HSU Academic Program Criteria
Academic Program in Industrial Technology

I. The Vision for Humboldt State University (Limit: 2 pages) [15%]

Describe up to 5 curricular or co-curricular features of the program that are consistent with the Vision of HSU, and indicate which aspect(s) of the Vision align with that particular feature. Please provide sufficient information such that an individual unfamiliar with your program will clearly understand the feature's relevance.

ENTER COMMENTS HERE

See the following pages.

The Applied Technology (formerly Industrial Technology) program matches with HSU vision numbers 1, 3, 4, 6, and 7. HSU vision linkage is indicated by (#) within the text.

Construction Management Going Green: Over the past four years, the construction pathway has been refocused on project management and green building. This has resulted in a shift in content in the following courses:

IT 225. Construction Systems – now includes energy audits and designs to reduce a building's carbon footprint. Coursework introduces LEED standards and alternative systems to reduce ecological impacts and explores solar power, water collection systems, as well as eco-friendly materials including recycled materials. Issues, methods and materials to reduce interior pollutants common to carbon based construction products are also introduced.

IT 340. Architectural Design (3). Architectural design and planning. In addition to stick framing, sustainable and green building design concepts are explored including hay bale, and rammed earth structures.

IT 371. Power & Energy – A significant focus on alternative energy production has become an essential part of this course. Wind, solar, biodiesel, as well as more exotic uses of farming byproducts to produce methane are examined.

IT 420. Advanced Construction Materials – In 2008, the Green Laboratory was opened with funding from National Collegiate Inventors and Innovators Alliance and HSU to develop/test alternative building materials. In conducting the required research project in the advanced materials class, students use the recently calibrated and newly refurbished testing equipment to develop and test the properties of alternative materials or systems.

As one of the few housing segments to weather the current downturn, and an area of construction that is predicted to double over the next decade, Green Building is a perfect fit with HSU's mission to attract and educate leaders in improving the environment (1)(4) in ways that are both ecologically and economically sound.

Green Builders Club: One of the outgrowths of the shift towards green building is the Green Builders Club which students initiated in 2005. Students engaged in the AT curriculum and participating in the Green Builders Club (GBC) are committed to action reflecting social and environmental responsibility both individually and collectively. This club has now been fully integrated as the core of the AT Club. One member of the GBC participated in the Hydrogen Fuel Station project and competed in Economic Fuel winning a $25,000 grant in 2006.

AT, Social Justice and Improving the Human Condition.

At its heart, the commitment to social justice must include helping individuals develop the ability to fully and responsibly participate in the economic opportunities of the age. Economic inequity is a primary cause for many social, political, and communal ills. As the authors of the influential *A Nation at Risk* report write "individuals in our society who do not possess the levels of skill, literacy, and training essential to this new era will be effectively disenfranchised." The AT program provides precisely the type of education needed to fully participate in an increasingly technological society and provides it with a pedagogy that engages students of color (36%) and those from lower socio-economic backgrounds creating a pathway to careers that an end cycles of poverty and support social/economic justice.

The curriculum in AT Manufacturing and Operations Management has begun to reflect emerging business models that define costs and benefits more broadly to include environmental and social consequences (1,4). Manufacturing courses now emphasize cradle-to grave decision making to reduce the impact on the environment (4) and stress production management in a multi-ethnic, global environment (6). Shifting from a purely profit driven, short-term model of business, to one in which companies recognize that it is possible to be a responsible partner with the community and environment (7) and still be a successful businesses is an essential outcome for our HSU graduates.

Teacher Training: Teacher training was the original mission of both HSU and the AT program. According to the California Bureau of Labor Statistics one of the fastest growing occupations is postsecondary Industrial Technology faculty for community college (CC) technical programs. CC technical programs provide both new and returning students opportunities to improve the lives of their families through technical job training and placement. It is the role of the CC to provide this skills training. HSU can provide the instructors, broadly educated and prepared for the challenges in the classroom. This is an area of growth for our program which can serve the economic and social needs of the state and is only possible through a four year program in Industrial/Applied Technology.

In addition to the curricular and co-curricular programs described above, AT students and faculty maintain an ongoing connection with CCAT, to provide consultation, design, & development often resulting from grant funded projects. The knowledge and skills of AT

students play an important role in transforming creative ideas into workable machines and materials.

II. Demand (Limit: 1.5 pages per option, not including tables) [20%]

A. Internal demand for the degree program and courses in the degree program

1. Headcount Data

Major Academic Year (Fall/Spring) Average Headcount Summary Majors_overview_IT report generated: 16-APR-08									
Major Code	**Major Description**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
IT	Industrial Technology	21	27	28	28	46	52	50	32
ITAT	Industrial Tech (Applied Tech)-DefunctF06	0	2	1	5	7	9	6	8
ITCM	Indust Tech (Constr. Mgmt)	0	0	0	0	0	0	3	10
ITID	Indust Tech (Indust Design)	0	0	0	0	0	0	0	3
ITMO	Indust Tech (Mfg & Oper Mgmt)	0	0	0	0	0	0	0	3
ITSS	Industrial Tech(Education)	3	0	1	3	4	3	3	1
ITTM	Industrial Tech (Tech Mgmt)	4	1	2	3	1	3	2	5
Total		**28**	**30**	**32**	**39**	**57**	**67**	**62**	**60**

Second Majors by Academic Year (exclusive of primary majors) Majors_overview_IT report generated: 16-APR-08									
Major Code	**Major Description**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
IT	Industrial Technology	1	1	2	2	0	0	0	1
Total		**1**	**1**	**2**	**2**	**0**	**0**	**0**	**1**

Minors enrolled AY Average in Industrial Technology minors_enrolled_IT report generated: 06-MAR-08								
CLASS	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Soph	0	0	0	0	1	1	0	0
Jr	0	0	0	0	0	1	0	0
Sr	0	1	1	0	0	1	2	2
	0	**1**	**1**	**0**	**1**	**2**	**2**	**2**

Majors by Sex and Ethnicity Majors_overview_IT report generated: 16-APR-08									
SEX	**Ethnicity**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Female	Asian	0	0	0	0	1	0	0	1
	Hispanic	0	0	0	0	0	0	0	1
	White	2	4	4	1	2	3	3	2
	Other	1	0	1	1	1	1	2	3
	Unknown	0	0	0	0	1	0	0	0
sum		**3**	**4**	**5**	**2**	**4**	**4**	**5**	**6**
Male	Asian	2	2	4	4	6	6	3	2
	Black	1	1	1	1	1	3	2	2
	Hispanic	1	1	2	2	6	8	10	8
	Native Amer	1	0	1	0	1	1	0	0
	Pacific Is	0	0	0	0	1	0	0	0
	White	20	18	15	22	25	33	34	35
	Other	2	2	1	1	2	4	3	4
	Unknown	0	2	6	8	12	10	6	4
sum		**25**	**26**	**27**	**37**	**53**	**64**	**58**	**54**

Industrial Technology (with options) Degrees Awarded (incl. primary and second majors) degrees_awarded_B_IT report generated: 25-JUN-08								
MAJOR	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Industrial Technology	2	0	1	1	0	1	1	2
Industrial Tech (Applied Tech)-DefunctF06	4	3	2	1	4	2	9	4
Indust Tech (Constr. Mgmt)	0	0	0	0	0	0	0	1
Industrial Tech(Education)	0	4	0	0	0	0	1	0
Industrial Tech (Tech Mgmt)	11	12	7	1	4	3	3	2
sum	**17**	**19**	**10**	**3**	**8**	**6**	**14**	**9**

Industrial Technology Degrees Awarded by Sex and Ethnicity (incl. primary and second majors) degrees_awarded_B_IT report generated: 25-JUN-08									
SEX	**Ethnicity**	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Female	White	1	0	1	0	1	0	0	1
	Other	0	0	1	0	0	0	0	1
sum		**1**	**0**	**2**	**0**	**1**	**0**	**0**	**2**
Male	Asian	1	0	0	0	1	0	1	0
	Black	0	0	0	0	0	1	0	0
	Hispanic	1	0	0	1	0	0	0	1
	White	9	16	7	1	5	4	6	5
	Other	1	2	1	0	0	0	0	0
	Unknown	4	1	0	1	1	1	7	1
sum		**16**	**19**	**8**	**3**	**7**	**6**	**14**	**7**

Minors Awarded by Year in Industrial Technology minors_awarded_IT report generated: 25-JUN-08								
MINOR	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Industrial Technology	0	0	0	1	0	0	0	1

Comments about the data presented in the tables above:

Regarding Major Headcount Summary (the first table): The Major's data does not match other figures presented in succeeding tables. According to the data presented in the "Majors by Six and Ethnicity" table, the actual number of majors is:

Total majors	30	30	35	40	59	69	63	62

Regarding the Majors by Sex and Ethnicity table: The sum columns in this table do not sum correctly. For example in AY 07/08 both male and female categories are one less than the actual total (7 & 55) arrived at by adding the majors in the column. The total majors are in conflict with other tables in the document. In 2007/2008 there were 62 AT majors. See modified table below.

Sum Female modified **To reflect actual numbers in column**	3	4	5	2	5	4	5	7
Sum Male modified **To reflect actual numbers in column**	27	26	30	38	54	65	58	55
Total majors	30	30	35	40	59	69	63	62

2. FTES by Course Code

FTES taken in Industrial Technology classes by Majors (AY 02/03 - AY 07/08)
course_ftes_smry_IT report generated: 30-JUN-08

SUBJ	Course level	Student Major	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
IT	Lower-div	Industrial Technology	7.2	11.9	12.0	18.6	12.8	13.3
		Undeclared	2.2	3.3	3.0	2.7	2.4	3.0
		Business Administration	1.0	1.0	.9	1.3	1.7	2.1
		Environmental Resources Engr	.9	.6	.3	1.5	1.0	1.6
		Wildlife	.5	1.1	1.1	.9	.7	1.5
	Sub-total		**22.0**	**29.1**	**27.9**	**36.4**	**30.2**	**36.3**

FTES taken in Industrial Technology classes by Majors (AY 02/03 - AY 07/08)
course_ftes_smry_IT report generated: 30-JUN-08

SUBJ	Course level	Student Major	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
IT	Upper-div	Industrial Technology	9.5	9.9	14.3	11.4	17.1	13.2
		Journalism	.0	.0	.0	.1	.0	.5
		Computer Information Systems	.0	.1	.0	.0	.0	.4
		Business Administration	.0	.1	.1	.0	.0	.4
		Art	.0	.4	.1	.1	.3	.3
	Sub-total		**11.3**	**13.2**	**15.4**	**13.8**	**20.3**	**18.4**

FTES taken in Industrial Technology classes by Majors (AY 02/03 - AY 07/08)
course_ftes_smry_IT report generated: 30-JUN-08

SUBJ	Course level	Student Major	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
IT	All Levels	Industrial Technology	16.7	21.8	26.3	30.1	29.9	26.5
		Undeclared	2.2	3.8	3.2	2.9	2.5	3.1
		Business Administration	1.0	1.1	1.0	1.3	1.7	2.5
		Environmental Resources Engr	1.4	.9	.3	1.9	1.3	1.8
		Wildlife	.5	1.1	1.1	.9	.7	1.5
Total			**33.3**	**42.3**	**43.3**	**50.2**	**50.5**	**54.7**

Comments regarding FTES data presented:

Changes in FTES over this period paradoxically reflect both the increase in majors, and the reduction in the number of courses offered each year. In 2006/07, a modified course rotation was implemented to increase the SFR in core classes.

3. Service to other HSU program/options
Document other HSU programs/options (including, GE) with required coursework from your program

Other HSU program/option name	Courses required List course number and units	Restricted elective courses List number and units
Physics – BS	IT 230 (3 units)	
Environmental Sciences	IT 340 (3 units)	

Both the IT 104 Beginning Wood class and the IT 308 Socio-Technological Thinking Processes serve GE. In addition, Appropriate Technology students often take at least one IT course, and currently with a faculty shortage in the Appropriate Technology program, students have been substituting a variety of IT courses for those being offered in their major.

Engineering students have routinely taken either beginning and advanced Computer Aided Drafting using the industry standard AutoCad.

4. Comment on the internal demand **FOR EACH OPTION** of the Major. Explain any significant changes in internal program demand over past 7 years. Provide any additional relevant information of internal demand.

Internal demand for the AT program has grown significantly since 2000. Between 2000/01 and 2006/07 the number of majors more than doubled to just over sixty. With sixty majors, the AT program has more majors than 60% of the degree programs at HSU. The growth trend is unmistakable. Based on a 2004 analysis of the enrollments at other CSU campuses that offered similar programs, a target of eighty majors was established in 2005. There is ample evidence that the program can make that target over the next three to five years.

The AT program serves an ethnically and economically diverse student population. Ethnic minorities represent 36% of the AT majors, double the HSU average. AT also has a significantly higher proportion of underrepresented minority students graduate than HSU at large.

Overall enrollment has more than doubled in the past seven years. Enrollments in each option have in the past reflected which courses were offered (e.g., for two years several Manufacturing pathway courses were simply unavailable so students migrated to the Construction pathway). Faculty composition and expertise in a particular area has also led to internal migrations between programs. To further complicate the analysis, the curriculum underwent a major revision in 2005. Currently the students are spread out over past and present pathways, with a significant number still completing lower division coursework who have not yet identified which option they will complete.

Industrial Tech (Constr. Mgmt)

The Construction Management Pathway is the descendant of the Construction pathway in the prior curriculum. An increased emphasis on project management, alternative construction and engineering materials has had a significant impact on the education students receive. Historically the construction pathway has been one of the more popular options. With the introduction of the Green Building focus, interest and enrollments in this area have grown.

Industrial Tech (Industrial Design)

This is a new pathway, and cannot be assessed at this point. This option was developed as a result of alumni and business input as well as faculty concerns for adequately preparing students to engage in 3D modeling, prototyping and green design all related to niche manufacturing.

The Industrial Design curriculum has the potential to provide an avenue for Art students looking for a commercial application for their degree. In discussions with faculty in the Art Department, there appears to be a real need for opportunities such as this to meet the demand from Art majors.

Industrial Tech (Mfg & Oper Mgmt)

This option is the descendant of the Manufacturing, Management, and Applied Technology pathways. What separates this program from management programs in business is the hands-on nature of the curriculum which allows students to develop a deeper understanding of the processes and limitations of production materials and equipment. Again, this option is only two years old and does not support an analysis of enrollment trends. It is likely that this option will

grow to serve approximately 40% of the AT majors if past history is useful in predicting the future.

Industrial Tech (Education)

This option has been redesigned in response to dropping numbers of students interested in entering the K-12 teaching profession. The lower division machining courses central to the state's teacher preparation requirements, have been outsourced to College of the Redwoods. There is only one three unit course specifically maintained for the teaching track, and it has been taught as a voluntary overload/independent study for the past five years.

B. External demand for "graduates" from the program

> Imagine you are answering a parent's question about job prospects and the demand for graduates of your program/option. Describe evidence of external demand for this program. Evidence may be cited from one of the following sources: the State of California http://www.labormarketinfo.edd.ca.gov/, the US Department of Labor http://www.bls.gov/OCO/, the National Association of Colleges and Employers, http://naceweb.org. Evidence may be cited from an additional source from, for example, a professional society relevant to your discipline.

The Noel Levitz report in 2005 identified the *Applied Technology* and *Technology Management* as two HSU programs "likely to yield increased enrollment" for the university if the marketing message highlights how they are distinctive at HSU. These were among the top 15% of programs with growth potential as analyzed by the Noel Levitz team.

According to California's labor market projections, Construction Managers, Technology Managers, Industrial Engineering Technicians and post secondary Vocational Education Teachers are among the fastest growing occupations in either the state or Humboldt County. The growth of these three areas by 2014 is projected to be between 19% and 30%. Our graduates are prepared for and employed in these professions.

In 1999 the Humboldt County Board of Supervisors adopted a comprehensive development strategy entitled Prosperity! The North Coast Strategy. This plan identified base industry clusters and a second set of support industries. Niche manufacturing is one of the nine base industry clusters, and construction is named as one of the industry clusters that are essential in providing the support structure for the economic growth of the county.

A 2007 labor market study produced by the Humboldt County Workforce Investment Board identified six “targets of Opportunity” fast growing industries on the North Coast. According to the report these “represent a sustained structural shift in our economy.” Among the six targets of opportunity are Niche Manufacturing, and Building and Systems Construction. The six industries account for 53% of private sector wages and 40% of the region’s employment. According to the study, their growth rate is nearly ten times that of the local economy as a whole. The Construction Management and Manufacturing and Operation Management, delivered with an emphasis on entrepreneurship, are a perfect match for the growth in our community and also support the statewide demand for labor in these fields.

HSU Niche: Green Building, Automated/Smart buildings, renewable energy systems, construction materials and methods, and advanced construction materials suited to the North Coast climate. "Green building" is undeniably hot right now. According to the National Association of Home Builders, the green segment of the construction industry is expected to climb from 2 percent of all housing starts in 2005 to between 5 and 10 percent in 2010.

In Manufacturing, the HSU emphasis on the design build cycle with computer aided manufacturing suited to flexible systems required by niche manufacturing coupled with an entrepreneurial flavor make us unique in ways that results in high placement rates for graduates in fields related to their major.

Indust Tech (Constr. Mgmt)

- Prosperity defines Construction Management (CM) as a key industry for Humboldt County infrastructure.
- State and Work Force Investment Board (WFIB) label CM one of the fastest growing occupations in Humboldt County/state
- Work Force Investment Board identifies CM as a “target of opportunity” in Humboldt County.
- National Association of Home Builders predicts a doubling of Green Construction between 2005/2010.

Indust Tech (Indust Design)

- An essential feature for niche manufacturing
- Niche Manufacturing is one of the core growth industries in the region.

Indust Tech (Mfg & Oper Mgmt,) formerly (Tech Mgmt)

- Niche Manufacturing is one of WFIB "targets of Opportunity"
- WFIB and CSLB identify manufacturing or technology management as among the fastest growing occupation in Humboldt County/state
- Prosperity, regional economic development plan identifies niche manufacturing as a "core" industry cluster.

Industrial Tech (Education)

- While student demand for a K-12 teaching credential has dropped precipitously, the CSLB identifies Community College technology faculty as one the fastest growing occupations in CA expected to grow 30% by 2014.

While the CSU has over 1800 degree programs, HSU is one of only 5 campuses offering B.S. Degrees in Industrial Technology(CPSLO, CSUFRES, CSULA, HSU, SFSU).

III. Program Quality (Limit: 6 pages, not including tables) [30%]

A. Students

1. For undergraduate programs

Industrial Technology (with options) Mean GWPE Scores (incl. primary and second majors) **degrees_awarded_B_IT report generated: 25-JUN-08**								
MAJOR	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Industrial Technology	14.5		15.0	22.0		17.0	14.0	18.0
Industrial Tech (Applied Tech)-DefunctF06	16.5	14.7	16.0	16.0	15.3	16.5	16.4	16.8
Indust Tech (Constr. Mgmt)								16.0
Industrial Tech(Education)		14.0					18.0	
Industrial Tech (Tech Mgmt)	15.8	15.8	15.7	17.0	15.8	16.0	15.7	16.5
Overall	15.8	15.3	15.7	18.3	15.5	16.3	16.2	16.9

Provide evidence indicative of program quality related to student learning (e.g., patterns of student achievements in discipline-specific contexts such as special honors or awards, publications, presentations; passing rates on professional examinations; proportion of students who are admitted to graduate school and/or employed in a disciplinary field; and so on – as appropriate for your discipline).

NOTE: Mean GWPE scores are not a suitable measure for inferring quality of students. A better measure would be the avg. GPA of students in courses outside their major (GE, Institutions, DCG, etc.). Having said that, the significant strengthening of the writing component in the AT curriculum introduced over the past few years has clearly improved the writing abilities of the students. At 16.9, AT students in 06/07 scored just above the campus average indicating that at least ½ of all HSU major programs had students with poorer writing scores on the GWPE.

Perhaps one of the best measures of the quality of education students receive is the response they get from their employers and the alumni's experience once they graduate. According to a survey of alumni (n=32), the level of preparation AT graduates receive is rated 8.5 on a 10 point scale in preparation for management, problem solving, technical skills, and the ability to find and use technical information. While surveys tell only part of the story, the support from the business community affirms the survey results by providing internships for AT students, hiring graduates, and advocating for the program with the administration. In 2000, eighty participants including local business leaders, members from the local economic development task force, educators, and students attended an all day AT Summit to demonstrate the importance of the AT program to the local community. The summit was funded by the Arcata Chamber of Commerce and the Humboldt Foundation and was testimony to the high regard local businesses have for our graduates.

Competitions:

Last year our students participated in the Associated Schools of Construction competition which led to a number of internships for HSU Construction Management students including: Robert Legulian -- Rudolf & Destin Construction; Thomas Viducich -- McCarthy Building Companies Inc.; Calos Murro -- Sierra Nevada Construction; Austin Wheelon – whose internship became a full time job with PCL Construction at $65K/yr. In addition, last year Einar Lono – had an internship with HSU Construction Management Unit

In 2006, Chris Keiselhorse won a $25,000 prize in the Economic Fuel competition and used the money to start a successful construction business providing employment for himself and two employees.

National standardized tests: In 2004, the last year before Phil Rose retired, seven seniors took the nationally normed NAIT exam. This is the standardized test for the field. All the students ranked above the eightieth percentile.

Employment in field:

While clearly marginal in value, Career Center surveys routinely report a high percentage of AT graduates working in a field related to their major. This result was confirmed in a comprehensive outreach to alumni, and in an analysis of alumni business cards. According to the 2004 Ad Hoc Committee on IT report, approximately 1/3rd of the graduates over the past two decades became high school teachers, 1/3 opened their own businesses or worked in technical jobs, and 1/3 were employed in engineering jobs (e.g., Production Engineer, Safety Engineer, etc.). Only one out of ten reported being employed in a field unrelated to their BS degree (results exclude military personnel which include positions such as Major, Petty Officer, etc.).

B. Faculty

1. Provide evidence of teaching effectiveness and commitment to continuous improvement of teaching. Include, for example, engagement in professional development for teaching (including around campus themes on learning outcomes and diversity, and on accessibility training), program approaches to ensure quality, and/or recognitions, honors, and awards for excellence in the classroom as appropriate for your program.

In 2000/2001 all four TT faculty members were nearing retirement, with Phil Rose being the last to retire in 2003. Lecturers and new TT faculty hired during and after 2004/05 routinely used classroom assessment tools, surveys of the students and alumni to guide teaching & curriculum development, and mid-term evaluations. According to his PDS Mark Doggett attended a number of teaching related workshops and activities including Writing Across the Curriculum, Tools for Teaching mentorship program, and Conversations on Teaching. Jamie Russell, used mid semester evaluations repeatedly despite consistently earning course evaluations in the good-excellent range.

2. Evidence of faculty engagement in scholarship/creative activities and service. (Express as a percentage of full-time or FERP faculty members **affiliated with the program**. For example, if 9 of 10 faculty affiliated with your program gave a paper at

a professional meeting in 04/05, then enter 9/10 = 90%.) This table is to be completed by the department.

In 2005/06 there was one TT Faculty member. In2006/07 and 2007/08 there were two TT faculty members. All three faculty members were assistant professors.

Scholarship/Creative Activities/Service	05/06	06/07	07/08
At least one peer-reviewed publication or creative product	100%	100%	100%
At least one funded grant or contract related to scholarship	100%	50%	50%
Invited participant or leader of workshops, expert panels, or task forces	100%	100%	50%
At least one presentation (paper, poster, exhibition, etc.) given at a professional society meeting	100%	100%	100%
Professional service activities at a regional or national level	100%	50%	50%
Service on at least one university or college-level committee (at least 1 hour/wk avg.)	100%	100%	50%

3. Provide explanations of the data above and/or descriptions of the patterns of faculty engagement in scholarly and/or creative activities and service as appropriate for your program.

As mentioned above, in 2000/2001 all four faculty members were nearing retirement. These faculty members had come to HSU during the period when the AT program was Industrial Arts with its primary focus on teacher preparation for high school Industrial Technology shop classes. At the time there were few expectations related to scholarship and with members so near to retirement, the last generation of faculty did not engage in ongoing scholarship beyond what would be expected to develop courses and curricula during the period under review.

The new generation of faculty members hired after 2004, were recruited with an explicit understanding that scholarship and service were central to the job requirements. All three faculty members hired since 2005 have published papers in a peer-reviewed journal and presented at national conferences. In his first year, Mark Doggett published in the peer reviewed *Quality Management Journal*, and presented a paper published in the proceedings of the National Association of Industrial Technology. In Dr. Jamie Russell's first year, his paper, presented at the Mechanical Engineering's Energy Sustainability Conference, won "Best paper Award" in fall of 2007. In 2007, Dr. Russell also won a multiyear FDIC grant for curricular revision in his

second year. Dr. Raoufi published an article in *Journal of Biomedical Science and Engineering,* he had multiple conference papers. He participated with Dr. Russell in the "Lean and Green Manufacturing" workshop.

While many programs protect new assistant professors by limiting the demands of college or university service, the AT faculty were very active. They served on committees ranging from the College Curriculum Committee, Campus Center for Appropriate Technology Advisory Board, University Classroom Priority Scheduling Committee, Academic Computing and Technology Committee, etc.

4. Provide evidence for faculty mentoring of students. Include, for example, approaches to advising, directed study or research, and/or clubs or student professional chapters that involve faculty mentorship.

Instruction in AT reflects Vygotsky's learning theories employing zones of proximal development by introducing challenging problems designed to stretch the students' capacity, while providing a supportive and knowledgeable community of faculty and peers to help students when they are stuck. It is the quality and level of feedback available in an applied curriculum that makes IT graduates such effective problem solvers. The AT faculty support this learning both formally and informally. Faculty mentor students as advisors for the Green Builders Club (now AT Club), through individual senior projects, partnerships in CCAT projects and the honor society Epsilon Pi Tau. In addition, for students who demonstrate an interest in going beyond the class assignments, faculty routinely assist students in their personal design and prototyping projects outside of class time. Faculty has also demonstrated an ongoing commitment to students through their willingness to take on directed study courses.

Sadly, the TT faculty hired since 2005 have elected to take jobs elsewhere leaving the program without TT faculty in 2008/09. An approved search that would have resulted in a third TT faculty member has been suspended. It is perhaps tempting to see this situation as an easy solution to budget problems as no TT faculty would be affected. That would be both a mistake and unfair. The faculty left because of the financial and campus problems that have occurred in recent years. As have many other promising young faculty members. None of which diminishes the value of an AT program to the students, campus and community. As can be readily seen from the record of the new generation of AT faculty, faculty hired in the future will be expected to

engage in scholarship, grant writing, excellent teaching, and service to the university and community.

5. Other evidence of quality indicators related to faculty that may not be listed elsewhere, including, for example, faculty diversity within the program.

C. Curriculum (differentiate by option, if appropriate)

1. Writing and oral communication learning outcomes
   Describe how written and oral communication skills are included in your program.

A significant majority (varies somewhat by instructor) of the current courses from the basic IT 104 Wood GE class all the way to the IT 493 Senior Project require formal or informal written reports, graphic communication and/or oral presentations. For example, in the Industrial Design class, students typically make five group oral presentations with posters to communicate the key features and challenges of their design. In addition, students produce informal reports on the process and goals of their design project. In the Construction Systems class, students have a variety of written homework assignments such as developing and justifying scheduling decisions, as well as an end of term summative report of their project. In addition to class papers and presentations, one of the core program requirements is JMC 232 Technical Writing which is the same course required by business majors and a number of science programs. IT senior projects involve a written report /colloquium presentation.

2. Assessment
   [Data on program progress with assessment tasks will be provided from the Faculty Associate for Assessment]
   Provide 2 examples of how you have used results of assessment of your program's student learning outcomes to adapt, enhance, or affirm your program's curriculum.

The ongoing curricular revisions have made formalizing assessment of learning outcomes difficult over the past several years. However, many of the changes being introduced into the curriculum are based on input from students, alumni and employers of our graduates. Surveys have been used to evaluate the effectiveness of the program and identify areas of weakness. In addition, some institutional data provides evidence that changes in the curriculum are having a positive effect on GWPE scores.

3. Accreditation (if applicable)
   If the program is accredited, describe the need for this accreditation and its impact on the quality and composition of the curriculum of the program.

Not applicable.

4. Relevance and innovation
   Provide evidence through examples that demonstrate a curriculum that is relevant, innovative, forward looking, responsive to changing trends, and equips students to function in a diverse, global context.

Of all categories of data, this is the one where AT shines the brightest. In soliciting program evaluations from alumni and employers in 2005, a number of key themes emerged including increasing the focus of the curriculum on the management of processes, developing higher mathematical proficiency, and introducing more modern technology including both hardware and software. The results of this input and that of the AT Industry Advisory Board have guided the development of 3D modeling coursework, rapid prototyping as part of the design experience, and the introduction of a higher level of computation, physics, and chemistry in courses such as Power and Energy and Advanced Materials.

Over the past several years the AT program has developed a partnership with College of the Redwoods to move half of the technical machining courses for Teacher Preparation to CR. The program used the flexibility this created to increase courses in material science, ergonomic design and mechatronics (the study of "smart" machines).

Current proposals for a transformation to a Mechanical Engineering degree have been suspended. However, many of the features of the proposed curriculum continue to be implemented within the AT program. Increased mathematics requirements and the associated course content in engineering will be implemented. The design pathway will be coupled with the smart machines currently being used in the Manufacturing and Operations Management pathway to allow student to develop more complex prototypes. The Green lab and materials testing equipment which has been recertified and updated will be integrated across pathways. The software available in the AT computer Laboratory has been updated to allow three dimensional modeling, dynamic testing, and architectural rendering with GPS precision.

5. Interactions between graduate and undergraduate programs (if applicable)

If this is a graduate program, what opportunities for undergraduates result (or are lost) by virtue of the graduate program.

Not applicable.

6. Program uniqueness
   If your program provides unique educational opportunities or course content that is found at few or no other CSU institutions, please describe this uniqueness.

While the CSU has over 1800 degree programs, HSU is one of only 5 campuses offering B.S. Degrees in Industrial Technology (CPSLO, CSUFRES, CSULA, HSU, SFSU). It is the only campus offering an education option. Although few students have elected this option over the past few years, the projected need for community college faculty may result in a reversal of this trend to the degree that the AT Program can adjust its education pathway to meet the needs of higher education.

7. Opportunities for undergraduate scholarship/creative activities/service
   Estimate the percentage of your undergraduate majors that participate in scholarship/creative activities/professionally-related service, and provide some illustrative examples of such activities. Can students receive academic credit for these activities and have them counted toward undergraduate major requirements?

All students complete a research project and prepare written reports in APA format as part of their materials classes. In addition, a variety of design/build projects are available for student participation including projects funded by CCAT grants.

D. Affiliations/Equipment/Facilities/Environment

1. Affiliations
   Some academic programs are affiliated with on-campus or off-campus centers, units or institutes that bring important benefits to programs. For any such center/unit/institute, please provide (1) the name of such center/unit/institute, and very brief descriptions of (2) the purpose of the center/unit/institute, (3) the nature of your program's affiliation with the center/unit/institute, and (4) the benefits accruing to your program/major from your affiliation with this center/unit/institute. Units/centers/institutes may be public (HSU, CSU, local, state, federal) or private.

The AT students have put their education to work on campus and off through the Institute for Industrial Technology. While participation and profits varied by year, this student run enterprise was the only self-funding student run business at HSU between 1990 and 2005. Students who

participated in the enterprise were responsible for all budgeting, management, and work related tasks. Faculty's only formal role was as part of the Advisory Board.

The success of this enterprise is a testament to the quality of students in AT. With gross profits that rose as high as $24,000/yr and jobs as diverse as designing and constructing rain gauges for the National Forest Service, to mass producing office furniture, the Institute was a unique and powerful learning experience for AT students. In 2005, then chair Mark Doggett decided to suspend the operation of the Institute in part because campus organizations were unable to continue handling the proceeds from Institute jobs.

2. Facilities and resources
   Provide a brief listing of your most important facilities, equipment and information/library resources, and describe the degree to which the current facilities, equipment and information/library resources affect program quality.

Over the past several years, the long economic drought that was initiated in 1992 has begun to be reversed. Today there are new CNC machines including a CNC mill with automated tool changers that allows for more complex machining operations. In addition, the program acquired a CNC machine lathe and 4' X 8' CNC router. These machines, combined with the 3D software allow students to develop and prototype a range of complex products. In addition to the machining centers central to an education in Niche Manufacturing, the program has also acquired a rapid prototyping machine for developing models, and a range of materials testing equipment for the program's new Green Laboratory that support the development and analysis of green construction materials and processes.

The Wood Laboratory has acquired a state of the art surface sander (purchased for the program by the student run Institute for Industrial Technology $15,000) and a table saw that automatically stops the blade instantly if a person's skin touches it.

Despite the significant progress in facilities and equipment in the construction, design and management courses, the Mechatronics lab will need investment over the next five years to achieve best practice in this area. Mechatronics, the study of electrical/mechanical instruments designed to sense and respond to environmental factors is an exciting direction in the field initiated by faculty at Stanford University.

NOTE: While dated, much of the program's WWII era equipment base remains operational and in good order.

3. Unique local and regional environment
   Describe how the program takes advantage of the unique local or regional social, cultural and/or natural environment available to students and faculty at HSU. (Do not include items listed under D1.)

Given the splendor of our natural resources on the North Coast it is not surprising that when we talk about capitalizing on the unique resources of the area, most people think of beaches, redwoods, and wildlife. However, beyond the unique attributes of our natural environment, this area offers something else which is just as special and just as different from most other areas in the state.

Much of the business community, particularly in the broader Arcata area, is ecologically and socially conscious for-profit businesses. Before the Green revolution swept the mainstream, local manufacturers were creating high value-added products from recycled glass, and exercising social responsibility by making decisions that balanced advances in productivity with the potential social costs to their employees. These are not soft headed business people. These are successful businesses often operating at a national or international level that put the core values of social and environmental responsibility to work every day. As exemplars of socially and environmentally conscious business practices, this community offers a unique opportunity to study and participate in businesses that have moved from a pure profit driven mentality which dehumanizes work, to a balanced, productive, and profitable approach which supports human innovation, investment, and decision making. While one can find similar attributes in companies elsewhere, the opportunity to learn and work in a community of likeminded businesses is rare indeed.

IV. Investments, Revenues, and Efficiencies (Response Limit: 2 pages of narrative, not including tables) [20%]

A. Program Investments

1. Program Investment – Degree Requirements

Enter the total number of required course units (as listed in the catalog) for this academic program, and then the number of required course units for this academic program that are from the primary course code associated with your program. Provide a total for each option if appropriate.

Student Units

CORE Total required Program SCUs	58*	Required Program SCUs in the primary Course Code	39
Const. Mgmt. Total required Program SCUs	18	Required Program SCUs in the primary Course Code	18
Industrial Design Total required Program SCUs	18**	Required Program SCUs in the primary Course Code	12
Mfg. & Op. Mgmt. Total required Program SCUs	15	Required Program SCUs in the primary Course Code	15
AT Minor Total required Program SCUs	20	Required Program SCUs in the primary Course Code	0

* 15 units also meet GE requirements
** 6 units also meet GE requirements

Weighted Teaching Units (WTU's)

Total the number of WTUs required to teach 1 section of each of the required courses in the program. If there are lists of restricted electives (e.g., take 1 of the following 3 courses), then choose a representative course from the list. For required S-factor courses, estimate the typical number of WTU's assigned to a faculty member who teaches the course. Again, differentiate by option if appropriate.

CORE Total Required Program WTUs	64	Required Program WTUs in the primary Course Code	45
Const. Mgmt. Total Required Program WTUs	19.25	Required Program WTUs in the primary Course Code	19.25
Industrial Design Total Required Program WTUs	21.3	Required Program WTUs in the primary Course Code	13.5
Mfg. & Op. Mgmt. Total Required Program WTUs	17.5	Required Program WTUs in the primary Course Code	17.5
Appropriate Technology Minor Total Required Program WTUs	20	Required Program WTUs in the primary Course Code	0

2. Program investment – by Minimum Weighted Teaching Units required to offer coursework so students can make reasonable progress toward their degree.

Complete the table below using the definitions that follow. Include additional columns as needed for additional options.

Total WTU in Course Code	WTU for GE and service to other academic Programs	WTU for **CORE**	WTU for Major Opt. 1 **Const. Mgmt.**	WTU for Major Opt.2 **Ind. Design**
145.25	12.5	81	19.25	13.5

continued	WTU for Major Option 3 **Mfg. & Op. Mgmt.**
	17.5

Total WTU in Course Code: Sum up the total number of WTU that were used to teach courses in the primary course code associated with your academic program ***over the past two academic years****. Exclude remedial courses.*

Service to GE and other Academic Programs: Enter the total number of WTU that were used ***over the past 2 years*** *to meet service demands imposed by students outside the major. (In other word, if 8 sections of Egyptology 301 have been offered over the past 2 years, but if 2 sections over the past 2 years would have been sufficient for the Egyptology majors, then count 6 sections of Egyptology, and the associated WTU, in this category.)*

WTU for Major Option (s): Sum up the non-service WTU for the set of courses in the course code associated with your program that you would need to offer ***over a two year period*** *to accommodate progress toward degree for your program students.*

Notes: 1) In programs with multiple options, courses common to the multiple options should be included in all options. Hence the entries to the right of the "Total" entry will not sum to the total. 2) Do not pro-rate WTU's by the percentage of students in a particular section of a course that are majors. Include the course in the count if it must be offered during a 2-year period for students to make progress toward their degree. The 4-year major plan for Freshmen may be useful.

3. Program Investments – by staff allocations.

   Estimate the percent of departmental expenditures for staff positions that can be attributed to this academic program. Provide an explanation, as appropriate.

	Major Program
Percents of Staff FTEF	100%

Staff FTE

	1/31/2004		1/31/2005		1/31/2006		1/31/2007		1/31/2008	
APPLIED TECHNOLOGY	Count	Sum	Count	Sum	Count	Sum	Count	Sum	Count	Sum
R07	1	0.50							1	1.00
Total	1	0.50	0	0.00	0	0.00	0	0.00	1	1.00

The Applied Technology department has only one half-time staff position (ASC). It is unknown why the table above shows no R07 support for January 2005, 2006, and 2007; perhaps it is because this position was a 10- or 11-month position and January was not recorded. Currently, the AT department has one half-time staff employed in a 12 month capacity.

As an academic department, all staff time is academic in nature.

4. Program Investments – Other annual costs.

Provide dollar estimates for other program costs by the following categories. Annualize periodic costs (equipment purchases or facilities upgrades) as necessary. Include an explanation, if appropriate. Do not include costs for commonly used items (smart classrooms, faculty workstations, etc.).

Category	**Estimated Cost**
Equipment (including maintenance)	5,500.*
Instructional Supplies	4,000.
Temporary Help (graders, lab assistants, GA's, etc.)	3,000.

*** Includes $5,000 for fees related to licensing (example AutoCAD licenses).**

5. Program Investments – accreditation [if applicable]

If this program is accredited, describe how this accreditation effects program costs.
Non-applicable

B. Gross Revenues

Revenue DEPARTMENTS COMPLETE THIS SECTION	05/06	06/07	07/08
Fundraising/donations	$860	$1,075	$3,365
Extended Education	$323	$286	$384
Student fees	$2,925	$2,910	$3,420
Instructionally Related Activities (IRA)	0.00	0.00	0.00
Instructionally-related grants	---	---	$16,000
Grants and contracts to P.I.s	---	---	---
Other revenues	$4,200	$2,119	---

Provide an explanation for how these revenues support the academic program.

The $16,000 grant was awarded by the National Collegiate Inventors & Innovators Alliance (NCIIA) to Dr. Russell, effective July 2007. Funds will be used in part to help students and faculty leverage the unique social, environmental, and economic resources of the North Coast to produce viable produce ideas that have high potential for economic development in the region; to pursue commercialization opportunities for products and systems that will have the greatest positive social, environment and economic impacts.

C. Efficiency

1. Efficiency – By SFR for course code

Academic Year Averages	Subject	02/03	03/04	04/05	05/06	06/07	07/08
SFR	IT	12.59	15.72	13.66	17.78	15.85	16.68
FTEF	IT	2.65	2.69	3.17	2.82	3.19	3.28

SFR SUMMARY	02/03	03/04	04/05	05/06	06/07	07/08
AHSS	20.36	22.05	21.94	20.61	21.19	22.91
CNRS	15.66	16.90	17.17	16.04	16.82	18.28
CPS	15.12	16.29	15.68	15.22	20.80	25.33
UNIVERSITY TOTALS	17.28	18.65	18.57	17.52	19.32	21.43

Explain any substantial changes in SFR. Also explain why this SFR differs from the college and/or university SFR. What efforts have been made over the past few years by the program to improve this measure of efficiency? Use the data under part IV.E. as appropriate.

While the SFR for AT is below the averages of the colleges, it is higher than 28% of the other degree programs on campus, and compares favorably to other lab based programs. The SFR has been improved by extending course rotations, eliminating some lab based machining courses, and by recruiting new majors.

2. Efficiency – Other views.

The Prioritization Task Force will examine the data given under section IV.A and B in terms of the overall production (e.g. number of majors, number of graduates) in the program. Please comment if appropriate.

D. Budget cut impacts

Indicate how your program has been affected by recent (since 2002-2003) budget cuts that have directly affected resources for your program (faculty, staff, operating expense) and course offerings (class size, reduced course offerings or options for the major.) Refer to the data included under section IV. E. or in the departmental report as appropriate.

Given the decade long financial drought for IT beginning in 1992, at the time of the recent budget reallocation crisis, the IT program had little left to give. Under the leadership of Mark

Doggett, course rotations were extended, the AT program was merged with the School of Business to eliminate the costs of the chair position. A number of courses were taught as independent studies to allow students in some pathways to graduate.

E. Additional Data

COMMENTS: Average section enrollment increased by 40% between 2000 and 2007.

Course Offerings Profile in Industrial Technology (AY 00/01 - AY 07/08) **class_offerings_IT report generated: 27-JUN-08**								
	AY 00/01	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Distinct Courses Enrolled	13	11	13	14	15	14	13	12
Sections Enrolled	19	13	15	16	17	19	17	17
Average Section Enrollment	15	14	16	18	18	19	20	21

Distinct Courses Enrolled in Industrial Technology by Level (AY 00/01 - AY 07/08) **class_offerings_IT report generated: 27-JUN-08**								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	7	5	6	7	6	8	5	5
Upper-div	7	6	7	8	9	7	8	7
Graduate	0	1	0	0	0	0	0	0
Total	**13**	**11**	**13**	**14**	**15**	**14**	**13**	**12**

Sections Enrolled in Industrial Technology by Level (AY 00/01 - AY 07/08) **class_offerings_IT report generated: 27-JUN-08**								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	11	7	8	9	9	11	9	9
Upper-div	8	6	7	8	9	8	8	8
Graduate	0	1	0	0	0	0	0	0
Total	**19**	**13**	**15**	**16**	**17**	**19**	**17**	**17**

Avg Section Enrollment in Industrial Technology by Level (AY 00/01 - AY 07/08) **class_offerings_IT report generated: 27-JUN-08**								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	18	22	20	25	23	25	27	29
Upper-div	9	7	10	11	12	11	13	12
Graduate		2						
Total	**28**	**31**	**31**	**36**	**35**	**36**	**39**	**41**

FTES in Industrial Technology by Course Level (AY 00/01 - AY 07/08) **class_offerings_IT report generated: 27-JUN-08**								
	AY	**AY**	**AY**	**AY**	**AY**	**AY**	**AY**	**AY**

Course Level	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Lower-div	23.9	18.7	22.0	29.1	27.9	36.4	30.2	36.3
Upper-div	9.6	7.2	11.3	13.2	15.4	13.8	20.3	18.4
Graduate	.1	.2	.0	.0	.0	.0	.0	.0
Total	**33.6**	**26.1**	**33.3**	**42.3**	**43.3**	**50.2**	**50.5**	**54.7**

NOTE: In the above tables all class sections have 2 or more students enrolled. This is done to minimize the influence of independent student sections.
Distinct Courses count each distinct SUBJ/Course-number combination enrolled.
All figures are Fall/Spring term averages. Due to the rounding of average Academic Year counts, the various breakouts may not add to the exact same amounts.

Other Class Offering Breakouts

These examine independent study sections, and sections by different modes of instruction. The Lecture-only sections have only a C1 through C6 mode. The Lab/Activity-only sections have only a C7 through C-16 mode. Other modes and combinations contain the remaining modes or combinations of lecture and lab/activity modes.

Other Special breakouts in Industrial Technology (AY 00/01 - AY 07/08)
class_offerings_IT report generated: 27-JUN-08

	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Sections with 1 student enrolled	1	1	1	0	1	2	4	1
Lecture only sections	7	5	8	7	7	7	6	7
Lab/Activity only sections	5	2	3	2	3	4	4	4
Other modes and combinations	7	6	5	7	7	9	8	7

Service Courses

The following shows sections which are considered service for either General Education, CWT (Communication and Ways of Thinking), DCG (Diversity and Common Ground), or Institutions Requirements.

Service Course Sections Enrolled in Industrial Technology (AY 00/01 - AY 07/08)
class_offerings_IT report generated: 27-JUN-08

Course Level	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Lower-div	5	3	3	3	4	4	5	5
Upper-div	0	0	0	0	0	1	1	1

Service Course FTES in Industrial Technology (AY 00/01 - AY 07/08)
class_offerings_IT report generated: 27-JUN-08

	AY	AY	AY	AY	AY	AY	AY	AY

Course Level	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Lower-div	13.6	8.7	8.5	9.5	12.0	14.1	16.0	18.5
Upper-div	.0	.0	.0	.0	.0	1.1	2.4	2.6

V. Potential (Please complete this section for each option. Limit: 2 pages per option) [15%]

A. Program capacity with existing resources:

1. What is your program's maximum capacity with current resources? Use two metrics to define "capacity": The number of graduates per year, and the number of FTES generated by courses that are unique to this option, per year.

Average graduates per year for all options = 11

CORE	Graduates per year	FTES in the major option per year
Existing		76.3
Maximum capacity with existing resources		98.7

Construction Management Option	Graduates per year	FTES in the major option per year
Existing		6.2
Maximum capacity with existing resources		19.8

Industrial Design Option	Graduates per year	FTES in the major option per year
Existing		3.8
Maximum capacity with existing resources		11.0

Manufacturing & Op. Mgmt.	Graduates per year	FTES in the major option per year
Existing		0
Maximum capacity with existing resources		10

2. If your program is at maximum capacity, proceed to part B. If you have capacity to grow with existing resources, what steps have been taken to increase enrollment? What have been the effects of these steps, and what results are still anticipated?

As is clear from the doubling of majors over the past seven years, the program has been increasing its outreach efforts through club and CCAT activities and at the same time students have been responding to the changes in the curriculum. As the technology was modernized (e.g., 3D design, CAD/CAM machine controls that convert graphics to machine language in order to build prototypes, etc.) in the courses, technically oriented students have been attracted to the program. In addition, the IT 104 GE course is an important opportunity that continues to be a successful route for recruiting majors. AT is involved in all the typical events: HOP, HSU tours, College Events for HS students, and has attending a variety of High School events to encourage seniors to attend the program once they graduate. There is every reason to believe, that if the program is supported at the 2007/2008 level, it should be possible to grow at least until it reaches the target of eighty majors.

B. Opportunities for future growth or substantial curricular changes

1. What opportunity does the program have for future expansion? Provide evidence for your response.

In the area of mechatronics, the AT program offers some unique benefits that other engineering programs often lack. This is a field pioneered by faculty at Stanford University and involves the integration of mechanical and electrical systems to create “smart” machines. Recently, there has been a call by the professional societies and accreditation bodies for engineering programs to take a more interdisciplinary/holistic approach. The goal of these efforts is already reflected in the AT curriculum. Students at HSU already have a broad foundation in Electronics, Power and Energy, and mechanical design. With the acquisition of software that allows virtual dynamic testing of designs, and changes in the curriculum which will require higher levels of mathematics, our students are well prepared for a mechatronics program. If, we could invest in this area, the niche manufacturing sector in the community, AT graduates and HSU would benefit.

2. Describe the curricular changes and/or staffing increases required to accomplish such an expansion?

The staffing would require an additional .5 shop manager as students reduce the time they spend machining and increase their engineering and design time.

C. Impact of augmented resources
Suppose that your program were ranked in a category that recommended augmentation of resources. What would be the impact of augmented resources? (Answer for a 10% augmentation and a 20% augmentation.)

A 10% augmentation would allow the program to invest in the mechatronics area and provide state of the art opportunities for our students (based on our 07/08 budget).

A 20% augmentation would support both mechatronics and an expansion of the construction materials engineering and testing in the Green Lab. If it were ongoing it might also facilitate the acquisition of software licenses that would expand the 3D capabilities of our design laboratory and test materials.

D. Impact of reduced resources
Suppose that your program were ranked in a category that recommended reduction of resources. What would be the impact of reduced resources? (Answer for a 10% reduction and a 20% reduction.)

As noted above, prior to the recent cuts, this program had been starved of resources for over a decade. Over the past several years the program has been supported and has been able to fill two TT faculty positions and had a third approved for this year. If the question is can the program operate effectively with less than three TT faculty, which would be the effect of either a 10% or 20% cut, the answer is yes. However, the lack of funding would eliminate the opportunities to continue growing and developing state of the art facilities. Of all the programs at HSU AT has had one of the roughest roads since 1992. Despite a near starvation level of funding, the program was maintained by dedicated lecturers, business members, and students. Now we have witnessed what happens when even a small investment is made in the program. Either a 10% or 20% cut could reverse those gains.

E. Impact of program elimination
Suppose that your program were recommended to be discontinued. What would be the impact of program elimination?

HSU would lose a growing program that is valued by the local business community with graduates who are more diverse ethnically and economically losing the opportunity to earn salaries significantly above the average. HSU would lose some FTES, although it is not possible to make a clear estimate, particularly if one factors in reinvestment of the savings. However, with

the AT program doubling its majors over the past seven years; it would be hard to argue that the funds would produce bigger gains in other programs. The local economy would lose the AT entrepreneurs and find their niche manufacturing opportunities diminished by losing an important supply of technologically savvy graduates. HSU would also lose a program that was one of the first on this campus, a program that continues to evolve in ways that reflect the changes in technology and their influences on our society. Applied Technology will remain a powerful driving force in all areas of our society. HSU should be a part of that future.

VI. Additional Information (Limit: 1 page) [up to 5 extra credit points may be assigned to the overall score]

Provide crucial information that is not provided under the previous categories.

Niche manufacturing is a type of production that often requires the flexibility of computer aided design linked with computer controlled machinery. Information technology are flexible enough to make small batches efficiently, change production processes and allow the business to quickly capitalize on emerging markets. Niche manufacturing also requires design and prototyping capabilities as well as management strategies that are more entrepreneurial and less formal than other more structured forms of manufacturing.

APPENDIX

HSU *Vision* Statement

1. Humboldt State University will be the campus of choice for individuals who seek above all else to improve the human condition and our environment.

2. We will be the premier center for the interdisciplinary study of the environment and its natural resources.

3. We will be a regional center for the arts.

4. We will be renowned for social and environmental responsibility and action.

5. We believe the key to our common future will be the individual citizen who acts in good conscience and engages in informed action.

6. We will commit to increasing our diversity of people and perspectives.

7. We will be exemplary partners with our communities, including tribal nations.

8. We will be stewards of learning to make a positive difference.