 2400.

Benchmark 1

"Clients" being interviewed and working with students on their environmental audits will rate their communication / presentation skills above 85% for clarity, articulation, politeness.

Assessment Method 1	Findings 1		Dates
Surveys completed by field service audit "clients".	Assessment not implemented.	**Assessed**	06/05
		Received	09/06

Program Findings Report
ENV Advanced HVACR Technician

Learning Outcomes

Students will demonstrate installation and troubleshooting skills on HVACR equipment trainers.

Benchmark 1

90% of the students will complete 90% of the labs.

Assessment Method 1	Findings 1	Dates	
Sample of lab experiments to assess troubleshooting and installation knowledge in TER 1650, TER 1210, TER 1430, TER 1610, TER 1630, TER 1150, TER1114.	Assessment not implemented.	**Assessed**	06/05
		Received	09/06

Program Findings Report
ENV Advanced HVACR Technician

Learning Outcomes

Students will master problem analysis and solving skills in order to complete energy efficiency assignments.

Benchmark 1

80% of students complete assignments.

Assessment Method 1	Findings 1		Dates
Lab samples on DDC controls and energy management systems for AET 2510.	Assessment not implemented.	**Assessed**	06/05
		Received	09/06

Benchmark 2

80% of students complete assignments.

Assessment Method 2	Findings 2		Dates
Lab samples to measure controls knowledge from TER 1430, TER 1800, and TER 2510.	Assessment not implemented.	**Assessed**	06/05
		Received	09/06

Benchmark 3

80% of students complete assignments.

Assessment Method 3	Findings 3		Dates
Samples of energy audits produced in AET 2400.	Assessment not implemented.	**Assessed**	05/05
	Received	**Received**	08/06

Program Findings Report
ENV Advanced HVACR Technician

Learning Outcomes

Students will obtain technical knowledge required to pass certification testing in areas of Heating, Ventilation, Air Conditioning and Refrigeration, and refrigerant handling. [This outcome encompasses all three Certificate levels.]

Benchmark 1

80% pass rate on EPA Section 608-ESCO Institute, NATE, and HVAC Excellence.

Assessment Method 1	Findings 1		Dates
Student pass rates on certification exams reported to the college. This benchmark is based on graduates and non-graduates. Also, the information is provided to the college by the testing agency. Sub test scores are also available.	Assessment not implemented.	**Assessed**	06/05
		Received	09/06

OAKLAND COMMUNITY COLLEGE

ENVR Review
Tahir Khan – faculty (Rob Featherstone)
June 1, 2007

- Since Environmental System has graduated 38 degrees (HVAC Technician granted the largest of 4 options) and 9 certificates in the last 10 years, CRC recommends creating Certificate of Achievements for marketable skills
- CRC recommends a return visit in 18 months
- Students perceive the National Certification is better than $25 fee for a diploma. How does OCC market to this population accessibility to degrees?
- CRC supports Environmental Systems reducing sections offered with the outcome of filled sections
- The Environmental Systems faculty (full-time and adjunct) needs to follow the College and Program requirements of "I's".
- Environmental Systems is hopeful that the State and OCC will update the environment of Building A and equipment used
- College/Marketing needs to simplify the way to post flyers for programs and streamline/control information to students
- Environmental Systems should consider a degree title change to HVAC/R and Energy Systems which is in sync with employment and other colleges
- A formal structure for updating adjunct faculty is needed especially since safety issues are of utmost importance. Support with adequate funds
- CRC recommends an installation design course for duct work development to be created
- Program option in Construction Technology to be explored and developed as appropriate course/ CA… CRC questions the need for 2 degrees or multiple options. Recommends further discussion.
- CRC recommends further dialogue regarding decreasing seat count from 27-20 ration due to safety concerns (high voltage etc.). Faculty to work with the dean.
- Reactivate/update or new courses in AET courses due to market demand
- CRC supports Environmental Systems Program researching the need for a Grant Writer for available funds since this is one of the Emerging Sectors for Michigan.
- Environmental Systems requests that green construction be implemented in Building A to support what students will be learning and utilized for academic purposes.
- Look at courses that prepare for national certification and how they are packaged for students
- Department Chair should have option to go into Datael to get adjunct grades for assessment purposes. Department Chair to work with dean on this issue.
- Expand lab for AET (RO).