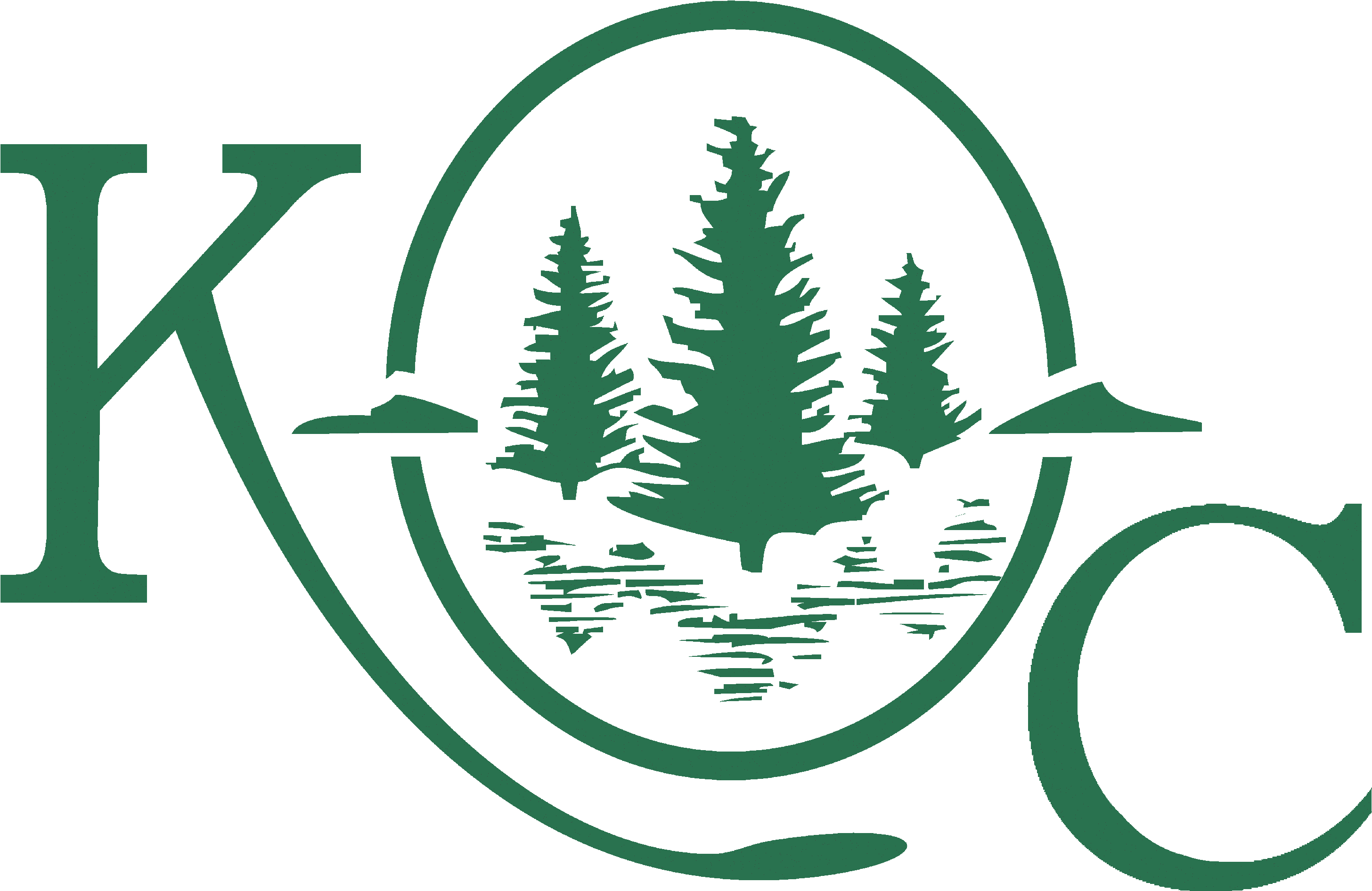
Associate of Applied Science Technology: Welding Emphasis

# Educational Effectiveness

# Assessment Plan

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**Version I**

**Adopted by**

**The Kodiak College Instructional Council: November 2005**

**Submitted to**

**The Director of Kodiak College: January 2006**

**The Office of Academic Affairs: January 27, 2006**

Reviewed with curriculum changes by the Academic Assessment Committee as an information item: 4/19/19

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## Introduction

The Associate of Applied Science, Technology degree program is designed to provide entry-level skills, continuing education and advanced technical skills in several specialized fields including Welding, Construction, and Occupational Safety.

Students seeking a technical career in Welding, Construction, and Occupational Safety will be well prepared as they complete the technology program. The comprehensive technology curriculum with applied math, science and technical writing components ensures student readiness for rewarding careers in a variety of technical fields. Additional technical skills are developed in an assortment of technologies which include computer aided design, computer technology, drafting, and electricity.

Within the program, students select an emphasis for more in-depth training in one of three areas: welding, construction, and occupational safety and health. This document defines the expected educational outcomes for the welding emphasis and outlines a plan for assessing the achievement of the stated outcomes.

The development of the objectives and outcomes consisted of combined efforts of faculty from each of the emphasis areas.

Robert McCauley: Welding Concentration

Curt Sather: Occupational Safety and Health Concentration

Jeff Callahan: Construction Concentration

The faculty met and accepted the objectives, outcomes, and assessment processes on 03/22/2006.

At the end of AY18/19, the Kodiak College faculty met to discuss current objectives, outcomes, and assessment processes. It was determined that only minor changes needed to be made to ensure student success is measured accurately with a feedback mechanism for students to allow for improvement during the semester. Though we are currently using AWS D1.1 Weld Certification testing as a means of assessment, the faculty has implemented a series of pretests staged throughout the semester to ensure students receive direct feedback from the instructor regarding their individual program in addition to suggestions for improvement.

The department will be meeting with Faculty from UAA Community & Technical College at the end of April 2019. During this visit, the department will seek advising for program and assessment revision to ensure better alignment with other welding programs offered within the University of Alaska Anchorage.

### Table 1: Association of Assessment Tools to Program Objectives and Outcomes

This table is intended to help organize objectives and outcomes and the tools that are used to measure them. Each tool contributes information on the students’ achievement of a different set of objectives. That contribution is tracked in this table.

This table also forms the basis of the template for reporting and analyzing the combined data gathered from these tools. That is shown in the report section.

| **Objectives and Outcomes** | Grade Data | Student Portfolio | Internship Evaluation | Faculty Interviews | National Testing |
| --- | --- | --- | --- | --- | --- |
| Understand, describe, and analyze the physical components and processes found in technical systems. | 1 | 1 | 0 | 0 | 0 |
| Demonstrate skills in communication, computation, and human relations applicable to personal and professional situations. | 1 | 0 | 0 | 0 | 0 |
| Demonstrate and apply knowledge of physics, math, and computers to technical fields. | 1 | 1 | 0 | 0 | 0 |
| Understand and apply safety practices. | 0 | 1 | 1 | 1 | 0 |
| Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments. | 1 | 1 | 1 | 1 | 1 |
| Demonstrate application of specifications and welding procedures to specific job tasks. | 0 | 1 | 1 | 1 | 1 |
| Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory. | 0 | 1 | 1 | 1 | 1 |
| Demonstrate competence in all-position welder qualification tests for 2 welding processes and familiarity with other welding processes. | 0 | 1 | 1 | 1 | 1 |
| Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment. | 0 | 1 | 1 | 1 | 1 |
| Effective communication with other employees, customers, and management. | 0 | 0 | 1 | 0 | 0 |

0 = Tool is not used to measure the associated objective.

1 = Tool is used to measure the associated objective.

## Assessment Tools

A description of the tools used in the assessment of the program objectives and their implementation are summarized in Table 2 below. The tools and their relationships to the program objectives are listed in Table 1, above.

There is a separate appendix for each tool that shows the tool itself and describes its use and the factors that affect the results.

### Table 2: Program Objectives Assessment Tools and Administration

| **Tool** | **Description** | **Frequency/ Start Date** | **Collection Method** | **Administered by** |
| --- | --- | --- | --- | --- |
| Grade Data | Detailed grade data to assist in determining successful student learning in targeted class activities | Annually, beginning Fall 2006 | Grade reports and/or Banner | Submitted by Faculty to Assessment Coordinator |
| Student Portfolio | Collection of student products representing skills and proficiencies gained | Each semester, beginning Fall 2006 | In designated courses by instructor | Submitted to Voc Tech Coordinator |
| Internship Evaluation | Students will be evaluated by their supervisor at completion of internship activities | At completion of practicum, beginning Fall 2006 | Personal interview with placement supervisor | Voc Tech Coordinator |
| Faculty Interviews | Structured interview to gain instructor impressions of student success in gaining targeted proficiencies | During final semester | Personal interview with designated faculty | Voc Tech Coordinator |
| National Testing | National and standardized certification tests, for courses and concentrations where they exist | As needed, in specific concentrations | In specific courses at completion of program | Submitted by instructor to Voc Tech Coordinator |

## Assessment Implementation & Analysis for Program Improvement

### General Implementation Strategy

The Associate of Applied Science, Technology Program will begin implementation of the assessment strategy during the Fall 2006 semester. The semester marks the beginning of the program and is, therefore, a good starting point. Grade Data and Portfolio materials will be collected at the end of each semester. Internship Evaluations will be completed by the student’s direct supervisor upon completion of internship activities. Faculty Interviews will be completed during the final semester prior to program completion.

Kodiak College has appointed an assessment coordinator who will work with the staff and faculty to collect the data indicated in the above tables. The coordinator will also provide support for course-level data collection and other assessment activities as needed. The assessment coordinator, with faculty, will assemble the data and forward it to the Director of Kodiak College for final report preparation. The final report will be reviewed by the program faculty before submitting it to the UAA Academic Affairs assessment coordinator.

### Method of Data Analysis and Formulation of Recommendations for Program Improvement

Program faculty will meet at least once a year to review the data collected using the stated assessment tools. The meeting could result in recommendations for program changes intended to enhance performance relative to the program objectives and outcomes. The results of the data collection, an interpretation of the results, and the recommended programmatic changes are to be forwarded to the Office of Academic Affairs (in the required format) by the end of May each academic year. A plan for implementing the recommended changes, including advertising the intended changes to all the program’s stakeholders, is also to be completed at the meeting.

The proposed programmatic changes may be any action or change in policy that the faculty deems as being necessary to improve performance relative to program objectives and outcomes. Recommended changes should also consider workload (faculty, staff, and students), budgetary, facilities, and other relevant constraints. A few examples of changes made by programs at UAA include:

* changes in course content, scheduling, sequencing, prerequisites, delivery methods, etc.
* changes in faculty/staff assignments
* changes in advising methods and requirements
* addition and/or replacement of equipment
* changes to facilities

### Modification of the Assessment Plan

The faculty, after reviewing the collected data and the processes used to collect it, may decide to alter the assessment plan. Changes may be made to any component of the plan, including the objectives, outcomes, assessment tools, or any other aspect of the plan. The changes are to be approved by the faculty of the program. The modified assessment plan is to be forwarded to the Kodiak College Director’s Office and to the UAA Office of Academic Affairs.

## Appendix A: Grade Data

### Tool Description:

While many factors may affect a student’s grade in a course, a student’s proficiency in the subject matter is generally indicated by the grade that the student earns in the course. A student’s proficiency in a subject area can be determined by looking at the student’s grades in all relevant courses. When looking at the proficiency of the student body as a whole, the course GPA may give an indication of the proficiency of the students and the quality of the course.

To evaluate some of the educational goals the AAS Technology Program, a database of course grade point averages (GPAs) will be developed to include grades from specific courses each semester. Courses to be included in the database are those courses that apply to the program and are taught by the department faculty and adjuncts.

### Factors that affect the collected data:

Some of the factors include the preparation and basic academic abilities of the student, the quality of the presentation of the material by the instructor, the quality of reference material, and the grading philosophy of the instructor. The data should also be compared to overall grade data for Kodiak College to mitigate inconsistencies in grading.

### How to interpret the data:

The data should be a fairly accurate indicator of student performance as most include concrete learning objectives. In essence, the tabulated grade will indicate how well the program has met specific outcomes and objectives.

### Tabulating and Reporting Results

The Student Tracking Specialist will prepare a summary of grade data on specific courses taught each semester. A GPA is then computed for the semester as well as for the academic year. Other trends will be identified and analyzed. Grade data will be collected beginning the Fall semester 2006. The following is a list of the course groupings associated with each outcome:

**(#1) Understand, describe, and analyze the physical components and processes found in technical systems;** *TECH A101*

**(#2) Demonstrates skills in communication, computation, and human relation skills applicable to personal and professional situations;** *COMM, ENGL A111, ENGL A212, HUMS A153, HUMS A155*

**(#3) Demonstrate and apply knowledge of physics, math and computers to technical fields;** *CHEM A103/L, GEOL A111, PHYS A123/L, MATH A105, CIS A105, AET A101*

**(#5) Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments;** *AET A101, WELD A112, WELD A114, WELD A161, WELD A190*

## Appendix B: Student Portfolios and other Products

### Tool Description:

The Student Portfolio is an organized collection documenting student proficiency in major areas of study and skill building. Also included are student products documenting practicum, work, and extra-curricular activities, as well as efforts toward professional development.

### Factors that affect the collected data:

Students are to work with a faculty or staff advisor in selecting portfolio contents; still, a student’s assessment of their “best work” may differ from that of a professional in the field. Since the portfolio will be developed over time and cover a number of skill-building areas, the quality of student work may not be consistent throughout the portfolio.

### How to interpret the data:

Care must be taken to investigate and discuss the factors influencing results before interpreting outcomes. It is expected that portfolios will need to be reviewed by the Vocational-Technical Coordinator as well as a representative panel of faculty members to determine an overall assessment.

Students will collect and organize their own portfolio contents following a sample template provided by the program. Some representative student products by outcome may include:

**(#1) Understand, describe, and analyze the physical components and processes found in technical systems;** *TECH A101*

**(#3) Demonstrate and apply knowledge of physics, math, and computers to technical fields;** *PHYS A123/L, WELD A157, AET A101*

**(#4) Understand and apply safety practices;** *OSH A101, WELD A112, WELD A114, WELD A161, WELD A190*

**(#5) Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments;** *WELD A112, WELD A114, WELD A161 and WELD A190*

**(#6) Demonstrate application of specifications and welding procedures to specific job tasks;** *WELD A112, WELD A114, WELD A161and WELD A190*

**(#7) Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory;** *WELD A112, WELD A114, and WELD A190*

**(#8) Demonstrate competence in all-position welder qualification tests for (2) welding processes and familiarity with other welding process;** *WELD A112, WELD A114, and WELD A190*

**(#9) Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment;** *OSH A101, OSH A250, WELD A112, WELD A114, WELD A190*

## Appendix C: Internship Evaluation

### Tool Description:

The student, advisor, and internship supervisor will sign a contract that articulates the expected learning outcomes at the beginning of the practicum placement. Other objectives, specifications, requirements, and/or expectations may be included on a case-by-case basis. Immediately following completion of the internship the Vocational-Technical Coordinator will contact the site supervisor to conduct a brief interview regarding their impression of the student’s experience at the placement. A copy of the interview instrument follows on the next page.

### Factors that affect the collected data:

Differences in management style and expectations of supervisors rating students should be considered when evaluating data. The type of business in which the practicum is completed could also be a factor.

### How to interpret the data:

The information provided by the site supervisor will provide an overview of how well the student was prepared to work at that job site. The information can be used to determine whether students are acquiring the basic skills necessary to succeed in the work place and in their area of concentration. In addition, it can be determined whether or not the student was able to exhibit professional ethics and behavior.

**(#5) Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments;** *WELD A112, WELD A114, WELD A161 and WELD A190*

**(#6) Demonstrate application of specifications and welding procedures to specific job tasks;** *WELD A112, WELD A114, WELD A161and WELD A190*

**(#7) Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory;** *WELD A112, WELD A114, and WELD A190*

**(#9) Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment.** *OSH A101, OSH A250, WELD A112, WELD A114, WELD A190*

**(#10) Effective communication with other employees, customers, and management;** *HUMS A153, HUMS A155*

**Kodiak College Associate of Applied Science in Technology**

**INTERNSHIP PLACEMENT – WELDING CONCENTRATION**

**SUPERVISOR EVALUATION INTERVIEW FORM**

| Student Name: |
| --- |
| Site Supervisor Name: |
| Internship Placement Site: |
| Date and Time of Interview: |
| By Phone, Face-to-Face, or Other: |

**Introduction:**

“Your participation in the practicum program is greatly appreciated! Your impressions about the student’s performance and any other comments you can give us will benefit both the student and program. This should only take about 20 to 30 minutes to complete. Thank you for your time!”

**I. Student Performance and Attitude:**

“I am going to read you a number of job performance attributes and I would like you to rate the student’s work on a 4 to 1 basis, with 4 being ‘excellent,’ 3 being ‘good,’ 2 being ‘average’ or ‘adequate,’ and 1 being ‘poor’ or ‘failing.’ If the attribute does not apply, please say so.” (Rate it ‘0.’)

(Read the following list, beginning each statement with ‘How would you rate…?’)

|  |  | **EXCELLENT** | **GOOD** | **AVERAGE** | **POOR** | **NOT APPLICABLE** |
| --- | --- | --- | --- | --- | --- | --- |
| **A.** | **Performance** |  |  |  |  |  |
| 1. | Quality of work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Quantity of work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Accuracy in work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Thoroughness | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Responsibility, dependability | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
|  |  |  |  |  |  |  |
| **B.** | **Abilities** |  |  |  |  |  |
| 1. | To learn new tasks | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | To work under stress | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | To work well with others | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | To use/take supervision | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | To make good decisions | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
|  |  |  |  |  |  |  |
| **C.** | **Attitudes** |  |  |  |  |  |
| 1. | Toward the placement | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Toward the field | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Toward co-workers | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Toward supervisor(s) | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Toward the public | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 6. | Reaction to criticism | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |

**INTERNSHIP PLACEMENT SUPERVISOR EVALUATION INTERVIEW FORM, Page 2**

|  |  | **EXCELLENT** | **GOOD** | **AVERAGE** | **POOR** | **NOT APPLICABLE** |
| --- | --- | --- | --- | --- | --- | --- |
| **D.** | **Learning Outcomes** |  |  |  |  |  |
| 1. | Understand and apply safety practices. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Demonstrate application of specifications and welding procedures to specific job tasks. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Demonstrate competence in all-position welder qualification tests for 2 welding processes and familiarity with other welding processes. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 6. | Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 7. | Effective communication with other employees, customers, and management. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |

**II. Supervisor Impressions and Recommendations**

“Thank you for your thoughtful assessment of the student. I have just a few more questions.”

A.1. Would you recommend this student for hire with your company, assuming that such a position was open and available at the time? YesNo

2. Please elaborate briefly:

B.1. Has participation in the practicum placement been beneficial for your business or agency? YesNo

2. Please elaborate briefly:

C.1. Would you accept another practicum placement in the future? YesNo

2. Please elaborate briefly:

D. Any other comments?

## Appendix D: Faculty Interviews

### Tool Description:

Since most of the courses in the program are taught by adjunct faculty it is, therefore, necessary to survey the instructors regarding their impression of the student’s experience and performance. During the student’s last semester of the program the Vocational-Technical Coordinator will contact the various instructors (or a sample therein) to conduct a brief interview. A copy of the interview instrument follows on the next page.

### Factors that affect the collected data:

Differences in teaching style and expectations of instructors rating students should be considered when evaluating data. The type course completed could also be a factor.

### How to interpret the data:

The information provided by the student’s instructors in specific courses will provide an overview of the student’s performance and proficiencies. The information can be used to determine whether students are acquiring the basic skills necessary to succeed in the program and beyond, and in their area of concentration. In addition, it will guide future modifications to the program and to the Assessment Plan.

**(#5) Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments;** *WELD A112, WELD A114, WELD A161 and WELD A190*

**(#6) Demonstrate application of specifications and welding procedures to specific job tasks;** *WELD A112, WELD A114, WELD A161and WELD A190*

**(#7) Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory;** *WELD A112, WELD A114, and WELD A190*

**(#8) Demonstrate competence in all-position welder qualification tests for (2) welding processes and familiarity with other welding process;** *WELD A112, WELD A114, and WELD A190*

**(#9) Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment;** *OSH A101, OSH A250, WELD A112, WELD A114, WELD A190*

**Kodiak College Associate of Applied Science in Technology**

**FACULTY INTERVIEW FORM – WELDING CONCENTRATION**

| Student Name: |
| --- |
| Instructor Name: |
| Course(s) Taught and Semesters: |
| Date and Time of Interview: |
| By Phone, Face-to-Face, or Other: |

**Introduction:**

“Your participation in the faculty interview is greatly appreciated! Your impressions about the student’s performance and any other comments you can give us will benefit both the student and program. This should only take about 15 to 20 minutes to complete. Thank you for your time!”

**I. Student Performance and Attitude:**

“I am going to read you a number of performance attributes and I would like you to rate the student’s work on a 4 to 1 basis, with 4 being ‘excellent,’ 3 being ‘good,’ 2 being ‘average’ or ‘adequate,’ and 1 being ‘poor’ or ‘failing.’ If the attribute does not apply, please say so.” (Rate it ‘0.’)

(Read the following list, beginning each statement with ‘How would you rate…?’)

|  |  | **EXCELLENT** | **GOOD** | **AVERAGE** | **POOR** | **NOT APPLICABLE** |
| --- | --- | --- | --- | --- | --- | --- |
| **A.** | **Performance** |  |  |  |  |  |
| 1. | Quality of course work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Quantity of course work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Accuracy in work | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Thoroughness | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Responsibility, dependability | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
|  |  |  |  |  |  |  |
| **B.** | **Abilities** |  |  |  |  |  |
| 1. | To learn new tasks | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | To work under stress | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | To work well with others | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | To use/take instruction | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | To make good decisions | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
|  |  |  |  |  |  |  |
| **C.** | **Attitudes** |  |  |  |  |  |
| 1. | Toward the course | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Toward the subject matter | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Toward classmates | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Toward instructor | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Reaction to criticism | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |

**PRACTICUM PLACEMENT SUPERVISOR EVALUATION INTERVIEW FORM, Page 2**

|  |  | **EXCELLENT** | **GOOD** | **AVERAGE** | **POOR** | **NOT APPLICABLE** |
| --- | --- | --- | --- | --- | --- | --- |
| **D.** | **Learning Outcomes** |  |  |  |  |  |
| 1. | Understand and apply safety practices. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 2. | Demonstrate technical and administrative skills required in today’s metal fabrication and welding environments. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 3. | Demonstrate application of specifications and welding procedures to specific job tasks. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 4. | Demonstrate skills in welding and thermal cutting processes and familiarity with basic metallurgy theory. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 5. | Demonstrate competence in all-position welder qualification tests for 2 welding processes and familiarity with other welding processes. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |
| 6. | Demonstrate safe work habits by assessing hazards and using best practices to avoid exposure to risk of injury, and to avoid damaging equipment. | ***4*** | ***3*** | ***2*** | ***1*** | ***0*** |

**II. Instructor Impressions and Recommendations**

“Thank you for your thoughtful assessment of the student. I have just a few more questions.”

A.1. “Would you say the student has acquired the requisite skills for success in the field of their choosing?” YesNo

2. “Please elaborate briefly:”

B.1. “What recommendations do you have for the student to advance in academic and career growth?

D. “Any other comments?”

## Appendix E: National Standardized Certification Test

### Tool Description:

Where they exist, National Standardized Certification Tests are excellent tools for measuring skill set proficiencies and for assessing other program outcomes successes.

### Factors that affect the collected data:

Not all students will take the indicated test, as not all students enrolled in the course will have entering the career field as a goal.

### How to interpret the data:

National Standardized Certification Tests are *ratio measures*; that is, the results have the attributes of being rank ordered with the distance between scores existing in meaningful intervals. In addition, a true zero point exists in the computation of scores. As a result, tools of this kind are the highest level possible.

**(#8) Demonstrate competence in all-position welder qualification tests for (2) welding processes and familiarity with other welding processes;** *WELD A112, WELD A114*