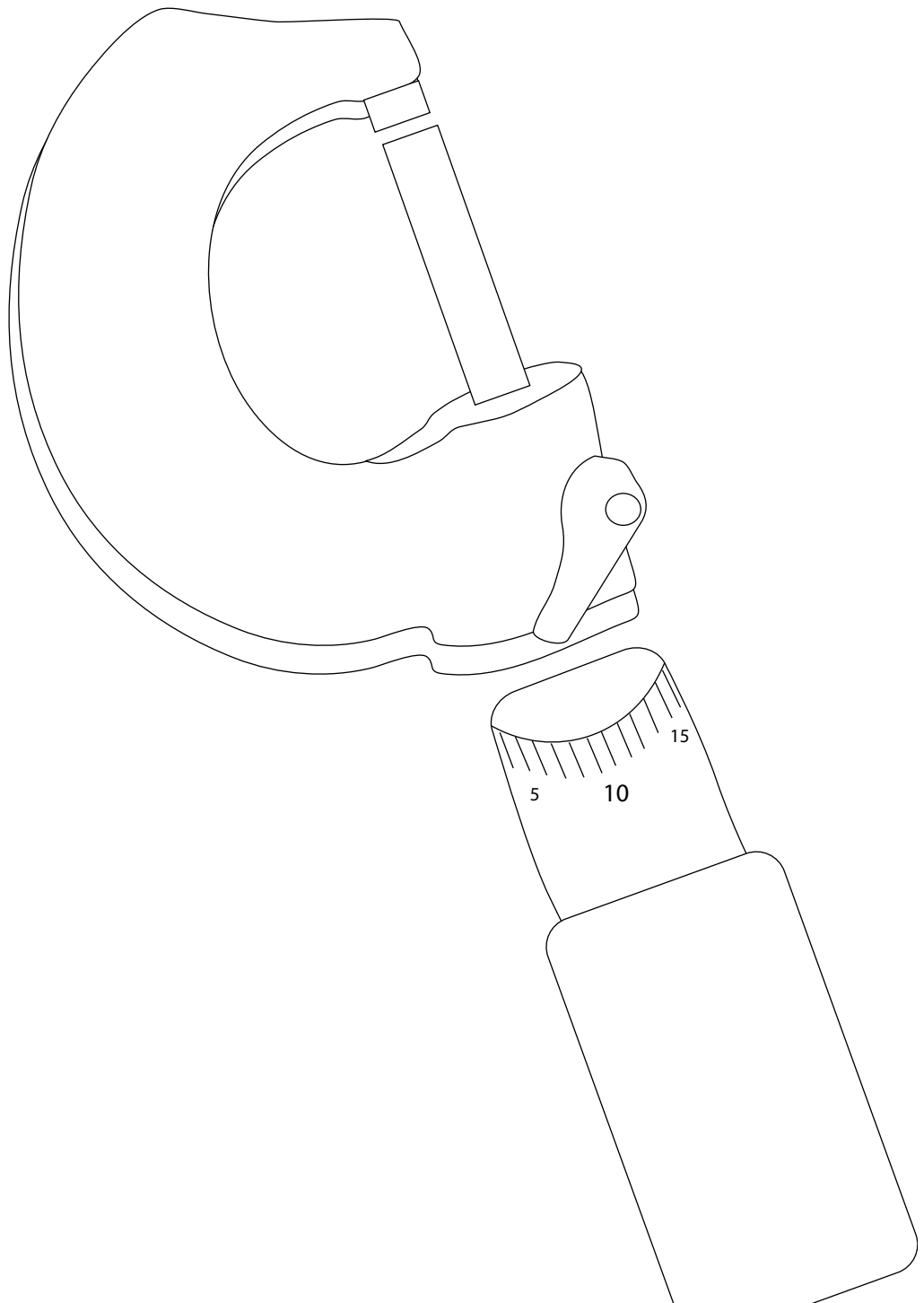


CLUSTER I

# Science Engineering

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## Summary of Identified Issues

To optimize its effectiveness, the Engineering group within IMPAC continues to work with the Engineering Liaison Council (ELC), a group that has provided long-standing discussions within the Engineering community involving community college instructors and advisors along with their counterparts at four-year institutions. The inappropriateness of IGETC for high-unit majors such as engineering is widely acknowledged, and this issue remains as Engineering considers the SciGETC proposal. Tight budgets and the increasingly varied lower-division requirements for engineering (for various majors) are significant challenges for delivering engineering programs in the community colleges. (We also note that engineering articulation is most successful when focused on primary feeder schools.)

## Identified Trends/Future Directions

We continue to find that a common lower-division core that would give students majoring in engineering a suitable background prior to transfer is difficult to identify, primarily because of specific differences among various engineering majors. These differences are largely dictated by pressures from the various branches of the engineering profession, generally through formal accreditation procedures managed by the Accreditation Board for Engineering and Technology (ABET).

## Comments from Statewide Meetings and the General Field

At the October IMPAC meeting in Oakland, the Engineering group developed an alternative concept to SciGETC, viz. a Transfer A.S. Degree. We felt this would provide a “value-added” approach for the community colleges by increasing the likelihood of students finishing a degree at the community college. The Transfer A.S. Degree was discussed further at the November IMPAC meeting in Long Beach. The resulting, refined version is given in the Engineering Appendix 1. We emphasize that this degree program encourages students to complete their lower division preparation at the community college while focusing on the ASSIST grid for a given school transfer combination. We have also identified the desirability of a Master Grid of Lower Division Requirements in Engineering. If funding is not available from IMPAC, we would be willing to try to generate such a grid ourselves. We note that a debate continues within both IMPAC and the ELC as to the advantages and disadvantages of multiple lower-division tracks, for example for mechanical-civil engineering, chemical-bio-environmental engineering and electrical-computer engineering. We have also reviewed the CAN descriptors for engineering. The various interdisciplinary discussions with Mathematics, Biology, Chemistry, and Physics groups were most helpful and greatly appreciated.

## Recommendations for the Discipline

Those involved in the articulation function for engineering (the core mission of the Engineering Liaison Council [ELC]) are encouraged to work with the parallel efforts of IMPAC and to become involved in the IMPAC activities. We feel that the Transfer A.S. Degree concept described in the Appendix is a desirable engineering alternative to the SciGETC approach. Our concerns about SciGETC include its similarity to IGETC (noted above). We prefer to avoid the constraints produced by such broad-based codification of articulation that ultimately is determined by a given community college/four-year school combination. We also note the difficulty in identifying a set of common courses for the wide range of majors. (This is difficult even within the field of engineering, as noted above.) We feel that CAN ENGR 2, Graphics, should be modified to include design. We also feel that

it is time to develop new CAN descriptors for CAN ENGR 1: Introduction to Engineering, CAN ENGR 5: Strength of Materials, and CAN ENGR 9: Dynamics. This recommendation is being forwarded to Robert Giomi, UC Berkeley, Chair of the Guidance Subcommittee of the ELC.

**Recommendations for Support Courses**

See Engineering Appendix 1.

**Topics for Further Discussion**

The working relationship between the ELC and IMPAC will focus on reviewing the CAN descriptors, especially for CAN ENGR 2: Graphics, and developing new descriptors for CAN ENGR 1: Introduction to Engineering, CAN ENGR 5: Strength of Materials, and CAN ENGR 9: Dynamics.

**Recommendations Forwarded/to be Forwarded to:**

**CAN**

See “Topics for Further Discussion”

**ASSIST**

N/A

**CIAC**

N/A

**Outreach presentations made by members of this group:**

Organization	Date/Place	Presenter’s Name	Number Present
Engineering Liaison Council (ELC)	October 17, 2002/ UC Irvine	J.F. Shackelford	50 approx.
Engineering Liaison Council (ELC)	March 6, 2003/ DeVry, Fremont	Darlene Mathias	50 approx.

## PROPOSED TRANSFER A.S. DEGREE PROGRAM

Courses	Semester Units
English Communication (two courses)	6
Speech (one course, if CSU bound)	3
Humanities (one course)	3
Social Sciences/Behavioral (one course)	3
Calculus Sequence (two courses)	8
Computer Programming (one course)	4 ( $\Sigma = 27$ )

Additional, individual major preparation (typically 18 to 30 semester units) to be chosen from the ASSIST grid for a given school transfer combination.