The Faculty Senate will hold its regular meeting on November 2, 1992, at 3:00 p.m. in room 190 SBA.

AGENDA
A. Roll
*B. Approval of the Minutes of the October 5, 1992, Meeting
C. Announcements and Communications from the Floor
   1. President’s Report
   2. Provost’s Report
D. Question Period
   1. Questions for Administrators
   2. Questions from the Floor for the Chair
E. Reports from the Officers of Administration and Committees
   1. Fall Term Registration Report—Tufts
   *2. Computing Needs Task Force—Fuller
   3. University Planning Council—Weikel
F. Unfinished Business
   None
G. New Business
   *1. Curriculum Committee and Graduate Council Course and Program
      Proposals—Jackson, Spolek
   2. Should the PSU Faculty Senate return to Cramer Hall room 150?—A. Johnson
H. Adjournment
   *The following documents are included with this mailing:
   B. Minutes of the October 5, 1992, Senate Meeting*
   E. Computing Needs Task Force*
   G. Curriculum Committee and Graduate Council Course and Program
      Proposals*

**Included for Senators and Ex-officio Members only.
PORTLAND STATE UNIVERSITY

Minutes: Faculty Senate Meeting, October 5, 1992
Presiding Officer: Ansel Johnson
Secretary: Alan Cabelly


Alternates Present: Benowitz for Burke, Johnson for H. Gray, Toth for Liebman, Brabenac for Lutes.

Members Absent: Briggs, DeCarrico, Etesami, Goekjian, Goucher, Latz, Manning, Narode, Schaumann, Tuttle.

Ex-officio Members Present: Cabelly, Davidson, Dawkins, Enneking, Erzurumlu, Koch, Miller-Jones, Oh, Pfingsten, Ramaley, Reardon, Tang, Tinnin, Toulan, Vieira, Ward.

A. JOHNSON called the meeting to order at 3:10 PM and made the following announcements:

1. The Senate Steering Committee for 1992-1993 is Presiding Officer Ansel Johnson; Presiding Officer pro tem Beatrice Oshika; elected members Susan Karant-Nunn, Don Moor, Oren Ogle and Shelley Reece; and Secretary to the Faculty Alan Cabelly.

2. Senators are encouraged to identify themselves and to speak up throughout Senate proceedings.

3. Individuals who have not received the 1992-1993 Faculty Governance Guide should call the Secretary at 5-3789.

4. K-House prepares refreshments after every Senate meeting. Senators and ex-officio members are encouraged to attend.

5. Senators should give the names of their alternates to the Secretary.

6. As a result of Senate action during the 1991-1992 year, chairs of all Constitutional Committees are now ex-officio members of the Senate.
APPROVAL OF THE MINUTES

At the June 1, 1992, Senate meeting, WADLEY was in attendance for Vistica.

With that correction, the minutes were approved.

ANNOUNCEMENTS AND COMMUNICATIONS FROM THE FLOOR

1. President's Report

   a. RAMALEY noted that the university is now a member of the National Association of State Universities and Land Grant Colleges (NASULGC). This represents most of the major state universities. They have recently adopted an urban focus that is consistent with our mission. Only nine institutions joined NASULGC in the past year. We have also joined AAC, the American Association of Colleges, which focuses on curriculum and undergraduate education.

   b. PSU has received a $1,600,000 US Department of Education Urban Community Service Grant, provided under Title XI of the Higher Education Act. We are one of the first 16 institutions to receive such a grant; ours will be coordinated throughout the Post-secondary educational institutions in Portland, the Portland Leaders Roundtable, and the Portland Educational Network. The executive summary is enclosed (see Attachment A) for Senators' information. The focus is on endangered children. One element of work will be within the Roosevelt, Jefferson, and Marshall clusters; a second element will be to work on violence and urban youth. A third component studies curricular design (faculty will hear about this during winter quarter) and will support faculty designing field based curriculum across departments and institutions. This brings to approximately $2,000,000 the amount that has been raised for the Portland Agenda, doubling the initial legislative appropriation.

   c. Work continues on telling the PSU story. Part is the news media and marketing/publications strategy. Op-ed pieces are encouraged, such as the Carl Abbott piece in the Oct. 4 Oregonian. RAMALEY also noted that she is working on a diversity piece. An advertising campaign with support from the Foundation is beginning, asking for corporate support. Specific examples concerning the quality of our education, including our success stories, will be printed. Meetings with media representatives are occurring; a common look for our publications is also being made. Further, two letters have been sent to metro area representatives, explaining about our organization and our urban grant. This precedes the published report on the Portland State agenda that will soon be distributed. "Good news" letters are also going out. Tell Clarence Hein of anything that should be included.
d. Restructuring continues to occur. As of October 1, we no longer have a VP for University Relations, and have appointed Regina Borum to be Acting Executive Director of Development. Lanny Proffer, our Government Relations Officer, has moved to Washington, D.C. to be with the National Geographic Foundation; we will soon begin the process of filling that position.

e. Quality initiatives are underway. Questionnaires have been filled out, identifying significant problems. In Business Affairs, the chief problem is travel reimbursement; in Personnel, it is how to recruit a more diversified staff; in Computing Services, it is microcomputing support; in Campus Security, it is how to handle emergencies; Auxiliary Services, how to coordinate and improve Smith Center activities; in Facilities, it is temperature control. Management priorities have moved from developing and implementing a strategic plan to the actual operational details for the plan, building on the materials that have been submitted by academic units.

f. The budget plan continues to be murky, looking at the governor's request to cut 10% in the current biennium and 20% for the 1993-1995 biennium. We are working with targeted staff. There are three budget scenarios: 20%, the Governor's, and the legislative Futures Committee. Much depends on tax reform; all is speculative. But we must assume that the highest numbers being discussed will be implemented.

LENDARIS noted that the campus grounds are beautiful, and hoped that, even in the Measure 5 environment, this will not be diminished. RAMALEY agreed on the importance of this, and thought that we could continue with our quality environment. Brian Chase, our new director of the Physical Plant, has said that he will be able to accomplish all funded projects within one year.

2. REARDON requested that faculty study questions generated from the Association of American Colleges' publication entitled "Integrity in the College Curriculum." Serious issues regarding the future of higher education are constantly being raised. REARDON asked that the Steering Committee and Senate determine how to study the questions posed in Attachment B. There are significant questions about whether these issues have been addressed at the university level, and what we at Portland State can and should do. He noted that the publication is on reserve in the Library under the Office of Academic Affairs.

3. DAWKINS, ASPSU President, first thanked Jackson for moderating the candidates' fair, which was a major success. The candidates and the audience were pleased with the results. He then described the process of adding student members to PSU committees. This year ASPSU waited until the new academic year to add students, in order to facilitate the process of adding newer students, instead of the former process of simply seeing who knows student body leaders in the spring. Next, he discussed peer advising,
expecting students to relieve faculty of the non-technical advising issues. Finally, he noted that a goal of ASPSU is to improve its credibility and avoid adversarial relationships throughout campus, especially with IFS and The Vanguard. He has been working with IFS Chair Theresa La Haie and Vanguard editor Greg Smiley. He also has been working with the Oregon Student Lobby in Salem, working on lobbying and legislation, focusing on faculty salaries. He asked for assistance, expert opinions, and returned phone calls from faculty.

4. A. JOHNSON noted that he is working with the Steering Committee on developing action items and a charge for each committee, to give them a focus. These will be distributed to committee chairs shortly.

5. WETZEL announced the ACADEMIC FREEDOM AND LEGALIZED DISCRIMINATION talks on Thursday, Oct.8, 12:00-1:30 PM, 327-328 SMC. Sponsored by the Students Opposing Bigotry, the topics and speakers are:

"Traditions of Academic Freedom" Michael Reardon, Portland State University Provost, Director of the University Honors Program, Professor of History.

"Impact of Measure 9 on Academic Freedom from the Perspective of the AAUP" Craig Wollner, PSU Research Associate Professor of History, PSU AAUP President

"Overall Context" Jan Haaken, PSU Professor of Psychology

"Measure 9 and Elementary and Secondary Education" Portland Association of Teachers

"Student Perspectives on Measure 9" Indira and Denise Morris, PSU Theater Arts

QUESTIONS FOR ADMINISTRATORS

1. *Question for Provost Michael Reardon from the Senate Steering Committee:* Have any PSU faculty members been given any personnel notices (e.g., termination) by E-Mail? Is there a formal or informal PSU policy on these practices?

REARDON noted that, to his knowledge, this has not occurred, and asked anyone who has any knowledge of this to bring it to his attention. He sees no reason to add a new policy at this time; there already exist policies for notification of termination.

2. *Question for Provost Michael Reardon from the Senate Steering Committee:* Past practice dictates, and the faculty assumption is, that assistant/associate deans and vice-provosts are selected from among faculty and administrators who are tenured at the time of their nomination, hold at least the rank of associate professor, have been faculty members for a substantial period of time, and have considerable academic achievements to their credit. These qualifications give them necessary familiarity with higher education, enable them
to command the respect of colleagues whose work they may have to pass judgment on, and allow them to serve as models to their peers. 1. Do you concur with these assumptions? 2. What standards do you desire to see in candidates for assistant/associate deans and assistant or vice-provosts? 3. How are appropriate hiring practices determined, and what input does faculty have in this decision? 4. What determines whether the successful candidate is called assistant or associate dean?

1. REARDON noted that this has not been past practice. It has not been universal. Selection/definition of position should be the prerogative of the Deans themselves. The role of each particular administrative position is determined by particular needs; the individual Dean is in the best position to make that decision.

2. Practices vary from unit to unit. Areas without departments have differing procedures from those that are fully departmentalized. The only place in which procedures are fully specified is department heads, whose selection procedures are determined by the Constitution and Faculty Governance Guide.

3. Assistant or Associate Dean titles are the prerogative of the Deans. We have attempted to further affirmative action goals, and have been successful at all administrative levels except for department heads.

Vice Provost selection has traditionally been divided. Two positions have normally been the object of internal searches: former Dean of Undergraduate Studies (now a Vice-Provost position), and the current Vice-Provost for Graduate Studies. The third position in academic affairs has traditionally been selected by the Provost or Vice-President. REARDON would like to see these policies continued.

QUESTIONS FROM THE FLOOR FOR THE CHAIR

1. DUFFIELD noted that biology faculty have observed classes fulling up, but that one of the large lecture halls (LH75) has been pulled off line. This is serving as a detriment to our urban mission. A. JOHNSON noted that classes that had previously been in this 300 seat room are now being split into 100 and 200 person sections.

TANG responded by discussing the Fine and Performing Arts need for a large enough space for the band to rehearse and perform in. Other pressing needs have included an international colloquium that has moved into 190 SBA; space continues to be a pressing campus-wide problem. Work will be done with scheduling to use our spaces most efficiently; the few rooms that can hold above 200 are in constant use. A space audit is being done, seeing how space is being used, and what rooms are under or over utilized. LH 75 will be looked at very carefully. MOOR asked what had happened to a similar audit from a few years back; TANG said that those recommendations continue to be used.
REPORTS FROM THE OFFICERS OF ADMINISTRATION AND COMMITTEES

1. Fall Term Registration Report—Tufts

TANG gave the report for Tufts. Oct. 1 headcount is down 1.1% from last year; students take an average of 9.7 credits each, and campus headcount is 14710. We expect to be even with next year. In response to GILLPATRICK’S question, TANG indicated that we will have a breakdown between lower and upper division credit hours in about four weeks. We have an increase of 28% in the number of graduate applications, and an increase of 9% in the number of graduate in attendance. We graduated 1000 more students in fall term than in prior years. In response to COOPER’S question, TANG stated that we might be down a few sections while we are holding enrollments steady. One additional problem revolves around the fire marshall’s requirements concerning how many students can be placed in a room, regardless of the number of seats. This further constrains our class sizes.

2. IFS Report—G. Enneking

ENNEKING noted that he, Burns, and Cooper are the current PSU members of the Interinstitutional Faculty Senate. Jackson had been serving as Secretary; since she was elected to a term beginning in January 1993, she continues in that capacity. The full IFS report is in Attachment (C).

UNFINISHED BUSINESS

NONE

NEW BUSINESS

OSHIKA/KOSOKOFF moved that:

"Because legislative or judicial mandate is an unacceptable manner of determining what shall be taught as true in university courses, the Portland State University Faculty Senate affirms that, no matter what statutes or constitutional amendments may be in effect, we will not teach and we cannot be forced to teach that homosexuality is wrong."

In the spirit of academic freedom, COOPER suggested a friendly amendment, deleting the words, "teach and we cannot." OSHIKA/KOSOKOFF accepted the amendment.

A show of hands was requested. The motion amended PASSED, by a majority of 42-1, with abstentions.

ADJOURNMENT

JOHNSON adjourned the meeting at 4:22.
ABSTRACT

The purpose of this proposal is to marshal the faculty and student resources of Portland State University (PSU), the area community colleges, and other institutions of higher education in the Portland area to work with selected local schools, social service agencies, community organizations, and parents already organized to address issues of urban endangered children.

The proposed project has four goals: 1) improve the capability of PSU, the community colleges and other Portland institutions of higher education to attack the problems of Portland's endangered children in a coordinated and efficient manner; 2) organize and deploy post-secondary faculty and students to work with community groups and agencies to solve problems of endangered children in specific urban neighborhoods; 3) bring the combined inter-institutional, inter-departmental, and inter-disciplinary resources of higher education to bear on the pervasive problem of violence among children in all neighborhoods; and 4) disseminate information and findings gained from project experience to a wide array of professional and community groups.

The problems affecting the children of Portland’s metropolitan area are urgent, complex, and inter-connected. Violence, poverty, drugs, adolescent pregnancy, inadequate education, and lack of employment opportunities are urban plagues in Portland, as they are elsewhere. One difference is that, in Portland, there is a caring community that has come together determined to address these problems cooperatively. This proposal builds upon the successful efforts of two consortia of local governments, social agencies, schools, community colleges, universities, business and community groups--the Portland Leaders Roundtable and the Portland Educational Network.

The project will be both broad and geographically-focused. One element of the program will address issues of endangered children and youth in three geographically-focused urban sites selected for their concentrations of disadvantaged children and high levels of urban problems. The program will later be expanded to other sites. A second element of the program will address the problem of violence and youth, a problem common to many neighborhoods and symptomatic of many other urban ills.

These problems will be addressed by means of community-based courses involving teams of faculty and students working closely with Community Roundtable Action Teams already at work assessing neighborhood needs and developing action plans to address these needs.

A lasting benefit of this project is that it will permanently change the way Portland higher education relates to and responds to its surrounding urban community. Our metropolitan area suffers from multiple ills, not one, and our urban neighborhoods differ greatly in which problems are seen as most pressing. While a regional consensus has emerged that issues affecting children are most important, the particular issues viewed as most threatening vary from area to area. The project does not attempt to impose its solutions. Rather, it proposes to listen to the members of the community most directly affected and to direct the energies and resources of multiple institutions of higher education to helping those communities solve the problems they feel most directly endanger their children.

Together, PSU, the community colleges, and other institutions of higher education in Portland have the resources and have demonstrated the commitment to work with community leaders to help solve these problems. They seek this grant to mobilize and focus faculty and student expertise to achieve this goal and to demonstrate the effectiveness of an inter-institutional and inter-disciplinary approach.
THE ELIGIBILITY OF PORTLAND STATE UNIVERSITY

A. Portland State University (PSU) is a comprehensive public university located in downtown Portland, Oregon. The Portland-Vancouver metropolitan area covers about 4,300 square miles and contains 1.5 million residents. This metropolitan area spans both Oregon and Washington.

B. The University has nearly 15,000 enrolled students, and serves nearly 40,000 individuals in credit or non-credit classes each year. Over 80% of these students are drawn from the surrounding metropolitan area. Serving many minority and low-income students, PSU has been designated as an eligible institution under the Strengthening Institutions Program of the U.S. Department of Education.

C. Portland State University is dedicated to making higher education accessible to the residents of the greater Portland metropolitan area, and this is reflected in all aspects of the institution. Its curricular diversity, its service to part-time and evening students, and its central, downtown location all facilitate access. In addition, PSU has designed a number of special programs to promote educational opportunity and access among urban residents, particularly minority and low-income residents. For example, PSU serves these students through its Upward Bound; Talent Search; Mathematics, Engineering, and Science Achievement Program (MESA); and Educational Opportunity Program (EOP). PSU’s returning women’s program provides special support to ensure the access and academic success of the many older women desiring to return to school. PSU’s Portland Teachers Program involves Portland Public Schools, Portland Community College, and PSU in a cooperative program to recruit and prepare minority teachers. In addition, to support access by adults with young children, PSU maintains an excellent child development center, subsidized for the children of student parents, and special counseling services designed for student parents.

D. PSU is a comprehensive urban university, with a strong core of liberal arts and sciences, five professional schools—Education, Engineering, Business, Social Work, and Urban and Public Affairs—and professional development, continuing education, and summer programs through the School of Extended Studies. Its total resources have grown to slightly under $100 million.

E. PSU’s Graduate and Professional Programs include a broad range of graduate and professional programs. Five Ph.D. and 35 Masters programs are offered. A number of professional programs prepare students for careers in urban community service. These include a Master of Public Administration, also available with an option in health administration, a Master of Social Work, a Master of Urban and Regional Planning, and a Master of Urban Studies.

The Graduate School of Social work offers the only graduate social work education program in Oregon. Taking advantage of the urban environment, the program combines on-campus course work with practica in human service organizations and agencies. Studies by the Regional Research Institute for Human Services, the School’s research arm, have helped improve the way human services are planned, organized, managed and evaluated.

Graduate students in the School of Education work in the public schools of the tri-county area and throughout the state. The School is providing the major academic foundation for implementing the newly enacted Oregon Educational Act for the 21st Century which incorporates the goals of America 2000. The School’s Center for Urban Research in Education (CURE) sponsors studies of teaching and learning in urban schools.
PSU’s School of Urban and Public Affairs encourages study and research in the metropolitan area and its graduates enter such fields as criminal justice, urban planning, and government administration. Its associated institutes such as the Center on Population Research and Census, the Institute of Portland Metropolitan Studies (IPMS), the Center for Urban Studies, and the Institute on Aging provide multiple opportunities for hands-on urban research.

Although not a traditional graduate program, the PSU School of Extended Studies offers a broad array of classes and certificate programs that help area residents update their knowledge and hone their professional skills. The Early Childhood Training Center affiliated with the school provides consultation, technical assistance and materials to a wide variety of programs serving young children and their families.

PSU has the tradition and the mission of serving the local urban area. Its motto “Doctrina Urbi Serviat” translates, “let knowledge serve the city.”

Because the large majority of its students reside in the urban area, many students and faculty work on community service projects in their own neighborhoods. Nevertheless, to assure a responsive academic community, the university has institutionalized a community feedback process. A network of several hundred community leaders organized into advisory bodies offer regular advice and counsel to the several schools and departments of the University.

Despite budget cuts during the past two years and the prospect of further cuts, community service and collaborative programs with other institutions are being maintained and expanded. PSU is a major participant and contributor to the Portland Educational Network (PEN). One of PEN’s ongoing projects is to ease the transition from secondary school to the community colleges and the University by helping students chart the most effective course for their career plans. Another project helps monitor and assist at-risk children throughout their education.

The newly established Institute of Portland Metropolitan Studies will conduct public service research, sponsor policy forums and provide technical assistance to area governments, agencies, and departments.

To provide a high quality research library to serve all Portland area higher education institutions, PSU and its other higher education partners are building a computer-based Portland Area Library System (PORTALS). The system will electronically link the collections of a dozen institutions and allow shared access to a wider variety of regional, national, and international databases.

The needs of children and youth have always been a priority at the University. The MESA program works with middle and high schools to stimulate the interest of minority children in math, engineering, and science. The Portland Teachers Program encourages and assists minority students pursue teaching careers in the Portland area. The Regional Research Institute for Human Services devotes the greater portion of its research efforts to the problems of children and families, and the School of Education places emphasis on at-risk children. The University is a regular forum for discussion of issues related to endangered children. A recent joint PSU/Oregon Department of Human Resources Institute brought leaders from throughout the Northwest to learn from each other and to plan new ways to help endangered children.
MEMORANDUM

OFFICE OF ACADEMIC AFFAIRS
Thursday, October 1, 1992

To: Alan Cabelly, Secretary to the Faculty Senate
Members of the Faculty Senate Steering Committee

From: Michael F. Reardon

Re: Question to the Faculty Senate October 5

In the context of the current national discussion on the state of higher education, I am asking the Faculty Senate to place three topics on its agenda for discussion at the November, December, and January meetings. It is important that these discussions reflect the views and concerns of the faculty at large. I ask that senators discuss the following topics with their constituencies:

1) decline and devaluation of the undergraduate degree
2) faculty performance, productivity, and accountability
3) the profession of college teaching

These and other relevant topics are discussed in the Association of American Colleges' publication entitled "Integrity in the College Curriculum." I have received permission from the Association to duplicate the booklet and have placed several copies in the PSU Reserve Library for your reference.

c: Ansel Johnson
INTERINSTITUTIONAL FACULTY SENATE REPORT TO PSU FACULTY SENATE

October 5, 1992

I. July 17, 1992 meeting at Western Oregon State College.

The IFS held a special summer meeting at WOSC to consider faculty issues associated with the failure of the Governor’s special session and to prepare a strategy toward conceptualization of budgeting being proposed by the Oregon Futures Committee co­chaired by Senate President Kitzhaber and Speaker of the House Larry Campbell. The IFS was welcomed by President Myers of WOSC who stressed that we are a system, the need for faculty to speak out, and the need for all to work together as a system.

The IFS heard from both Mark Nelson, AOF lobbyist, and Roger Bassett, Director of Government Relations for Higher Education. Both gave their impressions of the Special Session and possible scenarios the Futures Committee would follow. Higher Education testimony was to take place on August 24-25. In response to a question about how IFS could assist in the process, Mark emphasized that we continue as individuals as well as a group to talk about the needs of higher education in this state. He says, repeat, repeat in continuing to define the problem and say WE WANT A SOLUTION.

Roger Bassett continued by presenting the OSSHE game plan for the special hearings of the Oregon’s Future’s Committee. Since all planning is dynamic in nature and subject to change, all IFS efforts should be communicated to both he and Chancellor Bartlett so as to form the solidarity that will be need during this time. Roger suggested several key issues that may be proposed to the legislators during the two day session and invited IFS members to submit other ideas to him. A subgroup of IFS members; Donna Jensen, OHSU, Paul Engelking, UO, and Bonnie Staebler, WOSC were asked to form a subcommittee to meet with Roger and the Chancellor to discuss IFS ideas toward the goal of solidarity.

Key issues that were raised included

• Enrollment decrease vs tuition increase
• Administration decrease vs investment in instruction
• Support staff decrease vs student diversity increase
• Faculty productivity decrease vs teaching and student increase
• Re-configuration of campuses vs current eight campus system
• Placebound student access vs duplication of programs
• Distance learning via Ed-Net vs traditional professor-classroom
• Current level of competitive sports vs reduced levels of competition

II. October 2-3, 1992 meeting at Portland State University.

The IFS was welcomed by President Ramaley who presented an up-to-date picture of current events surrounding the work of the Oregon Futures Committee and possible legislative events to unfold as the year progresses. Noting the IFS representation of faculty in the State System she asked the IFS to give thought toward presenting a message the would convey the System’s real value. That message could included examples of how successful programs leverage not only dollars but also generate economic and intellectual multipliers. She cited the recent award of a 1.6 million urban grant award as an example where System assistance would be needed to fulfill the goals of the plan.

Roger Bassett presented the IFS with an analysis of the special subcommittee of the Oregon Futures Committee work on creating a core budget for State government programs. He outlined five specifics he felt Senate President Kitzhaber would include as part of a Legislative agenda:

1. Special subcommittee determination of core programs essential to the State.
2. Recommendations toward priorities if insufficient funding.
3. Further streamlining of government.
4. Preventive investment. What could the State invest in now to preventive greater cost in the future.
5. Actions of State government to stimulate State’s economy.
Ideas needed to be packaged and programs funded via a tax measure created with special session or within the regular Legislature.

Guests of the IFS included Alice Dale, OPEU, who spoke in support of Ballot Mea 7. She distributed material and spoke to misconceptions arising from the campaign on measure.

Senator Shirley Gold (D) spoke to the group with enthusiastic statements in sup of work on the Educational Act of 21st Century (the Katz’s bill). She was impressed preliminary work being done by the Joint Boards of Education. Senator Gold addressed possible funding of State programs subject to the passage of Measure, possible income tax surcharge, and/or, special fees. Most likely little will happen u the results of the election are known and climate for a split roll tax on pers property and business property is then assessed. Political climate within Legislature depends heavily upon control of the House.

Representative Mike Burton was also a guest of the IFS and spoke to chan demographics within the State and the Oregon’s traditional natural resources b economy. Worker and retiree migration to the State has generated new and dif demands upon programs. Representative Burton also spoke to the funding issue for State describing what he saw as issues that could evolve depending upon outcome: Ballot measure 7 and Legislative actions.

Vice-Chancellor Shirley Clark gave an update on 10% decision packages before Governor and the growth in telecommunication courses via Ed-Net. She described prog or articulation actions of the Joint Boards of Education including a brief descri projects related to school reform (Katz Bill) at the colleges and universities.

Vice-Chancellor Clark concluded with discussion on the need to communicate fac productivity and/or workload to the Legislature and general public. A special task f is being contemplated to address this issue. How does the division of labor differ institution to institution and how is that explained or modelled to the public? Ar willing to change our current division of effort between teaching and research to teaching? Members of IFS expressed their concern that they have a voice in these iss

At its regular meeting of Saturday, October 3, 1992 the IFS received reports on Higher Education appearance before the special subcommittee of the Oregon Fut Committee. Some members of the Legislative subcommittee questioned faculty workload representatives of IFS felt that as an issue faculty workload did not receive an ade presentation. Questions of administrative costs via the Board Administrative R Committee (BARC) received attention.

The IFS agreed to focus its next meeting on the issues of faculty productivity and continue its discussion of a task force report on teaching and administration in H. Education.

The major portion of the IFS meeting dealt with a discussion of motions that been presented before the faculty at some campuses on the effects of passage of B Measure 9. After reviewing content of a resolution passed at Oregon State Univer one to be presented to the faculty at PSU, and a report on one adopted at the Unive of Oregon the IFS passed a resolution to be read at individual institution’s fac Senates.

Respectfully submitted,

Eugene A. Enneking
Executive Summary

The Computing Needs Task Force makes the following recommendations in four areas:

A. Planning for and Evaluating the Technological Environment
   1. Develop a long-range computer plan.
   2. Mobilize strong leadership to accomplish our goals:
      • Stress computer literacy for all students.
      • Provide faculty assistance and incentives.
      • Mandate software compliance to academic and administrative units.
   3. Hire an Associate Director of Academic Computing.

B. Optimizing Use of Technology and Improving the Physical Infrastructure
   1. Provide microcomputers to all faculty.
   2. Complete campus-wide computer network.
   3. Add more microcomputers for student use.

C. Support and Training
   1. Establish a quality initiative team to study OIS processes to increase efficiency and user friendliness.
   2. Direct the Advisory Committee on Computer Resources to establish consistent computing policies.
   3. Offer more training for faculty, staff, and students.

D. Financing
   1. Seek external funds for computing:
      • Encourage faculty and staff to submit grant proposals for hardware.
      • Establish a fundraising effort.
   2. Develop a redeployment system to maximize use of hardware.
   3. Mobilize student help to augment technical assistance for hardware, software, and network problems.
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I. Introduction

The Computing Needs Task Force was established by President Judith Ramaley to conduct a technology needs assessment, to identify organizational issues and opportunities, and to establish a framework for planning and managing information technologies at Portland State University (PSU). The Task Force reports to the Vice President for Finance and Administration, Lindsay Desrochers, and to the Provost, Michael Reardon. This final report makes recommendations for institutional action. The information for this report was collected from several sources: individual and focus group interviews with administrators, faculty, and staff; a campus-wide survey of faculty and staff, as well as of students from randomly selected courses; an inventory of campus computing hardware; and a review of current literature on information technology in higher education.

Task Force participants include the following individuals:

<table>
<thead>
<tr>
<th>Beverly Fuller (Chair)</th>
<th>Business Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Anderson</td>
<td>Financial Aid</td>
</tr>
<tr>
<td>Nancy Chapman</td>
<td>Urban Studies Program</td>
</tr>
<tr>
<td>Lorraine Duncan</td>
<td>Faculty Resource Center</td>
</tr>
<tr>
<td>David Gardner</td>
<td>Center for Population Research and Census, OPEU Steward</td>
</tr>
<tr>
<td>Warren Harrison</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Robert Holloway</td>
<td>Social Work</td>
</tr>
<tr>
<td>Joe Hendricks</td>
<td>Academic Affairs</td>
</tr>
<tr>
<td>Ellen Hudetz</td>
<td>Extended Studies</td>
</tr>
<tr>
<td>Bruce Jensen</td>
<td>Mathematical Sciences</td>
</tr>
<tr>
<td>James Kushman</td>
<td>Education</td>
</tr>
<tr>
<td>Beatrice Oshika</td>
<td>Applied Linguistics</td>
</tr>
<tr>
<td>Mary Ricks</td>
<td>Office of Institutional Research and Planning</td>
</tr>
<tr>
<td>Gary Sampson</td>
<td>Library</td>
</tr>
<tr>
<td>Ronald Wills</td>
<td>Office of Information Systems (OIS)</td>
</tr>
<tr>
<td>Emily Young</td>
<td>Art</td>
</tr>
<tr>
<td>Mark Van Alstyne</td>
<td>Student Representative</td>
</tr>
</tbody>
</table>

The participants were assisted by George Murray from IBM Academic Information Systems who served as a consultant at no cost to the university.

The Computing Needs Task Force conducted its investigation with the following goals for PSU in mind:

- To achieve minimal levels of computerization, campus-wide;
- To maximize the use of technology and to improve the physical infrastructure;
- To provide training and support for the faculty, staff, and students; and
- To delegate or decentralize the authority, responsibility, and accountability of administrative procedures.
The first goal of achieving minimal levels of computerization is necessary in order for PSU to be competitive in attracting and retaining qualified students and faculty. The last three goals are consistent with preparing for the effects of the current fiscal environment. These three goals were evident in both the Introspect project and the Oregon State System of Higher Education (OSSHE)/Financial Information System (FIS)/Human Resources Information System (HRIS) committee report.

The Task Force acknowledges the assistance of the following people in completing this report: Dolores Timmins from the School of Business Administration, the staff of the Office of Institutional Research and Planning, and Dallas Platt, Kara Seabeck, Beverly Henderson, and Doris Sun from OIS.

II. Study Process

The information-gathering and analysis techniques employed by the Task Force are widely used in both academic and business settings. The process begins with focus group interviews with individuals who are likely to share a similar perspective on a particular issue. Issues raised in the group interview sessions are compared with opinions collected from dissimilar groups in order to determine the issues of widest concern. This process encourages constant comparative analysis of each input to data previously collected. Conceptual categories emerge as the data are gathered.

The Task Force interviewed 52 people. Most interviewees were selected either because they were known for their extensive use of computers or because they represented the viewpoints of either schools or administrative units. The names of the individuals who participated and extracts from their statements are contained in Appendix A of this report.

A group content analysis of the compiled statements was performed to determine the most widely perceived requirements. The critical strategic issues that have emerged from these data (listed in declining order of response frequency) are:

- Better training for faculty, staff, and students;
- More PCs or workstations for faculty and staff;
- More student computing laboratories;
- A complete campus-wide computer network;
- Better hardware and software support for PCs from OIS;
- An upgrade of the IBM 4381 to increase computing speed and disk space;
- Better information about what computing is available on campus now and what technologies are emerging for the future; and
In order to determine if the issues that emerged from the interviews were indeed representative of the entire university community, the Task Force developed questionnaires for faculty and staff and for students. The survey results, along with the questionnaires themselves, are contained in Appendix B. The results confirm the importance of the previously identified issues; the open-ended responses to the surveys are contained in Appendix C.

Based on the information-gathering activities conducted during Winter Term 1992, four common areas of concern emerged across these constituencies:

- Planning for and evaluating the technological environment;
- Optimizing use of the current technology and improving the physical infrastructure;
- Support and training for users; and
- Financing the purchase of new equipment and providing ongoing support for users.

III. Minimal Levels of Computerization

Portland State University exists because of the needs of the Portland metropolitan area. The university's charter requires the provision of educational opportunities to "mid-life" adults as well as to younger students who have just graduated from local high schools.

In recent years, the level of technology involved in the delivery of education to local high school students has risen rapidly. Ten years ago, a high school course that made substantial use of computers was a rarity while today it is the rule. Local school districts are embarking on ambitious programs to increase the use of technology, particularly computing technology, at all grade levels.

As an illustrative example, the development plan (Appendix D) published by the North Clackamas school district (Milwaukie High, Clackamas High, and Putnam High, plus associated elementary and middle schools) identified five related student outcomes for Phase I of its computerization plan (1991-1993):

- Students will be provided with the capability to access information technology in all district school buildings.
- Students will receive instruction and curriculum that integrates technology into subject-specific areas.
- Students will have opportunities to interact actively with technological equipment in neighborhood schools.
• Students will greatly enhance their ability to develop higher-order thinking skills by their direct access to technology and by integrating instruction from different aspects of the curriculum.

• Students will view technology as a tool that assists in the mastery of learning rather than as an end in itself.

This plan goes on to specify the goal of having at least one lab of 30 networked Macintosh computers and a sophisticated technology-teaching station in each middle school and high school in the district. The computers are to "apply directly to curricular integration and career development." Further, every computer in the district will be connected to every other computer in the district through a combination of Local Area Networks (LANs) and Wide Area Networks (WANs). Most of these resources are already in place.

By Phase II (1993-1996), the goal is to extend the technological curriculum integration into Foreign Languages, Home Economics, Technical Education, Art, Music, and Physical Education, combined with the acquisition of specialty subject-area technologies, including computerized lathes, robotics, CAD/CAM systems, music synthesizers, art-generated graphic systems, and technological science equipment. Each teacher will have a networked Macintosh on his or her desk, not only for pedagogy but also for classroom administration and grade keeping.

If we assume that North Clackamas School District is representative of other local school districts, then PSU will soon be facing a major crisis. We will be unable to serve the needs of recent high school graduates adequately. They will compare our facilities with those in their high schools and find us lacking in both delivery and sophistication. Those who can will go to more technologically aware schools. Those who cannot will no doubt attend PSU but with a dissatisfaction that will be difficult to undo. They will be part of the retention problem that PSU will experience in the next five years.

Likewise, a comparison between PSU and the local community college is also unfavorable. At Clackamas Community College (CCC), computing is integrated into the Business, Economics, Psychology, Biology, Mathematics, Writing, Physics, and Chemistry curricula. For instance, at CCC, which has an FTE enrollment of 4,700 students, over 220 MS-DOS workstations are available for general use, a ratio of approximately 1 computer for every 21 students. At PSU the ratios are 1 computer for every 126 students using general purpose computing labs and 1 computer for every 40 students using general purpose and departmental computing labs.

Even "mid-life" students who are considering a return to school view computing as an important part of their curriculum. While experience shows that they are often intimidated by the integration of computing into the curriculum, at least initially, they typically see the benefits after moderate exposure to the technology.

Students rightly expect institutions of higher education to offer them an enhanced educational experience. Because of this, we submit that it is our obligation to offer at least the same level of technological integration as our local high schools in corresponding subject areas.
The Task Force therefore proposes that computing be integrated into the curriculum on a subject-by-subject basis, at least to the same extent that it is at the most progressive of local public high schools and community colleges. Further, adequate resources to facilitate this integration must be made available to the faculty who are charged with the task. To do less is to invite an erosion of the good will and confidence of our constituency.

Beyond purely educational computing needs, the needs for computing in support of research at PSU must be addressed separately. In most schools at PSU, research is considered an important part of a faculty member's duties, and it figures significantly in the evaluation of faculty. Since research is a competitive activity, it is important that our faculty be able to compete on equal footing with faculty from other universities for space in journals and access to research grants. When computing is an integral part of a faculty member's research, the university has an obligation to provide these resources no less than an obligation to provide current library resources.

Both faculty and graduate students doing research must have access to dedicated computing resources that are at least equivalent to those possessed by similar institutions. To do less invites career setbacks for faculty and makes PSU unattractive to funding agencies that have come to expect an infrastructure conducive to advanced research.

The standards specified in this document should be viewed as guidelines. Specific computing needs will vary widely from department to department. Because individual departments are much more familiar with the needs of their fields, they should identify their specific standards, within the spirit of these guidelines, in a strategic plan for computing.

IV. Planning for and Evaluating the Technological Environment

A. Long-range Planning

There should be a clear, long-range plan for academic and administrative computing, that will be reviewed and revised regularly. Faculty members throughout the university should be involved in the planning. Departmental long-range plans for computing should be integrated into the university's long-range plan. Aggressive steps should be taken to secure funding to implement long-range plans. Cooperation with local public school systems (K through 12), as well as with other institutions of higher education, should be fostered. Through cooperation, it may be possible to share computing resources so as to reduce overall costs. By seeking external funding through a consortium, funding success may be improved. PSU could take the lead in developing such a consortium in the Portland metropolitan area.

Key elements in a long-range plan would include establishing the goal of integrating computing into the curriculum and providing resources to facilitate this integration. Adequate resources must also be provided for faculty and graduate students doing research.
1. **Leadership**

PSU needs to strengthen its computer facilities and expand its computer utilization at every level. In order to accomplish this, strong leadership is needed at every level.

*A long-range planning process for academic and administrative computing should be established to address the integration of computing into the curriculum and to provide adequate resources both for this integration and for faculty and graduate students' research needs.*

a. The President and Provost should stress computer literacy for all students.

b. The deans also should reinforce the message of computer literacy by providing assistance and incentives to faculty to incorporate the use of computers in the curriculum.

2. **Associate Director of Academic Computing**

*This Task Force recommends that an Associate Director of Academic Computing be hired.*

Academic and administrative computing are different. Administrative computing standardizes on proven systems and uses the systems routinely and repeatedly. Academics, by contrast, are continually pushing the frontiers of knowledge. Their next research project rarely uses the same methodology as previous ones. Administrative computing has easily identified spokespersons for their needs, while academic users are isolated in different departments and rarely communicate with each other; they have no single spokesperson. These are critical differences. Academic users at PSU have expressed the need to have a spokesperson who can articulate their needs and would report to the Provost as well as the Director of OIS.

The Advising Committee on Computing Resources is to be charged with setting policies for computing at PSU. This committee could work closely with the Associate Director of Academic Computing.

3. **Software Compliance**

Although software is a relatively new medium of intellectual property, it is protected under international and U.S. copyright laws, as any book would be. Title 17 of the U.S. code says, "It is illegal to make or distribute copies of copyrighted material without authorization." The only exception to the code for software is copying for archival purposes. Therefore, it is illegal to make copies of software for any other purpose without the permission of the publisher. Unauthorized duplication can result in fines of up to $100,000 per infringement and jail sentences of up to 5 years. Many businesses have been caught with illegal software and fined; just recently a university was caught, resulting in fines and software repurchases amounting to over $500,000. Universities have been put on notice by Software Publishers Association
(SPA) that they will be the subject of greater scrutiny in the future. It appears that software compliance is not just the ethical and legal thing to do, it may very well be the smart thing as well. See Appendix E for information relating to software compliance.

The President and Provost should stress the importance of software compliance to the university community, and the university should adopt a policy of software compliance.

a. The university should educate its faculty, staff, and students about software use and the law. All training material and sessions should begin by identifying university policies and allowable behavior under PSU's software licenses and copyright law.

b. All departments and units within the university should develop an inventory of software purchase records and license agreements; these should be kept current. These records, along with original diskettes and manuals, will be required to prove that the software is legal in the event of an audit by the SPA.

c. All departments and units should conduct a software audit to determine the size and scope of software compliance problems at PSU.

B. Evaluating the Environment

The Task Force proposes that OIS should become more user-friendly. The term "user-friendly" is usually used to describe an application program. It implies that the program is easy to use, is not intimidating, and provides guidance as needed. The same attributes can and should apply to computing centers.

The results of our survey indicate dissatisfaction with the current level of support provided by OIS. There seem to be a generally perceived lack of "user friendliness" and a general reluctance to seek help when needed, whether or not it may be available. The committee recognizes that each member of the academic community has specific needs and demands for computing services, and these criticisms may reflect a very narrow point of view. But the perception of a problem is widespread enough to warrant the formation of a special team to investigate the service.

A team should be appointed to study OIS processes and to recommend ways in which these processes can be improved to enhance OIS service to its customers. A number of principles should be kept in mind in this analysis:

- Concern for customer needs;
- Establishing permanent teams within OIS to seek continual improvement;
- Maintaining open, consistent, and regular communication within OIS itself and between OIS and its users throughout the university;
• Encouraging creativity;
• Commitment to productivity and quality; and
• Fostering dedication to continuous improvement.

V. Optimizing Use of Current Technology and Improving the Physical Infrastructure

A. Faculty Computing

The character of university teaching and research is changing rapidly, in part because of the increasing need for faculty to use computers to access information, to prepare teaching materials, to conduct increasingly complex research, and to prepare research reports, articles, and manuscripts. Faculty need access to computing hardware and software that will allow them to do their jobs effectively and efficiently. Although specific computing needs will vary greatly by discipline, the Task Force offers the following as minimal computing standards for faculty operating in today’s university.

1. Hardware

a. Microcomputers

Every faculty member should have access to an appropriate level of computing equipment necessary to teach, conduct research, and perform service functions.

Every faculty member who wants a microcomputer should have one on his or her desk. According to a survey of equipment, 123 faculty report not having a university microcomputer. In Foreign Languages and Literature, 24 of 26, or 92%, do not have a microcomputer. In English, 20 do not have microcomputers. In the School of Social Work, no teaching faculty have university-owned microcomputers. The only university-owned microcomputers in that school are in the Regional Research Institute.

A systematic effort should be made to provide computers to faculty. See Part B of this section for greater elaboration.

i. The computing needs of faculty currently employed at the university should be evaluated on a person-by-person basis. The university and departments should prioritize computing needs and make a systematic effort to provide faculty with needed computing equipment.

ii. When new faculty members are hired, a minimal package of computing equipment appropriate for professional activity in the discipline should be made available to them.

Incentives should be provided to departments that upgrade computer equipment to place older equipment that no longer meets their needs into a pool from
which other departments may draw. See redeployment in Section VII for further discussion.

The Faculty Resource Center should be maintained and upgraded to provide access to computers to help meet faculty needs.

b. Mainframe Computers

Faculty should have access to mainframe computers of sufficient power and speed to allow them to teach, conduct research, and fulfill their service obligations effectively and efficiently.

During the focus group interviews, a number of faculty expressed concern about the slow speed of the IBM 4381 and also about the lack of disk space available to them. SAS and Minitab, the two most frequently used software packages, are installed on the IBM only. Options for improving the capacity and speed of the IBM should therefore be examined, since much social science research takes place on this machine.

Purchasing computing from an off-campus source was discussed. A thorough cost-benefit analysis should be done, but initial investigation suggests purchasing from an off-campus source may be quite costly.

It is estimated that the IBM’s CPU could be upgraded for less than $150,000 with a smaller annual maintenance cost than now. All current peripheral equipment would still be useful. In the event that the IBM cannot be expanded to meet current computing needs, careful consideration should be given to faculty computing needs in all disciplines, particularly in those disciplines currently using the IBM, before decisions are made about new computing hardware.

c. Campus-wide Computer Network Connections

The computer in each faculty member's office should be connected to the campus-wide computer network, in order to allow the use of mainframe computers for research and instructional purposes and the BANNER Student Information System for advising and for downloading class rosters. Through the network, faculty would be able to access library catalogs, to use E-mail to correspond with other PSU faculty and with colleagues at other universities, and, when appropriate, to access remote high-speed computers. See Section V.D. for greater detail.

d. Printers

Many faculty have expressed the desire to have a laser printer on their desks. Providing printers for each individual faculty member is expensive and not reasonable in the current fiscal environment. An alternative would be for each department to provide its faculty access to a laser printer, located in the departmental office or some other secure place, 24 hours a day.
2. Software

a. Microcomputer Software

The university currently has site licenses for some software packages. OIS personnel should continue to investigate opportunities for obtaining site licenses for software packages that are in high demand.

*The Faculty Resource Center should continue to make state-of-the-art software available to faculty* for desktop publishing, graphics, and presentation preparation, eliminating the necessity for each department to maintain an inventory of such programs.

b. Mainframe Software

There is a problem in perception about how decisions are made concerning software. Some users believe OIS makes the decisions, while far fewer believe the decision making rests with the Advisory Committee on Computing Resources.

It is the recommendation of the task force that next year the *Advisory Committee on Computing Resources be changed with developing a process for software purchases*. This committee should also identify ways that users will become knowledgeable about these processes.

*OIS should inform users about changes in mainframe software, and appropriate documentation should be made available before changes are implemented.*

3. Training and Support

Faculty training and support are addressed in Section VI of this report.

4. Hardware/Software Acquisition for Faculty

In order to optimize the use of existing technology, the Task Force recommends connecting as many faculty computers as possible onto the campus-wide computer network as quickly as possible. This will maximize the number of faculty with access to E-mail, the BANNER system, the library system, and other resources, will greatly enhance communication, and will help make the transition to an almost paperless system. It is quite clear from the open-ended responses in the surveys that such a distributed computing model is preferred by the faculty. The Task Force suggests that computing equipment will be made available to new faculty when they are hired.

a. Minimal Configurations:

Three minimal hardware/software configurations have been identified, based on the most common computing platforms on campus. They are:
Configuration 1:
Macintosh LC II
- 4M RAM
- 40M disk
- Monochrome monitor
- Network card
- HP DeskWriter
- MS Word

$1,956

Configuration 2:
386SX
- 4M RAM
- 40M disk
- Monochrome VGA
- Network card
- Mouse
- MS Windows
- Wordperfect
- HP DeskJet

$1,873

Configuration 3:
Sun SPARC ELC (21 mips)
- 8M RAM
- Diskless
- 17" Monochrome monitor
- 207M disk

$3,777

b. Acquisition Process

*Phase I - Fiscal Year 1992-1993.* Currently networked offices in which there is no university-owned computer are identified, such that each unit acquired will add a new user to the network, thus making the most efficient use of the resources we already have; that is, the campus-wide computer network.

One order form should be distributed to each appropriate department chair for each such office under his or her control. The chair will be responsible for distributing these order forms to the appropriate faculty. Faculty will be offered the choice of one of the above configurations.

At the time of placing the initial order, additional enhancements may be ordered (color monitors, additional RAM, larger disks, faster CPUs, and so forth) at actual cost. Payments for enhancements may be made by departmental purchase requisition or with personal funds. *Ownership of all equipment and software will remain with PSU;* however, faculty members will be guaranteed continued use of the equipment and software for as long as they are employed by PSU or until the hardware and software are superseded by other products if personal funds are used in the purchases.
In order to qualify for these resources, department chairs must identify one faculty or staff member to serve as the Computing Resource Person for that department. This individual will:

i. Be responsible for getting training for users in the department (OIS will be responsible for training the Computing Resource Persons);

ii. Serve as a resource in identifying and acquiring discipline-specific software for the department; and

iii. Serve as a liaison between the department and OIS. In this role, he or she will be responsible for notifying OIS of computing problems within the department and for disseminating OIS news within the department.

In recognition of the additional effort required to do such a job well, the department chair will be expected to reduce the faculty member’s teaching load or other responsibilities. Further, the activity must be considered equal to significant community service (like participation in the Faculty Senate) in the tenure/promotion and annual review process. Directives from the President and Provost to this effect must be publicized on campus before this acquisition program begins.

It is likely that without such a resource person in each department or further increases in the OIS staff, much of the equipment will be underutilized due to lack of training.

The following academic units that are currently connected to the campus-wide computer network have indicated the number of full-time faculty who currently do not have access to a computer (figures from OIS handout, 1/17/92, and from a telephone survey of departmental chairs or representatives).

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of faculty without university-owned computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>8</td>
</tr>
<tr>
<td>Business Administration</td>
<td>0</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Computer Science</td>
<td>0</td>
</tr>
<tr>
<td>School of Education</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Management</td>
<td>0</td>
</tr>
<tr>
<td>English</td>
<td>20</td>
</tr>
<tr>
<td>Foreign Languages &amp; Literatures</td>
<td>24</td>
</tr>
<tr>
<td>Geology</td>
<td>0</td>
</tr>
<tr>
<td>Mathematical Sciences</td>
<td>0</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
</tr>
</tbody>
</table>

If we assume that 45% of the users will choose Configuration 1, 45% of the users will choose Configuration 2, and 10% of the users will choose
Configuration 3, Phase I will cost approximately $113,440.

Phase II - Fiscal Year 1993-1994. Offices that are not yet networked will be scheduled for networking. As each office is connected to the campus network, the department chair will be given order forms for distribution to appropriate faculty members. Each faculty member can then place an order for Configuration 1, Configuration 2, or Configuration 3 under the same guidelines as used in Phase I. All requirements for Computing Resource Persons will continue to be in effect. Based on the OIS list of networked academic units and on a survey of departmental chairs or representatives, the following units will need to be connected during Phase II of the process:

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of faculty without university-owned computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration of Justice</td>
<td>2</td>
</tr>
<tr>
<td>Anthropology</td>
<td>0</td>
</tr>
<tr>
<td>Applied Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>3</td>
</tr>
<tr>
<td>Black Studies</td>
<td>2</td>
</tr>
<tr>
<td>Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Dance</td>
<td>1</td>
</tr>
<tr>
<td>Economics</td>
<td>5</td>
</tr>
<tr>
<td>Geography</td>
<td>1</td>
</tr>
<tr>
<td>School of Health &amp; Human Performance(^1)</td>
<td>0</td>
</tr>
<tr>
<td>History</td>
<td>9</td>
</tr>
<tr>
<td>Institute on Aging</td>
<td>0</td>
</tr>
<tr>
<td>International Studies</td>
<td>0</td>
</tr>
<tr>
<td>Music</td>
<td>8</td>
</tr>
<tr>
<td>OIRP</td>
<td>0</td>
</tr>
<tr>
<td>Philosophy</td>
<td>2</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
</tr>
<tr>
<td>Political Science</td>
<td>1</td>
</tr>
<tr>
<td>Population and Census</td>
<td>0</td>
</tr>
<tr>
<td>Psychology</td>
<td>0</td>
</tr>
<tr>
<td>Regional Research</td>
<td>0</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>12</td>
</tr>
<tr>
<td>Sociology</td>
<td>8</td>
</tr>
<tr>
<td>Speech Communication</td>
<td>5</td>
</tr>
<tr>
<td>Theater Arts</td>
<td>2</td>
</tr>
<tr>
<td>School of Urban &amp; Public Administration</td>
<td>0</td>
</tr>
<tr>
<td>Urban Studies</td>
<td>0</td>
</tr>
<tr>
<td>Urban Studies Center</td>
<td>0</td>
</tr>
<tr>
<td>Womens Studies</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
</tr>
</tbody>
</table>

Again, using the same dollar amounts and assumptions as for Phase I, this Phase will cost approximately $144,952. This estimate does not include the cost

\(^1\)Could not identify needs at time of request.
of network wiring.

Phase III - Fiscal Years 1994-1996. Users who did not participate in the Phase I or Phase II activities will have an opportunity, under the same guidelines and requirements, to obtain similar configurations, although the specifics can be expected to be different by then, due to advancing technology and reductions in price. Priority should be given to users using nonstandard or obsolete equipment.

Phase IV - Fiscal Years 1996-1999. Users who participated in previous phases can have their equipment replaced, in the order in which it was originally distributed (that is, the Phase I participants will be the first to upgrade in 1996-1997, followed by the Phase II participants in 1997-1998, and the Phase III participants in 1998-1999).

B. Administrative Computing

In the future, administrative systems will become more computer-based, less paper-driven, and more decentralized. For instance, the administration can begin to decentralize the purchasing function, thereby giving departments the authority and responsibility to make purchases. To facilitate this, departments will enter the purchase requisition in a computer database that will automatically post to and update a departmental bookkeeping system, permit electronic approvals, update the general ledger with encumbrance data, route electronic copies to the receiving dock and accounts payable, and so forth. This, in turn, should save time typing or otherwise entering duplicate data, filing paper copies, maintaining duplicative sets of books, delivering paper copies around the campus, and so forth. The result will be a more timely, user-driven information system that should save money in the long run.

With systems such as this in mind, the Task Force foresees administrative computing needs as follows:

1. Campus-wide Computer Network

Completion of the campus-wide computer network is of paramount importance. Most plans currently being proposed rely heavily on technology utilization and connection to the campus LAN and OSSHE WAN. It is important that fiber drops to all floors in all campus buildings be completed and that systematic wiring of all offices take place to take full advantage of the productivity gains that could result from such a system. The Financial Information Systems consultants have recommended the formation of Administrative Service Centers (ASCs), through which multiple departments can be serviced by an "enhanced steno pool" concept or by a clustering of expertise to service the administrative needs of the departments and faculty that they represent. If money becomes a constraint, ASCs should have priority, since the university could realize savings from the ASCs that could then be applied to other projects.
2. Hardware and Software

The Task Force recommends that sufficient microcomputers and software be made available so that all staff will have the proper tools to do their jobs effectively. It is difficult for this Task Force to identify the precise number of microcomputers needed because of the downsizing that will take place. These decisions will need to be evaluated as the budget reduction process proceeds.

As units acquire newer hardware, older equipment can be made available to other units that can use it productively. If a system being replaced no longer works, it should be donated to a warehousing system where the workable parts can be used effectively by some other unit. Credit should be given to the donor unit. See the redeployment section of this report in Section VII for greater detail.

3. Enhanced Training Programs

Enhanced training programs are needed to provide adequate support for the proliferation of microcomputers that these plans presume. As the university begins to decentralize and delegate authority, responsibility, and accountability, there will be a need to train staff adequately both in the utilization of the technology and in the myriad rules and procedures that the state or federal governments mandate. This will require training programs in the usage of computer operating systems, E-mail, word-processing, database management, and spreadsheet software, at beginning through advanced levels, and in the utilization of other applications that may reside on mainframes in the PSU computer center or on the Honeywell in Corvallis. Classes should be offered during the 8-to-5 daytime work period and be available often enough to satisfy the demand.

Knowledgeable staff are needed in OIS to assist users in the design of applications using commercial software packages. Endless possibilities for using spreadsheets, databases, or even word-processing applications exist if the university has the expertise available to assist users in designing customized programs.

4. Technical Support

Additional technical support is required in three major areas: (1) hardware maintenance; (2) network maintenance; and (3) software maintenance and design. As we begin to rely on computers, downtime will become a real problem. When a computer fails, we will need to respond quickly, providing a loaner machine and either servicing internal or contracting with a reputable firm for hardware maintenance service. An internal service department that can trouble-shoot and repair microcomputers would be preferable but may not be economically feasible. We will also need in-house expertise to diagnose problems in either the hardware or the network and be able to resolve them
Progress has been made in this area by combining the telecommunications unit with the computer center. Finally, software will need to be maintained or designed. New upgrades, compliance with licensing requirements, archiving or backing up data, and so forth dictate that we have someone on staff who can oversee such activities.

C. Student Computing

1. Microcomputing

In order for faculty to use microcomputers effectively in their teaching, classrooms must be equipped to allow the use of computers during lectures, and sufficient microcomputers must be available to students who do not own computers or cannot get access to them. Microcomputer labs must be available on evenings and weekends for working students. Attendants in student microcomputer labs should be competent to answer questions.

Of the students surveyed, 47% have no need to use a microcomputer on campus because they either have one at home or have access to one at work; however, 89% would use computers on campus if they were available. Some students are dissatisfied with the computing capabilities at PSU (see Figure 1). Their dissatisfaction comes from four main sources:

- Too few computers available;
- Inconvenient lab hours;
- Need for more training; and
- Too few trained lab personnel.

The total number of microcomputers available in the general student microcomputing laboratories is 77. There are, however, approximately 243 microcomputers available in departmental laboratories for student use. Given a student population of approximately 14,285 and an FTE count of 9,701 (Fall 1991), it appears that there is a need for additional student computing facilities. The Task Force recommends that additional student microcomputing be added.

The university should add an additional 100 microcomputers to the general purpose labs. This may be accomplished by adding one large student microcomputer laboratory or several smaller ones. The Task Force recommends that Room 145, Shattuck Hall, be developed. By removing the wall between Room 112 and 145, one large microcomputer laboratory can be created, reducing the need to staff two separate spaces. It is expected that an additional 100 microcomputers would be made available to students by adding this new lab. The cost of the remodeling is estimated at $370,000. This cost estimate does not include the microcomputers and furniture. See Appendix F for a description of the remodeling and cost estimates. Also see Figure 6.
The Task Force recommends that vendors be identified to donate microcomputers for this new laboratory. Vendors are likely to make donations when their hardware will be used in showcase settings. No one vendor would equip the entire lab, so several vendors would be required.

If this large student microcomputer laboratory cannot be added, then several small labs will be needed. One possible space is in the library; another may be found in Science Building II.

The Students with Disabilities Union strongly believes that student computer labs on campus need to be accessible to all users (including people who use wheelchairs, the blind, and students with other disabilities). To encourage integration of students with disabilities into the general student population, each student microcomputer lab must be accessible, and not segregated by making only a few particular labs accessible. Each lab will need staff members who have training for the operation of adaptive equipment and visual assistance software. All these needs are in compliance with the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

2. Computer-Equipped Classrooms

Classrooms need to be equipped so that faculty and students can use computers during class. Classrooms that are equipped with computers for student use and that are networked to a server with projection equipment are needed. In these classrooms, interactive work by students can take place which more closely approximate the "real world" workplace. Scheduling of these specially equipped classrooms would be under the control of OIS to assure efficient usage and equal access to all departments and schools. These classrooms can be used as general-usage student laboratories when no computers and overhead projection devices are permanently located there.

3. Training and Support

In terms of those students receiving computing assistance, about equal numbers are satisfied as are dissatisfied. It appears that students would benefit from consultants receiving more training. However, sometimes students are dissatisfied with the consultants for not providing assistance when the student should not be provided with that type of assistance. There is a need to convey to students what type of help is available. For example, lab personnel are not hired to interpret and set up the homework assignment but only to assist in the debugging even though the student wants help beyond debugging. Better communication is needed in this area. It will require faculty cooperation to inform students what help they can reasonably receive in the labs. Faculty should tell lab personnel what types of computer projects they are assigning so that the consultants will be prepared better to do their jobs.

Students also need better training in microcomputing and mainframe use. Three times as many students are dissatisfied as are satisfied with the training currently provided in both areas (see Figure 2). Better information materials (particularly
introductory material) are needed and would provide a higher level of satisfaction for students.

About half the students surveyed use at least one of the mainframes on campus. During the Winter Term, 1,785 students had accounts on the IBM 4381, and 890 students had accounts on the Sequent (ODIN). Of the 56% of the students who made use of the mainframes, over half expressed dissatisfaction with the training they have received and with the poor availability of the consultants. Once they were assisted, however, more than half were satisfied with the level of support provided. More consultants are recommended.

The Task Force recommends that introductory courses in computing be provided for students with no computing background. Regular courses should be available for basic word-processing, spreadsheets, and database management. See Section VI of this report for further elaboration.

4. Hours

Lab hours should be lengthened to maximize the use of technology.

Many students responded that computing could be improved at PSU by extending the lab hours and eliminating the two-hour use limit. Extending hours is an inexpensive method compared to adding more computing facilities. The Task Force recommends that hours be extended. See Figure 3 for the hours that students indicated they would use the microcomputing labs. It may be possible to use student volunteers to augment the lab personnel for low-demand hours at minimal additional cost to the university.

5. Mainframe Computing

Students are not allowed to have an account on the mainframes unless it is required for a course and perceive this as unfair. It is not necessary for instructors to require them to read a book in the library reserves to have access to the library resources. Some students can teach themselves computing and would like to do so, but they need access to a mainframe. It is suggested that students be given mainframe accounts when they request them provided there are sufficient resources to handle the demand.

D. Campus-wide Computer Network

The goal of the campus network is to provide connectivity to computing and information resources both on and off campus for faculty and staff. The network currently provides access to OIS academic and administrative systems as well as to departmental systems such as those in Computer Science and Electrical Engineering. The Millar Library catalog is available to those connected to the campus-wide computer network. The network also provides access to off-campus computing and information services such as high-performance computers and other library catalogs.
In addition, the network provides users with world-wide E-mail services as well as the capability for information exchange between departmental LANs.

1. Networking

At the present time, approximately 42\% of the faculty and staff offices are wired for network access. This includes departmental LANs under construction, such as the one in the School of Business Administration. See Appendix G for information about the campus-wide computer network.

To meet the goal of the network, two conditions must be met:

- The remaining faculty and staff offices must be wired; and
- Microcomputers must be acquired for those who do not have them (see Faculty Computing section).

Up to now, administrative units and departments have been wired when they had the funds and chose to expend them on network wiring. Wiring portions of buildings in this fashion creates islands of connectivity and is usually not the most efficient or economical way to wire buildings.

The better approach to completing the campus network would be to wire all faculty and staff offices in each building systematically, one building at a time. This allows wire routing to be optimized within each building. The cost, as estimated by Physical Plant, is approximately $250 per drop and may be lower than that if an electrician is dedicated to the task of wiring each building systematically. Following such a systematic scheme, it is anticipated the university itself would pay for the connectivity, rather than the administrative units and academic departments.

The estimated cost is based on the OSSHE building list for 1990-1991, which identified approximately 785 offices (58\% of all campus offices) still needing to be networked. Given an average cost of $250 per drop, the total estimated cost for completing the wiring for the campus network is $196,250, if wiring did not take place in a systematic manner.

Classrooms also need to be wired. It is estimated that it will cost $50,000 to wire the approximately 200 classrooms, seminar rooms, and laboratories at PSU.

In addition to the wiring costs, there are costs for the network cards and also for the software.

Therefore, the total estimated cost of computing the campus-wide computer network is $ \_ \_ \_. The estimated cost does not include the cost of placing personal computers on every faculty and staff desk.

The Task Force recommends that the campus-wide computer network be completed in the most efficient and economical manner (that is, systematically wiring all offices on campus, building by building). The completion of the campus network is
necessary so that:

i. The administration, at a minimum, can decentralize the purchasing function in order to make the reductions required by the current fiscal environment.

ii. The faculty can have access, from their offices, to computing resources on and off campus comparable to those institutions similar to PSU.

iii. The faculty, with easy access to computing from their offices, will integrate computing into their courses, so that the PSU curriculum will be attractive to area high school and community college students.

2. Providing Technical Support

The campus-wide computer network is operating but no additional staff have been hired to support this activity. Most LANs are supported by faculty, staff, or graduate students within the academic or administrative units. For the most part, these arrangements are informal. For example, when a problem develops, one faculty member asks another who is more knowledgeable. Over time, this knowledgeable faculty member becomes the de facto network manager for the department.

_The Task Force recommends that departments and administrative units provide an officially designated network manager when the network becomes sufficiently large (over 10 stations)._ This network manager may be the Computer Resource Person identified earlier in the report.

It may be possible that students from Computer Science, Electrical Engineering, Management Information Systems, and other areas possess the skills and experience to provide technical support, with proper faculty supervision, by offering graduate assistantships, tuition waivers, and/or course credit. See Section VII on Financing for further elaboration of these ideas.

If, because of the current fiscal environment, there are not enough resources to provide additional technical support, the Task Force recommends that the informal arrangements be formalized so that faculty members and others receive recognition for their contribution to maintaining the network. Faculty members should receive reduced teaching loads or reduced service requirements to permit them the time to manage the network properly, and this activity should be rewarded when the faculty or staff member is evaluated.

VI. Support and Training

A. Computing Support Issues

Surveys and interviews indicate that those who approach OIS for support are often frustrated. Among survey respondents who reported using support services, there
was a consistent pattern of almost equal numbers of people feeling satisfied, neutral, and dissatisfied with support services. For example, in terms of the availability of mainframe consultants, 39% were satisfied, 31% were neutral, and 30% were dissatisfied. Similar results were found for the availability of microcomputing consultants (34% satisfied, 37% neutral, and 29% dissatisfied).

It is possible that some people will always be dissatisfied with computer support, and it is difficult for a computer support function to respond to everyone's needs. Still, there is a perception that OIS lacks a customer focus and fails to play a proactive leadership role in helping faculty and staff to be better and more informed users of computer hardware and software. On the positive side, some of the interviewees indicated that some support services are better now than they had been. Regardless of how responsive OIS actually is, the important point here is that the perception of nonresponsiveness is a problem in itself. Therefore, OIS needs to fix existing problems and actively communicate to its customers that it can indeed address their needs. The quality initiative team recommended in Section IV.B. should identify new processes that may help elevate some of the problems.

A related problem is that user awareness of existing systems is often poor, resulting in the underutilization of these systems, such as the BANNER system. For example, any university employee who wants access to BANNER must apply for the right to use it, specifying the type of information needed. This is a fairly easy process for someone who is already aware of how the BANNER system works but confusing to anyone else. The process inaccurately presupposes knowledge of this resource on the user’s part.

Due in part to restrictions on the budget and on the number of personnel available, support is limited to certain "approved" software. Deviation from the use of this software is perceived to be discouraged. Users who attempt to get support for a new software program feel they are not helped regardless of the number of users involved. Although supporting every user's software request is not practical, communication channels must remain open, since technology is constantly changing. The inability of faculty members to be heard has led to erosion of the good will between some faculty members and OIS in this area and should be relatively easily corrected.

Some of the changes recommended below could be realized with the current resources of OIS because these changes involve only a modification of management processes and a reallocation of current resources.

1. **OIS should take the initiative in training and support rather than react to problems as they arise:**
   
   a. A help desk or hotline should be established.
   
   b. New computer purchases should be tracked and assistance should be offered for the set-up of both hardware and software.
   
   c. Training requests should also be tracked and courses should be offered based on demand.
d. Resources such as BANNER should be promoted to users according to each office's specific needs.

e. Communication regarding new software, hardware, and upgrades should be fast and direct.

2. **OIS should be open to applications that serve users' specific needs as well as to those that it traditionally supports.**

   a. OIS should encourage and seek out new computing activity among faculty and staff.

   b. OIS should survey the use of software on campus frequently to determine the changes in users' demands.

3. **OIS should take a more active leadership role, anticipating the future needs of users and building its capability to respond to these needs.** Since it is difficult for OIS to know what the priorities of users are, it must necessarily rely on the user community to identify these priorities. In order to do this, a useful mechanism may be the Advisory Committee on Computing Resources that can assist OIS in identifying user priorities, sorting out which kinds of support could best be provided in a centralized or decentralized manner.

B. **Training Issues**

Major training needs can be identified from the faculty, administration, and staff survey of computer use. Respondents were asked about their frequency of use of a wide variety of computer types and applications; one response category was "never use, but would if had training." The four computer uses that showed the greatest likelihood of increased use as a result of appropriate training were Sequent/BANNER (23% of faculty, 7-9% of administration and staff), the IBM 4381 (13% of faculty), Gould/Sequent (14% of faculty, 12% of administration), and the on-line library catalog (12% of faculty, 15-16% of administration and staff). See Figure 4. A total of 62% of the respondents reported needing some level of training on the BANNER system, with beginning-level training being most needed by all; substantial numbers of staff requested intermediate and advanced training as well. Training for the library on-line catalog and for use of remote libraries was also requested by more than 60% of the respondents, with most requests again being for beginning-level training. Particularly noteworthy is that 41% of the faculty needed training in accessing remote libraries.

In the microcomputer environment, word-processing is the most frequently used application, and it also shows the greatest need for advanced training; this need was identified by 40% of the users responding. The greatest needs for beginning-level training are for E-mail (34%), networks (33%), graphics (32%), desk-top publishing (31%), spreadsheet (29%), and database management (27%). The most commonly identified intermediate-level training needs are in the use of databases (25%), word-processing (22%), E-mail (19%), and graphics (19%). Among the subgroups,
notable responses were that 25% of the staff reported a need for advanced training in database management; and that 34% of staff and 41% of administrators reported a need for beginning-level training in statistical packages.

Students consistently identified a need for beginning-level training in microcomputers — in the operating system, word-processing, database management, and spreadsheet applications. They need the basics, an introduction to microcomputers in general and enough knowledge of applications to make use of them in writing papers and fulfilling course assignments. They identified the lack of courses or other resources to help them. It is anticipated that students entering PSU will be more computer literate each year. However, given that many of our students are older and returning to school, it may mean that there will be a need for beginning-level training for sometime.

It is clear that there is a wide variety of training needs related to the mainframes and to both IBM-compatible and Macintosh microcomputers, as well as to a variety of types of software. See Figure 5. To meet this demand, we need to design a flexible program that addresses beginning to advanced-level needs and also an approach that will attract users who may not be aware of the increased efficiency, productivity, or creativity possible via particular computer applications. Options include:

1. **Classes available to all students that would introduce them to the basics of using both the mainframe and microcomputers.** Students need noncredit or limited credit classes that could be made available through Extended Studies for beginning-level instruction.

2. **Well-written documentation for local applications** (such as BANNER, the on-line catalog, and so forth) to reduce the need for training. A system should be developed, using either campus mail or E-mail/bitnet, to notify users immediately of changes in how applications function.

3. **Training staff who have strong skills in training both to provide short courses and be available for consultation during self-paced training.**

4. **Training videos for individual use with the support of a lab assistant but without formal instruction.** Such videos are available for beginning, intermediate, and, in some cases, advanced instruction. These could be available in current student and faculty labs and/or in a dedicated lab.

5. **A proactive approach to the entire PSU community to help all members identify ways in which they can use computers in their work and study; the opportunity to be trained should be widely advertised.**

6. **Dedicated instructional computing laboratory(ies).** Such a facility should be equipped with microcomputers, a lecture station, an overhead video monitor connected to the instructor's computer, an audio amplifier, and software. It could be scheduled for faculty, staff, or student training (which can be mixed if their needs are similar or separate if they make quite different uses of the same software). It may also be used as a general access lab when not in use for
instruction. Instruction can include:

a. Beginning, intermediate, and advanced instruction in a variety of software packages, for both IBM-compatible and Macintosh users, and in mainframe applications (including BANNER and the on-line library catalog). The emphasis should be on intensive short courses. In some cases, it may be appropriate to have decentralized training, specific in content and location to the needs of specific units. Attention should focus first on those types of training that are most needed, based on the computer survey: BANNER, on- and off-campus library access, E-mail, networks use, graphics, and desk-top publishing.

b. Short courses for specific user groups, such as faculty or departmental staff, focusing on how common tasks can be simplified by the use of a particular software application. These would provide basic instruction in the use of the tool and include simple, practical exercises in using the tool.

c. Courses available to faculty and staff without charge, although a charge for materials may be appropriate.

7. **Supplementing formal training by identifying user groups with similar needs.** These may be particularly useful for subgroups with specific needs (e.g., computerizing the course-scheduling process) or for those who use software that is not officially supported on campus. In some cases, faculty or staff with specific expertise may be willing to conduct short courses if they can be released in some way from another part of their work load to do so. A small amount of money set aside to provide release funds would make such options more attractive to the employees providing the training and to their supervisors. This approach might be particularly useful for advanced training and for applications specific to a particular unit or user group on campus.

8. **Devoting resources both to researching the literature on the most effective ways to train users and to supporting experimentation on effective training techniques.**

9. **Continuously evaluating the appropriateness and adequacy of the content and personnel in each training course.**

See Appendix H for college models for training for Glenndale Community College and Miami-Dade Community College. Both community colleges have been nationally recognized for their training programs.

VII. **Financing**

PSU has computing needs in terms of:

- hardware and software acquisitions for academic and administrative units;
networking;

• student microcomputing labs;

• training;

• upgrading or replacing the IBM 4381; and

• technical support for hardware, software, and networks.

The price will not be cheap. Given the present economic climate, creative financing may be needed. Because of the constraints imposed by ongoing budget reductions, PSU should be pursuing external sources of funding for needed computer equipment. Lists of funding opportunities, such as the Grants CD-ROM database from the Dialog service, are available from the Office of Grants and Contracts. Personal contacts in local companies, such as IBM, Intel, and Sequent, should also be pursued, as that avenue has been successful in the recent past.

A. Sources of Funding for Improving the Infrastructure

1. Certificates of Participation

_The university should borrow money through the state._ If the avenue of certificates of participation is open to the university, it makes sense to borrow the total amount of money needed to equip PSU fully in terms of computing, provided the university can service the debt.

With a large sum of money for capital investment, the university could provide microcomputers for all its faculty and staff, open a 100+ microcomputer laboratory for students, complete the campus-wide computer network, and upgrade the IBM 4381.

2. Fundraising

_The President should establish a fundraising effort._ This effort should be headed by an established business leader in the community. Contributions can be in the form of equipment as well as money.

3. Grants

_The President and Provost should encourage the faculty and administrative staff to develop grant proposals seeking computer equipment._ Numerous grants are available from the federal government for programs such as creating writing labs and for incorporating the computer into various curricula, particularly mathematics and the sciences. Grants exist even for technical support and maintenance.

A review of grant and contract funding sources for computer equipment was conducted by PSU’s Office of Grants and Contracts. It indicates that many educational equipment grants are oriented toward K-12 services rather than higher education. College and university proposals that are closely integrated
with K-12 education may qualify for those funding sources. Therefore, PSU may want to cooperate with Portland’s K-12 schools, as well as with other higher educational institutions, in seeking grant funding.

Other grant and contract support for equipment can generally be divided into two main types:

a. **Support by foundations and other private sources:** Charitable foundations generally focus their philanthropic efforts on targeted groups (e.g., disabled, children at risk, single parents, minorities, vocational trainees). Equipment grants from such foundations are closely integrated with a broader program of education and training. To leverage their limited resources, private foundations often require matching funds or effort.

b. **Vendor donations:** All major computer equipment vendors maintain liaison offices oriented toward providing equipment to educational institutions at all levels. Awards can include new equipment in support of specific functions (e.g., a language laboratory or a computer-based art education program) or excess equipment to support more general needs. Targeted programs should have high visibility and high payoff, reflecting public benefit for the donor.

**B. Sources of Funding for Technical Support and Training**

1. **Redeployment of Microcomputers**

Although not a direct source of funding, redeployment stretches past investment. When an academic or administrative unit acquires new hardware, the old hardware should be made available to other units that could use it productively. Too often, the equipment is placed in a closet or corner in case it will be needed as a spare at a later date. Instead, the Task Force recommends that redeployment occur immediately. Credit should be given to the donor so that when equipment fails in the future, the unit will have built up sufficient credit to be able to get some working equipment because the unit has been a good citizen of the campus-wide computer community.

Failed equipment can also be donated since working parts can often be cannibalized and used to make other systems function. Again, the donor unit will need to get credit for its donation for its own future rainy day.

2. **Students Can Provide Technical Support to the University**

Students have skills and experience that can be used to augment network, software, and hardware support through practicum classes, tuition rebates, or student employment within various departments.
Examples:

a. A microcomputer software help desk, similar to mainframe consultants, could be established utilizing the skills of Computer Science, Electrical Engineering, Management Information Systems, or other students with appropriate skills. A telephone line would be set up and staffed by students to answer questions for faculty, staff, and students. These activities would be supervised by faculty involved in the programs.

b. Funding or tuition incentives could be provided to departments to hire student assistants for the departmental Computing Resource Person or Network Administrator identified earlier in this report.

c. Analysis and design of new systems on campus could be accomplished as class projects coordinated through the Computer Science, Electrical Engineering, or Management Information Systems programs. Class credit and real-world work experience would be provided to the students in exchange for the development of these systems.

3. Staffing Requirements

The following recommendations are made for staffing requirements. All salaries are yearly and include OPE.

a. **Academic Support**

   Several years ago, a consultant recommended that an Associate Director for Academic Computing be hired at an estimated cost of $70,400. One support position should be added at an additional cost of $35,481.

b. **Microcomputer Support**

   PSU currently has one central microcomputer support person for every 373 computers. A recent informal survey indicates that a ratio of 1 to 200 is a more common figure. If PSU were to achieve such a ratio, an additional four support persons would have to be added. Each new support person would cost $35,481.

   The administration must determine at what level of support the university should attempt to maintain. *This Task Force recommends that two additional support personnel be added next year.* This would lower the ratio to 1 to 266 at an additional cost of $70,962.

   *Students should be hired to assist OIS in providing hardware and software support for microcomputers, thereby lowering the ratio even further.*
c. Campus-wide Computer Network

The position of network manager was allocated and funded, but permission was never granted to fill the position. The Task Force recommends that this position be filled as a support person at $35,481, and should report to the Technical Director. The person should not be a manager, given the current desire to reduce the number of administrators on campus. Students should be hired ($16,692) to monitor the function of the campus-wide computer network. In addition, an electrician ($24,000) should be hired to do the systematic wiring for the network, one building at a time.

d. Training

The Task Force recommends that a training facility be established. To staff this facility would require a training coordinator ($29,390) plus additional student help ($25,038).

A funding pool of release time for volunteer trainers should be made available to academic and administrative units that provide their own training.

Training videos should be purchased (typically $50 each).

Contracting out training typically costs $100-$250/hour, depending on the type of training.

Required and elective courses for students could potentially be self-supporting when offered through the School of Extended Studies.

e. Software Compliance Personnel

The Task Force recommends that a position ($29,390) be added to assist the university in its software compliance. Educating the university community would be part of his/her responsibilities also.
New Courses and Course Changes

Anthropology

Anth 300 THE MODERN WORLD IN ANTHROPOLOGICAL PERSPECTIVE (3)
Examination of anthropological approaches to cultural diversity in a global context. Includes cultural contact between the fourth-world and the industrialized world; health, nutrition, and poverty in different world areas; ecocide and ethnocide; political movements in the fourth world; racism; and sexism. [NEW]

Anth 315 AMERICAN CULTURE (3)
Central beliefs and core values of modern American society are examined from an anthropological perspective. Considers: value of constructs such as individualism and conformity; creation of public images; kinship and friendship; privacy; schools and neighborhoods; and conflicts involving ethnicity, social class, and gender. Questions the role of culture in our own lives, thereby gaining a greater understanding of social experience and of the concept of culture. [NEW]

Anth 428/528 POLITICAL ANTHROPOLOGY (3)
Survey of major anthropological approaches to politics and power. Coverage includes structural functionalism, evolutionism, action theory, structuralism, political economy, and post-structuralism. Ethnographic cases include both primitive politics and contemporary ethnic, class, and gender struggles in heterogeneous societies. Anth 304, 305 recommended. [NEW]

Anth 479/579 FORENSIC ANTHROPOLOGY (3)
Advanced techniques of human skeletal identification and their application to the solution of medico-legal (forensic) problems. Prerequisites: Anth 478/578 or consent of instructor. [NEW]

Anth 304 SOCIAL ANTHROPOLOGY (3)
Human social organization is examined in cross-cultural perspective. Analysis of kinship systems in stateless societies and of the state and the mode of production in complex society. Attention to major theoretical approaches to social organization: structural-functionalism, structuralism, political economy. Designed for anthropology majors and minors. Prerequisite: Anth 110. [CHANGE DESCRIPTION]

Anth 305 CULTURAL ANTHROPOLOGY (3)
Explores development of the concept of culture within anthropology since the 1930s and examines how this concept and the theories based on it have shaped both fieldwork practices and production of ethnographic texts. Prerequisite: Anth 110. [CHANGE DESCRIPTION]

Anth 314 NATIVE AMERICANS (3)
Ethnographic survey of North American Indian cultures--from simple hunter-gatherers to complex empires--illustrating the patterns of adaptations to the variety of landscape and historical processes. [CHANGE TITLE AND DESCRIPTION]

Anth 418/518 INDIAN-WHITE RELATIONS (3) [CHANGE TITLE]
Soc 423/523. STRATIFICATION (3)
Survey and analysis of stratification theories and empirical research.
Analysis of class, race, ethnicity, gender, and sexual orientation, considering
economic, social, political, and cultural dimensions of power. Prerequisites:
Soc 204, 205. [CHANGE NUMBER FROM 434/534, TITLE AND DESCRIPTION]

Soc 424/524 SMALL GROUPS (3)
Major theories and research findings pertaining to small group structure and
interaction. Functions of small groups; group organization and performance;
interdependence; cohesiveness; group influence processes; cooperation and
conflict in groups. Prerequisites: Soc 204, 205. [CHANGE DESCRIPTION]

Soc 425/525 SOCIOLOGY OF WOMEN (3)
Analysis of the social position of women in the U.S. in institutional areas such
as family, reproduction, politics, work, and education. Consideration and
evaluation of feminist theories concerning social condition, behaviors, and
characteristics of women. Prerequisites: Soc 204, 205. [CHANGE NUMBER FROM
415/515 AND DESCRIPTION]

Soc 459/559 SOCIOLOGY OF HEALTH AND MEDICINE (3) [CHANGE TITLE]

Soc 469/569 SOCIOLOGY OF AGING (3) [CHANGE TITLE]

Soc 361 SOCIAL ORGANIZATION (3) [DROP]
Soc 364 SOCIAL FACTORS IN HEALTH AND ILLNESS BEHAVIOR (3) [DROP]
Soc 414 THE FUTURE OF SOCIETY (3) [DROP]
Soc 419 THE MODERN COMMUNITY (3) [DROP]
Soc 426/526 SOCIAL ECOLOGY (3) [DROP]
Soc 428/528 MIGRATION (3) [DROP]
Soc 441/541 THE SOCIAL DEVELOPMENT OF THE BLACK IN AMERICA (3) [DROP]
Soc 456/556 ISSUES IN INDUSTRIAL ORGANIZATION (3) [DROP]
Soc 460/560 SOCIOLOGY OF ADULT DEVELOPMENT AND OLD AGE (3) [DROP]
Soc 464/564 CORRECTIONAL AND THERAPEUTIC COMMUNITIES (3) [DROP]
Soc 467/567 SOCIOLOGY OF INTELLECTUALS (3) [DROP]
Soc 481/581 TRANSNATIONAL SOCIAL ORGANIZATION (3) [DROP]
Soc 489/589 SOCIOLOGY OF LAW (3) [DROP]

Speech Communication

Sp 211 COMMUNICATION INQUIRY (3)
Introduction to assumptions and methods of inquiry in study of human
communication. Students develop basic skills of research and inquiry, and
improve their ability to understand, evaluate, and use reports of research and
scholarship encountered at work, in the mass media, and in other communica
tions contexts. Prerequisite: Mth 243. Mth 244 recommended. [NEW]

Sp 412/512 EMPIRICAL THEORIES OF MASS COMMUNICATION (3)
Surveys social scientific theories of mass communication. Prerequisite: Sp
212. [NEW]

Sp 422/522 CRITICAL THEORIES OF MASS COMMUNICATION (3)
Surveys critical institutional theories of mass communication. Primary focus is
analysis of the relationship between media institutions and the state and other
social institutions. Prerequisites: Sp 212. [NEW]
Sp 447/547 COMMUNICATION AND AGING (3)
Focuses on the intersecting areas of communication and gerontology. Ages of
communicators are often variables affecting the process and outcome of
interaction. Students examine communication and aging through interaction
(intrapersonal, interpersonal, intercultural) and through context (organizational,
family, medical). Prerequisite: Sp 212. [NEW]

Sp 556 SEMINAR: GENERAL SEMANTICS (3)
General semantics focuses on communication from a linguistic, physiological,
environmental perspective and application of general semantics theory.
Students design and implement applications of theories addressed in class. [NEW]

Sp 212 MASS COMMUNICATION AND SOCIETY (3) [CHANGE NUMBER FROM 217]

SpHr 464/564 ARTICULATORY/PHONOLOGICAL DISORDERS (3) [CHANGE NUMBER
FROM 386]

SpHr 488/588 ADVANCED AUDIOLOGY (4) [CHANGE CREDIT HOURS FROM 3 TO 4]

SpHr 489/589 SPEECH SOUND DISORDERS (1) [CHANGE NUMBER FROM 384]

SpHr 490/590 AURAL REHABILITATION, SPEECH-READING AND AUDITORY TRAINING (3)
Prerequisite: SpHr 488/588. [CHANGE PREREQUISITE]

Sp 420/520 PUPPETRY FOR CLINIC AND CLASSROOM (3) [DROP]
Sp 530 ADVANCED PUPPETRY FOR CLINIC AND CLASSROOM (3) [DROP]

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Civil Engineering

CE 552/652 HIGHWAY DESIGN FOR CAPACITY (3)
Principles of highway capacity, traffic characteristics, operational analysis,
design and planning of freeways, multi-lane and two-lane rural highways,
intersections and arterials, transit facilities. Prerequisite: CE 454. [NEW]

CE 576/676 ENVIRONMENTAL FLUID MECHANICS II (3)
Introduction to the fundamentals of the fluid dynamics of natural surface
waters by analysis of the governing equations of mass, momentum, and heat
conservation. Applications include turbulence modeling, finite depth water
motions, stratified flow phenomena, seiche phenomena. Prerequisites: CE
572/672 or EAS 361, CE 362, CE 371. [NEW]

CE 578/678 WATER QUALITY MODELING (3)
Introduction to descriptive modeling approaches for analyzing water quality
changes in lakes, reservoirs, rivers, and estuaries. Applications include
modeling dissolved oxygen, temperature, nutrients, and algal dynamics.
Prerequisites: EAS 361, CE 371. [CHANGE NUMBER FROM 576/676, DESCRIPTION
AND PREREQUISITES]

CE 341 SOIL CLASSIFICATION AND PROPERTIES (3)
Two lectures; one 3-hour laboratory period. Prerequisite: EAS 213. [CHANGE
LAB HRS. FROM 2 TO 3]
CE 572/672 ENVIRONMENTAL FLUID MECHANICS I (3)
Prerequisites: EAS 361, CE 371. [CHANGE TITLE AND PREREQUISITES]

Computer Science

CS 415/515 ADVANCED PARALLEL PROGRAMMING (4/3)
Advanced course on parallel languages and programming techniques. Introduces the fundamentals of and different approaches to parallel computing, and establishes first-hand experience in programming actual parallel computers. Three lecture hours; one three-hour laboratory period. Prerequisites: CS 302 and working knowledge of C, Fortran and Unix. [NEW]

CS 458/558 PROGRAMMING LANGUAGES (4/3)
In-depth study of current and historical issues in the design, implementation, and application of programming languages. Topics range from basic to advanced. Areas include syntax, semantics, scoping, typing, abstraction, exceptions, and concurrency. Computational paradigms such as functional, logic, and/or object oriented are analyzed. Several “recent” programming languages used. Three lecture hours; one three-hour laboratory period. Prerequisite: CS 302. [NEW]

CS 533 CONCEPTS OF OPERATING SYSTEMS (3)
Survey of concepts and techniques used in modern operating systems. Sample concepts covered are concurrency, IPCs, scheduling, resource allocation, memory management, file systems, security. Techniques for implementing operating systems taught through a programming project. Prerequisite: CS 303. [NEW]

CS 105, 106, 107 COMPUTING FUNDAMENTALS (3, 3, 3)
Elementary introduction to the basic principles of computer science, their interpretation and application. Covers the fundamental concepts of computer technologies and introduces the problem solving potential of popular application software packages to the new user of computers. Intended as a computer literacy course for non-CS majors. Need not be taken in sequence. Prerequisite: Mth 111. [CHANGE DESCRIPTION, HRS. FROM 3 TO 3, 3, 3 AND CREATE SEQUENCE]

Electrical Engineering

EE 478/578 INTELLIGENT ROBOTICS I (4)
EE 479/579 INTELLIGENT ROBOTICS II (4)

EE 528/628 LAYOUT TECHNIQUES (4)
Methodologies and strategies used to lay out electronic circuits. Full-custom and semi-custom approaches. Gate arrays, standard cells, cell generators, building blocks, and sea-of-gates technologies. Hierarchical circuit description, layout process, and manufacturability. Layout problem as a constrained optimization problem. Application of graph theory and mathematical optimization techniques to VLSI layout synthesis. Overview of the most important combinatorial problems in circuit layout, and descriptions of their solutions. Prerequisite: graduate standing. [NEW]

EE 529/629 PERFORMANCE-DRIVEN LAYOUT (4)
Floorplanning, placement, routing, compaction, design rule verification, and module generation. Description and analysis of algorithms used in layout synthesis. Timing-driven layout techniques for performance optimization. Application Specific Integrated Circuits (ASIC) using traditional semicustom techniques and new Application-Specific programmable logic devices, FPGAs, EPLDs. Fitting problem for architecture-specific EPLDs. Prerequisite: EE 528/628. [NEW]

EE 568/668 INTRODUCTORY IMAGE PROCESSING (4)
Two-dimensional systems, image perception, image digitization (sampling and quantization), image transforms (Fourier, Cosine, K-L transforms), image enhancement (histogram equalization, filtering, spatial operation). Prerequisite: graduate standing. [NEW]

EE 569/669 ADVANCED IMAGE PROCESSING (4)
Introduction to random fields, image representation by stochastic models, image restoration (Wiener and Kalman filtering), image coding and compression (predictive and transform coding, vector quantization). Prerequisite: EE 565/665, EE 568/668. [NEW]

EE 570/670 COMPUTER VISION (4)
Image detection and registration, image analysis (texture extraction, edge detection, segmentation), image reconstruction (radon transform, Fourier reconstruction), stereo imaging and motion analysis, pattern recognition (recognition, classification, and clustering). Prerequisite: EE 568/668. [NEW]

EE 589/689 PERFORMANCE ANALYSIS OF LOCAL AREA NETWORKS (4)
Studies the structure and performance of local computer networks. Emphasis on performance issues for common protocols used in local computer networks specifically, polling networks and rings networks and random access networks. Allows the student to analyze network performance and read the current literature. [NEW]
SW 586 FINANCIAL MANAGEMENT FOR SOCIAL SERVICE AGENCIES (3)
Prepares students to perform effectively the fiscal management responsibilities of a social service administrator. Provides understanding of fiscal management functions, processes, and issues; methods of analysis for assessing the financial condition of an organization; and insight into financial monitoring and decision making systems. [NEW]

SW 601 RESEARCH (Credit to be arranged.) [NEW]

SW 603 DISSERTATION (Credit to be arranged.) [NEW]

SW 605 READING AND CONFERENCE (Credit to be arranged.) [NEW]

SW 607 SEMINAR (Credit to be arranged.) [NEW]

SW 610 SELECTED TOPICS (Credit to be arranged.) [NEW]

SW 620 SOCIAL PROBLEM ANALYSIS I (3)
First in a three course sequence. Focuses on the assessment phase of the problem solving process applied to the student’s selected social problem. Emphasis on gathering the information necessary for understanding the social problem such as relevant knowledge of human behavior, social programs associated with the problem area, relevant elements of the value system of social work, related practice theories, current organizational, legal and governmental structures and related social policy. [NEW]

SW 621 SOCIAL PROBLEM ANALYSIS II (3)
Social work intervention phase of the problem solving process applied to the student’s selected social problem. Development of social intervention plan based on assessment. Integration of policy and practice will be emphasized. [NEW]

SW 622 SOCIAL PROBLEM ANALYSIS III (3)
Evaluation phase of the problem solving process applied to social problems. Focus on evaluation of decisions and their implementation in social agencies. Monitoring taught as part of continuing intervention planning. Attention will be given to developments in client tracking, quality control, family impact analysis, and outcome measurement. Reformulation of problems as the outcome of evaluation to help students tie together the phases of problem solving. [NEW]

SW 630 EMPIRICAL METHODS FOR KNOWLEDGE BUILDING IN SOCIAL WORK (3)
Examines types of research which are useful for the study of the questions posed by social work. Selected elements of research design, and their application to research done in an agency setting. Problems in needs assessment, monitoring of direct practice, analysis of existing data, and evaluation of agency service data. Emphasizes the social implications of the use of research findings. [NEW]

SW 631 EMPIRICAL METHODS IN SOCIAL WORK RESEARCH II (3)
Provides preparation in the selection of research designs and statistical methods appropriate for social work research questions. Reviews descriptive and inferential statistical methods common in social work research and considers validity and reliability issues in measurement. Empirical social work studies analyzed and discussed. Considers treatment evaluation research. Prerequisites: Mth 243, 244 or SW 522, 523. [NEW]
Art 513 ART IN THE ELEMENTARY SCHOOL (2)
Methods and field experience: a lecture seminar and studio participation course with assigned field experience. Students develop attitudes toward an understanding of children's creative development through course planning in arts and crafts. Prerequisites: Art 312 and admission to the teacher education program. [CHANGE NUMBER FROM 313, PREREQUISITES AND CREDITS HOURS FROM 3 TO 2]

Music

Mus 275, 276 WORLD MUSIC (3, 3)
Survey of the major musical cultures of Asia, the Middle East and sub-Saharan Africa. Explores social and cultural contexts, instrument types, and structural organization of the music. Primary emphasis on listening. [NEW]

Mus 355 JAZZ HISTORY (3)
Examines the development of jazz from its African and European roots and its origins in New Orleans to its florescence in Chicago and New York. Covers period from about 1900 to 1960. Focuses on important musicians and major musical styles. Prerequisite: Mus 201 or Mus 261. [NEW]

Mus 376 AMERICAN MUSICAL TRADITIONS (3)
Examines the diversity of musical traditions found in American history and culture. Included are African-American, Anglo-American, Hispanic, and Native American musical cultures, in the areas of folk, popular and art music genres. Prerequisite: Mus 201, Mus 275 or Mus 276. [NEW]

Mus 204, 205, 206 MUSIC HISTORY I (2, 2, 2)
Intensive, analytical study of the history of music in the Medieval, Renaissance and Baroque periods. Prerequisites: Mus 111, 112, 113, 120, 121. [CHANGE DESCRIPTION]

Mus 304, 305, 306 MUSIC HISTORY II (2, 2, 2)
Intensive, analytical study of the history of music in the Classical and Romantic periods, and in the twentieth century. Prerequisites: Mus 111, 112, 113, 120, 121. [CHANGE DESCRIPTION]

GRADUATE SCHOOL OF SOCIAL WORK

SW 568 SOCIAL WORK WITH VULNERABLE POPULATIONS (3)
Examines forces associated with identification of groups as "vulnerable." Examines selected sub-groups of vulnerable populations using homeless people and homeless mentally ill people as exemplars. Examines structural and cultural differences associated with vulnerability. Reviews and explicates policies, principles, and practice of social work with vulnerable populations. [NEW]

SW 571 COMMUNITY PRACTICE WITH THE LONG-TERM MENTALLY ILL (3)
Focuses on the characteristics of long-term mental illness, its impact on individuals and their families, and the basic practice principles that contribute to effective community treatment of this population. Topics covered include psychosocial rehabilitation, case management, medication, dual diagnosis, and advocacy. Deinstitutionalization and other relevant policies also reviewed. [NEW]
EE 575/675 COMPUTATIONAL AND RESEARCH TOOLS IN ELECTRICAL ENGINEERING (4)
Introduction to the major computer and computational research tools in electrical engineering. UNIX, C, concepts in computer networks and departmental software packages are introduced. Prerequisites: graduate standing and high level programming language. [CHANGE NUMBER FROM 580/680 AND DESCRIPTION]

EE 576/676 COMPUTATIONAL METHODS IN ELECTRICAL ENGINEERING (4)
Prerequisite: EE 575/675. [CHANGE NUMBER FROM 581/681 AND PREREQUISITE]

EE 577/677 INTERACTIVE COMPUTER GRAPHICS (4)
Prerequisite: EE 575/675. [CHANGE NUMBER FROM 582/682 AND PREREQUISITE]

Engineering Management

EMgt 590/690 ENGINEERING MANAGEMENT SYNTHESIS (3)
[CHANGE NUMBER FROM 560/660]

Mechanical Engineering

ME 352 NUMERICAL METHODS IN ENGINEERING (3)
Introduction to numerical methods used in engineering. Topics include: number representation and truncation errors, integration, differentiation, interpolation and approximation, linear system of equations, non-linear equations, and solution of differential equations. Prerequisites: EAS 101, Mth 256. [NEW]

ME 455/555 FINITE ELEMENT METHODS IN MECHANICAL ENGINEERING (3)
Prerequisites: ME 312, 313, 314. [CHANGE NUMBER FROM 555/655 AND PREREQUISITES]

SCHOOL OF FINE AND PERFORMING ARTS

Art

Art 260 PHOTOGRAPHIC SEEING (3)
Introduction to visual literacy. Students learn photographic seeing, design principles, and composition as they investigate the urban environment with a camera. Emphasis on visual communication. No darkroom work. The medium is color slide film, commercially processed. [NEW]

Art 340 ADVANCED PHOTOGRAPHY (3)
Study of photography as a visual language. Students work on extended assignments that explore technical, aesthetic, and ethical issues of photographic communication. Emphasis on the photographic series, with either a documentary or conceptual approach. Maximum: 9 credits. Prerequisite: 3 credits in Art 261. [CHANGE NUMBER FROM 440/540, DESCRIPTION, PREREQUISITES AND ADD MAXIMUM CREDITS]
EE 171 DIGITAL CIRCUITS (4)
Foundation course in digital design. Topics such as number systems, basic logic gates, TTL device parameters, Boolean algebra, logic circuit simplification techniques, timing analysis, the application of MSI combinational logic devices, programmable logic devices, flip-flops, synchronous state machines and counters. Introduces students to a systematic design methodology. Uses computer based tools such as schematic capture programs, programmable logic development programs, and digital circuit stimulators. [CHANGE DESCRIPTION]

EE 271 DIGITAL SYSTEMS (4)
Second course in a sequence of digital and microprocessor courses. Covers shift register devices and circuits; design, timing analysis, and application of synchronous state machine circuits using discrete devices and programmable logic devices; timing analysis of asynchronous state machines, arithmetic circuits and devices; internal architecture of a microprocessor; design and interfacing of memory systems, and an introduction to design for test techniques. Reinforces the systematic design methodology, documentation standards, and use of computer based tools introduced in EE 171. Prerequisite: EE 171. [CHANGE DESCRIPTION]

EE 572/672 ADVANCED LOGIC SYNTHESIS (4)

EE 573/673 CONTROL UNIT DESIGN (4)

EE 574/674 HIGH-LEVEL SYNTHESIS AND DESIGN AUTOMATION (4)
Comprehensive design automation systems. Problems of system and high-level synthesis. Register-transfer and hardware description languages. Data path design: scheduling and allocation. Design methods for systolic, pipelined, cellular and dynamic architectures. System issues. System-level silicon compilers. Group project: using high-level tools for design of a complete VLSI ASIC chip or FPGA architecture: vision, DSP or controller. Prerequisite: EE 573/673. [CHANGE DESCRIPTION]
USP 514 URBAN STUDIES THEORY (3)
Prerequisites: completion of two of the following four courses: USP 511, 512, 513, and 569. [CHANGE NUMBER FROM 614 AND ADD PREREQUISITE]

USP 520 COMPUTER APPLICATIONS TO URBAN STUDIES (2)
[CHANGE NUMBER FROM 530]

USP 530 RESEARCH DESIGN (3)
Prerequisite: USP 430, 520. [CHANGE NUMBER FROM 630 AND ADD PREREQUISITE]

USP 531 PLANNING ANALYSIS (3)
Introduction to applied research in planning. Problem definition and practical designs emphasized. Other topics include graphics, automated mapping, G.I.S., and descriptive analytical statistics, e.g., shift-share analysis and location quotients. Prerequisites: USP 430, 520. [CHANGE DESCRIPTION AND PREREQUISITES]

USP 532 URBAN DATA SYSTEMS (3)
Prerequisite: USP 430 and/or an introductory undergraduate statistics sequence, USP 520, and USP 530 or 531. [CHANGE PREREQUISITES]

USP 533 MODELS OR URBAN SYSTEMS (3)
Prerequisite: USP 532. [CHANGE PREREQUISITE]

USP 544 URBAN TRANSPORTATION PLANNING (3)
Prerequisite: USP 519. [ADD PREREQUISITE]

USP 546 THEORY OF URBAN DESIGN (3)
Prerequisite: USP 525. [ADD PREREQUISITE]

USP 570/670 TRANSPORTATION AND LAND USE (3)
Prerequisites: USP 515 and USP 544. [ADD DOCTORAL CREDIT AND PREREQUISITE]

USP 571/671 GEOGRAPHIC INFORMATION SYSTEMS APPLICATIONS (3)
Prerequisites: Geog 488/588, USP 519. [ADD DOCTORAL CREDIT, CHANGE TITLE, AND ADD PREREQUISITE]

USP 572/672 REGIONAL ECONOMIC STRUCTURE (3)
Prerequisite: USP 515. [ADD DOCTORAL CREDIT AND PREREQUISITE]

USP 574/674 SPATIAL ANALYSIS (3)
Prerequisite: USP 532. [ADD DOCTORAL CREDIT AND PREREQUISITE]

USP 575 URBAN SERVICE AND FACILITY PLANNING (3)
Prerequisite: USP 515. [ADD PREREQUISITE]

USP 576/676 ACTIVITY LOCATION (3)
Prerequisite: USP 519. [ADD DOCTORAL CREDIT AND PREREQUISITE]

USP 578/678 IMPACT ASSESSMENT (3)
Prerequisite: USP 515. [ADD DOCTORAL CREDIT AND PREREQUISITE]
SW 632 METHODS OF DATA ANALYSIS IN SOCIAL WORK RESEARCH (3)
Using existing data bases from social service agencies and studies at the Regional Research Institute, course provides laboratory experience in data analysis and in interpretation. Emphasis placed on strategies of analysis, with comparison of findings obtained by alternative statistical procedures. Additional emphasis on interpretation and presentation of analysis to highlight policy implications. Prerequisite: SW 631. [NEW]

SW 640, 641, 642 RESEARCH PRACTICUM (3, 3, 3)
Participation in a research study under the supervision of appropriate faculty. Whenever possible this practicum will be in the proposed dissertation area. [NEW]

SW 650 HISTORY AND PHILOSOPHY OF SOCIAL WORK (3)
History, philosophy and ethics of social welfare. Focus is on the contributions of historical figures in the context of societal changes in definition of social welfare problems. Major philosophical, theoretical and political issues, the impact of professionalization, and the development of social work methods. Traces historical changes in social work's identification of and response to vulnerable populations. [NEW]

SW 651, 652 INTEGRATIVE SEMINAR (3, 3)
Addresses the integration and synthesis of social science theory, social work practice and policy, social research, and the practicum experience. Work on developing the dissertation topic and proposal included. [NEW]

SW 654 INFORMATION TECHNOLOGY FOR SOCIAL WORK PRACTICE (3)
Reviews sources of an access to data in specific practice areas. Explores efficient and appropriate use of data, and use of computer-based information technology in social work. [CHANGE TITLE AND DESCRIPTION]

SW 582 WORKING WITH PERSONS WITH HIV/AIDS AND THEIR FAMILIES (3)
Impact of HIV/AIDS on persons diagnosed as having AIDS or who are HIV positive. Strategies employed by social workers, school counselors, and other professionals in offering counseling and other social service assistance to them, their families, partners, and friends. Primary focus on homosexual males, intravenous drug users, women, and children. Analysis of local, national, and international populations and services. [CHANGE TITLE AND DESCRIPTION]

SW 561 OCCUPATIONAL SOCIAL WORK (3) [DROP]
SW 565 COMMUNITY MENTAL HEALTH (3) [DROP]
SW 579 SOCIAL WORK INTERVENTION WITH COUPLES (3) [DROP]
SW 584 CLINICAL SOCIAL WORK WITH WOMEN (3) [DROP]

SCHOOL OF URBAN AND PUBLIC AFFAIRS

Urban Studies and Planning

USP 424/524 SITE PLANNING
Prerequisites: either USP 525 or 311 and 421. Graduate students undertake a substantial independent project in addition to other course requirements. [CHANGE PREREQUISITE]
Program Changes Approved by Curriculum Committee or Graduate Council 1993-94 (see detailed documents under "Faculty Senate: Programs" in the Reserve Library)

Liberal Arts and Sciences

Minor and BA/BS Mathematics
BA/BS Speech Communication

Education

MA/MS Curriculum and Instruction (Reading)
MA/MS Curriculum and Instruction (Postsecondary Adult and Cont. Ed)
Track II in Counseling

Engineering and Applied Science

BS and MS in Computer Science
MA/MS in Electrical and Computer Engineering
BS Mechanical Engineering
DATE: December 7, 1992
TO: Senators and ex-officio members of the Senate
FROM: Alan Cabelly
SUBJ: December Senate meeting

The leadership of the Faculty Senate has postponed the December meeting of the PSU Faculty Senate to **Monday, December 14, 1992, at 3:00 PM** in SBA 190. I look forward to seeing you there.

If you are scheduled to make a report and will be forced to miss this meeting, please inform me at 5-3789. Other arrangements will be made.