

(a) Apply knowledge of math, science, and engineering

Previous Curriculum Action Review Summary

No Previous Curriculum Action Review Items were noted

Curriculum Review Summary

Mean student performance improved from 2008 to 2009, while the variation between instruments was considerably reduced.

- MATH 373 has ceased being a useful assessment tool.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| A | MATH 373 | Replace MATH 373 |

Previous Assessment Process Action Review Summary

Two Previous Assessment Process Action items were noted, a watch on the variation in the senior exit exam and a continuation action concerning faculty training.

Assessment Process Review Summary

As previously, all student assessments for the local exam were the same. They were all very good, but with no variation. This may indicate some changes in questions or how the scores are apportioned is needed.

- No results were returned for MATH 373.
- Scores have stabilized so the extra faculty training is likely having an effect

| | | |
|---|------------|---|
| A | MATH 373 | Replace MATH 373 |
| W | Local Exam | Variability within instrument still low |

(b) Design and conduct experiments analyze and interpret data and information

Previous Curriculum Action Review Summary

- No curriculum action was suggested.

Curriculum Review Summary

- Both FE Exam and MET 465 Local Exam are showing Outcome (b) Design and Conduct experiments needs to be improved.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| A | Improve Design of experiments | * Add curriculum changes by introducing more Design of experiments in MET 310 Lab. |

Previous Assessment Process Action Review Summary

- It was noted to watch small number of instruments in odd years.

Assessment Process Review Summary

• Again a small number of instruments are used. There was heavy reliance in the past on MATH 373. Assessment for Outcome (b) needs to be introduced in other courses to substitute for MATH 373.

| | | |
|---|---|--|
| A | Implementation of Outcome (b) in more/other courses | * Implementation of assessment of Outcome (b) should be done in MET 310 in even years and MET 330L in odd years. |
| W | Small number of students taking FE | * Consider the possible bias from too few students taking the FE Exam. |

(c) Optimally select material and design materials treatment and production processes

Previous Curriculum Action Review Summary

- Students were performing well.
- There were no needed Curriculum Actions for 2009.

Curriculum Review Summary

- Student performance mirrored that of 2009, which itself was at a high level.
- No recommended Curricular Actions are necessary for 2010.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| N | No action required. | |

Previous Assessment Process Action Review Summary

- Students were performing well.
- There were no needed Assessment Process Actions for 2009.

Assessment Process Review Summary

- Students continued to perform well with on this outcome.
- The tools used to assess this outcome are varied and robust.
- No recommended Assessment Process Actions needed for 2010.

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

(d) Function well on teams**Previous Curriculum Action Review Summary**

Since the performance of this category had been decreasing, it was decided to "watch" the results during this review period to see if the decline continued. The slight decrease during the previous two years was attributed to academically superior 05/06 cohort and the recent turnover of the program faculty.

Curriculum Review Summary

The assessment results increased slightly during this review period indicating there was a normalization of the outcome assessment from previous cohorts and the new faculty.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| N | No action required. | |

Previous Assessment Process Action Review Summary

The primary concern for 2009 was whether the student's opinions concerning the workings of the design teams are a legitimate measure of teaming skills and the proper balance between teaming knowledge and skills.

Assessment Process Review Summary

In the future additional teaming and conflict resolution issues will be addressed in the design courses by either faculty in the department or by faculty from other departments.

| | | |
|---|--------------------------|--|
| W | Working well with others | Additional materials to be taught in Design courses. |
|---|--------------------------|--|

(e) Identify, formulate, and solve engineering problems**Previous Curriculum Action Review Summary**

- No Curriculum Action was suggested.

Curriculum Review Summary

- Student performance seems satisfactory.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| N | No action required. | |

Previous Assessment Process Action Review Summary

- No Assessment Process actions were suggested.

Assessment Process Review Summary

- It is noted that the Senior Survey indicates that the students are confident in their abilities to solve engineering problems; however, Local Exam results indicate a different picture. This may indicate students are not doing as well as they think.

| | | |
|---|------------------------------|---|
| W | Local Exam vs. Senior Survey | * Local Exam results are much lower than Senior Survey. This difference may need to be watched in the future. |
|---|------------------------------|---|

(f) Know professional and ethical responsibilities and practices**Previous Curriculum Action Review Summary**

No Previous Curriculum Action Review Items were noted from 2008.

Curriculum Review Summary

For 2009, the curriculum in MET 465 (Design Reports) seems to have underemphasized ethics. However, the other methods indicate good performance in Outcome (f).

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| A | MET 465 Design Reports | Re-emphasize ethics |

Previous Assessment Process Action Review Summary

No Previous Assessment Process Action Reviews were noted from 2008.

Assessment Process Review Summary

The Assessment Process shows that Outcome (f) is adequately covered by the current instruments, once the issue with the design reports is dealt with.

| | | |
|---|--|--|
| N | | |
|---|--|--|

(g) Communicate effectively**Previous Curriculum Action Review Summary**

- It appears that the curriculum is performing adequately. Generally lower scores were reported for the design fair presentations than for the other instruments that were reported.

Curriculum Review Summary

- Overall quality of senior design reports appear to decrease from previous year's quality. This finding bears watching into the next assessment cycle as the capstone report often serves as a bell weather for overall program communication skills.

| | Curriculum Action Title | Curriculum Action Brief Description |
|--|--------------------------------|--|
|--|--------------------------------|--|

| | | |
|---|--------------------------------------|--|
| W | Monitor Senior Design Communications | Monitor quality of communications, particularly Senior Design Report (note, in the current cycle Juniors are also participating in these reports). |
|---|--------------------------------------|--|

Previous Assessment Process Action Review Summary

• This outcome utilized six different instruments, and thus, is very robust in terms of the amount of data collected. Triangulation was possible because of the relatively large number of instruments that were used.

Assessment Process Review Summary

The assessment instruments used were adequate and varied. Five different assessors were used and a total of seven instruments in total, making the assessment process very robust.

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

(h) Know engineering's global societal context

Previous Curriculum Action Review Summary

A Previous Curriculum Action Item watch was given in 2008, as performance had only recently begun increasing.

Curriculum Review Summary

As the scores have been increasing the curriculum seems to be better addressing Outcome (h).

| | Curriculum Action Title | Curriculum Action Brief Description |
|--|--------------------------------|--|
|--|--------------------------------|--|

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

Previous Assessment Process Action Review Summary

A Previous Assessment Process Watch Action was given in 2008 for 2009.

Assessment Process Review Summary

Student performance improved indicating that the watch does not need continuation.

• Little variation was observed in the mean assessments in both 2008 and 2009, so a watch may be needed to determine if this is a short term fluke or if the instruments used are a little too blunt.

| | | |
|---|----------------|---|
| W | Mean Variation | Watch if the variation of the means stays too small |
|---|----------------|---|

(i) Engage in life-long learning

Previous Curriculum Action Review Summary

No action needed.

Curriculum Review Summary

The assessment results for this instrument remain high.

| | Curriculum Action Title | Curriculum Action Brief Description |
|--|--------------------------------|--|
|--|--------------------------------|--|

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

Previous Assessment Process Action Review Summary

No actions needed.

Assessment Process Review Summary

Nothing to report.

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

(j) Know contemporary issues

Previous Curriculum Action Review Summary

• Improved Instruction on Outcome (j) Contemporary Issues was warranted.

Curriculum Review Summary

• It was found that the student scores from the instruments used during the assessment cycle were on average reasonably high (average 3.92).

• Overall, the student performance on this outcome appears adequate.

| | Curriculum Action Title | Curriculum Action Brief Description |
|--|--------------------------------|--|
|--|--------------------------------|--|

| | | |
|---|---------------------|--|
| N | No action required. | |
|---|---------------------|--|

Previous Assessment Process Action Review Summary

• The instrument inventory needs to be expanded so that triangulation results.

Assessment Process Review Summary

• Unlike the previous assessment period triangulation assessment occurred.

• An additional instrument to the assessment "toolbox" would help make the Assessment Process for this Outcome more robust.

| | | |
|---|---|--|
| W | Consider Expanding Instrument Inventory for (j) | The instrument inventory should be monitored carefully, and if possible the instrument inventory expanded. |
|---|---|--|

(k) Use engineering techniques, skills, and tools

Previous Curriculum Action Review Summary

No action needed.

Curriculum Review Summary

The assessment results for this instrument increased slightly compared to 2008.

| | Curriculum Action Title | Curriculum Action Brief Description |
|---|--------------------------------|--|
| N | No action required. | |

Previous Assessment Process Action Review Summary

No action was needed.

Assessment Process Review Summary

Need to find another assessment instrument for Math-373 since a faculty member from the MET department is not teaching it. Assessment information from other MET courses or labs needs to be added to this instrument.

| | | |
|---|-------------------------|--|
| A | Assessment for Math-373 | Find other assessment methods to replace Math-373. |
|---|-------------------------|--|