The Dictates and Dilemmas of Circular A-21: Accountability Measures Confront Faculty

The title rings of government red tape and bureaucracy: Office of Management and Budget Circular A-21: Cost Principles for Educational Institutions. For research universities like Pennsylvania, OMB A-21 will be a troublesome, but absolute fact of life after July 1. OMB A-21 is a set of regulations for universities outlining which direct and indirect research costs can be recovered by the university through federal grants. Direct costs include salaries of those performing the research, employee benefits, supplies, travel expenses and other costs identified directly with the program. Indirect costs include library expenses, and utility, maintenance and administrative costs.

To recover these costs with a government grant, the University will require faculty and much of the professional and support staff to file effort reports: statements indicating how their time is allocated among different duties.

The regulations are part of an increasing concern by the federal government for research accountability. Very few cases of fraud have been reported in the use of grant funds; "if we were to calculate that percentage among colleges and universities, it's ludicrously small," said Louis Girifalco, vice provost for research.

Concern over the accountability of government research funds has not always been this intense. Before 1958, government-sponsored grants were not audited, and checks were sometimes delivered directly to the principal investigator rather than to the institution supporting his work.

In preparation since 1977, the first draft of A-21 was "highly undesirable" said Professor Donald Langenberg, physics, a member of the Council on Governmental Relations (COGR). Along with the Association of American Universities, the Association of American Medical Colleges and the American Council on Education, COGR helped negotiate for more manageable and reasonable guidelines.

Both Langenberg and Comptroller Dennis Dougherty said that the original guidelines were unacceptable to the academic world. Among other things, those guidelines failed to include as recoverable items such basic indirect costs as library expenses, Dougherty pointed out.

In recommending these increases to the Executive Board, University President Martin Meyerson noted that educational institutions suffer more than any other groups in inflationary times, and added that "the burden grows greater with the years. "Our aim has been to keep the increases in tuition as low as we can, and salaries and wages as high as we can," he said.

The sale of WEFA to the Ziff Corporation, a New York-based magazine publisher, comes after several months of negotiations.

A non-profit organization owned by the University, WEFA is widely known for its national quarterly economic forecasts and computer models.

The Board's resolution did not disclose the proposed purchase price because, explained John Eckman, chairman of the Trustees committee on Budget and Finance, it is a "very complicated offer" and a "very complex agreement" dependent on many variables.

The following are reportedly among the (continued on page 2)
Trustees Executive Board

(continued from page 2)

terms of the agreement: retaining the University's right to use the forecasts and data from WEFA, maintaining WEFA operations and headquarters close to the University campus, retaining current WEFA personnel, repaying several loans made or guaranteed by the University.

Economics Professor Lawrence R. Klein founded WEFA more than 15 years ago with 20 major corporations as purchasers of WEFA's forecasting service. Since then, the firm has expanded with hundreds of members across the country and models of many parts of the economy.

Trustee Chairman Paul Miller, Jr. reported to the Executive Board on the progress of the University's Program for the Eighties, for which he is also chairman. The University has currently raised $234.5 million of the campaign's $255 million goal. Miller said, "I'm optimistic at this point [about reaching the goal]." Miller said, "given what we have in the works."

In other fund-raising efforts, Miller reported that the annual giving campaign is 2,700 donors ahead of last year, and that a special telephone and mail solicitation program had received about $3.4 million so far this year. "We hope to hit $5 million on that aspect of fund-raising efforts," he said.

"Most of these people would not have given without that particular solicitation."

Regarding the University's financial picture. Vice President for Budget and Finance Jon C. Strauss reported that despite the "unpleasant surprise this fall of sharp increases in energy costs" he expects the university to operate with a balanced budget for the current fiscal year.

The balanced budget will be achieved with some "slowdown on plans to repay the deficit in new residences," but this "does not slow down our resolve to repay in the future," he said.

Strauss added that his office is currently working on plans for fiscal year 1980-81.

In other action, the Executive Board:

- approved the sale of UNI-COLL, the computing service located in the University City Science Center, to the RAC Corporation.
- agreed to the University's membership in the Greater Philadelphia Organization for Clinical Trials. The corporation is being formed to improve the efficiency of testing new pharmaceuticals through coordination of medical resources in Philadelphia. Other initial members include the Greater Philadelphia Partnership, Thomas Jefferson University, Temple University, Medical College of Pennsylvania, Philadelphia College of Osteopathic Medicine, and the Philadelphia College of Osteopathic Medicine.
- designated the following people as University nominees to the Presbyterian-University of Pennsylvania Medical Center Board of Trustees: James G. Calhoun, Richard L. Duffiend, Clifford E. Frishmuth, Charles Kenevlen, Harry G. Kuch, Paul M. Pitts, Laird H. Simons, Jr., Geoffrey Stengel, Robert G. Ward, Richard G. Dunlop, Maximilian Martin, Lillian S. Brunner and Thomas W. Langfitt.
- appointed Arthur M. Bueche, Edward G. Jefferson and Allen S. Russell to the Board of Overseers of the School of Engineering, each for a three-year term effective immediately. Bueche is vice president for research and development at the Research and Development Center of the General Electric Company in Schenectady, N.Y. Jefferson is president of E.I. duPont in Wilmington, Del. Russell is vice president for research at Alcoa Research Labs, Aluminum Company of America.
- voted to change the name of the department of chemical and biochemical engineering to the department of chemical engineering. The change had been requested by the chairman and faculty of the department who felt the new name would better reflect the instruction and research actually being pursued.
- increased the number of members on the Investment Board of the University from 11 to 12 and elected F. Stanton Moyer an additional member of the board.

-C.A.V.

'Almanac' Acting Editor Named

The Almanac Advisory Board is pleased to announce that, as of this issue, it has designated Ms. C. Anne Vitullo as Acting Editor of Almanac. Ms. Vitullo, in fact, has been responsible for the last three issues since the former editor Mr. Cable Neuhaus announced his resignation.

Ms. Vitullo edited the Syracuse University Alumni News (1978-79); and served as Assistant Editor in the Syracuse University Publications Office (1978). She earned a B.S. degree with honors from Cornell University (1977), where she was a reporter for the Cornell Daily Sun; and where she helped found The Ithaca Post, a weekly student/community newspaper.

In 1978 she was awarded an M.A. degree in magazine journalism at Syracuse University. She is a member of the Society of Professional Journalists/Sigma Delta Chi.

The Board would also like to announce that it has undertaken a formal search for a new permanent editor. Applications and nominations are welcome.

Robert Lewis Shayon
Chairman, Almanac Advisory Board

Holiday Policy

Provost Vartan Gregorian wishes to remind faculty and students that April 1 and 2 (Tuesday and Wednesday) are the first two days of Passover and April 4 is Good Friday. No examinations shall be given or assigned work made due on these days.

Monday, April 7 and Tuesday, April 8, are the last two days of Passover which some students may also plan to observe. According to the religious holidays policy (Almanac, February 20, 1979), those students who wish to observe these two days should have contacted their instructors at the beginning of the spring term so that alternate arrangements should have been made, if necessary, for the convenience of both the students and the faculty. Those students who have made appropriate arrangements are entitled to make-up examinations if exams are scheduled to be given on these two days.

[Additional content not shown]
Council Discusses Research Guidelines, United Way Ties

The University Council last week directed the Council Steering Committee to re-examine the proposed Guidelines and Integrated Statement of the University of Pennsylvania Policy on Conduct of Sponsored Programs.

That action was recommended at last Wednesday's meeting after Council listened to discussion on the proposed guidelines and took an informal vote — meant to advise the Steering Committee — that indicated strong opposition to dual regulations for foreign and domestic sponsorship.

Section 12 of the proposed guidelines would require sponsors and donors to comply with the University's non-discrimination policy and would subject agreements with foreign sponsors to review for academic worthiness. (See ALMANAC, 28 February 1980 for the full text of the proposed guidelines.)

Among those with reservations about the guidelines was Professor Bernard Wailes, anthropology, who, in a March 10 letter to the Council, questioned whether the guidelines "place unreasonable restrictions on a considerable portion of the extensive research carried out outside the U.S. by members of this University."

He defined the pertinent issues as academic freedom versus "both the University's interests as a corporate body and the University's concern for possible discrimination against its members.

"Clearly unbridled academic freedom could conflict with either of the latter legitimate and proper concerns," he wrote. "The questions are: what limits to academic freedom are acceptable in principle? and how can those limitations be implemented effectively and fairly?"

Said Vice Provost for Research Louis Girifalco: "Adopting a policy on sponsored programs is a very serious matter because so much of our research relies on external funds. If not wisely constructed, these guidelines can be a source of inhibition."

In particular Girifalco said he disagrees with the section on foreign sponsors and donors because he does not believe it represents "a practical approach to discrimination."

The proposed guidelines were drafted to replace the 1978 Interim Guidelines drawn up when the University was confronted with a proposal for cooperative work with a Libyan institution sponsored by Colonel Khaddafy's government.

The Steering Committee was slated to consider the proposed guidelines yesterday, Professor Walter Wales said Tuesday.

Commenting on possible action in Steering Committee, Wales said they could decide to revise the guidelines themselves, or to appoint a special task force or committee to work on revisions.

The Council also heard discussion last week on the University's relationship with the United Way of Southeastern Pennsylvania. President Martin Meyerson. Provost Vartan Gregorian and Professor Walter Wales met with United Way Executive Director Robert Reifsnyder last week to clarify the organization's position on a number of issues.

That meeting was called in light of publicity surrounding a 1975 agreement between the Catholic Archdiocese of Philadelphia and the United Way that the latter would not fund agencies whose activities are contrary to Church teachings. Agencies that provide abortion assistance have allegedly been denied United Way funding because of this agreement. The Catholic Church is morally opposed to abortion.

Some members of the University community have called for the University's withdrawal from the annual United Way campaign because of the controversy.

Among the questions University officials asked the United Way last week was whether the understanding between the United Way and the Archdiocese had given the Church veto power over United Way procedures. There is some concern that the agreement might have given the Church the right to tell United Way which agencies it could — and could not — fund.

Gregorian reported that Reifsnyder told them the United Way had a "long-standing policy of not funding controversial programs," and that the policy had held true before the Archdiocese had merged the Catholic Charities Appeal with the United Way.

"While the United Way does not fund agencies that provide direct abortion services," Gregorian reported, "we learned that they do help people who seek family planning counseling. This practice is not in complete opposition to the teaching of the Catholic Church."

The Steering Committee was also expected to discuss United Way imbroilings yesterday. Wales said the committee could frame resolutions for the consideration of the full council.

The next University Council meeting is set for Wednesday April 9 at 4 p.m. in the Council Room of the Furness Building. Among the items likely to appear on the agenda: a report from the committee on community relations, a report from the committee on safety and security, further discussion on the policy on sponsored programs, and a discussion on energy problems from Vice President for Operational Services Fred Shabel. — C.A.V.

Deaths

Julie Revisn, a graduate student in the Annenberg School of Communications, died on March 21. She was 25.

An autopsy revealed that Revisn had been murdered, with death attributed to bleeding from knife wounds. Her body was discovered by her roommate, Thomas Wheelock, at 3:15 p.m. last Friday. The apartment had not been broken into and the autopsy revealed no signs of assault. No suspects are being held.

She was in her second semester in the Annenberg School's masters program. Her undergraduate years were spent at Lake Erie College, near Cleveland. She is survived by her mother, Mrs. Ann Revisn; a sister, Elsa; and a half-brother, Ethan. A memorial service was held Monday in the Annenberg School.

Edward S. Lieblein, a graduate student in classical archaeology, died on March 5. He was 33.

Lieblein came to the University in 1976 intending to earn his Ph.D. He had completed all of his preliminary work and was writing his dissertation. He is survived by his wife, Aviva.

Sylvia Gorchov, an office manager in the obstetrics and gynecology department, died on March 13. She was 62.

Gorchov came to the University as a secretary in 1960; she was promoted to medical records assistant in 1973; and became office manager in 1977. She is survived by her son, Robert.

Worth Noting

• The Women's Studies Program will host a conference on Roots and Realities: Changing Images of Women in Family and Community on Friday, April 11 in the Rainey Auditorium of the University Museum.

The conference is free, and open to the public. For more information, call the Women's Studies Program at Ext. 8740.
Centenary Celebration Honors Memory of Brister

In the fall of 1879, James Brister entered the University's School of Dental Medicine. Two years later he received a Doctorate of Dental Surgery (D.D.S.) and became the first black to graduate from the University of Pennsylvania.

As the 100th anniversary of Brister's graduation drew near, it was the hope of the Black Faculty and Administrators (BFA) at the University that observance by the University community would correspond to the historical significance of the event.

In order to mark the occasion, the BFA, in consultation with the School of Dental Medicine and other faculties, formally submitted a proposal for commemorating celebration to President Martin Meyerson, who responded with enthusiastic support.

"The centenary affords the University community a unique opportunity to appreciate the rich and varied contributions of the University's black alumni and to focus on the University's continuing commitment to a vital and viable black presence," Meyerson said.

"I hope this event will highlight the depth of commitment and the sense of community which are so necessary as the University moves into its second century of involvement with the education of blacks in this country and around the world," Gregorian said.

The provost has established an advisory committee, representing diverse organizations and schools, as well as the University's Development Office. The members of the committee recommended unanimously that the president and provost jointly seek the approval, endorsement and support of the University's trustees to mark this historic occasion. At their Stated Meeting of January 18 the Trustees adopted the following resolution:

"Resolved, that the Trustees of the University of Pennsylvania welcome the 100th anniversary of the awarding of a degree to Pennsylvania's first black graduate, authorize that the centenary be celebrated during the 1980-81 academic year, and encourage the president and the provost to take appropriate measures to mark this occasion with scholarly and cultural events, including the holding of a University convocation."

"Trustee adoption of the resolution turned a BFA proposal into a University program," said Law Professor Ralph Smith. "This endorsement has reinforced the University administration's commitment to ensure that we have a fitting celebration to mark the occasion and that we raise the necessary funds."

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University archivist F. J. Dallett has uncovered the following information about James Brister and two other students who were among the first blacks to attend the University—which he shared with ALMANAC:

James Brister was one of four black students who entered the University in 1879: two in the medical department, one in the College (now the Faculty of Arts and Sciences) and Brister in the department of dentistry. He received the degree of D.D.S. in 1881 and, it is believed after extensive research, that Brister thus became the first black to receive an academic degree from the University.

Brister went on to practice his profession in Illinois and died in 1916. The next black student to follow a Pennsylvania in the Dental department was Sabourin Holly, a member of a distinguished creole family in the republic of Haiti who received a D.D.S.

Far better remembered in Philadelphia, however, is Vivian Pennock Bailey D.D.S. 1911, who practised dentistry here for more than 50 years until his death in 1964.

In the fall of 1879, James Brister entered the University's School of Dental Medicine. Two years later he received a Doctorate of Dental Surgery (D.D.S.) and became the first black to graduate from the University of Pennsylvania.

On Campus

March 20-March 29

Items for On Campus should reach the Almanac office by noon the Thursday preceding desired publication.

27, Thursday

Blood Drive: The University Hospital will collect blood at the School of Medicine from 11:30 a.m.-4 p.m.

Discussion: Interacts will hold an after-performance discussion with the cast and crew of Love Letters on Blue Paper at 2:30 p.m. in Annenberg Auditorium.

Lecture: The Undergraduate Psychology Society presents Dr. Sally Green, psychology, on Marriage Counseling and the Problems College Students Face at 4:30 p.m. in Stiteler Hall, room 8-6.

Music: The Penn Singers perform Gilbert and Sullivan's The Mikado in the Zellerbach Theatre at 8 p.m. Tickets are $4 general, $3 students.

Movies: International Cinema presents The Stud Farm, a Hungarian film, at 7:30 p.m. and Koko, A Talking Gorilla, at 9:30 p.m. Admission for each feature is $2.

Seminar: The Center for the Study of Aging brings Elaine Bron into the Philadelphia Geriatrics Center to the auditorium of the Colonial Penn Center at 4 p.m. to discuss Aging and the Family.

Sports: The NCAA men's swimming finals take place at Harvard through Saturday, and the national women's fencing tournament meets at Ohio State University in Columbus through Saturday.

Theatre: Love Letters on Blue Paper continues through April 6 at the Annenberg Studio Theatre. For times and ticket information, call Ext. 6791.

The Penn Singers decorate the Bookstore wall with an advertisement for The Mikado, Gilbert and Sullivan's comic opera. Part of Artsfest '80, the production runs through Saturday. Check daily listings for times.

28, Friday

Alumni Event: Mask and Wig hosts Class Night at its clubhouse, 310 S. Quince St., with a performance of Daze A Yu at 6:30 p.m. Admission, including show and dinner, is $20.

Continuing Education: The continuing medical education program sponsors a course on Therapy in Neurology in Dallas Auditorium of the Medical Education Building. Dr. Austin Summer is the course director.

Discussion: Interacts will hold a discussion of the production of Love Letters on Blue Paper after the play at 9:30 p.m. in Annenberg Auditorium.

Ice Skating: The Ice Skating Club meets every Friday afternoon, 4:45 p.m. in the Class of 1923 Ice Rink.

Movies: International Cinema presents Koko, A Talking Gorilla at 4 p.m. in the International House for $1, followed by Imposters at 7:30 p.m. and The Stud Farm at 9:30 p.m. Admission is $2 for each screening; director Rappaport will discuss his Imposters after it is shown.

Music: The Penn Singers production of The Mikado continues at the Zellerbach Theatre with performances at 1 p.m. and 8 p.m.

Theatre Workshop: The Theatre Workshop 251 will present a program of student works in the Studio Theatre of the Annenberg School at 8 p.m.

29, Saturday

Dance: The Penn Dance and Mime troupe will perform in the Harold Prince Theatre at 2 and 8 p.m. Admission is $5 for students; $5.50, general admission.

Demonstration: A rose pruning demonstration will be sponsored by the Morris Arboretum in the Rose Garden from 1-3 p.m.
Provost Named to Board

Provost Vartan Gregorian has been asked by the Italian Ministry of Education to serve as the United States representative on the editorial board of a new journal called Universitas. The journal will be published by the Ministry in cooperation with the other cultural and educational institutions of the European Common Market.

The president of the Permanent Conference of Rectors of European Universities, the president of the International Association of Universities, the president of the Special Committee of the European Communities for University Problems, the Chairman of the Italian National Research Committee and the Chairman of the Accademia dei Licei, have also been appointed as members of the board.

The inaugural meeting of the board was held on March 7 at San Miniato (Pisa). Gregorian attended the meeting as a guest of the Italian ministry.

Michener Chosen Baccalaureate Speaker

Pulitzer prize winning author, James A. Michener, was named as the speaker at the University's baccalaureate ceremony this year. President Martin Meyerson announced last week.

Michener, 73, has written 25 books, including the best sellers: Centennial, Chesapeake and Hawaii. He won the Pulitzer Prize for his Tales of the South Pacific, published in 1947.

Michener graduated summa cum laude from Swarthmore College, then did research at a number of universities including Pennsylvania.

The baccalaureate ceremony will be held Sunday, May 18, at Irvine Auditorium.

The University's commencement exercises will be held Monday, May 19. The main speaker will be Lord Noel Gilroy Annan, chief executive officer of the University of London and an internationally known scholar and educator.
A-21 and Accountability: Costs of Reporting

(continued from page 1)

That commentary and the remarks of other groups and individuals combined with OMB's ideas to produce the present document. Thus, the current version is a compromise. Like many compromises, it has an uneasy acceptance. Both faculty and administration complain of the burdens placed on them by the guidelines.

Among the problems pointed out by University officials are:
1. varying standards for allowable costs that enable profit-making enterprises to recover costs that not-for-profit institutions like universities cannot;
2. effort reports which promise to cause an administrative paperwork nightmare;
3. an end to the use of tuition remission from the employee benefit pool for graduate student assistantships.

Dougherty pointed out three problems of "omission," in which the federal government refuses universities costs which are permitted to commercial researchers. First, government grants in the commercial sector allow for the payment of a portion of interest expenses if money were borrowed, for example, to meet a payroll or other imminent expense. However, under the present guidelines universities are not allowed to recover these costs.

Second, commercial researchers are allowed to write off the costs of independent research and development while universities cannot do so. Independent research and development often provides the basis for which new research programs are developed to a point where they can qualify for federal funding.

Finally, Dougherty noted that university capital campaigns to raise funds for research buildings cannot be funded even indirectly through grants. "We are told that the cost of soliciting funds [from alumni]—even if a direct benefit to research can be demonstrated—is not a reimbursable expense," he said.

Dougherty is also displeased with the guidelines' implication that universities are fiscally irresponsible. He pointed out "that while only 8 percent of HEW's budget goes to universities, 26 percent of their audit effort is aimed toward them."

The new guidelines are "an additional degree of oversight that is unnecessary," he said. The $70-80 million the University receives in federal grants is only part of a budget of $400 million, he reflected, and "we have demonstrated the ability to manage that larger sum responsibly."

Dougherty estimated that the new regulations will cost the University more than $500,000 the first year, although in theory the University should recover some of this cost from the federal government.

Anthony Merritt, director of research administration, added that the bases which the University may use to calculate indirect costs have been rigidly proscribed in the new guidelines. While the previous cost principles allowed several ways of doing this, the new guidelines "ignore the diversity" of universities.

"We will have to account for things in a way we wouldn't do normally," Merritt said, citing the effort-reporting forms and new cost studies which will have to be undertaken to conform to the government's methods.

He called the new guidelines "a move toward precision" in accounting for research funds, and thought that the University could eventually benefit from this focus as it will have a very documented knowledge of its research costs.

Girifalco noted that effort-reporting will be the biggest difficulty for the faculty as they all will have to complete forms whether or not they are receiving direct grant monies.

"Faculty members find it hard to compartmentalize intellectual activity into boxes," Girifalco said. "People who have worked on sponsored programs for a long time have kept records on how they allocate their time on a research project. For people not accustomed to doing this, it's going to be difficult."

Faculty Senate Chairman Walter Wales, physics, worries that "they have the potential to change the way we go about things."

Professor Walter Wales, chairman of the Faculty Senate, agreed. "The forms are useless," he said. "If people began to think about what they're doing with the forms in mind... they have the potential to change the way we go about things."

Dougherty explained the tangled web these forms potentially could weave. Suppose that a surgeon at the Hospital was principal investigator on a federal grant and performed a newly developed surgical procedure on a patient in an operating theatre filled with medical students. What percentage of his time would be considered research? What part instructional? And what portion should be categorized as clinical service? For many faculty members, paradoxical situations like this are not far-fetched.

The problem with effort reporting, those interviewed seemed to agree, is that it treats "the production of knowledge as if it were like the production of toothpaste," Langenberg said. The government expects to be able to measure an end product, Wales pointed out, yet, scholarship does not necessarily yield an end product.

Also under the A-21 guidelines, the cost of tuition for research and teaching assistants will no longer be paid from the employee benefits pool. Tuition will be charged directly to the research grants for research assistants, or to the individual budgets of their schools for teaching assistantships. This will subtract further from the funds available for other research purposes.

The University must shift or discover nearly $1 million, Langenberg predicted, in order to continue providing remitted tuition

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Opportunities

The following listings are condensed from the personnel office’s bulletin of March 20. Because of the delay occasioned by printing schedules, these listings should be considered official. Some positions may no longer be available.

Bulletins boards at several campus locations list full job descriptions. New postings are accepted every Thursday. Bulletins board locations are: Franklin Building: outside personnel office, Room 130; Towne Building: mezzanine lobby; Veterinary School: first floor, next to directory;469 Lakes: first floor, outside Room 102; Anatomy-Chemistry Building: near Room 356; Rittenhouse Lab: office 2S1, 2nd floor, elevator; LEASE: first floor, opposite elevator; Johnson Pavilion: first floor, next to directory; Logan Hall: first floor, next door, Room 111; Social Work/Caster Building: first floor, Richards Building: first floor, near mailroom; Law School: Room 28, basement; Dietrich Hall: first floor, outside E-108.

For further information, call personnel services, Ext. 7285. The University is an equal opportunity employer. Positions listed as requiring specific formal education or training, significant experience in the field may be substituted. The two figures in salary listings show minimum starting salary and maximum starting salary (if available). Some positions listed may have strong internal candidates. If you would like to know more about a particular position, please ask about the position interview a personnel counselor or hiring department representative. Openings listed without salaries are those in which salary is yet to be determined.

Administrative/Professional

Accountant I (2694) $10,375-$14,375.
Assistant Director, Wharton Innovative Center (2854) $10,850.
Director of Communications (2724) $28,325-$39,950.
Executive Assistant for Development and University Relations (2777) $24,650-$34,750. No longer accepting applications.
Foreman, Repair and Utility (2689) $12,900-$17,850.
Heating, Ventilation, Instrumentation Control Foreman (2790) $12,900-$17,850.
Junior Research Specialist (B265) $9,650-$12.225.
Research Coordinator (B267) system management of on-line computer models and storage facility (with maximum starting salary and maximum starting salary (if available). Some positions listed may have strong internal candidates. If you would like to know more about a particular position, please ask about the position interview a personnel counselor or hiring department representative. Openings listed without salaries are those in which salary is yet to be determined.

Support Staff

Administrative Assistant (B285) $7,975-$10,150.
Administrative Assistant (2 positions) (B075) preparation of faculty dossiers; follow-up correspondence for associate dean; preparation of speeches, articles, etc. degree in English or business; ability to express ideas effectively in writing and speaking; 10 years experience in management of complex facilities; knowledgeable of utilities, maintenance, landscaping, cost accounting, and labor relations $28,325-$39,950.
Director of Admissions and Financial Aid (2798) $16,125-$22,725.
Director of Communications (2724) $28,325-$39,950.
Director of Fiscal Operations and Development (2803) $12,900-$17,850.
Director of Upperclass Admissions (2752) $12,900-$17,850.
Editor (2905) $16,125-$22,725.

Educator/Coordinator

Davis is WARC Director

Peter Davis was appointed director of the Wharton Applied Research Center, effective April 1. Robert E. Mittelstadt, the current director, will be returning to his position as director of the Wharton Innovative Center Program, upon completion of his interim appointment.

Davis is currently a member of the faculty of the social sciences and economics unit and, until January, was co-director of the Busch Center. He has initiated and directed a number of federally sponsored research projects and has served as a consultant to public and private sector organizations in the United States, United Kingdom, Mexico, Brazil and Venezuela. His writings have been concerned with the theory and practice of planned change.

Dr. Davis received an M.A. from Cambridge University, his M.S. from the London School of Economics and his Ph.D. from the University.

This book represents the results of a long and thorough investigation of the numerical regularities in the masses of nuclei and elementary particles together with a consideration of the basic theory pertaining to these entities. The important conclusion obtained from this research is that the integers 3 and 4, which are respectively the number of dimensions of space and spacetime play a dominant role in the basic theory of fundamental particles, elementary particles, and nuclei. The author calls the integers 3 and 4 other integers derived from them the space-time magic numbers. Among these numbers are 6, 6^2, 6^3, 6^4 + 1, (6^5 + 1)^2, 136, and the integer powers of the integer 2. Note that 136=4^2x(4^2+1)/2. This idea enables us to understand the mysterious occurrence of the integer 3 at many strategic places in quark theory and the fact that no elementary particle is composed of more than 3 quarks or antiquarks. All of this leads to the conclusion that to unify quark theory, the special theory of relativity, and quantum mechanics, the concepts of space, time, and fundamental particles must be merged in a new synthetic concept just as the concepts of space and time were merged by Einstein in his 1905 theory. In this new theory the masses and other properties of the fundamental particles, elementary particles, and nuclei will be functions of the space-time magic numbers and of the quantum numbers. Finally, the fundamental particles, namely leptons and quarks, will never be found to be composite because they are merely the manifestations of the synthetic complex concept of space, time and particles.

The integers or at least certain integers are turning out to be much more important in the basic theory of microphysics than ever suspected in the past.


The contributions to this volume were presented at a symposium honoring Mildred Cohn and reflect the breadth of her interests and correspond to some of the most exciting areas of biochemical research. The papers include NMR studies of proteins, nucleic acids and membranes, as well as approaches to this type of research in general from both the magnetic resonance and biological points of view. The final section deals with detailed views of enzyme function, utilizing a variety of spectroscopic techniques. The book is an unusual offering to students and researchers in biophysics and biochemistry. Opella and Lu are associate professors of chemistry. Dr. Mildred Cohn is professor of biochemistry and biophysics.


George W. Taylor's achievements in arbitration, mediation, wage regulation, and in the study of industrial relations are the milestones in the history of labor relations in twentieth-century America. Taylor left an immense collection of speeches, articles, and a lifetime of arbitrations decisions upon his death in 1972. For a critical evaluation of his legacy, the authors of this volume have classified and appraised those aspects of Taylor's career that have had the greatest impact on society and government. Shils is professor of management and founder of the Wharton Entrepreneurial Center. George W. Taylor was on the Wharton School faculty until his retirement.


Part I presents an integrated theory of the basic functions of the verb, precisely delimiting the boundaries of the interrelated and often confused categories of 'aspect', 'actional types', and 'the inherent capacity of each verbal concept to represent a certain degree of change'.

In Part II, a detailed analysis of the verb system of Gothic and a complete classification of its verbs according to the principles established in Part I serve to demonstrate both the applicability of these theoretical considerations and the presence of formal aspect in early Germanic. An index of verbs facilitates the use of this section as an independent reference work for Gothic. Lloyd is chairman of the department of Germanic languages.


An introduction to the techniques of optimal control theory (calculus of variations and the maximum principle) and their applications in economics and regional science, designed as a text for advanced undergraduates and graduate students, particularly in the social sciences. Miller is professor of regional sciences.