Appendix B

**New Course or Course Change Proposal Form**

<table>
<thead>
<tr>
<th>Date of Proposal:</th>
<th>March 27, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author:</td>
<td>Doug Laven</td>
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</table>

**Proposal Type:**
- New Course
- *Modify Course*
- Delete Course

**Contact for the Course:**
- Jon Morgan
- Doug Laven

**Course Designator, Number and Title:**
CIM 2135: CNC Programming III

**Number of Credits:** 3

**Prerequisites:**
CIM 1235 CNC Programming II.

**Course Description:**
This course is a continuation of CIM1235: CNC Programming II. Topics include lathe programming, program downloading, editing, and advanced set-ups and operations. Prerequisite: CIM1235 CNC Programming II.

**Grading Method:**
- *Grade*
- Pass/Fail

**Scheduling:**
- *Fall*
- Spring
- Summer
- Alternate Years
- Variable
- On Demand

**Instructional Type:**
- Lecture: 1
- Lab: 2
- Lecture/Lab:
- Internship
- Seminar

*Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.*

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If there is not enough space provided, please use the back of this form for additional signatures or click on a row with the right button of the mouse, select insert and then select insert rows below to add rows to the table.

Is this Course Proposed as a Liberal Arts Course: Yes *No

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs? *Yes No

If Yes, Which Program(s)? CIM

Describe What is Changing/Being Added, and the Rationale: The course name and number changed from CIM 2120: Computer Control Programming III to CIM 2135: CNC Programming III.

What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing.

Other than additional lecture/lab requirement in room A-133, none.

> Attach Common Course Outline to this Form.
CNC Programming III
Common Course Outline

Course Information
Organization: South Central College
Developers: Jon Morgan
Development Date: 9/2/2010
Revised Date: 3/29/2012
Course Number: CIM 2135
Potential Hours of Instruction: 80
Total Credits: 3

Description
This course is a continuation of CIM1235: CNC Programming II. Topics include lathe programming, program downloading, editing, and advanced set-ups and operations. Prerequisite: CIM1235 CNC Programming II.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
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<td>1</td>
</tr>
<tr>
<td>Lab</td>
<td>64</td>
<td>2</td>
</tr>
</tbody>
</table>

Prerequisites
CIM 1235: CNC Programming II

Exit Learning Outcomes
Institutional Core Competencies
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Create a program
   Learning Objectives
   a. Use lathe "M" codes
   b. Use lathe "G" codes
2. Demonstrate tapping process
   Learning Objectives
   a. Demonstrate rigid tapping operation
3. Demonstrate the control memory operation
   Learning Objectives
   a. Choose upload programs
   b. Choose download programs

4. Explain machine controls
   Learning Objectives
   a. Identify length offsets
   b. Identify diameter offsets

5. Identify wire EDM
   Learning Objectives
   a. Use EDM holding accessories
   b. Demonstrate specialized EDM principles

6. Create a file
   Learning Objectives
   a. Demonstrate file management
   b. Exhibit file management habits

7. Identify machine axis
   Learning Objectives
   a. Demonstrate 2 axis cutting
   b. Describe 4 axis cutting

8. Demonstrate lathe graphing
   Learning Objectives
   a. Explain lathe dry run
   b. Explain simulate program

9. Explain ways to break an edge
   Learning Objectives
   a. Use auto chamfer
   b. Demonstrate auto radius application
Appendix B

New Course or Course Change Proposal Form

Date of Proposal: March 30, 2012

Author: Doug Laven

Proposal Type: | New Course | *Modify Course | Delete Course
Contact for the Course: Jon Morgan \ Doug Laven

Course Designator, Number and Title: CIM 2145: Applications III
Number of Credits: 4

Prerequisites: CIM 1245: Applications II

Course Description: This course is a continuation of CIM 1245: Applications II. New topics include advanced grinding techniques. Prerequisite: CIM 1245: Applications II.

Grading Method: | *Grade | Pass/Fail
Scheduling: | *Fall | Spring | Summer | Alternate Years | Variable | On Demand
Instructional Type: | Lecture: 1 | Lab: 3 | Lecture/Lab: | Internship | Seminar

*Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

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Is this Course Proposed as a Liberal Arts Course: Yes | *No

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs? *Yes | No

If Yes, Which Program(s)? CIM

Describe What is Changing/Being Added, and the Rationale: The course name and number changed from CIM 2140: Applications III to CIM 2145: Applications III. The credits also changed from 4 credits of Lab to 1 credit lecture and 3 credits lab.

What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing.

Other than additional lecture/lab requirement in room A-133, none.

➢ Attach Common Course Outline to this Form.
Applications III
Course Outcome Summary

Course Information
Organization: South Central College
Developers: Jon Morgan
Development Date: 9/2/2010
Revised Date: 3/31/2012
Course Number: CIM 2145
Potential Hours of Instruction: 112
Total Credits: 4

Description
This course is a continuation of CIM 1245: Applications II. New topics include advanced grinding techniques. Prerequisite: CIM 1245: Applications II.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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</thead>
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<td>1</td>
</tr>
<tr>
<td>Lab</td>
<td>96</td>
<td>3</td>
</tr>
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</table>

Prerequisites
CIM1245: Applications II

Exit Learning Outcomes
Core Abilities
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Identify the grinding machine
   Learning Objectives
   a. Set-up manual grinder
   b. Set-up cylindrical grinder for O.D. grinding
2. Describe the grinding magnet
   Learning Objectives
   a. Dial in magnet
   b. Dial in magnet fence
3. Describe grinding to print
   Learning Objectives
   a. Illustrate grinding perpendicular to +or- .0003
   b. Illustrate grinding parallel to +or- .0003

4. Identify the grinding wheel dresser
   Learning Objectives
   a. Demonstrate “True” a grinding wheel
   b. Demonstrate side dress a grinding wheel

5. Describe form dressing
   Learning Objectives
   a. Demonstrate form dressing an outside radius on a grinding wheel
   b. Demonstrate form dressing an angle on a grinding wheel

6. Describe grinding a radius
   Learning Objectives
   a. Illustrate grinding an inside radius
   b. Illustrate grinding an outside radius

7. Select proper grinding wheel
   Learning Objectives
   a. Demonstrate balancing grinding wheel
   b. Demonstrate mounting wheel on grinder

8. Illustrate ability to complete tasks on time
   Learning Objectives
   a. Demonstrate professionalism
   b. Demonstrate part craftsmanship

9. Describe milling mold cavity
   Learning Objectives
   a. Illustrate machining runners to specifications
   b. Illustrate machining gates to specifications

10. Demonstrate mold press safety
    Learning Objectives
    a. Explain how to adjust press shut height
    b. Explain how to adjust knock out bar

11. Discuss types of plastics
    Learning Objectives
    a. Identify thermosetting plastic
    b. Identify thermoplastics

12. Identify injection mold processes
    Learning Objectives
    a. Analyze flash problems
    b. Analyze vent problems

13. Acquire NIMs Credentials
    Learning Objectives
    a. Study for NIMs Credential Exam
    b. Pass NIMs Credential Exam
Appendix B

New Course or Course Change Proposal Form

Date of Proposal: March 25, 2012
Author: Doug Laven

<table>
<thead>
<tr>
<th>Proposal Type:</th>
<th>New Course</th>
<th>*Modify Course</th>
<th>Delete Course</th>
</tr>
</thead>
</table>

Contact for the Course: Jon Morgan \ Doug Laven

**Course Designator, Number and Title:** CIM 2215: Quality Inspection IV

**Number of Credits:** 2

Prerequisites: CIM 2115: Quality Inspection III

Course Description: This course is a continuation of CIM 2115: Quality Inspection III. New topics include more alternative measuring techniques and final inspection of advanced project. Prerequisites: CIM 2115: Quality Inspection III.

**Grading Method:** *Grade* | Pass/Fail

**Scheduling:** Fall | *Spring* | Summer | Alternate Years | Variable | On Demand

**Instructional Type:** Lecture: 1 | Lab: 1 | Lecture/Lab: Internship | Seminar

**Class Maximum:** (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

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| Is this Course Proposed as a Liberal Arts Course: | Yes | *No |

| If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)? |

| Is This Course a Requirement/Elective for a Specific Program or Programs? | *Yes | No |

| If Yes, Which Program(s)? CIM |

| Describe What is Changing/Being Added, and the Rationale: The course name and number changed from CIM 2230: Quality Assurance IV to CIM 2215: Quality Inspection IV. The credits also changed from 3 credits (1 lecture / 2 lab) to 2 credits (1 lecture / 1 lab) |

| What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing. Other than additional lecture/lab requirement in room A-133, none. |

➢ Attach Common Course Outline to this Form.
Quality Inspection IV
Course Outcome Summary

Course Information
Developers Jon Morgan
Development Date 3/15/2010
Revised Date 3/25/2012
Course Number CIM 2215
Potential Hours of Instruction 48
Total Credits 2

Description
This course is a continuation of CIM 2115: Quality Inspection III. New topics include more alternative measuring techniques and final inspection of advanced project. Prerequisites: CIM 2115: Quality Inspection III.

Types of Instruction

<table>
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<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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</thead>
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<td>1</td>
</tr>
<tr>
<td>Lab</td>
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<td>1</td>
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</table>

Prerequisites
CIM 2115: Quality Inspection III

Exit Learning Outcomes
Core Abilities
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Describe heat treat outcomes
   Learning Objectives
   a. Describe destructive testing
   b. Describe non-destructive testing
2. Identify punch press
   Learning Objectives
   a. Describe spring pressure
   b. Describe die tonnage
3. **Analyze ejector pin height measurement**  
   **Learning Objectives**  
   a. Calculate ejector pin lengths  
   b. Calculate ejector pen height  

4. **Describe centerline**  
   **Learning Objectives**  
   a. Explain centerline on welding fixture  
   b. Explain centerline on advanced project  

5. **Describe welding processes**  
   **Learning Objectives**  
   a. Review weld beads  
   b. Explain weld penetration  

6. **Demonstrate measuring fixtures**  
   **Learning Objectives**  
   a. Use a testing fixture  
   b. Demonstrate weld fixture perpendicularity  

7. **Describe mechanical testing of welds**  
   **Learning Objectives**  
   a. Explain x-ray examination of welds  
   b. Explain mechanical testing of welds  

8. **Explain work holding principles**  
   **Learning Objectives**  
   a. Identify jig and fixture hardware  
   b. Identify jig and fixture classes  

9. **Identify jigs and fixtures**  
   **Learning Objectives**  
   a. Explain template jigs  
   b. Explain welding fixtures
Appendix B

New Course or Course Change Proposal Form

Date of Proposal: March 25, 2012

Author: Doug Laven

Proposal Type: New Course, Modify Course, Delete Course

Contact for the Course: Jon Morgan, Doug Laven

Course Designator, Number and Title: CIM 2225: Technical Design IV

Number of Credits: 4

Prerequisites: CIM 2125: Technical Design III

Course Description: This course is a continuation of CIM 2125 Technical Design III. New topics include advanced design procedures and alternative work holding techniques for the production of an advanced project. Prerequisites: CIM 2125 Technical Design III.

Grading Method: Grade, Pass/Fail

Scheduling: Fall, Spring, Summer, Alternate Years, Variable, On Demand

Instructional Type: Lecture: 2, Lab: 2, Lecture/Lab: Internship, Seminar

*Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

Faculty Name | Faculty Signature | Class Max | Date
--- | --- | --- | ---

Dean's Name | Dean's Signature | Date
--- | --- | ---

*If there is not enough space provided, please use the back of this form for additional signatures or click on a row with the right button of the mouse, select insert and then select insert rows below to add rows to the table.*

Is this Course Proposed as a Liberal Arts Course: Yes, *No

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs? *Yes, No

If Yes, Which Program(s)? CIM

Describe What is Changing/Being Added, and the Rationale: The course name and number changed from CIM 2210: Concept Engineering IV to CIM 2225: Technical Design IV.

What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing.

Other than additional lecture/lab requirement in room A-133, none.

> Attach Common Course Outline to this Form.
Technical Design IV
Course Outcome Summary

Course Information
Organization: South Central College
Developers: Jon Morgan
Development Date: 3/7/2010
Revised Date: 3/25/2012
Course Number: CIM 2225
Potential Hours of Instruction: 96
Total Credits: 4

Description
This course is a continuation of CIM 2125 Technical Design III. New topics include advanced design procedures and alternative work holding techniques for the production of an advanced project.
Prerequisites: CIM 2125 Technical Design III

Types of Instruction

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<tr>
<td>Lab</td>
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Prerequisites
CIM 2125: Technical Design III

Exit Learning Outcomes
Core Abilities
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Demonstrate trim feature operation
   Learning Objectives
   a. Use trim surfaces
   b. Use trim fillets
2. Demonstrate cut feature operation
   Learning Objectives
   a. Use cut surface
b. Use cut fillets

3. **Demonstrate surface feature operation**
   Learning Objectives
   a. Identify surface normals
   b. Explain manipulating surface normals

4. **Discuss boundaries**
   Learning Objectives
   a. Use boundaries
   b. Illustrate change boundary directions

5. **Describe 3D machining fix**
   Learning Objectives
   a. Identify UV patch to be milled
   b. Use UV patch milling

6. **Demonstrate slice cut operation**
   Learning Objectives
   a. Locate slice cut icon
   b. Use slice cutting

7. **Describe tool clearance**
   Learning Objectives
   a. Create clearance plane
   b. Illustrate changing clearance plane

8. **Demonstrate mode feature operation**
   Learning Objectives
   a. Demonstrate change part in part mode
   b. Demonstrate change part in assembly mode

9. **Describe open an assembly**
   Learning Objectives
   a. Explain mates
   b. Explain insert parts

10. **Explain extrude feature**
    Learning Objectives
    a. Identify extrude icon
    b. Use extrude feature

11. **Discuss save work icon**
    Learning Objectives
    a. Use save part
    b. Use save assembly

12. **Discuss add relation icon**
    Learning Objectives
    a. Use parallel
    b. Use coincident

13. **Acquire NIMs Credentials**
    Learning Objectives
    a. Study for NIMs Credential Exam
b. Pass NIMs Credential Exam
**Appendix B**

**New Course or Course Change Proposal Form**

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<td>Doug Laven</td>
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<tr>
<td><strong>Proposal Type:</strong></td>
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<tr>
<td><strong>Contact for the Course:</strong></td>
<td>Jon Morgan \ Doug Laven</td>
</tr>
<tr>
<td><strong>Course Designator, Number and Title:</strong></td>
<td>CIM 2235: CNC Programming IV</td>
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<tr>
<td><strong>Number of Credits:</strong></td>
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<tr>
<td><strong>Prerequisites:</strong></td>
<td>CIM 2135: CNC Programming III</td>
</tr>
<tr>
<td><strong>Course Description:</strong></td>
<td>This course is a continuation of CIM 2135: CNC Programming III. New topics include alternative work holding and advanced tooling set-up and operation for production of an advanced project. Prerequisites: CIM 2135: CNC Programming III.</td>
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<tr>
<td><strong>Grading Method:</strong></td>
<td>*Grade Pass/Fail</td>
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<td><strong>Scheduling:</strong></td>
<td>Fall *Spring Summer Alternate Years Variable On Demand</td>
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<td><strong>Instructional Type:</strong></td>
<td>Lecture: 1 Lab: 2 Lecture/Lab: Internship Seminar</td>
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<td><strong>Class Maximum:</strong></td>
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<td><strong>Is This Course a Requirement/Elective for a Specific Program or Programs?</strong></td>
<td>*Yes No</td>
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<tr>
<td><strong>If Yes, Which Program(s)? CIM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Describe What is Changing/Being Added, and the Rationale:</strong></td>
<td>The course name and number changed from CIM 2220: Computer Control Programming IV to CIM 2235: CNC Programming IV.</td>
</tr>
<tr>
<td><strong>What Impact Will This New Course or Change Have on Other Programs or Areas?</strong></td>
<td>These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing. Other than additional lecture/lab requirement in room A-133, none.</td>
</tr>
</tbody>
</table>

> Attach Common Course Outline to this Form.
CNC Programming IV
Common Course Outline

Course Information
Organization South Central College
Developers Jon Morgan
Development Date 3/7/2010
Revised Date 3/25/2012
Course Number CIM 2235
Potential Hours of Instruction 80
Total Credits 3

Description
This course is a continuation of CIM 2135: CNC Programming III. New topics include alternative work holding and advanced tooling set-up and operation for production of an advanced project. Prerequisites: CIM 2135: CNC Programming III.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>16</td>
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<tr>
<td>Lab</td>
<td>64</td>
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Prerequisites
CIM 2135: CNC Programming III

Exit Learning Outcomes

Institutional Core Competencies
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Discuss spindle orientation
   Learning Objectives
   a. Use spindle orientation
   b. Identify code for spindle orientation
2. Initiate machine maintenance
   Learning Objectives
   a. Illustrate checking oil level
3. **Discuss program stop**
   Learning Objectives
   a. Use slide hold
   b. Use emergency stop

4. **Describe program override**
   Learning Objectives
   a. Use spindle override
   b. Use feedrate override

5. **Describe fourth axis**
   Learning Objectives
   a. Use fourth axis
   b. Illustrate indicating fourth axis

6. **Develop indicating part practice**
   Learning Objectives
   a. Illustrate indicating part for flatness
   b. Illustrate indicating a diameter

7. **Demonstrate proper tool holder use**
   Learning Objectives
   a. Explain tool holder taper
   b. Explain cleaning tool holder taper

8. **Identify cutters**
   Learning Objectives
   a. Use carbide endmills
   b. Use roughing endmills

9. **Explain mid program start**
   Learning Objectives
   a. Use mid program start
   b. Use mid program CNC start
Appendix B

New Course or Course Change Proposal Form

Date of Proposal: March 25, 2012

Author: Doug Laven

<table>
<thead>
<tr>
<th>Proposal Type:</th>
<th>New Course</th>
<th>Modify Course</th>
<th>Delete Course</th>
</tr>
</thead>
</table>

Contact for the Course: Jon Morgan \ Doug Laven

Course Designator, Number and Title: CIM 2245: Applications IV

Number of Credits: 4

Prerequisites: CIM 2145: Applications III

Course Description: This course is a continuation of CIM 2135: CNC Programming III. New topics include alternative work holding and advanced tooling set-up and operation for production of an advanced project. Prerequisites: CIM 2135: CNC Programming III.

Grading Method: *Grade Pass/Fail

<table>
<thead>
<tr>
<th>Scheduling:</th>
<th>Fall</th>
<th>*Spring</th>
<th>Summer</th>
<th>Alternate Years</th>
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<table>
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<tr>
<th>Instructional Type:</th>
<th>Lecture: 1</th>
<th>Lab: 3</th>
<th>Lecture/Lab:</th>
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<th>Seminar</th>
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*Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

Faculty Name | Faculty Signature | Class Max | Date

Dean’s Name | Dean’s Signature | Date

If there is not enough space provided, please use the back of this form for additional signatures or click on a row with the right button of the mouse, select Insert and then select Insert rows below to add rows to the table.

Is this Course Proposed as a Liberal Arts Course: Yes *No

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs? *Yes No

If Yes, Which Program(s)? CIM

Describe What is Changing/Being Added, and the Rationale: The course name and number changed from CIM 2240: Applications IV to CIM 2245: Applications IV. The credits also changed from 4 lab credits to 4 credits (1 lecture / 3 lab)

What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing.

Other than additional lecture/lab requirement in room A-133, none.

> Attach Common Course Outline to this Form.
Applications IV
Course Outcome Summary

Course Information
Organization: South Central College
Developers: Jon Morgan
Development Date: 3/12/2010
Revised Date: 3/25/2012
Course Number: CIM 2245
Potential Hours of Instruction: 112
Total Credits: 4

Description
This course is a continuation of CIM 2145: Applications III. New topics include the finishing of products for the staging of the advanced project. Prerequisites: CIM 2145: Applications III.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Lab</td>
<td>96</td>
<td>3</td>
</tr>
</tbody>
</table>

Prerequisites
CIM 2145 Applications III

Exit Learning Outcomes
Core Abilities
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Demonstrate die process and procedures
   Learning Objectives
   a. Set up die clearance
   b. Set up and run die parts
2. Demonstrate punch press process and procedures
   Learning Objectives
   a. Set up punch press
   b. Describe punch press safety
3. Discuss break press tooling
   Learning Objectives
   a. Identify die shoe components
   b. Identify "off the shelf" components

4. Describe different dies
   Learning Objectives
   a. Identify a blanking die
   b. Identify a piercing die

5. Discuss forward motor mount weld fixture
   Learning Objectives
   a. Employ machining practices to make front motor mounts
   b. Employ machining practices to make forward mount fixture

6. Discuss forward control mount weld fixture
   Learning Objectives
   a. Employ machining practices to make forward control mount
   b. Employ machining practices to make forward control fixture

7. Align strut weld fixture
   Learning Objectives
   a. Employ machining practices to make struts
   b. Employ machining practices to make strut fixture

8. Set up swing arm weld fixture
   Learning Objectives
   a. Employ machining practices to make swing arm components
   b. Employ machining practices to make swing arm fixture

9. Align motor mount weld fixture
   Learning Objectives
   a. Employ machining practices to make motor mounts
   b. Employ machining practices to make motor mount fixture

10. Discuss points cover fixture
    Learning Objectives
    a. Employ machining practices to make points cover
    b. Employ machining practices to make points cover detail

11. Manipulate tubing in weld fixture
    Learning Objectives
    a. Use coping machine
    b. Demonstrate ways to prep tubing

12. Set up grinding equipment
    Learning Objectives
    a. Demonstrate grinding components
    b. Demonstrate finish grind weld contour
Appendix B

New Course or Course Change Proposal Form

Date of Proposal: April 11, 2012

Author: Doug Laven

Proposal Type: | New Course | *Modify Course | Delete Course
Contact for the Course: Jon Morgan \ Doug Laven

Course Designator, Number and Title: CIM 2251: Applied Welding
Number of Credits: 2

Prerequisites: None

Course Description: This course covers topics relating to the basic and advance study of Wire Feed, TIG, MIG, and SMAW Welding. Specialized topics including Silver Soldering and Brazing and Cutting will be included. Prerequisites: None.

Grading Method: | *Grade | Pass/Fail
Scheduling: | Fall | *Spring | Summer | Alternate Years | Variable | On Demand
Instructional Type: | Lecture: .5 | Lab: .5 | Lecture/Lab: | Internship | Seminar

*Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

Faculty Name | Faculty Signature | Class Max | Date

Dean's Name | Dean's Signature | Date

If there is not enough space provided, please use the back of this form for additional signatures or click on a row with the right button of the mouse, select insert and then select insert rows below to add rows to the table.

Is this Course Proposed as a Liberal Arts Course: | Yes | *No

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs: | *Yes | No

If Yes, Which Program(s)? CIM

Describe What is Changing/Being Added, and the Rationale: The credits also changed from 2 credits to 1 credit (.5 lecture / .5 lab).

What Impact Will This New Course or Change Have on Other Programs or Areas? These changes will enhance the CIM program by allowing the students to achieve NIMS credentialing.

Other than additional lecture/lab requirement in room A-133, none.

➢ Attach Common Course Outline to this Form.
Applied Welding
Course Outcome Summary

Course Information
Organization          South Central College
Developers            Jon Morgan
Development Date      4/11/2012
Course Number         CIM2251
Potential Hours of Instruction 24
Total Credits          1

Description
This course covers topics relating to the basic and advance study of Wire Feed, TIG, MIG, and SMAW Welding. Specialized topics including Silver Soldering and Brazing and Cutting will be included. Prerequisites: None.

Types of Instruction
Instruction Type      Contact Hours  Credits
Lecture               8               0.5
Lab                   16              0.5

Prerequisites
None

Exit Learning Outcomes
Core Abilities
A. Intercultural knowledge and competence
B. Foundations and skills for lifelong learning
C. Teamwork and problem-solving
D. Analysis and inquiry
E. Critical and creative thinking
F. Written and oral communication

Competencies
1. Explain welding shop equipment
   Learning Objectives
   a. Identify Wire Feed, MIG and TIG welding
   b. Demonstrate safe operation of welding equipment
   c. Explain non-destructive testing
   d. Explain destructive testing
   e. Explain oxyfuel welding equipment
f. Describe filler material

2. **Demonstrate the welding process**
   **Learning Objectives**
   a. Describe the set up and operation of the gas tungsten arc welding
   b. Describe the set up and operation of the gas metal arc welding

3. **Explain metallurgy of welding process**
   **Learning Objectives**
   a. Describe post heating
   b. Describe preheating

4. **Explain the effect of changing arc length on a weld**
   **Learning Objectives**
   a. Explain proper welding positions
   b. Explain the effect of electrode angle on a weld

5. **Explain weld penetration**
   **Learning Objectives**
   a. Demonstrate the ability to weld plates and structural shapes
   b. Describe the use of multiple pass welds

6. **Demonstrate proper maintenance of welding equipment**
   **Learning Objectives**
   a. Identify leaky hoses and regulators
   b. Identify frayed wires and cracked electrode holders