Graduate School
of Architecture and Planning

Columbia University Bulletin

August 2,1976

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POST OFFICE ADDRESS: 405 Avery Hall, Columbia University, New York, N.Y. 10027

TELEPHONE: (Area Code 212) 280-3504

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Philosophy and Goals of the School

The Graduate School of Architecture and Planning comprises three distinctive but cooperating divisions: Architecture, Urban Planning, and Architectural Technology. The educational disciplines concentrated within each of these divisions deal in different ways with one general problem area: man and his environment. The presence of the three areas of study within a single school makes possible a better understanding of the forces entering into the creation of environment and the interdependency of these forces.

In each division, regardless of the degree program offered, it is the intention to provide students with the information and strategies to enable them, as professionals, to deal responsibly with the problems that confront man in his environment. All of these problems are approached from points of view that take into account each problem's theoretical base as well as the actual constraints involved in problem solving in the real world. A major concomitant of this attitude is the implicit mandate that no planning, architectural, or technological problem be undertaken unless a major component of its solution provides the community, in its narrowest as well as its broadest sense, with results permanently useful and beneficial to all.

The following are the general goals of the School and the specific educational aims and activities by which the goals are implemented. It must be emphasized that these activities are not discrete; they interact and reinforce one another. The curriculum is of course the vehicle that concretely expresses and realizes these objectives.

1. In order to provide the atmosphere and opportunity for the intellectual growth and development of all students and faculty, the School offers sequential courses, which correspond to student needs and capabilities, and staffs these offerings with instructors who are committed to the general goals of the School and are capable of rigorous and nondoctrinaire academic leadership.

2. In order to develop new knowledge that will materially add to the vitality both of the professions and of society as a whole, the School promotes basic research in the fields of architecture and planning.

3. In order that the School may function as an integral and contributing part of the intellectual community of the University, programs and curricula are formulated that symbiotically relate to other activities in the University—emphasizing the traditionally interdisciplinary nature of the fields of architecture and planning.

4. In order to serve broadly defined social purposes, the program of the School focuses on contemporary problems relating to urban and rural man-made and natural environments, toward the solution of which the School utilizes resources outside the University and engages in the dissemination of socially useful information.

The School has inaugurated a realistic and comprehensive set of programs in order to help students to overcome the restrictions imposed by a narrow conception of their professional role, thereby encouraging them, as graduates, to use their unique talents to bring about positive structural change within our society.

James Stewart Polshek

Dean of the Faculty of Architecture and Planning

THE GRADUATE SCHOOL OF ARCHITECTURE AND PLANNING

History

A program in architecture was first established at Columbia College in 1881, as an adjunct to the School of Mines. William R. Ware, a disciple of the first American student at the French *Ecole des Beaux-Arts*, was the director of the new four-year curriculum leading to a degree of Bachelor of Philosophy.

The first class consisted of two students and met in a former asylum. In 1902 the School of Architecture finally realized complete independence as an entity in the University organization, and in 1912, with an enrollment of 140, the School moved into its new quarters, Avery Hall, designed by McKim, Mead, and White.

In 1922 William A. Boring became the first dean of the Faculty of Architecture. He foresaw the need for a department of town planning to provide instruction in defining the economic necessities of the community and the safety, health, and other requirements of the individual, and in the devising of plans to satisfy these needs. In this he anticipated the initial offering in 1935 of courses in town planning at the School of Architecture.

The first instance of the School's direct involvement in community service occurred in 1917. When St. Luke's Hospital in New York City proposed to erect an additional building adjacent to its existing facilities, to serve as a war hospital, the School of Architecture at Columbia was requested by the hospital authorities to aid in determining the feasibility of proceeding with the project. The School submitted a group of studies, in the form of eight-day problems, of such excellence that it was designated as architect of the project. This tradition of education and public service continues to this day as the students and faculty of this school continue to participate in a wide range of architecture, planning, and technology programs for the benefit of the community of which it is a part.

In 1973, in recognition of the growing importance of the urban planning program in the curriculum and in accord with the decision of the School to offer only graduate degrees, the name of the School was changed to the Graduate School of Architecture and Planning.

Facilities and Resources for Study

THE SCHOOL

The School is located in its own building, Avery Hall, which houses design studios, classrooms, a lounge, exhibition galleries, a carpentry workshop, audio-visual facilities, and a photography darkroom.

The School and the Avery Architectural Library in Avery Hall are now undergoing a four-million-dollar expansion and modernization program. Construction commenced in 1974.

AVERY LIBRARY

The resources of the world's leading architectural library, the Avery Memorial Library, are located in Avery Hall and are available to the students of the School. Founded by Samuel Putnam Avery in 1890 as a research collection of the important books on architecture and the related fields, it has since grown into what can be called the national library of the profession. It is ranked by scholars from all over the world as the outstanding international research center on the history of architecture. Its holdings consist of over one hundred and ten thousand books and periodicals on architecture, urban planning, archaeology, the decorative arts, and a broad variety of related background material. The contents range from the first published book on architecture, L. B. Alberti's *De Re Aedificatoria* (1485), to a unique collection of books on the contemporary architectural movement. In addition, the library has over twenty thousand original architectural drawings, collections of prints, and rare photographic material. Avery Library also contains the most extensive and up-to-date periodical catalogue in the field of architecture. The library facilities and the School are in the process of expanding and by 1977 will include extensive new quarters.

WARE MEMORIAL LIBRARY

The Ware Memorial Library is designed as a circulating branch of the library for the everyday use of the students. It contains more than three thousand books on architecture and planning from the United States and Europe.

CENTER FOR COMPUTING ACTIVITIES

The Columbia University Center for Computing Activities, between Uris and Havemeyer Halls, has available advanced digital computing equipment (at present, principally an IBM System/360 Model 75 and a System/360 Model 91) and related auxiliary equipment for use in academic research projects and in other educational activities requiring computing. Professional programmers are available at the Center to advise and guide persons who use the equipment. Short, noncredit courses are offered by the staff of the Center for qualified students and faculty members.

THE UNIVERSITY

To the resources of the city and the School are added the resources of a great university and its numerous divisions and departments, including the School of Engineering and Applied Science, the School of Public Health, and Teachers College. The special and unique advantages of Avery Library are enhanced by the availability of the other libraries of the University. The Department of Art History in the Graduate School of Arts and Sciences is a particularly valuable asset to the School.

NEW YORK CITY

The city of New York is a principal resource to the school. Its endless variety of superb examples of historic and modern buildings provide local laboratories for students and faculty.

New York's institutions are another significant advantage. Alumni and faculty of the School are in positions of major responsibility in various organizations. This has helped the school to open up unique opportunities for students. A partial list of these organizations includes the Museum of Modern Art (Department of Architecture and Design), the Metropolitan Museum, the South Street Seaport Museum, the Architectural League of New York, the Institute of Architecture and Urban Studies, the Institute for Fine Arts (New York University), the New York City Planning Commission (Urban Design Group), the New York City Landmark Preservation Commission, and the Cooper Hewitt Museum.

WILLIAM KINNE FELLOWS TRAVELING FELLOWSHIPS

The School is the beneficiary of a considerable bequest in honor of William Kinne Fellows that has as its purpose the enrichment of the student's education through travel. A number of fellowships for the study of architecture, including planning and other specialized aspects of architecture, are awarded annually to graduating students. Applications from members of the graduating class will be considered for postgraduate travel and for travel during the summer preceding the final year of study. Specific requirements and guidelines will be announced during the academic year.

Programs and Degrees

DIVISION OF ARCHITECTURE

Master of Architecture

Master of Science in Architecture and Urban Design

Master of Science in Health Services Planning and Design

Master of Science in Historic Preservation

DIVISION OF ARCHITECTURAL TECHNOLOGY

Master of Science in Architectural Technology

DIVISION OF URBAN PLANNING

Master of Science in Urban Planning

THROUGH THE GRADUATE SCHOOL OF ARTS AND SCIENCES

Doctor of Philosophy in Urban Planning

JOINT DEGREE PROGRAMS

Master of Architecture–Master of Science in Urban Planning

Master of Science in Architectural Technology–Master of Science in Civil Engineering (in conjunction with the School of Engineering and Applied Science)

Master of Science in Urban Planning–Master of Business Administration (in conjunction with the Graduate School of Business)

Master of Science in Urban Planning–Juris Doctor (in conjunction with the School of Law)

Master of Science in Urban Planning–Master of Public Health (in conjunction with the School of Public Health)

Master of Science in Urban Planning–Master of Science in Social Work (in conjunction with the School of Social Work)

FACULTY OF ARCHITECTURE AND PLANNING

William J. McGill, Ph.D., L.H.D., LL.D. *President of the University*

Wm. Theodore deBary, Ph.D., L.H.D., D.Litt. *Executive Vice President for Academic Affairs and Provost of the University*

James S. Young, Ph.D. *Vice President for Academic Planning and Deputy Provost*

James Stewart Polshek, B.S., M.Arch. *Dean of the Faculty of Architecture and Planning*

Harold K. Bell. *Professor of Urban Planning*

B.B.A., College of the City of New York, 1947. Founding president, Starrett Systems, INCO; and Module Communities, Inc., a H.U.D. "Operation Breakthrough" award winner.

J. Max Bond, Jr. *Associate Professor of Architecture*

B.A., Howard, 1955; M.Arch., 1958. Fulbright Fellow, France, 1958-1959. Member, American Institute of Architects. Registered architect.

Christine Boyer. *Assistant Professor of Urban Planning*

B.A., Goucher, 1961; M.S., Pennsylvania, 1964; M.C.P., Massachusetts Institute of Technology, 1968; Ph.D., 1972.

Victor F. Christ-Janer. *Adjunct Professor of Architecture*

B.F.A., Yale, 1942; B.Arch., 1947; D.F.A. (hon.), Lake Erie, 1967. Danforth Lecturer. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Lewis P. Clopton. *Assistant Professor of Urban Planning*

B.S. (M.E.), Toledo, 1970; Ph.D., Michigan, 1974. Associate, A.I.P.; Member, A.S.P.O.; Regional Plan Association; American Institute of Industrial Engineers.

George R. Collins. *Professor of Art History*

B.A., Princeton, 1939; M.F.A., 1942.

David G. De Long. *Assistant Professor of Architecture*

B.Arch., Kansas, 1962; M.Arch., Pennsylvania, 1963; Ph.D., Columbia, 1976. Fulbright Scholar, 1967-1968. Member, Society of Architectural Historians, Vice President, New York Chapter. Registered architect.

Michael Dalton. *Adjunct Associate Professor*

B.E., National University of Ireland, 1949. Member, New York Association of Consulting Engineers, New York Society of Professional Engineers, Illuminating Engineering Society. Licensed Professional Engineer.

Stanton Eckstut. *Associate Professor of Architecture*

B.Arch.Eng., Pennsylvania State, 1965; B.Arch., Pennsylvania, 1968. Principle Urban Designer, City of New York. Registered architect. N.C.A.R.B. certificate.

James Marston Fitch. *Professor of Architecture*

Alabama, 1926; Tulane, 1928. Director, American Society of Architectural Historians; Municipal Art Society; Victorian Society in America. Member, National Committee, International Commission of Monuments and Sites; Advisory Council on Historic Preservation. Associate member, American Institute of Architects.

William G. Foulks. *Assistant Professor of Architecture*

B.Arch., Michigan, 1968; M.A., Columbia, 1972.

Kenneth Frampton. *Professor of Architecture*

Dipl.Arch., Dipl.Trop., Architectural Association (London), 1956. A.R.I.B.A., 1957. Fellow, The Institute for Architecture and Urban Studies, New York. AIA/ACSA Teachers' Seminar Planning Committee, 1969–1970. Member, Conference of Architects for the Study of the Environment; Society of Architectural Historians. Loeb Fellow in Advanced Environmental Studies, 1973.

Romaldo Giurgola. *Ware Professor of Architecture*

Architect, Rome, 1948; M.S., Columbia, 1951. Member, American Institute of Architects; Italian Order of Architects, Registered architect. N.C.A.R.B. certificate.

Sigurd Grava. *Professor of Urban Planning*

B.C.E., College of the City of New York, 1955; M.S., Columbia, 1957; Ph.D., 1965. William Kinne Fellows Traveling Fellow, 1958. Member, American Institute of Planners; American Society of Civil Engineers. Licensed professional planner.

Charles Gwathmey. *Adjunct Associate Professor*

B.Arch., Yale, 1962. Fulbright Fellow, France, 1962–1963. Member, National Institute of Arts and Letters, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Albert O. Halse. *Professor of Architecture*

B.Arch., New York University, 1940; M.A., 1944; Ed.D., 1952. Member, American Institute of Architects; American Institute of Interior Designers. Registered architect.

Cyril M. Harris. *Professor of Architecture and Electrical Engineering; Chairman, Division of Architectural Technology*

B.A., California (Los Angeles), 1938; M.A., 1940; Ph.D., Massachusetts Institute of Technology, 1945. Member, National Academy of Engineering. Fellow, Acoustical Society of America; Institute of Electrical and Electronic Engineers. Honorary member, Audio Engineering Society. Director, the Acoustics Laboratory. Member, Society of Architectural Historians.

Klaus Herdeg. *Associate Professor of Architecture*

B.Arch., Cornell, 1963; M.Arch., Harvard, 1964. Member, Swiss Society of Architects and Engineers. Wheelwright Fellow, Harvard, 1974–1975. Registered architect.

Ghislaine Hermanuz. *Assistant Professor of Architecture; Assistant Dean for Minority Affairs*

Dipl.Arch., Polytechnic Institute of the University of Lausanne, 1967; M.S., Columbia, 1970. Member, Société d'Architectes et d'Ingénieurs; Société des Ingénieurs Civils de France. Registered architect, Switzerland.

John A. James. *Assistant Professor of Architecture*

B.S., College of the City of New York, 1960; M.Arch., Harvard, 1971.

Ada Karmi-Melamede. *Professor of Architecture*

B.A. in Arch., Technion-Israel Institute of Technology, 1961.

Robert Kolodny. *Associate Professor of Urban Planning*

B.A., Antioch, 1962; M.C.P., Pennsylvania, 1967, Ph.D., Columbia, 1974. Sears Roebuck Fellow, 1965–1967. Member, American Institute of Planners; American Society of Planning Officials; National Association of Housing and Rehabilitation Officials; Board of Directors, Citizen Housing and Planning Council of New York City.

Alexander Kouzmanoff. *Professor of Architecture; Chairman, Division of Architecture*

B.S., Illinois, 1939; M.S., 1949. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate

R. Yin-Wang Kwok. *Assistant Professor of Urban Planning*

Dipl.Arch., Polytechnic (London), 1963; Dipl.Trop., Architectural Association (London), 1967; M.Arch., Columbia, 1969; M.S., 1969; Ph.D., 1973. William Kinne Fellows Traveling Fellow, 1969. Associate, A.I.P., R.I.B.A. Member, A.S.P.O.: Architectural Association (London); Asian Society; Regional Science Association; Regional Studies Association (U.K.); Society for International Development.

John M. McCormick. *Adjunct Professor of Architecture*

B.S., Villanova, 1956; M.S., Columbia, 1957; Eng. Sc.D., 1961. Member, American Society of Civil Engineers; Sigma Xi. Registered professional engineer.

George J. Mann. *Associate Professor of Architecture and Planning; Director, Health Services Planning and Design Program*

B.Arch., Columbia, 1961; M.S., 1962. Personal Member, American Association for Hospital Planning; International Hospital Federation. Registered architect, New York, Texas, Louisiana, N.C.A.R.B. certificate.

Peter Marcuse. *Professor of Urban Planning; Chairman, Division of Urban Planning*

B.A., Harvard, 1948; J.D., Yale, 1952; M.A., Columbia, 1963; M.U.S., Yale, 1968; Ph.D., California (Berkeley), 1972. Member, Connecticut Bar Association; National Housing Conference; National Association of Housing and Re-development Officials; ASPO.

Michael Mostoller. *Associate Professor of Architecture*

B.S., Renssalaer Polytechnic Institute, 1960; B.Arch., 1964; M.Arch., Harvard, 1969. Registered architect. N.C.A.R.B. certificate.

Adolf K. Placzek. *Adjunct Professor of Architecture*

Vienna, 1931–1938; B.S., Columbia, 1942. Vice President, Society of Architectural Historians.

Richard A. Plunz. *Associate Professor of Architecture*

B.S., Rensselaer Polytechnic Institute, 1965; B. Arch., 1966; M.Arch., 1967.

Jan Hird Pokorny. *Professor of Architecture*

Engineer-Architect. Polytechnical University (Prague), 1938; M.S., Columbia, 1941. Fellow, American Institute of Architects. Member, National Institute of Architectural Education. Commissioner, Art Commission of the City of New York. Registered architect. N.C.A.R.B. certificate.

James Stewart Polshek. *Professor of Architecture; Dean of the Faculty of Architecture and Planning*

M.Arch., Yale, 1955; B.S., Case Western Reserve, 1973. Fulbright Fellow, 1956. Fellow, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Theodor K. Rohdenburg. *Professor of Architecture*

B.Arch., Columbia, 1937. Member, American Institute of Architects; Association of Collegiate Schools of Architecture; American Arbitration Association. Registered architect.

Janet Scheff. *Associate Professor of Urban Planning*

B.A., Brooklyn, 1953; M.C.P., Pennsylvania, 1955; Ph.D., 1972. Resources for the Future, Urban Economics Fellow, 1956–1957. Mellon Teaching Fellow, Urban Planning Department, Cornell University, 1968–1969.

Loes Schiller. *Assistant Dean for Administration, Admissions, and Student Affairs*

Dipl.S.W., Sociale Akademie (The Hague), 1953.

Jon Michael Schwarting. *Assistant Professor of Architecture*

B.Arch., Cornell, 1966; M.Arch., 1968. Prix de Rome, 1968–1970. Registered architect. N.C.A.R.B. certificate.

John E. Seley. *Assistant Professor of Urban Planning*

B.A., Pennsylvania, 1969; M.C.P., 1972; Ph.D., 1973. Member, American Institute of Planners; Association of American Geographers; American Society of Planning Officials; American Sociological Association.

Robert A. M. Stern. *Assistant Professor of Architecture; Representative for Columbia College*

B.A., Columbia, 1960; M.Arch., Yale, 1965. Member, American Institute of Architects. Registered architect.

Rolland Thompson. *Adjunct Associate Professor*

B.S., Harvard, 1943; M.Arch., 1948; M.S., Massachusetts Institute of Technology, 1949. Fellow, American Institute of Architects. Member, National Council of Educational Planners. Registered architect.

Charles W. Thurston. *Professor of Architecture*

B.S., Union (Schenectady), 1943; M.S., Columbia, 1950; Ph.D., 1958. Member, American Society of Civil Engineers; American Concrete Institute; American Society for Engineering Education; Society for Experimental Stress Analysis; Sigma Xi. Registered professional engineer.

Danforth W. Toan. *Adjunct Professor of Architecture*

B.A., Dartmouth, 1940; B.Arch., Columbia, 1949. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Timothy Wood. *Assistant Professor of Architecture*

B.Arch., Cornell, 1966; M.F.A., Princeton, 1969. Registered architect. N.C.A.R.B. certificate.

Other Officers of Instruction

Horst Berger. *Adjunct Professor of Architecture*

Dipl.Ing., Technische Hochschule Stuttgart (Germany), 1954. Member, American Concrete Institute. Registered engineer.

Ellen Perry Berkeley. *Adjunct Associate Professor of Architecture*

B.A., Smith, 1952. Harvard Graduate School of Design, 1952-1955. Loeb Fellow in Advanced Environmental Studies, 1973. Former senior editor of *Architectural Forum;* currently on editorial staff of *Architecture Plus.*

Joseph T. Butler. *Adjunct Associate Professor of Architecture*

B.S., Maryland, 1954; M.A., Ohio, 1955; M.A., Delaware, 1957. Winterthur Fellow. Member, National Arts Club; Victorian Society in America; Furniture History Society; Irish Georgian Society; American Collectors.

Victor Caliandro. *Adjunct Assistant Professor in Architecture*

B.Arch., Massachusetts Institute of Technology, 1969. M.S., Columbia, 1975.

Elaine Dowe Carter. *Adjunct Associate Professor of Urban Planning*

B.A., Howard, 1952; M.A., Boston, 1962. Member, American Society for Training and Development; American Sociological Association; National Association of Community Development; Organization Development Network.

Adele Chatfield-Taylor. *Adjunct Assistant Professor of Architecture*

B.A., Manhattanville, 1966; M.S., Columbia, 1974. Assistant to chairman, New York Landmarks Preservation Commission. Member, National Trust for Historic Preservation; Alliance of Women in Architecture.

Francois Confino. *Adjunct Assistant Professor in Architecture*

Dipl.Arch., Swiss Federal Institute of Technology (Zurich), 1970.

Alexander Cooper. *Adjunct Professor of Architecture; Director, Urban Design Program*

B.A., Yale, 1958; M.Arch., 1962. Commissioner, New York City Planning Commission.

Paul Davidoff. *Adjunct Professor of Urban Planning*

B.A., Allegheny, 1952; M.C.P., Pennsylvania, 1956; LL.B., 1961.

Daniel C. Dunham. *Lecturer in Urban Planning*

B.S., Wisconsin, 1950; M.Arch., Harvard, 1959. Fulbright Scholar, School of Tropical Architecture, London, 1960.

Karen M. Eisenstadt. *Adjunct Assistant Professor of Urban Planning*

B.A., Brooklyn College, 1968, M.R.P., North Carolina, 1971.

David H. Geiger. *Adjunct Professor of Architecture*

B.S., Drexel Institute of Technology. 1958; M.S., Wisconsin, 1960; Ph.D., Columbia, 1967. William Kinne Fellows Traveling Fellow, 1967. Member, American Concrete Institute; American Society of Civil Engineers, Chairman, Air Kinetics Committee, B.R.I., National Academy of Sciences. Registered engineer.

Peter Gisolfi. *Adjunct Assistant Professor of Architecture*

B.A., Yale, 1966; M.Arch., 1970; M.L.A., Pennsylvania, 1973. Registered architect.

Peter Gluck. *Adjunct Assistant Professor of Architecture*

B.A., Yale, 1962; B.Arch., Yale, 1965. Registered architect.

Frank P. Grad. *Professor of Law*

B.A., Brooklyn, 1947; LL.B., Columbia, 1949.

Frances Halsband. *Lecturer in Architecture*

B.A., Swarthmore, 1965; B.Arch., Columbia, 1968. William Kinne Fellows Traveling Fellow, 1968. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Morrison H. Heckscher. *Adjunct Assistant Professor*

B.A., Wesleyan, 1962; M.A., Delaware, 1964. Director, Society of Architectural Historians; Curator, American Wing, Metropolitan Museum of Art.

Robert M. Heller. *Adjunct Associate Professor of Architecture*

B.A., Columbia, 1963; LL.B., 1966; Kent Scholar. Member, New York Bar; Association of the Bar, City of New York. Formerly, Assistant to the Mayor of New York City for Housing, City Planning, Model Cities, and Transportation.

Constantine John Karalis. *Adjunct Assistant Professor of Urban Planning*

B.S.Arch., Illinois Institute of Architecture, 1964; M.Arch., Harvard, 1965; M.C.P., Massachusetts Institute of Technology, 1968. Associate, American Institute of Planners; Member, Executive Committee: Rhode Island Urban Observatory; Rhode Island Council of Community Services; Board of Trustees: Rhode Island School of Design; N.C.A.R.B. certificate.

Edgar Kaufmann, Jr. *Adjunct Professor of Art History and Architecture*

D.F.A., Allegheny, 1963. Apprenticed to Frank Lloyd Wright, 1934–1935. Director, Department of Industrial Design, Museum of Modern Art. Honorary member, American Institute of Architects. Vice-President, International Council of Societies of Industrial Design.

Frank S. Kristof. *Adjunct Professor of Urban Planning*

B.B.A., College of the City of New York, 1942; M.S., Columbia, 1947; Ph.D., 1952.

Jacqueline Leavitt. *Lecturer in Urban Planning*

B.A., Pennsylvania, 1961; M.S., Columbia, 1965. A.I.A. A.S.C.A. Environmental Stipend Fellow, 1973; William F. Kinne Traveling Fellow, 1964.

Matthys P. Levy. *Adjunct Professor of Architecture*

B.C.E., College of the City of New York, 1951; M.S., Columbia, 1956; C.E., 1962. Fellow, American Society of Civil Engineers. Member, Architectural League. Registered engineer.

Robert McNulty. *Adjunct Associate Professor of Architecture*

B.S., California (Berkeley), 1962; J.D., 1965; Loeb Fellow, Harvard University Graduate School of Design, 1973–1974.

Paul Marantz. *Adjunct Associate Professor of Architecture*

B.A., Oberlin, 1960. Member, Illuminating Engineering Society; U.S. Institute for Theatre Technology.

Robert E. Meadows. *Lecturer in Architecture*

B.S.Arch., Cincinnati, 1967; M.S., Columbia, 1968. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

William Meyer. *Adjunct Assistant Professor of Architecture*

B.Arch., Minnesota, 1967; M.Arch., Massachusetts Institute of Technology, 1968; M.S., 1974. Registered architect, California.

Kellis E. Parker. *Associate Professor of Law*

B.A., North Carolina, 1964; J.D., Howard, 1968.

Giovanni Pasanella. *Adjunct Associate Professor*

B.Arch., Yale, 1958. Fellow, Institute of Architecture and Urban Studies, 1974. Member, American Institute of Architects. Registered architect. N.C.A.R.B. certificate.

Charles E. Peterson. *Adjunct Professor of Architecture*

B.A., Minnesota, 1928. Fellow, American Institute of Architects, Past president, Association for Preservation Technology (Canadian-American); Society of Architectural Historians. Member, U.S. ICOMOS Committee; U.S. International Centre Standing Committee. Registered architect.

Diane Pilgrim. *Adjunct Assistant Professor of Architecture*

B.A., Pennsylvania State, 1963; M.A., Institute of Fine Arts, New York University, 1965; Certificate, Museum Training, 1965. Member, Society of Architectural Historians; Decorative Arts Society. Board director, New York Chapter, Victorian Society in America.

T. Merrill Prentice, Jr. *Adjunct Associate Professor of Architecture*

B.A., Yale, 1953; M.Arch., 1960. President, Municipal Art Society of New York.

Theodore H. M. Prudon. *Senior Research Associate in Architecture*

M.A. Delft University of Technology, 1969; M.S., Columbia, 1972. William Kinne Fellows Traveling Fellow, 1972. Member, Dutch Society of Architects.

J. Woodson Rainey, Jr. *Adjunct Assistant Professor of Architecture*

B.F.A., Utah, 1964; B.Arch., 1966. Alpha Rho Chi Medal, 1966. Burch Birdett Long Rendering Prize, 1971.

Carole Rifkind *Adjunct Assistant Professor of Architecture*

B.A., Barnard, 1956; M.A., New York University, 1964; M.S., Columbia, 1974. Member, Society of Architectural Historians; Victorian Society; Association for Preservation Technology.

Ovadia A. Salama. *Adjunct Associate Professor of Urban Planning*

B.S., Paris, 1960; M.S. Ecole Nationale des Ponts et Chaussées (Paris), 1963; M.A., Pennsylvania, 1969; Ph.D., 1971. Member, Regional Science Association.

Mario G. Salvadori. *Special Lecturer; James Renwick Professor Emeritus of Civil Engineering and Architecture*

D.C.E., Rome, 1930; D.Math., 1933; Libero Docente in Theory of Structures, 1937. Fellow, American Society of Civil Engineers; American Society of Mechanical Engineers; New York Academy of Sciences. Member, American Concrete Institute; International Association of Shell Structures; International Association of Bridge and Structural Engineering. Registered professional engineer.

Frank Emile Sanchis. *Adjunct Assistant Professor of Architecture*

B.Arch., Pratt Institute, 1967; M.S., Columbia, 1969. Member, American Institute of Architects; National Trust for Historical Preservation; Society of Architectural Historians; Victorian Society in America, New York Chapter. Registered architect. N.C.A.R.B. certificate.

Piero Sartogo. *Adjunct Associate Professor*

Laurea Universita di Roma, 1959.

S. J. Schulman. *Adjunct Professor of Urban Planning*

B.C.E., Cooper Union, 1949; M.S., Columbia, 1954. William Kinne Fellows Traveling Fellow, 1954. Member, American Institute of Planners. Registered engineer.

Charles Sullivan. *Adjunct Assistant Professor of Architecture*

B.A., Dartmouth, 1964; M.C.P., Harvard, 1970.

Douglas D. Telfer. *Adjunct Associate Professor of Architecture*

Dipl.Arch. Distinction, Dunelm (U.K.), 1961. M.S., Columbia, 1962. A.R.I.B.A.; R.I.B.A. Design Prize, 1961. Campus Architect, Columbia University.

Georges Vernez. *Adjunct Associate Professor of Urban Planning*

B.S., Polytechnic Institute of the University of Lausanne, 1962; M.S., Texas (Austin), 1963; M.C.R.P., California (Berkeley), 1968; Ph.D., 1970.

Thomas Vietorisz. *Adjunct Professor of Urban Planning*

Absolutorium, Technical University (Budapest), 1946; S.M., Massachusetts Institute of Technology, 1948; Ph.D., 1956.

Steven Winter. *Adjunct Associate Professor of Architecture*

B.Arch., Sydney (Australia), 1966; M.S., Columbia, 1968. William Kinne Fellows Traveling Fellow, 1968. Affiliate, Royal Australian Institute of Architects. Member, Architectural Association, London; Architectural League. Registered architect, State of N.S.W. (Australia). Registered architect, New York.

Waltraude Schleicher-Woods. *Adjunct Assistant Professor of Architecture*

B.F.A., Rhode Island School of Design, 1956; B.Arch, 1957. Fulbright Scholar, Germany, 1957–1959. Member, Alliance of Women in Architecture.

John L. Young. *Adjunct Assistant Professor*

B.A., Rice, 1962; B.Arch., 1963; M.S., Columbia, 1969. Registered architect.

Jeffrey Zupan. *Adjunct Assistant Professor of Urban Planning*

B.E., City College, 1963; M.S., Polytechnic Institute of Brooklyn, 1967. Associate member, American Society of Civil Engineering. Registered professional engineer.

Administrative Officers

James Stewart Polshek. *Dean of the Faculty of Architecture and Planning; Special Adviser to the President of the University for Physical Development and Planning; Director, Center for Advanced Research in Urban and Environmental Affairs*

Loes Schiller. *Assistant Dean for Administration, Admissions, and Student Affairs*

Ghislaine Hermanuz. *Assistant Dean for Minority Affairs*

Alexander Kouzmanoff. *Chairman of the Division of Architecture*

Cyril M. Harris. *Chairman of the Division of Architectural Technology*

Peter Marcuse. *Chairman of the Division of Urban Planning*

Edward Merkle. *Associate Registrar*

Jane H. Bobbe. *Administrative Assistant*

Rebecca Fogel. *Administrative Assistant, Admissions and Student Affairs*

Mary Hood Hoskinson. *Executive Secretary to the Dean*

Katherine Hartnett. *Architecture Division Secretary*

Marga Walter. *Planning Division Secretary*

Trudy Oppenheimer. *Receptionist*

Michael Antonson. *Shop Technician*

AVERY LIBRARY

Adolf K. Placzek. *Avery Librarian*

Eleanor M. Thompson. *Reference Librarian*

Herbert Mitchell. *Bibliographer*

Charling C. Fagan. *Reference Librarian*

Carol Falcione. *City Planning and Housing Librarian*

Emeriti and Retired Officers

Leopold Arnaud. *Ware Professor Emeritus of Architecture; Dean Emeritus of the Faculty of Architecture*

Ernest M. Fisher. *Professor Emeritus of Urban Land Economics*

Percival Goodman. *Professor Emeritus of Architecture*

Charles J. Rieger. *Professor of Architecture, Retired*

Mario G. Salvadori. *James Renwick Professor Emeritus of Civil Engineering and Architecture*

Kenneth A. Smith. *Professor Emeritus of Architecture; Dean Emeritus of the Faculty of Architecture*

James Grote Van Derpool. *Professor Emeritus of Architecture*

Participating Visitors to the Graduate School of Architecture and Planning

The following visitors participated in seminars, reviews, or lectures held at the Graduate School of Architecture and Planning during the academic year 1975–76:

Gerald Allen
Tim Anderson
Jonathan Barnett
John Belle
Anna Bofill
Jerome Bolson
Lo-Yi Chan
Alan Chimacoff
Barbara Chimanoff
Harry Cobb
Thomas Costello
Suzanne Crowhurst
Roger Cumming
Abbot Cummings
Tom Dahlquist
Gordon J. Davis
John Davis
Lewis Davis
Eric DeLony
James Dietz
Jane Doggett
Arthur Drexler
Elspeth Dusenberry
Judith Edelman
Samuel Edgerton
F. Aldrich Edwards
Michael Ehrmann
Peter Eisenman
Donald H. Elliot
Jane Fields
Harold Fredenberg
Clara Fox
Herbert Gans
John Gero
Colin Glennie
Bruce Goff
Paul Goldberger
Michael Graves
Charles Gwathmey
N. John Habraken
Robert G. Hagen
Miles Hardie
Hugh Hardy
Chester Hartman
Peter Hoppner
Ada Louise Huxtable
Arata Isozaki
John Johansen
Philip Johnson
Dorthee King
Etel Kramer
Kisho Kurokawa
Peter Land
Megan Lawrence
Marilyn Levy
Barry Light
Richard Llewelyn-Davies
Mimi Lobell
Edward Logue
John McHale
Harley McKee
Victor Marrero
Anita Miller
Barton Myers
Paul Mylonas
Lee Nelson
Julian Neski
Gio Passanella
Robert Perron
Cynthia Peterson
Steve Peterson
Norman Pfeiffer
Frances Fox Piven
Steven Potters
Richard Rogers
Frederick Rose
Donald Ryder
Joseph Rykwert
Sherman Schneider
Paul Segal
Ivan Selenyi
Peter Smithson
Seymour Soloman
Michael Stegman
Katherine Stimpson
James Swan
Don Terner
Stuart Turner
David Vickery
Anthony Vidler
Edward Walker
Joseph Wasserman
Richard Weinstein
Myles Wintraub
Troy West
Tod Williams
Nora Winter
Steven Winter
Elizabeth Wood
John E. Zuccotti

DIVISION OF ARCHITECTURE

CHAIRMAN: Mr. Alexander Kouzmanoff

The curriculums of the Master of Architecture and the various Master of Science programs in the Division of Architecture are based on a foundation consisting of the three primary matrices—the perceptual, the cultural, and the constructual. Some of the ultimate values, goals, and relevant procedures implicit in these matrices are set forth below. These broad frames of reference are interdependent. Interacting continually, they redefine specific areas of inquiry. This is necessary if inquiry is to be responsive to the shifting needs of an evolving society. While each frame of reference is important, the *perceptual* must remain the central matrix. It is the core of the curriculums and the area of major concentration. The constructual and cultural matrices serve to modify and to reinforce in the perceptual.

THE CONSTRUCTUAL MATRIX

—to understand the physical complexities and constraints as well as the functional interdependencies and opportunities that determine so many aspects of our lives and to create and maintain conditions that promote survival and satisfy the need for security.

—to understand science and mathematics sufficiently to be able to explain and direct the use of various pertinent technologies in a responsible manner, including their orderly integration into the fabric of the physical environment.

THE PERCEPTUAL MATRIX

—to positively affect and influence intellectual and physical growth by the creation of physical situations that satisfy the need for amenity, harmony, and beauty.

—to give order to the individual and collective elements that comprise the man-made environment by

(a) discovering the relationships between disparate natural and man-made phenomena; by
(b) formulating these relationships into particular areas of inquiry in a communicable and verifiable manner; and by
(c) communicating these findings to others in a way that encourages interdisciplinary syntheses based on an understanding of the underlying principles that govern our physical world.

THE CULTURAL MATRIX

—to comprehend and rationalize the chaotic aspects of existence so that these can be constructively integrated into the fabric of our lives by the creation of conditions that satisfy social and psychological needs.
—to broaden our perception of the social, political, and economic world by
(a) intensifying our sensitivity to the specific needs and cultural imperatives of the diverse groups that are increasingly involved in environmental decision making, and expanding our understanding of the ways in which these groups perceive and integrate environmental stimuli; and by
(b) developing an understanding of the internal dynamics and external consequences of policy and decision making in the bureaucracies and technocracies that have the responsibility for the generation and implementation of socially effective changes in the physical environment.

MASTER OF ARCHITECTURE DEGREE

The Three-Year M.Arch. Curriculum

THE COMPREHENSIVE STUDIO

The Masters Program in Architecture attempts to distinguish itself from similar programs elsewhere by stressing the importance of developing an understanding of and ability to utilize architectural principles in relationship to historic and contemporary issues. It is the school's intention to assist the student in developing a theoretical basis for decision-making in design. The Faculty of the School is not now nor does it wish it to be monolithic in its philosophical attitudes. The faculty believes that a variety of pedagogical approaches delivered within clearly defined objectives best suit the needs of the heterogeneous graduate student population that the school consciously seeks.

The School sees as its responsibility the provision of three major elements which together form the educational matrix which is the core of the Columbia experience:

1. A *faculty* of experienced teachers, both practitioners and researchers, all of whom are expected to relate their extracurricular work to their teaching responsibilities.

2. *Programs of study,* comprised of lectures, seminars, and studios, whose objectives are definable but whose form is malleable—programs that respond to changing student attitudes and evolving societal needs.

3. A setting comprised of the most effective physical facilities, including classrooms, studios, auditoriums, shops, and libraries, maintained and managed by administrative officers sensitive to the needs of students and faculty and conversant with the primary educational mission of the school.

The Five-Year M.Arch. Curriculum-Work/Study

Many qualified applicants for the M.Arch. degree do not have available the tuition and time required to attend full time. A WORK/STUDY option has been initiated offering such students the opportunity to undertake graduate work while maintaining employment during most of the program. This option has been integrated with the full-time program by jointly scheduling the design studios and most courses.

The full-time program leading to the M.Arch. degree normally requires three years of study and includes 108 points of academic credit. Students in the Work/Study Program are able to complete the same requirements in five years as follows: one year of full-time study followed by four years of part-time study. Thus the first year's work is common for all students in the M.Arch. program, and all entering students are subject to the same entrance requirements, application deadlines, etc. After the first year of full-time study has been completed successfully, students may elect to complete their remaining studies under the Work/Study option.

JOINT DEGREE PROGRAM IN ARCHITECTURE AND URBAN PLANNING

See *Division of Urban Planning*–Joint Degree Programs for further information.

Summary of the Master of Architecture Program

I. GENERAL REQUIREMENTS

A. STUDIO
Six terms — each 7 pts

B. HISTORY/THEORY
1. A4400 Principles of architectural design — 3 pts
2. Four other courses in History/Theory selected from the distributional requirement list below (at least two of these courses must be in the Graduate School of Architecture and Planning)

C. TECHNOLOGY/STRUCTURES
1. The following courses are required, but may be exempted by examination with no credit:
   - A4110 Building of buildings — 2 pts
   - A4220 Construction technology — 3 pts
   - A4221 Construction and environmental systems technology — 3 pts
   - A4610 Environmental control systems — 3 pts
   - A4111 Statics and strengths — 3 pts
   - A4123 Wood and steel — 2 pts
   - A4125 Concrete — 2 pts
2. Three other courses in Technology/Structure selected from the distributional requirement list.

D. PRACTICE/SKILLS
A4500 Graphics I — 2 pts

II. DISTRIBUTIONAL REQUIREMENTS

A. The following courses fulfill the History/Theory distributional requirements:
- C3302 Architecture in the Western world — 3 pts
- A6730 American architecture 1600–1914 — 3 pts
- A4420 Comparative critical analysis of built form — 3 pts
- A4355 Frank Lloyd Wright — 3 pts
- *A4357 History seminar: Renaissance architecture I — 2 pts
- *A4358 History seminar: Renaissance architecture II — 2 pts
- A4470 Ideologies and the production of environment — 3 pts
- A4456 Concepts of urban place in 20th-century architecture — 3 pts
- A4458 Urban precedents — 3 pts
- A6734 The classical language and literature of classical architecture — 3 pts

* Term 1 or term 2 will fulfill distribution requirements

A4421	Models of 20th-century architecture	3 pts
W4660	Modern architecture: the 20th century	3 pts
A4410	Origins of design attitudes in modern urbanisme	3 pts
A4354	Origins of modern architecture	3 pts
A4460	Perspectives in Japanese environmental design	3 pts
A6731	Patterns of development in American architecture	2 pts
W8006	Seminar on the historical shaping of architecture by technology	3 pts

Other courses in architectural history and theory that will fulfill the History/Theory distributional requirements are offered by the Art History Department of the Graduate School of Arts and Sciences; see their bulletin for listings.

B. The following courses will fulfill the Technology/Structures distribution requirements:

A4653	Adaptive architecture	3 pts
A4628	Architectural acoustics	3 pts
A6134	Architectural consequences of structural decisions	3 pts
A4650	Analysis and design of industrialized building systems	3 pts
A4637	Lighting and building	3 pts

III. ELECTIVES

A4538	Development and finance	3 pts
A4539	Advanced development and finance	3 pts
A4624	Economic infrastructure of building as an activity	3 pts
A4246	Construction management and cost control	2 pts
A4623	Economic analysis of housing technologies	3 pts
A4530	Computers in architecture	3 pts
A4134	Experimental structures	2 pts
A4405	Introduction to urban design	3 pts
A4652	Physical aspects of environmental planning	3 pts
A4154	Structures review	1 pt
A4210	Basic principles of traditional construction	2 pts
A4501	Graphics II	2 pts
A4510	Introduction to architectural recording and analysis	2 pts
A4521	Architectural photography	1 pt
A4511	Graphic preparation	2 pts
A4523	Media and the built environment	2 pts
A4524	Architectural presentation	2 pts
A4550	Critical descriptive writing for architects and planners	3 pts
A4557	Techniques of documentary drawing	2 pts
A4560	Architectural practice and legal aspects of construction	3 pts
W6010	Environmental impact statements	1 pt

MASTER OF SCIENCE DEGREE IN ARCHITECTURE AND URBAN DESIGN

DIRECTOR: Mr. Alexander Cooper

OBJECTIVES OF THE PROGRAM

It is the intention of the urban design program to:

(a) postulate and achieve a consensus definition of "urban design" as distinguished from architecture and from urban planning;

(b) develop and elaborate a consistent set of guidelines and principles for the practice of urban design; and

(c) train a core of urban design professionals for both the public and private sectors.

DEFINITION OF URBAN DESIGN

Urban design is accountable beyond the normal scope of architectural practice; urban design problems do not necessarily involve buildings; urban design methodology is substantively different from architectural process; and urban design products are typically expressed in legislative or regulatory forms. These factors indicate that the educational experience must be expressly adapted to the practice of urban design.

Urban design, as we define it, is the manipulation of those physical elements of the built environment that most directly affect the public interest, that is, the interest of those who are neither specific clients nor intended users of the project.

According to this definition, urban design is both broader and narrower than conventional usage indicates. It is broader in that it responds to the public impact of buildings and other physical developments, whatever their size or scale, and in that it encompasses all relevant strategies to influence that impact. It is narrower in that it does not concern itself even with the largest-scale development if its impact extends only to its own developers and their clients and business relations.

Urban design, then, must connect events—that is, budgetary, legislative, political, and physical events—that take place over a period of time. The correct structuring of these elements requires a grasp of issues and procedures not normally associated with physical design.

The fundamental orientation of urban design is to serve the public interest. The goal of urban design is to distribute benefits as widely as possible, rather than to serve the narrowly conceived interest of a single-purpose client.

ROLE OF THE URBAN DESIGNER

The fundamental role of an urban designer is to provide a solution of an urban design problem that accommodates a variety of single-purpose, vested interests and also provides benefits beyond such interests. To achieve this, urban design-

ers must understand that generally they are not the implementers: they do not design buildings; they do not maintain facilities; and they do not share in development profits. But they must be sensitive to each of these concerns. They must be sensitive as well to the increasing role of government in shaping development to the public interest. Either by regulation (National Environmental Policy Act) or by incentive (capital and mortgage financing), government has become critical to the success or failure of almost any large-scale proposal. For this reason these new areas of concern are emphasized in the urban design curriculum.

The program is summarized in the chart below.

M.S. DEGREE IN ARCHITECTURE AND URBAN DESIGN
36 points required for the degree

REQUIRED COURSEWORK

	AUTUMN		SPRING	
DESIGN	Urban design studio I		Urban design studio II	
	A6850	5 pts	A6851	5 pts
	Urban design seminar		Urban design seminar	
	A6890	1 pt	A6891	1 pt
SUPPORT	Development & finance		Advanced development & finance	
	A4538	3 pts	A4539	3 pts
	The law & urban design		Implications of politics for urban design	
	A6862	3 pts	A6863	3 pts
	Urban policy & management		Urban design research	
	Corp Rel B8450	3 pts	A6893	3 pts
	Urban design infrastructure I		Urban design infrastructure II	
	A6860	3 pts	A6861	3 pts

The Columbia Urban Design Studio is a full-time professional office staffed by the students and the faculty of the Urban Design Program. Except for required class hours in the supporting courses, the student is required to work in the Studio from 9:30 to 5:30, Mondays through Thursdays. The faculty members are considered as both associates and consultants, and participate directly in the design process and products of the Studio. The scheduling of the Urban Design Program allows no opportunity for students to undertake part-time employment.

Twelve points per term are required in the following disciplines in order to introduce the student to the vocabulary and the concerns of the "other" urban designers: development and finance, law, urban policy and management, engineering, politics and planning.

An original research project to advance the state of urban design is required to be completed and submitted before graduation.

An urban design problem is assigned during the summer preceding the academic year and is required to be submitted for autumn term registration and presented during the first studio.

MASTER OF SCIENCE DEGREE IN HEALTH SERVICES PLANNING AND DESIGN

DIRECTOR: Mr. George J. Mann

The objectives of this program are to educate and prepare those who will be policy advisers and decision-makers so that they can improve the natural and built environment as it relates to health. Emphasis is placed on achieving an understanding of health problems in the developing as well as in the developed countries.

The program offers a one-year multidisciplinary course directed to the study of the programming, planning, and design of health facilities within the broader context of urban and regional planning.

The autumn term is introductory and analytical. The spring term is devoted to in-depth basic and applied research on an individual or team basis. Students are encouraged to take electives.

The resources of the region are utilized for field trips, seminars, and research.

The program is open to graduate architects and students in other disciplines related to health planning. A total of 34 points is required for the degree (see chart below).

SEMINARS

Each year a number of great lecturers conduct seminars at the Graduate School of Architecture and Planning or at their own offices or the institutions with which they are affiliated. They include the following:

A. Kent Ballard. *American Association for Comprehensive Health Planning*
Lowell Eliezer Bellin. *School of Public Health, Columbia University*
Marvin Bostin. *E. D. Rosenfeld Associates*
John H. Bryant. *School of Public Health, Columbia University*
J. Armand Burgun. *Rogers, Butler & Burgun*
Neil Fogel. *E. D. Rosenfeld Associates*
Gordon A. Friesen. *Gordon A. Friesen, International*
Seth Goldsmith. *School of Public Health, Columbia University*
Jose Gonzales. *American Hospital Association, International Hospital Federation*
Kenzo Kiikuni. *Institute of Hospital Administration, Tokyo*
Thomas J. Kupper. *New York City Health and Hospital Corporation*
Harold J. Olson. *Skidmore, Owings, & Merrill, Architects*
Peter Rogatz. *Blue Cross of Greater New York*
Edward J. Romieniec. *Texas A&M University*
Eugene D. Rosenfeld. *E. D. Rosenfeld Associates*
Joe Russo. *Russo & Sonder*
Paul Selbst. *School of Public Health, Columbia University*
Joseph Shein. *Russo & Sonder*
Kenneth A. Smith. *Dean Emeritus of the Faculty of Architecture*
Richard Sonder. *Russo & Sonder*
Joseph Sprague. *American Hospital Association*
Frederick J. Trost. *Texas A&M University*
William B. Walsh. *Project Hope*

M.S. DEGREE IN HEALTH SERVICES PLANNING AND DESIGN
34 points required for the degree

		AUTUMN		SPRING	
REQUIRED COURSEWORK	INTRODUCTION	Introduction to environmental & health problems			
		A6803	3 pts		
	DESIGN/ PLANNING	Introduction to health facilities planning & design		Health facilities planning & design	
		A6810	3 pts	A6811	3 pts
	RESEARCH	Environmental & health planning research formulation		Environmental & health planning research	
		A6830	1 pt	A6831	8 pts
RECOMMENDED ELECTIVES	TECHNOLOGY			Industrialized building systems	
				A4650	3 pts
		Architectural consequences of structural decisions		Computers in architecture	
		A6134	3 pts	A4530	2 pts
		Environmental planning			
		A4652	3 pts		
	HEALTH	Perspectives in the history & philosophy of public health		Perspectives in the history & philosophy of public health in America	
		Public Health P6000	2 pts	Public Health P6001	2 pts
		Medical background		Systems analysis in health planning I	
		Public Health P6002	1 pt	Public Health P6511	3 pts
		Imperatives of health administration I		Imperatives of health administration II	
		Public Health P6500	3 pts	Public Health P6501	3 pts
	PLANNING	The city as a physical system		Public intervention in the urban physical system	
		P1 A4112	3 pts	P1 A4120	3 pts
		Systems concepts in urban planning		Physical planning problems in less-developed countries	
		P1 A6220	3 pts	P1 A4610	2 pts
	SOCIOCULTURAL	Critical/descriptive writing for architects & planners			
		A4550	2 pts		
		Environmental bases for regional & ecological studies		Origins of design attitudes in modern *urbanisme*	
		Geography W4000	3 pts	A4410	3 pts
				Environmental impact statements	
				Arch-Law W6010	1 pt

MASTER OF SCIENCE DEGREE IN HISTORIC PRESERVATION

DIRECTOR: Mr. James Marston Fitch

The program in historic preservation of the Columbia University Graduate School of Architecture and Planning is uniquely structured to serve a new and still-evolving field of professional activity. This field is characterized by its complexity, its breadth, and its rapid growth. It includes projects as broad as the rehabilitation of entire historic districts and as specific as the installation of historic rooms in existing museums. It covers such disparate activities as the interpretation of historic sites, the making of computerized regional surveys of scenically or architecturally significant monuments as an aid to highway and hydraulic construction, the adaptation of old structures to new uses, and the insertion of new structures into existing neighborhoods.

A growing general interest in the retrieval and recycling of the built environment has resulted in the creation of an assortment of new agencies and institutions—public or private in character; national, state-wide, or municipal in scope. Similarly, the development of this new field has created a requirement for the cooperation of many kinds of specialist—architect, landscape architect, and urban designer; art and social historian and archaeologist; legal expert in preservation and in environmental law; urban real estate expert and economist. Different and new combinations of specialists are required. To work together efficiently, these specialists need to possess common concepts of their task, a common language for describing it, and common methods and technologies for dealing with it.

The Columbia program is designed to fill precisely this need. Cross-disciplinary in structure, it accepts students whose undergraduate degrees are in any of the above-named disciplines. Its curriculum—developed over the last ten years—engages students in a three- to four-term program of courses, lectures, field trips, and internships. The curriculum is itself synoptic; it is thus the reverse of the standard graduate curriculum, which aims to move the student steadily into deeper, but increasingly narrow, specialization. Insofar as possible, this program aims to recreate real-life situations in which the highest levels of theory and practice are brought together. The underlying belief is that a generalized orientation such as this, which gives consideration to the field as a whole, is indispensable to optimal performance in a professional career.

As might be expected of a program within a school of architecture, this program is "artifact-centered"; that is, its central concern is the wise and civilized management of the actual physical environment as a mix of old and new, natural and man-made monumental and vernacular. This task involves the integration of many skills and kinds of expertise; hence our emphasis upon developing inclusive and broad parameters for judgment and decision-making.

The program of study has four main components:

Course work: includes academic studies specially structured for this program: design work in the studios; advanced historical research; and electives taken within the School as well as in the Department of Art History and Archaeology and in the Department of History.

The Seminar: is aimed at giving the student a synoptic overview of both the theoretical and practical problems of the field; some forty distinguished lecturers participate each year (see list below).

Field trips: are an integral part of the study program and enable the student to visit a wide range of institutions, projects, and sites throughout the eastern United States.

Internships: during both the academic year and the summer vacation period, students do historic research and prepare surveys and measured drawings of actual sites.

Scholarships available to students in this program include the George B. Weitzmann Fellowship in advanced historical research; the Quester's Award for distinguished undergraduate work in architecture; the Dora Brahms Memorial Award for outstanding work in the decorative arts; and two universal research stipends in conservation technology.

LECTURES

Each year a number of lectures are commissioned on various specialized aspects of the preservation of the artistic and historic patrimony. Among the professionals in the field who regularly deliver such lectures are the following:

Rita Androsko. *Smithsonian Institution*
Penelope Batchelor. *National Park Service*
George O. Bird. *Henry Ford Museum*
Helen D. Bullock. *National Trust*
Richard C. Candee. *Old Sturbridge Village*
David Chase. *Smithsonian Institution–Dumbarton Oaks*
Abbott Cummings. *Society for the Preservation of New England Antiquities*
James M. Deetz. *Plimoth Plantation*
Eric DeLony. *Historic American Engineering Record*
Elspeth Dusenberry. *New York University Institute of Fine Arts*
Samuel Edgerton, Jr. *Boston University*
Bernard Feilden. *York Minster and St. Paul's, Norwich, England*
Albert Fein. *Long Island University*
Henry A. Glassie III. *University of Indiana*
Henry A. Judd. *National Park Service*
Bunji Kuyabashi. *Technical University of Tokyo*
Seymour Lewin. *New York University*
Chester H. Liebs. *Vermont State Board of Historic Sites*
Harley J. McKee. *Syracuse University*
Lawrence Majewski. *New York University Institute of Fine Arts*
James C. Massey. *National Trust*
William Massey. *National Trust*
John Milner. *National Heritage Corporation*
Tomas Morasovic. *Institute of Town Planning, Split, Yugoslavia*
Virginia Partridge. *New York Historical Association*
Morgan Phillips. *Society for Preservation of New England Antiques*
John Poppeliers. *National Park Service*

Henry Hope Reed. *New York City Department of Parks*
L. S. Russell. *Royal Ontario Museum*
Norman Souder. *National Park Service*
Stanley South. *University of South Carolina*
John Stevens. *Old Bethpage Village, Inc.*
Meredith H. Sykes. *Department of Northwestern Development and Indian Affairs, Canada*
Robert M. Vogel. *Smithsonian Institution*
John G. Waite, Jr. *Mendel, Mesick, Cohen, Architects, Albany*
George Wrenn III *Society for the Preservation of New England Antiquities*
Anne St. Clair Wright. *Historic Annapolis, Inc.*

M. S. DEGREE IN HISTORIC PRESERVATION

54 points plus a 3-month internship required for the degree

REQUIRED COURSES

Seminar in historic preservation A6740, A6741	6 pts
Introduction to the historic preservation studio A6749	3 pts
Historic preservation studio I A6750	5 pts
Historic preservation studio II (or Thesis) A6751	5 pts
Total	19 pts

REQUIRED AREAS

HISTORY *Minimum required:* 6 pts

The beginnings of architecture C3301	2 pts
Architecture of the Western world C3302	2 pts
American Architecture, 1600–1914 A6730 (prerequisite: C3301 and C3302, or the equivalent)	3 pts
Stylistic currents in American Architecture A6731 (prerequisite: C3301 and C3302, or the equivalent)	3 pts

Students who have taken C3301 and C3302 or their equivalent may take any architectural history class in the Graduate School of Architecture and Planning or in the Department of Art History to fulfill 3 of the 6 required points in this area.

ADVANCED HISTORY *Minimum required:* 3 pts

Classical language and literature of architecture A6734	3 pts
American architecture colloquium A6766 (limited enrollment)	3 pts
Research problems in the history of architecture A8790	2 or 3 pts

DECORATIVE ARTS *Minimum required:* 3 pts

Decorative arts: European A6732	3 pts
Decorative arts: American A6733	3 pts
Museological problems of the historic room A6752 (limited enrollment)	3 pts

TECHNOLOGY *Minimum required:* 3 pts

Basic principles of traditional construction A4210	2 pts
American building technology before 1900 A6760	3 pts
Architectural conservation A6762	3 pts

APPLIED SKILLS *Minimum required:* 6 pts

Introduction to analysis A4510	2 pts
Descriptive analysis of historic buildings I A6754	3 pts
Descriptive analysis of historic buildings II A6755 (prerequisite: A4510 or the equivalent)	3 pts

For candidates who have corresponding professional skills, the minimum required may be reduced to 3 points.

RELATED SKILLS *Minimum required:* 3 pts

Applications of urban planning A6767	3 pts
Law, development and historic preservation A6765	3 pts
Introduction to architectural criticism (limited enrollment)	3 pts

Required courses: 43 points
Electives: 11 points minimum
Required for the M.S. degree: 54 points

Students holding a professional architecture degree may be eligible for advanced standing in certain courses.

DIVISION OF ARCHITECTURAL TECHNOLOGY

CHAIRMAN: Mr. Cyril M. Harris

The Division of Architectural Technology was established to train architects and engineers in those specialties which are essential to improving buildings and building processes. By acquiring training in the latest technologies of building construction and environmental control in buildings, graduate architects increase their ability to communicate with their engineering consultants; by expanding their knowledge of the technical and human problems involved in the construction of buildings, graduate engineers become more effective consultants to architects, owners, and contractors. Team efforts are thereby reinforced.

The Division accepts students with first degrees in either architecture or engineering (or, exceptionally, others whose practice has been in related fields), and arranges graduate programs in technology to fit individual interests and needs. In shaping their programs in consultation with their advisers, students are expected to choose a portion of their course work in an identifiable area of study such as systems building and building construction, environmental control systems in buildings, or construction project management. Students with degrees in civil engineering are able to pursue advanced courses in structural analysis and design. Representative courses emphasizing the integration of mechanical and electrical systems into building processes are available, as are courses in acoustics and illumination, effect on ecological systems of energy generation and consumption, public health delivery systems, and others, together with digital computer applications to many of these studies. A master's thesis, normally written in the area of concentration, is a requirement for the degree of Master of Science in architectural technology. Research courses are available for the study of special problems, and academic courses and experimental laboratories in other divisions within the University are open to students in the program.

MASTER OF SCIENCE DEGREE IN ARCHITECTURAL TECHNOLOGY

Most of the courses shown in the chart "M.S. in Architectural Technology" below are open to all students in the program. Some courses, however, because of their technical content or mathematical sophistication, may be taken only after proper preparation; prerequisites should be checked carefully. In addition to the thesis, all programs should include the following courses (unless these courses duplicate previous work): introductory courses in law and accounting; a course requiring use of computers; a course in systems building; a course emphasizing the interrelationship of structure and design. In addition to the listed courses, many of the offerings of other divisions of the University are available, with approval, for one, or possibly two, elective choices in each program. Students should consult the appropriate bulletins.

JOINT DEGREE PROGRAM IN ARCHITECTURAL TECHNOLOGY AND CIVIL ENGINEERING

To more fully utilize the facilities and resources of the University and to provide opportunities for students to pursue studies in related fields, the Graduate School of Architecture and Planning, in conjunction with other schools and faculties, has established several joint degree programs. Each program leads to the award of two professional degrees.

One such program, offered by the Graduate School of Architecture and Planning in conjunction with the School of Engineering and Applied Science, leads to the award of the degrees of Master of Science in civil engineering and Master of Science in architectural technology. A student must enroll for 60 points of credit, which may be earned in four terms in residence—two terms in the School of Engineering and Applied Science and two terms in the Graduate School of Architecture and Planning. For students in the joint program, the thesis requirement of the Division of Architectural Technology is waived.

Students who wish to enter this program must apply to each of the participating schools and be admitted to both. They should consult the respective school admissions offices for further information.

M.S. DEGREE IN ARCHITECTURAL TECHNOLOGY
34 points required for the degree

	AUTUMN				SPRING			
STRUCTURES	Architectural consequences of structural decisions		Advanced structural analysis I		Experimental structures		Theory of plates & shells	
	A6134*	3 pts	CE E4023	3 pts	A4134	2 pts	Engr Mech E4214	3 pts
	Soil mechanics & foundations		Reinforced concrete structures		Foundation engineering I		Theory of vibrations	
	CE E4241	3 pts	CE E4232	3 pts	CE E4244	3 pts	Engr Mech E4215	3 pts
MECHANICALS	Architectural acoustics		Lighting and buildings					
	A4628	3 pts	A4637	2 pts				
COMPUTERS	Computer application to urban planning		Digital computers: engineering applications		Computers in architecture		Computer-aided engineering graphics	
	Pl A4210	3 pts	Computer Sci E4811†‡	3 pts	A4530	2 pts	Graphics E1205†	3 pts
QUANTITATIVE METHODS	Ordinary differential equations I Engr Math E3200	3 pts	Partial differential equations Engr Math E4200†	3 pts	Numerical methods Engr Math E4300	3 pts		
PRACTICE/ SKILLS			Economic infrastructure of building as an activity				Economic analysis of housing technologies	
			A4624	3 pts			A4623	2 pts
	Accounting for lawyers				Legal aspects of business I		Accounting for lawyers	
	L6201*	2 pts			Bus Law B6150†‡	3 pts	L6201*	2 pts
FINANCE	Development & finance		Business in a changing economy		Advanced development & finance			
	A4538†	3 pts	Business B6005†	3 pts	A4539	3 pts		
CONSTRUCTION/ SYSTEMS	Analysis and design of industrialized building systems		Systems analysis for capital projects				Introduction to methods of operations research	
	A4650*	3 pts	CE E4028	3 pts			OR E4000	3 pts
	Historical building technology: 1600–1860		Construction technology				Construction management & cost control	
	A6760	3 pts	A4220	3 pts			A4246	2 pts

PLANNING	Urban transportation planning		The city as a physical system				Public intervention in the urban physical system	
	PI A4404	3 pts	PI A4112	3 pts			PI A4120	3 pts
ENVIRONMENTAL STUDIES	Environmental bases for regional & ecological studies		Seminar in energy & power		Urban geography		Seminar in energy & power	
	Geography W4000	3 pts	Engr E4005	1½ pts	Geography W4041	3 pts	Engr E4006	1½ pts
	Environmental control systems I A4610	2 pts	Environmental control systems II A4611	2 pts	Noise pollution: measurement & control EE E4452	3 pts	Noise pollution Engr Law W6277	2 pts
THESIS/ RESEARCH/ EXPERIENCE	Thesis		Research				Research	
	A6690*†§	3 pts	A6900	2 pts			A6901	2 pts

*Required course.
† Offered in both autumn and spring.
‡ Normally required course.
§ Although the thesis is 3 points, this does not reflect the amount of work expected.

ELECTIVE CONCENTRATIONS

To achieve a degree of specialization in an area of technology, it is suggested that 10 to 12 points of elective courses be selected from one of the following groups.

Systems building and building construction

Architecture A4246	2 pts	Architecture A4624	3 pts
Architecture A4538	3 pts	Architecture A4650	3 pts
Architecture A4623	2 pts		

Construction project management

Architecture A4538	3 pts	C.E. E4028	3 pts
Architecture A4539	3 pts	O.R. E4000	3 pts
Architecture A4624	3 pts		

Environmental control systems

Architecture A4610	2 pts	Arch-Law W6010	1 pt
Architecture A4611	2 pts	E.E. E4552	3 pts
Architecture A4629	1 pt	Engr. E4005	1½ pts
Architecture A4637	2 pts	Engr. E4006	1½ pts

Structural analysis and design*

C.E. E4023	3 pts	C.E. E4244	3 pts
C.E. E4232	3 pts	Engr. Mech. E4214	3 pts
C.E. E4241	3 pts	Engr. Mech. E4215	3 pts

* Normally only for students with first degrees in engineering.

DIVISION OF URBAN PLANNING

CHAIRMAN: Mr. Peter Marcuse

PURPOSE

The primary purpose of the Urban Planning Division is the education of students so that they can contribute their knowledge, skills, and human understanding to the improvement of the quality of life in urban society. Course work, field work, community service, and research are means to this end. The Division strives to facilitate the joint efforts of students, faculty, and staff toward achieving the goal of improving urban life.

Planning per se involves concern with policy; its vital center is the application of technical knowledge, research findings, and past experience to the city of today and tomorrow. The Division at Columbia is concerned with those aspects of planning that deal directly or indirectly with the quality of the urban environment, access to opportunity in the urban setting, and availability of urban services.

Planners may be either publicly or privately employed. While the urban planning program at Columbia seeks to educate planners for either role, the program's primary focus is on the issues of public policy with which planners deal. Planning is viewed as both a technical and a political process, and the educational program is designed to give each student both a competence in technical skills and an understanding of political issues, so that he or she can combine the roles of technical expert, public servant and facilitator, and creative leader, in the particular combination that best suits the particular student. The curriculum of the Division is based on the view of planning as a technical and political process. The curriculum undertakes to provide understanding in theory of economic, social, political and physical processes of urban society; to teach the skills, techniques, and methods of professional planning and of research; and to provide a context for the application of theory and skills to current urban problems, so that what is learned in theory can be tested in practice, and can thus also enrich theory.

EMPHASIS

Given its broad policy-oriented concern, the subject matter of the program necessarily emphasizes the problems and potentials of the great urban regions of the world. The location of the School in the heart of the largest and densest metropolitan area in the United States is particularly opportune. New York City confronts the planner not only with difficult and ineludible challenges, but also with a variety of resources with which to meet these challenges. International activities concentrated in the City, including those at United Nations headquarters, provide further resources and foci for the School's program. As part of Columbia University, the breadth and quality of the offerings of the Division of Urban Planning also go far beyond that which the Division's size might otherwise dictate, since the Division is able to draw upon the resources of the Graduate School of Arts and Sciences and of the other professional schools and educational and research facilities of the University.

JOINT DEGREE PROGRAMS

To more fully utilize the facilities and resources of the University and to provide opportunities for students to pursue studies in related fields, the Graduate School of Architecture and Planning, in conjunction with other schools and faculties, has established several joint degree programs. Each program leads to the award of two professional degrees. Students who wish to enter one of the programs described below must apply to each of the participating schools and be admitted to both. They should consult the respective school admissions offices for further information. In the case of the joint program offered in two divisions within the Graduate School of Architecture and Planning, students should consult the Admissions Office of the School.

URBAN PLANNING AND ARCHITECTURE

The Graduate School of Architecture and Planning offers a joint program leading to the degree of Master of Architecture and the degree of Master of Science in urban planning. A student must enroll for 130 points of credit, which may be earned in eight terms in residence in the Graduate School of Architecture and Planning.

URBAN PLANNING AND BUSINESS

The Graduate School of Business and the Graduate School of Architecture and Planning offer a joint program leading to the degree of Master of Business Administration and the degree of Master of Science in urban planning. A student must enroll for 90 points of credit, which may be earned in six terms in residence—three terms in the Graduate School of Business and three terms in the Graduate School of Architecture and Planning.

URBAN PLANNING AND LAW

The School of Law and the Graduate School of Architecture and Planning offer a joint program leading to the degree of Juris Doctor and the degree of Master of Science in urban planning. A student must enroll for 120 points of credit, which may be earned in eight terms in residence—six terms in the School of Law and two terms in the Graduate School of Architecture and Planning.

URBAN PLANNING AND PUBLIC HEALTH

The School of Public Health and the Graduate School of Architecture and Planning offer a joint program leading to the degree of Master of Public Health and the degree of Master of Science in urban planning. A student must enroll for 80 points of credit, which may be earned in five terms in residence—two terms in the School of Public Health and three terms in the Graduate School of Architecture and Planning.

URBAN PLANNING AND SOCIAL WORK

The School of Social Work and the Graduate School of Architecture and Planning offer a joint program leading to the degrees of Master of Science in social work and Master of Science in urban planning. A student must enroll for 90

points of credit, which may be earned in six terms in residence—three terms in the School of Social Work and three terms in the Graduate School of Architecture and Planning.

SUPPLEMENTAL PROGRAMS

Under the William F. Kinne traveling fellowship program available to students of the Graduate School of Architecture and Planning, a number of planning students are annually eligible to take part in study programs abroad. In order to expand their skills, students are also encouraged to accept employment in planning offices during their summer vacations or to take appropriate courses offered by the Division of Urban Planning as described in the bulletin of the Summer Session. Community consultation is an integral part of the curriculum, and several such projects are continuously in operation.

Master of Science Degree in Urban Planning

The M.S. degree in urban planning requires two years of full-time study; no part-time students are accepted. Students are ordinarily admitted in the autumn term. This degree program is open to students with degrees in the arts or the sciences. While students receive broad training in the field of planning as a whole—from problem exploration and design to implementation—they are also given the opportunity to specialize, and are expected to do so.

Students are required to take 60 points of course work to earn the M.S. degree in urban planning. The curriculum is closely structured but permits as many as seventeen out of approximately twenty courses to be of the student's own selection. The basic courses include:

A recommended statistics course, taken before the second term, or a passing grade in a statistical proficiency examination taken prior to or during the first term of study.

Planning A6001—Introduction to the planning profession, to be taken in the first term.

The theory courses. *Planning A4120,* and *A4122,* to be taken during the first and second terms.

The two courses in analytic methods, *Planning A4206* and *A4208,* except insofar as they are waived, to be taken in the first and second terms.

The planning studio course, *Planning A6911,* to be taken in the third term, is required for most students. Students taking field practice may, under special circumstances and with the instructor's approval, receive a waiver.

The thesis, *Planning A6918,* to be taken in the fourth term. It is designed to coordinate individual student efforts and to facilitate the mutual enrichment of theoretical aspects of individual theses and planning studio or field projects. It is recommended that all students, particularly those without previous research experience, take thesis preparation, *Planning A6917,* in the third term.

Three sectoral courses, to be chosen by the student within a single area of specialization (sector), at least two of these courses to be taken within the Division. For an appropriately qualified student, urban design may be substituted for one of the sectors as the area of specialization.

SUMMARY OF THE PROGRAM

For a graphic description of the program see the chart below. Detailed information about joint degree programs, sectors in urban planning, as well as the urban planning newsletter and other information, are available from the admissions office upon request.

PLANNING PROGRAM FOR DEVELOPING NATIONS (PPDN)

The Division of Urban Planning offers students from developing nations, or students planning to practice in developing nations, a specialized graduate study program leading to the degree of Master of Science in Urban Planning. The unique feature of this program is the opportunity for students to complete part of their work in their home countries or outside the University and still obtain the professional degree. For students in this program, residency at Columbia University consists of four terms of study (including one summer session) and lasts for sixteen months.

There are three educational components in this special program. First, the program provides the students with a comprehensive knowledge of the fundamental principles of urban theory and basic planning techniques that all students entering the professional planning field must assimilate. Second, the program offers the students a collaborative investigation of the general characteristics of developing nations, theories related to their various features, and the necessary adaptation, selection, and innovation in planning and management approaches reflecting the differences among them. Third, the program encourages and requires that the students develop special competence in a selected urban discipline that is particularly applicable to their indigenous situations and congruent with their own professional interests. This lends a definite focus to each student's individual program, and ensures that the student will be able to operate effectively in the increasingly complex urban and regional situations to be encountered in later work.

Students interested in this program should write to the Admissions Office, Graduate School of Architecture and Planning, for the special brochure describing the program in more detail.

Doctor of Philosophy Degree

The specific focus of the Ph.D. program is the analysis of the implications for public policy of knowledge and experience gained in planning and the problems raised or illuminated by that analysis. Such a focus both deepens and limits the concerns of the program. It deepens them by requiring, in addition to an attention to thoroughness of research, care in description, rigor of method, and an awareness of the policy implications of the research findings. On the other hand, it excludes from the main thrust of the program studies unconcerned with policy and thus unrelated to the main direction of the planning profession.

A Ph.D. degree candidate specializing in urban planning may have a background in economics, architecture, engineering, sociology, anthropology, law, or other disciplines relevant to urban planning. Normally, before entering the doctoral program, the candidate will have earned a master's degree in urban planning or in one of these related fields. The subject of the doctoral dissertation may include historical and critical studies in urban and regional planning. Research for the dissertation must be original and contribute significantly to literature in the field. It must be of a publishable nature. For admission and degree requirements, see *Admission*—Doctor of Philosophy Degree; see also *Degree Requirements*—Doctor of Philosophy Degree.

M. S. Degree in Urban Planning*

60 points required for the degree

INTRODUCTION		Introduction to the planning profession PI A6001‡ 3 pts		
URBAN THEORY		The city as a physical system PI A4112§ 3 pts	The city as social and political systems PI A4115§ 3 pts	The city as an economic system PI A4116§ 3 pts
ANALYTIC METHODS		Analytic methods A PI A4208‡ 3 pts	Analytic methods B PI A4206‡ 3 pts	Introduction to computer application PI A4210 3 pts
		Regional science and economic methods PI A6274 3 pts	Concepts of equity and their planning application PI A6278 3 pts	
SECTORS †	HOUSING	Housing: the economic and social elements PI A4304 3 pts	Housing in the suburbs PI A4306 3 pts	The determinants of housing policy PI A4308 3 pts
	TRANSPORTATION	Urban transportation planning PI A4404 3 pts	Transportation in metropolitan development PI A4406 3 pts	Transportation study and methodologies PI A4408 3 pts
	SOCIAL SERVICES	Social service planning PI A4620 3 pts	Health service policy planning and programming PI A4512 3 pts	Urban planning for manpower programs PI A4514 3 pts

Public intervention in the urban physical system PI A4120‡ 3 pts	Public intervention in the urban social system PI A4122‡ 3 pts	Analysis of policy formation PI A4502 3 pts	Metropolitan economic development PI A4507 3 pts	
Sources of community data PI A4212 3 pts	Demographic techniques and population projection PI A4214 3 pts	Land use survey and modeling PI A4216 3 pts	Graphic techniques for planners PI A4218 3 pts	Techniques of program evaluation PI A6217 3 pts
Comparative housing problems and policies: developed nations PI A4310 3 pts	Evaluation of housing quality PI A4315 3 pts	Housing and urban development in developing nations PI A4616 3 pts	Seminar on residential renewal in the inner city PI A6341 3 pts	Seminar in housing policy PI A6344 3 pts
Transportation issues seminar PI A6434 3 pts				
Locational planning of public services PI A4516 3 pts	Planning and programming of correctional facilities PI A4518 3 pts	Needs assessment PI A4520 3 pts		

continued

M.S. Degree in Urban Planning (continued)

SECTORS†	ENVIRONMENT	Planning issues in environmental planning PI A4704 3 pts	Infrastructure and physical environment PI A4706 3 pts	Quantitative methods of environmental analysis PI A4709 3 pts
	DEVELOPING NATIONS	Planning issues and preliminary research in developing nations PI A4602 3 pts	Planning problems in developing nations PI A4609 3 pts	National development issues in developing nations PI A4612 3 pts
	ADMINISTRATION	Municipal budgeting PI A4056 3 pts	The theory and practice of advocacy planning PI A4506 3 pts	Planning law and administration PI A6052 3 pts
	URBAN DESIGN	Sector being developed		
PLANNING THEORY AND PRACTICE		Economic social and political context of planning PI A4007 3 pts	Women in planning and architecture PI A4058 3 pts	The planner as a manager of change PI A4508 3 pts
		Planning studio PI A6911‡ 6 pts	Field practice PI A6913-A6914 3 pts	Thesis preparation PI A6917§ 3 pts

*Students in the Planning Program for Developing Nations have different requirements.
†Three courses within a single sector are required.
‡Required course.
§Highly recommended.

Planning issues of the transnational environment PI A4622 3 pts				
Regional development in developing nations PI A4624 3 pts	Metropolitan economic development PI A4507 3 pts	Planning and development in contemporary China PI A4614 3 pts	Housing and urban development in developing nations PI A4616 3 pts	Advanced seminar on planning topics in developing nations PI A6602 3 pts
Planning in socialist nations PI A4509 3 pts	Systems concepts in urban planning PI A6220 3 pts	Planning theory seminar PI A6920 3 pts		
Thesis PI A6918‡ 3 pts	Advanced research I PI A6925 2 or 3 pts	Advanced research II PI A6926 2 or 3 pts		

THE CENTER FOR ADVANCED RESEARCH IN URBAN AND ENVIRONMENTAL AFFAIRS

The Center for Advanced Research in Urban and Environmental Affairs was created in 1973 to assist the School in its efforts to serve broadly defined social purposes; to develop new knowledge that materially adds to the vitality of the architecture and planning professions; and to create opportunities for students to undertake advanced research work that complements the basic instructional program and, whenever possible, responds to the technical assistance needs of community service organizations. Moreover, the Center seeks to expand the research capability of the School by providing supportive services to investigators in the areas of project development, staffing, funding, and publishing; and to insure the high quality of research products and community service activities by channeling to each project the interdisciplinary expertise represented on the Center's Board of Advisers.

Research associates of the Center include faculty members from the School and from other schools within the University, as well as professionals from public agencies and private firms who contribute their unique talents to research teams. In developing and carrying out research programs, associates have access to the varied and substantial experience of senior faculty members of the School, who are appointed by the Dean from each of the three divisions of the School to serve on the Board of Advisers for the Center.

In its brief history the Center has sponsored a diverse series of activities placing particular emphasis on projects incorporating specific community interventions that can be implemented, monitored, and evaluated in a realistic rather than a "laboratory" context. Projects of this nature, recently completed or currently under way, include:

A survey of health care needs and priorities related to the feasibility of building a teaching hospital for Monastir, Tunisia, requested by the Ministry of Health for the Government of Tunisia;

The development of a "Handbook for Pedestrian Action" aimed at providing city dwellers with basic information on how the city environment can be improved and how citizens can be instrumental in decision-making processes which affect city growth and change;

An on-site review of the traditional architectural designs unique to the Akcaalan area of Turkey's Bodram peninsula in conjunction with the Middle East Technical University; the resulting study to be presented to the Turkish Government's Ministry of Tourism outlines a strategy for defense of the traditional houses and closely related lifestyles, while still permitting the modernization necessary in light of the area's imminent touristic development;

The preparation of a comprehensive reutilization program for the Christopher Street Federal Archive Building in New York City calling for the building's redevelopment by the Landmarks Conservancy into a major urban center that includes retail stores, restaurants, a theater, and library facility or other educational entity, as well as condominiums or cooperative housing;

A nationwide investigation of the legal and urban design issues related to construction over streets aimed at the development of guidelines for municipalities considering the lease or sale of air space over streets;

An inventory of all publicly owned buildings in the City of New York (excluding housing and those built after 1940) followed by the preparation of a report on 800 buildings identified as architecturally significant;

Management of a tour by British housing and planning professionals to selected American cities to observe innovative programs in the fields of housing managements, rehabilitation and conservation, tenant participation, and public/private financing.

In addition to its research activities, the Center publishes *Outrage,* an early warning broadsheet regarding endangered buildings and neighborhoods, and *Working Papers,* a series of research reports and monographs prepared by the faculty, students, and graduates of the School.

The Center also manages the Japan Study Center, which was established to provide students, faculty members, and professionals from both Japan and the United States the opportunity to explore a variety of Japanese environmental design issues. The major activity of the Japan Study Center is an interdisciplinary seminar series that features visiting Japanese lecturers.

COURSES OF INSTRUCTION

The University reserves the right to withdraw or modify the courses of instruction or to change the instructors at any time.

Students may not drop or change courses without official approval.

NUMBERING OF COURSES

Each course number consists of a capital letter followed by four digits and the term designation:

The capital letter indicates the University division for whose students the course is primarily offered: A, Architecture; B, Business; C, Columbia College; E, Engineering & Applied Science; F, General Studies; G, Graduate School of Arts and Sciences; L, Law; P, Public Health; R, School of the Arts; W, Inter-Faculty.

The first digit indicates the level of the course, as follows:

0 Course which cannot be credited toward any degree
1 Undergraduate course
3 Undergraduate course, advanced
4 Undergraduate and graduate course
6 Graduate course
8 Graduate course, advanced
9 Graduate research courses or seminar

An *x* following the course number indicates that the course meets in the autumn term; a *y* indicates the spring term.

Two consecutive numbers which are joined with a hyphen indicate a course which runs through both terms (e.g., *Architecture A3121x-A3122y*). The first half is prerequisite to the second half unless the course description says otherwise.

POINTS OF COURSE CREDIT

The number of points of credit a course carries *per term* is given in boldface type on the right margin of the course entry. The value of a course in points of credit is calculated at the rate of one point for three hours' work each week in each term. The number of points is not determined by the number of class meetings a week, but by the number of hours of work required. For most courses it is assumed that the student will spend at least two hours in preparation for one hour of lecture, recitation, or seminar.

WHEN AND WHERE CLASSES MEET

The days, hours, and room assignments for all courses given in the Graduate School of Architecture and Planning are posted in Avery Hall at the time of registration. Other University divisions on the Morningside campus publish this information in a separate bulletin, which is distributed at registration.

Architecture and Architectural Technology

UNDERGRADUATE

Architecture A3009. Applied mathematics. **2 pts**

Mr. McCormick.

A survey of mathematics necessary to the analyses of structures and mechanical systems by modern methods. Included are elements of algebra, trigonometry, analytic geometry, differential calculus, integral calculus. Illustrative examples and student exercises taken from the field of architectural practice.

DESIGN

The design program comprises more than 50 percent of the total of credits required for graduation. It is continuously evaluated and modified in order to better respond to the dynamic nature of the practice of architecture. Short and long design problems, case studies, historical and technological analyses, and research projects are utilized where deemed appropriate.

The student-faculty ratio is 12 to 1. Team teaching is utilized during most of the first year. In the following two years a carefully worked-out system allows each student to study with at least six different critics on various problems that have in common a concern with fundamental design issues as these are defined by faculty and students.

Design reviews include visiting architects, historians, and critics as well as faculty members from the Planning, Historic Preservation, Urban Design, and Health Service Planning and Design Programs of the School.

The following faculty members teach in the design studies: Alexander Kouzmanoff (*chairman*); Max Bond, Kenneth Frampton, Romaldo Giurgola, Klaus Herdeg, Ghislaine Hermanuz, John James, Ada Karmi-Melamede, Michael Mostoller, Richard Plunz, James Polshek, T. Merrill Prentice, Jr., Michael Schwarting, Robert Stern, Timothy Wood, and Val Woods.

Architecture A4001. Comprehensive studio I. **7 pts**

Architecture A4002. Comprehensive studio II. **7 pts**

Architecture A4003. Comprehensive studio III. **7 pts**

Architecture A4004. Comprehensive studio IV. **7 pts**

Architecture A4005. Comprehensive studio V. **7 pts**

Architecture A4006. Comprehensive studio VI. **7 pts**

TECHNOLOGY

Architecture A4110. The building of buildings: a survey of structural principles. **2 pts**

Mr. Salvadori.

An introduction to the basic concepts of structural action by means of models, slides, and films. Both elementary and refined concepts qualitatively considered without the use of mathematical tools. Special consideration to modern structural materials and to both classical and contemporary structural systems.

Architecture A4111. Statics and strength of structures. **3 pts**

Mr. McCormick.

Prerequisite: *Architecture A3009* or the passing of an equivalency examination.
The introduction of statics through the determination of reactions and internal forces of statically determinate beams, cables, three-hinged arches, trusses, and framed domes. Both graphical and analytical techniques are considered. Properties of areas. Axial, bending, and torsional stresses.

Architecture A4123. Wood and steel. **2 pts**

Mr. McCormick.

Application of the principles of structural analysis and design to modern timber and steel construction. Case studies. Use of handbooks and codes.

Architecture A4125. Concrete. **2 pts**

Mr. McCormick.

Application of the principles of structural analysis and design to modern reinforced concrete construction. Case studies. Use of handbook and codes.

Architecture A4134. Experimental structures. **2 pts**

Messrs. Berger, Geiger, Levy, and Thurston, and others.

Review of tensile structures, air structures, domes, cable roofs, and space trusses.

Architecture A4154. Structures review. **1 pt**

Mr. Thurston.

A structural design review.

Architecture A6134. Architectural consequences of structural decisions. **3 pts**

Mr. Salvadori.

Prerequisite: a knowledge of elementary steel, concrete, and wood structures.
Basic concepts of structural behavior applied to the solution of practical problems with the specific purpose of determining the influence of structural decisions on architecture. Optimalization of structure considered as a component of the architectural system. Considerations of economy, functionality, and practicality of construction in the search for proper architectural solutions. Large-span and high-rise structures as well as structures for modular buildings. Additional knowledge of advanced structures introduced when required for the solution of the problem at hand.

Architecture A4210. Basic principles of traditional construction. **2 pts**

Mr. Rohdenburg.

For students in the historic preservation program.
Designed to give the nonarchitecture student an introduction to the structural principles and building materials employed in traditional American structures of wood and masonry. Seminars supplemented by required reading and graphic exercises.

Architecture A4220. Construction technology. **3 pts**

Messrs. Rohdenburg and Caliandro.

Discussion of the history of construction methods with regard to material and resource availability, state of technique, tools, transportation, and regional environmental conditions, followed by an introduction to generic construction concepts.

Architecture A4221. Construction and environmental systems technology. **3 pts**

Rolland Thompson and visiting lecturers.

Prerequisite: *Architecture A4220.*
Introduction to architectural construction. Survey of materials, building components, and construction methods. Interrelation of technological choices and design. Lecture material integrated with the design work in the Comprehensive Studio as appropriate.

Architecture A4246. Construction management and cost control. **2 pts**

Mr. Pokorny.

An introduction for the advanced student to the latest techniques of construction management and cost control during all phases of the building process. Fast track scheduling, data banks, estimating techniques, value engineering, progress controls, computer utilization, record keeping, and labor problems. Construction management experts from the private building sector as well as from public agencies (UDC, SUNY, GSA, etc.) participate, to provide an understanding of the challenges of the "real world," namely, cost, time, and quality.

Architecture A4610. Environmental control systems I. **2 pts**

Messrs. Rohdenburg, Dalton, Gisolfi, and Harris.

Heating and cooling theory; analysis of system typologies with respect to energy conservation, input criteria, and cost effectiveness (life cycle and first cost); discussion of elements of various systems, including points of origin, generating equipment, distribution devices, delivery mechanisms, and control systems.

Architecture A4611. Advanced environmental control systems. **3 pts**

Mr. Rohdenburg. For case studies: Messrs. Bond, Giurgola, Kouzmanoff, Polshek, Stern, and Toan.

Discussion of heating and cooling systems relative to building typologies; case studies of buildings are used to describe system integration and space requirements. Analysis of architect-engineer consultant relationships. Introduction to water supply and sanitary and storm sewage systems and discussion of electrical, fire protection, and vertical transportation systems.

Architecture A4623. Economic analysis of current housing technologies. **3 pts**

Mr. Bell.

Examination of the politics and economics of current (traditional and new) technologies, including economic comparisons of different structural systems: single family, low and high rise. Case study methods deciding which systems, technology, or combinations of technologies would be most likely to produce a financially feasible building venture.

Architecture A4624. Economic infrastructure of building as an activity. **3 pts**

Mr. Bell.

Case study method. Examination of various land-development and building ventures including single-family housing, condominium and cooperative developments, planned-unit communities, new towns, and new towns-in-towns. "Go-ahead" decision making. Basic approaches to successful building.

Architecture A4628. Architectural acoustics. **3 pts**

Mr. Harris.

Physical properties of sound. Reflection, absorption, and diffraction of sound waves. Sound absorptive materials and constructions. Principles of room acoustics; room resonance, diffusion of sound; the decay of sound in a room. Designing for optimum reverberation time. Acoustical defects in rooms and auditoriums and how to avoid them. The acoustical design of rooms, lecture halls, auditoriums, studios, and open-air theatres. Noise transmission in buildings. Noise control methods in HVAC systems, in electrical systems, and in piping systems. Control of airborne noise in buildings (walls, slabs, double-wall construction, doors and windows, enclosures, use of sound absorptive materials). Control of solid-borne noise in buildings.

Architecture A4637. Lighting and buildings. **3 pts**

Mr. Marantz.

Light as a controllable material. Developing brightness relationships in internal spaces; appraisal of alternatives. Daylight and electric light as a single system. Evaluation of light sources for distribution, color, and cost. Design methodology, experiments, and case studies.

Architecture A4650y. Analysis and design of industrialized building systems. **3 pts**

Mr. Meyer.

Prerequisite: *Architecture A4610* or the instructor's permission.

Principles and uses of performance specifications; prefabrication approaches and techniques: transportation and on-site assembly technology; connections for prefabricated components; approaches to coordination of prefabricated structural and mechanical subsystems; dimensional problems and techniques; strategies for building-system procurement; cost-estimating and activity-scheduling techniques for using industrialized building systems. Some class time each week is devoted to discussion and review of the class assignment, which involves the design of a comprehensive industrialized building system for a selected building type. No other examinations or papers are required.

Architecture A4652. Physical aspects of environmental planning. **3 pts**

Mr. Gisolfi.

The effects of the natural environment on large- and small-scale land planning decisions. Practical applications emphasized through class projects using published data on climate, geology, hydrology, soils, vegetation, etc.

Architecture A4653. Adaptive architecture. **3 pts**

Mr. Gisolfi.

Methods of examining architectural and site planning problems (including urban settings) in order to arrive at solutions which have minimal impact on the environment while taking maximum advantage of natural conditions.

Architecture A6690. Thesis. **3 pts**

Mr. Harris.

Required of students in the architectural technology program.
The thesis is directed to the solution of an architectural problem through use of a technology of major interest to the student. It should be under the sponsorship of an adviser, who may be from any Faculty of the University.

HISTORY

C3301. The beginnings of architecture. **2 pts**

Mr. De Long.

A survey of the history of architecture from prehistoric times through the fall of Rome, including major examples of non-Western architecture. Mid-term examination, short paper, final examination.

C3302. Architecture in the Western world. **2 pts**

Mr. De Long.

Continuation of *C3301*; a survey of European architecture from the fall of Rome to the beginnings of the Industrial Revolution. Mid-term examination, short paper, final examination.

Architecture A4354. Origins of modern architecture. **3 pts**

Mr. Kaufmann.

Prerequisite: the instructor's permission.
From rococo and rationalism through the arts and crafts movement.

Architecture A4355. Frank Lloyd Wright: the development of his architectural design. **3 pts**

Mr. Kaufmann.

Prerequisite: the instructor's permission.
Frank Lloyd Wright's practice over seven decades; critical examination of key buildings; Wright's responses to the architecture of other practitioners. Lectures, with student participation through brief weekly reports leading to class discussions. A written final examination essay or a prearranged research paper required.

Architecture A4357. History seminar: Renaissance architecture I. **2 pts**

Mr. Giurgola.

An introduction to the architecture of the Renaissance through the study of intentions, results, methodologies, and form. Man-made environment and building complexes studied from the point of view of process and in relation to the present. The Italian experience from the thirteenth to the early fifteenth century.

Architecture A4358. History seminar: Renaissance architecture II. **2 pts**

Mr. Giurgola.

A continuation of *Architecture A4357.*
Realization of Renaissance architecture in Europe and in the New World. Consequences of methodology in later architectural works.

THEORY

Architecture A4400. Principles of architectural design. **3 pts**

Messrs. Herdeg and Schwarting.

The investigation and analysis of buildings within and without their cultural context. Emphasis on those design principles which are true for differing cultures and building purposes because they derive their meaning from basic biological and psychological traits as well as from inherent, and thus stable,

formal characteristics. Examples of architecture from nonindustrial societies as well as from pre-industrial and industrial Europe and America. Lectures and discussions. Intended as a corollary to Comprehensive Studio I.

Architecture A4410. Origins of design attitudes in modern *urbanisme*, 1750–1930. 3 pts

Mr. Plunz.

Seminar on selected topics concerning the perceptions of contemporary architects and planners as these relate to urban form; an analysis of the relationship of design vocabulary to the conditioning of the designer's approach caused by social factors. Case studies emphasize the rise of deterministic thinking and the development of formal vocabularies of functionalism; intentional communities, growth, change, mobility, and social stratification as important form determinants; problems of applied fantasy and abstraction; and phenomenon of scientific thinking and its resultant aesthetic.

Architecture A4420. Comparative critical analysis of built form. 3 pts

Mr. Frampton.

Comparative critical team analysis used as a device for revealing both explicit and implicit intent in the design of built form, the analytical process predicated on typological categories in which buildings of the same type are compared as embodiments and expressions of differing conceptions of nature, use, production, and value. Apart from their typological arrangement, buildings are usually ordered so as to also reveal a particular historical development. The aim of the course is three fold: (1) to reveal through analysis the capacity of built form to carry meaning; (2) to sensitize the student designer to subtle significances in spatial sequence, adjacency, detailing, etc., and (3) to see design as cultural discourse. Analytical materials to be drawn from either the nineteenth or the twentieth century.

Architecture A4421. Models of twentieth-century architecture: architecture and industrialized society. 3 pts

Mr. Frampton.

Theoretical and practical development of twentieth-century design. Emphasis on the efforts of successive thinkers, reformers, and designers to come to terms with industrialization and its overwhelming consequences. Taking the Renaissance as a point of departure, the course moves to the period 1850–1970 to encompass the industrial crisis in the mid-nineteenth century and the twentieth-century reaction.

Architecture A4456. Concepts of urban place in 20th-century architecture. 3 pts

Mr. Mostoller.

An exploration of 20th-century urban architecture in terms of housing, office buildings, urban spaces, and new towns. The purpose is to understand modern architecture as an effort to create a viable, meaningful, and beautiful urban place.

Architecture A4458. Urban precedents. 3 pts

Messrs. Herdeg and Schwarting.

Seminar limited to 20 students.
Prerequisite: M. Arch degree candidacy or the instructor's permission.
The relationship between building and urban structure or the "interpretability" of a building's meaning in an urban context. Intended to help students to develop a consciousness of context and scale as well as the multiple roles that urban form can assume. Lectures by the instructors combined with presentations for review and discussion by student teams or individuals. Examples are drawn from various cultures and time periods in order to discuss the relation of cultural meaning to design principles which transcend time and culture.

Architecture A4460. Perspectives in Japanese environmental design. 3 pts

Mr. Gluck.

An exploration of the cultural content of environment rather than the evolution of architectural, planning, or art-historical style. The design traditions of Japan offer a unique focus for comparative study. Both contemporary and historical examples of built form are discussed by members of the Columbia faculty and visiting Japanese.

Architecture A4470. Ideologies and the production of environment. 3 pts

Ms. Hermanuz.

Relationships between specific design elements and ideological concerns; criteria for political, cultural, social, and economic analysis of the built environment. Case studies analyzing societal structuring of environments, Third World developments, and socialist approaches to design and planning. Effort to establish a design process consistent with Black values and priorities. Seminar format.

PRACTICE AND SKILLS

Architecture A4405. Introduction to urban design. **3 pts**

Mr. Eckstut.

Primarily designed for second- and third-year architecture students.
The external forces that impact the design of a building and, in turn, the forces through which the individual building impacts the urban context beyond its immediate site. Design of buildings considered with respect to the following: (*a*) large-scale design objectives such as land use, bulk, open space, and circulation; (*b*) coordination of a variety of vested interests instead of the traditional single client; (*c*) long-term development in phases. Consideration of architecture in terms of maximum public benefits instead of in terms of designing for the users of a building.

Architecture A4500-A4501. Graphics I and II. **2 pts**

Messrs. Rainey and Williams.

Studio work in a two- and three-dimensional graphics vocabulary with special attention to the individual student's particular skills. Emphasis on conceptual/perceptual techniques in measured and freehand drawing. Complements the design work in Comprehensive Studios I and II. Intended also to generate a high level of graphic ability.

Architecture A4510. Introduction to architectural recording and analysis. **3 pts**

Mr. James.

Examination of existing architectural examples in terms of their physical, historical, and cultural contexts; their anatomy, both perceptual and conceptual, and their meanings. Development of skills in the observation of architecture ("seeing" what is there); the recording (graphic representation) of the perceptual phenomena; and the analysis of these phenomena to discover the underlying concepts, and the architectural design principles and means employed to express these concepts.

Architecture A4511. Graphic preparation. **2 pts**

Mr. Halse.

A basic introduction to the use of drafting instruments and techniques to provide knowledge and practice in recording buildings by scale drawing.

Architecture A4521. Photography as a tool for architects. **1 pt**

Instructor to be announced.

Intended to develop a basic understanding of camera use, specifically in its application as a tool for architects.

Architecture A4523. Media and the built environment. **2 pts**

Mr. Confino. Not given in 1976–1977.

The implications of filmmaking and video-taping as tools for architects and planners; the new concepts of information exchange (instant communications, environmental networks, simulated realities, etc.) and their impact on the built environment and its related professions. Students participate in production of a video-tape or a short film.

Architecture A4524-A4525y or A4524-A4525. Architectural presentation. **2 pts**

Mr. Halse.

Architectural visual presentation in various media, with relation to the design of both interior and exterior subjects. Exploration of graphic techniques. Analysis of color, line, and value as elements of visual communication. A personal approach in a logical fashion is emphasized. The student is encouraged to experiment.

Architecture A4530. Computers in architecture. **3 pts**

Mr. Thurston and others.

Introduction to FORTRAN IV computer programming and to computer utilization in architecture. Recent developments in computer graphics. Both the potentials and limitations of computer usage in the profession are explored.

Architecture A4538. Development and finance. **3 pts**

Mr. Bell.

An introduction to economic decision making with regard to income-producing properties, through case study examinations of the effects of feasibility studies, political restraints, pioneering, financing, methods of leverage, taxation, and investment return. Successful and unsuccessful suburban and urban multifamily housing, shopping center, rehabilitation and renovation, and office building projects.

Architecture A4539. Advanced development and finance. **3 pts**

Mr. Bell.

Prerequisite: *Architecture A4538.*
A continuation of the analysis of sophisticated "deal making." An examination of the economics and feasibility of condominium conversions, office and loft building conversions, hotel and motel operations, medical and specialized buildings, land acquisition, and restoration and rehabilitation. The general contractor; estimating and bidding. Pitfalls in leasing and management. Selected on-the-scene, in-depth economic evaluations of multifamily housing, shopping center, and office building complexes in the metropolitan area.

Architecture A4550. Critical/descriptive writing for architects and planners. **3 pts**

Ms. Berkeley.

Students experiment with different kinds of writing—"objective," descriptive, humorous, critical, analytical—on subjects of concern to architects and planners. In most cases, the specific subjects are chosen by the students. Discussion centers on the writing *process:* how to define the readership, how to organize thoughts and notes, etc. Emphasis is on writing as a means of communicating ideas encountered in fulfilling the normal demands of professional practice, or in a related activity such as architectural journalism.

Architecture A4557. Techniques of documentary drawing. **2 pts**

Mr. Halse.

Preparation of documentary drawings and details; working-drawing techniques developed on various levels of architectural complexity; comparison of the handling of large and small projects.

Architecture A4560. Architectural practice and legal aspects of construction. **3 pts**

Mr. Rohdenburg.

Responsibilities inherent in the interrelationship of architects, consultants, public and private owners, and building contractors. Development of contract documents and specifications. Liens, arbitration, and insurance.

Architecture-Law W6010. Environmental impact statements. **1 pt**

Messrs. Grad and Harris.

Formulation and consideration of environmental impact statements; their legal aspects and influence on urban and regional planning. Relevant case histories.

HISTORIC PRESERVATION

Architecture A6730. American architecture: 1600–1893. **3 pts**

Mr. Fitch.

A detailed examination of the main forces—cultural, technical, and ecological—that shaped American architecture from the first European settlement period to 1893. Special attention to domestic, folk, and vernacular buildings. Field trips and term paper required.

Architecture A6731. Stylistic currents in American architecture. **2 pts**

Mr. De Long.

Significant movements in American architecture from the 17th century through the mid-20th century, with special emphasis on the period after 1893. Major buildings by key architects are related to the development of stylistic patterns; where pertinent, European prototypes and parallels are included. Final examination required.

Architecture A6732. Decorative arts: European. **3 pts**

Mr. Butler.

A survey of dominant theories in design and proportion in European architecture, interior design, and furniture. Lectures, field trips, museum visits.

Architecture A6733. Decorative arts: American. **3 pts**

Mr. Butler.

A survey of the evolution of American furniture and interior decorative design, to give architects and historians a general understanding of stylistic parallels between this specialized field and architecture in general. Illustrated lectures and museum tours.

Architecture A6734. The classical language and literature of classical architecture: 1485–1840. **3 pts**

Mr. Foulks.

A detailed review of the literature which propagated the use of classical architectural idioms from the Renaissance through the Greek Revival. The classical orders as visually interpreted by the architectural treatise in Italy, Germany, France, and England and later pattern books of England and America. Influence of these printed sources upon executed buildings is emphasized to aid the student in stylistic analysis and identification of characteristic ornament and decorative devices of various periods.

Architecture A6740-A6741. Seminar in restoration and preservation. **3 pts**

Mr. Fitch and visiting lecturers.

Current concepts as expressed in legislation, institutions, and actual projects, here and abroad. Lectures and field trips designed to familiarize advanced students with methods or archaeological and bibliographic research, technical problems of restoration and conservation, and curatorial problems of interpretation and maintenance.

Architecture A6749. Introduction to historic preservation studio. **3 pts**

Messrs. Foulks, Pokorny and Sanchis.

A broad range of problems in historic preservation; lectures and discussion on case studies chosen from three major areas: restoration of buildings for their original or museological use, adaptive use of historic structures, and neighborhood conservation. An overview of the profession as it is currently practiced and projected for the future.

Architecture A6750. Historic preservation studio I. **5 pts**

Messrs. De Long, Foulks, Pokorny, and staff.

In a small studio group, students use knowledge learned in *A6749* to identify, define, and solve a problem in one area of historic preservation. Graphic presentation is encouraged.

Architecture A6751. Historic preservation studio II. **5 pts**

Messrs. Fitch, Foulks, Pokorny, and staff.

In consultation with an adviser, the student develops and presents a thesis which shows evidence of in-depth study of and original research in one area of historic preservation.

Architecture A6752. Museological problems of the historic room. **2 pts**

Instructor to be announced.

The installation, maintenance, and interpretation of the historic room as a feature of the general museum. In addition to lectures, each student is expected to execute historical documentation, prepare measured drawings and installation layouts for a specific room.

Architecture A6754-A6755. Descriptive analysis of historic buildings I and II. **2 pts**

Mr. Sanchis.

Field trips and studio work to teach the student to make thorough and comprehensive surveys of actual buildings, recording by measurement, photographs, and verbal descriptions. Study of techniques for inventories and surveys of whole districts, as a basis for broad conservation policies. Introduction to recording techniques such as surveying, photography, and photogrammetry.

Architecture A6760. American building technology. **3 pts**

Mr. Foulks and visiting lecturers.

A survey of the major materials and techniques employed in American building before 1900. Following introductory lectures, guest speakers discuss specific topics in their respective fields.

Architecture A6762. Architectural conservation. **3 pts**

Mr. Prudon.

Introduction to current techniques in conservation of old architectural "fabrics." Lectures cover such problems as causes and treatment of stone diseases; protection of wooden "fabrics" against fire; insect and bacterial attack; cleaning of brick and masonry; identification and matching of old paint colors. Lectures, bibliographic research, demonstration of laboratory techniques, field work.

Architecture A6765. Law, development, and historic preservation. **3 pts**

Messrs. Byard and McNulty.

An introduction to the laws and businesses involved in preservation, with emphasis on the development process, its purposes and participants, and the laws, both common and statutory, that permit and control its operation. Lectures, discussions, and preparation of case studies having to do with the preservation of landmark buildings and districts in New York City and elsewhere.

Architecture A6766. American architecture colloquium. **3 pts**

Mr. De Long.

Prerequisite: the instructor's permission.
The investigation of a particular problem in American architecture through introductory lectures and detailed student reports. Typical problems include the picturesque in American architecture and American architecture between the two World Wars.

Architecture A6767. Applications of urban planning in historic preservation. **3 pts**

Mr. Sullivan.

Study of three areas that contribute to professional practice: organization and decision-making in public agencies; theories of change in urban environments; and the use of planning techniques to further historic preservation objectives. Discussion of urban historical geography as a key to urban change; public agency organization and decision-making; planning techniques that can be turned to the advantage of preservation, such as zoning, density control, design review, and community development; and the various government programs that affect the built environment.
Planning problems in the preservation of 19th-century urban environments. Discussion of planning techniques that further preservation objectives as well as publicly funded programs for community development, neighborhood conservation, and housing rehabilitation. For a major portion of the course students work in teams with local planners and community groups to prepare a preservation plan for a neighborhood in the New York area.

Architecture A6768. Introduction to architectural criticism. **3 pts**

Mr. Fitch.

Prerequisite: the instructor's permission.
Intended as a continuation of *A4550*: students submit papers on assigned topics for editorial criticism and group discussion.

Architecture A8790. Research problems in the history of architecture. **2 or 3 pts**

Mr. Placzek.

Prerequisite: the instructor's permission.
Students do extra work for the third point.
Advanced research in the history of architecture: the rise and development of architectural movements; analysis of particular architects and building types; special monuments, etc. Development of the student's critical and analytical capacity is encouraged by individual tutoring and the student's preparation of papers.

Architecture A8794. Thesis. **5 pts**

Mr. Fitch.

The student is expected to analyze in depth a selected stylistic movement, historic personage, or significant monument, showing in detail its origin, development, and historical significance.

HEALTH SERVICES PLANNING AND DESIGN

Architecture A6803. Introduction to environmental and health problems. **3 pts**

Mr. Mann.

The identification of environmental and health needs in both the industrially developed and industrially developing countries. Seminars, lectures, and site visits.

Architecture A6810. Introduction to health facilities planning and design. **3 pts**

Mr. Mann.

Seminars, lectures, and site visits related to basic fundamentals concerning health planning and health facilities programming, planning, and design. Analysis of case studies from various countries.

Architecture A6811. Health facilities planning and design. **3 pts**

Mr. Mann.

Actual development, in depth, of specific health planning and health facilities planning, programming, and design case studies. Work in realistic settings in communities to be stressed.

Architecture A6830. Environmental and health planning research formulation. **1 pt**

Mr. Mann.

Review of field trips, analysis of need, and consultation with instructors to develop a subject area for in-depth research in the spring term.

Architecture A6831. Environmental and health planning research. **8 pts**

Mr. Mann.

Individual or team in-depth research, to provide significant additions to the existing knowledge of a selected area of interest. Paper and/or research proposal required.

URBAN DESIGN

Architecture A6850. Columbia urban design studio I. **5 pts**

Mr. Eckstut.

An introduction to the vocabulary and methodology of the urban design practice. A variety of scales of built-up land are considered, including the total city, local areas, and the individual property. In all cases, the emphasis is on learning how to survey, discover, and describe an existing situation, as well as on possible conclusions from each type of scale and scope of involvement. Since urban design is implemented by government, and usually in the form of controls and legislation, studio time is devoted to zoning concepts and language. In addition, there are sketch problems intended to introduce advanced developments in urban design graphics and the design of "instructions to others." Most studio work is developed individually and made purposely different for each student in order to provide comparisons and thereby maximize the educational benefits of the many exercises. Field trips are scheduled one day each week. Weekly written reports of the field trips are required, in order to help develop writing skills.

Architecture A6851. Columbia urban design studio II. **5 pts**

Mr. Eckstut.

Application of material drawn from the previous studio experience and the supporting courses. Each student is a project director for a major urban design project. The studio projects have real clients and involve many outside resources for their solutions, with emphasis on the role and impact of an integrated urban design process on the public as chief beneficiary. Included are approaches and solutions to a related series of design steps involving local area planning, the development of urban design guidelines and criteria, and legislative controls.

Architecture A6860x-A6861y. Urban design infrastructure I and II. **3 pts**

Mr. Eckstut.

Open only to students in the urban design program.
Support elements in the city and how they serve to determine the built characteristics of the physical environment. Relationship of the following elements to land use and density: vehicular, rail, and pedestrian circulation; water supply; sewage; waste disposal; energy; communications; signage and lighting. Each system analyzed with regard to both technical considerations and potential for encouraging or inhibiting future development. Presentations by visiting lecturers from the appropriate government agencies or private industries. Completion of a research assignment each term is required.

Architecture A6862. The law and urban design. **3 pts**

Mr. Byard.

The public and private interests that change urban form and the legal means for their expression and reconciliation: review of common law and statutory systems with a particular focus on zoning and on regulations affecting the architecture of streets. The work includes the discovery and critical review of relevant law in New York and elseqhere, with an effort to create appropriate language to improve it.

Architecture A6863. The implications of politics for urban design. 3 pts

Mr. Heller.

Plans for physical development invariably undergo extensive modification as a project moves from the drawing board to the street. Perhaps the most important modifications result from the political process, both in the course of official review procedures (e.g., if zoning changes are required or public money is involved) and in the course of less formal community review procedures which are often more rigorous and more difficult to pass.

In this course an analysis is made, utilizing recent and prominent case histories in the New York region, of the influence of political decision making upon urban design methodology. Examples are selected from industrial, commercial, housing, and transportation planning projects. The course seeks to demonstrate the importance of building political acceptability into any urban design proposal, and to analyze perils and suggest some ways of meeting them.

Architecture A6890-A6891. Urban design seminar. 1 pt

Mr. Cooper.

The laboratory for all required support courses in the Program. Introduction to concepts and actual practice of urban design. Case studies, guest lecturers, and field trips demonstrate the design implication (constraints and opportunities) of concerns (legal, administrative, economic, and technical) generally regarded as having no design impact. The seminar is also intended to articulate and consider the specific methods for implementing urban design recommendations.

Architecture A6893. Urban design research. 3 pts

Messrs. Cooper and Eckstut.

An individual research effort to advance the state of the art of urban design. The research project should either be a type of survey or an investigation of significant past examples of urban design and designers. Problem definition, and determination of scope and schedule of the work are completed in the autumn term; the bulk of the work is completed during the winter holidays; a draft report is presented prior to registration for the spring term.

RESEARCH AND THESIS

Architecture A6900-A6901. Research I or II. 2 pts

Mr. Polshek and the staff.

Either term may be taken separately.

Prerequisite: a project outline and the written permission of a faculty project supervisor.

An introduction to the independent study of technical, scientific, and social aspects of architecture. Each student selects an area for investigation, plans an approach to his chosen subject matter, and develops an adequate presentation of his findings. The project may involve experimentation, accumulation of physical data, consultation with recognized authorities, or surveys of opinion, and is expected to add significantly to the existing knowledge of the chosen subject.

The following courses are offered in Columbia College for students pursuing a major in architecture:

Architecture C1001.	**Introduction to architecture**	**Mr. Caliandro and staff**	**3 pts**
Architecture C3101.	**Architectural graphics**	**Mr. Rainey**	**2 pts**
Architecture C3103.	**Freehand drawing**	**Mr. Williams**	**2 pts**
Architecture C3201.	**Elements of architectural design I**	**Mr. Stern**	**4 pts**
Architecture C3202.	**Elements of architectural design II**	**Mr. Stern**	**4 pts**
Architecture C3301.	**The beginnings of architecture**	**Mr. DeLong**	**3 pts**
Architecture C3302.	**Architecture in the western world**	**Mr. DeLong**	**3 pts**
Architecture C3901.	**Senior seminar**	**Mr. Mostoller**	**3 pts**
Architecture C3997-C3998.	**Independent study**	**Mr. Stern**	**2 or 3 pts**
Architecture C3211.	**Intermediate architectural design I**	**Mr. Wood**	**4 pts**
Architecture C3212.	**Intermediate architectural design II**	**Mr. James**	**4 pts**

The following course is offered in Columbia College for students pursuing a major in urban studies:

Urban Studies C3880. Seminar in urban design 4 pts

Planning

INTRODUCTION

Planning A6001. Introduction to the planning profession. **3 pts**

Mr. Marcuse.

Required of all first-year students in the urban planning program.
The course consists of (1) lecture-discussions, covering the history and role of planning as a profession, the types of practice, planning theory, and professional ethics; (2) small-scale field work projects; an intensive examination of a concrete planning problem in the New York area, and of proposal for its solution.

URBAN THEORY

Planning A4112. The city as a physical system. **3 pts**

Ms. Boyer and Mr. Grava.

A discussion devoted to an understanding of the urban physical system, what it is, how it came about, and some of the general theories that purport to explain its form and function. Historical comparative analysis—from Paleolithic villages to the new town movement—of the form of cities as a product of political, economic, and social forces. Discussion of some major theorists on urban form and design. An exploration of the basic concepts of urban morphology and their relationships to the contemporary urban/metropolitan situation. A review of planning tasks for selected types of city districts. The planning approaches in some countries not following the American model.

Planning A4115. The city as social and political systems. **3 pts**

Mr. Seley.

Political and social aspects of urban life, focusing on the planner's role and potential in change. Political and social theory as the bases for understanding current urban processes. Examination of these aspects for redistribution of power, the positive function of conflict, and the problems of equity and efficiency.

Planning A4116. The city as an economic system. **3 pts**

Mr. Kwok.

The economic theories that influence the structure and the dynamics of urban and regional development; functions of and relationship between city and region; linkages and interdependence of activities; location decision and transportation; analysis of land rent and land use competition; urban and regional growth and development; and economic issues in urban and regional planning.

Planning A4120. Public intervention in the urban physical system. **3 pts**

Messrs. Grava and Schulman.

Basic principles of constitutional law and the interrelationships of legislation, administration, and litigation as related to the planning effort. The various legal controls available to carry out official planning policy: zoning, official map and building control, subdivision regulations, building and housing codes, aesthetic and sign regulations, urban renewal, public development, landmarks and historical districts. A survey of the structure and responsibilities of planning institutions, particularly the local planning board. Relationships to other levels of government and current state and federal role in land and development control. Practice in formulation of regulations.

Planning A4122. Public intervention in the urban social system. **3 pts**

Mr. Seley.

Prerequisite: *Planning A4115* and *A4116*, or the instructor's permission.
Historical, theoretical, and practical considerations in the attempt to intervene in the social environment of cities. Emphasis on client-focused orientations and community approaches to planning.

Planning A4502. Analysis of policy formation. **3 pts**

Instructor to be announced.

The political dynamics underlying governmental activities in public welfare, housing, health, and education. Survey of several major program areas, focusing on recent periods of severe political trauma and examining the performance of such subsystems during these periods.

Planning A4507. Metropolitan economic development. **3 pts**

Mr. Vietorisz.

The political economy of metropolitan and regional development, with examples drawn from both developed and developing countries. Emphasis on the world's major megalopolises and their hinterland: planning options, means of control, and long-term prospects.

Anthropology G4167. Urban anthropology. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts & Sciences.

Economics W4228. The urban economy. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Geography W4022. Location theory. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Geography W4041. Urban geography. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Political Science G4241. The political setting of public administration. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Political Science G8232. Colloquium on urban politics. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts & Sciences.

Sociology G4047. Urban sociology and social policy. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Political Science G8232. Colloquium on urban politics. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

ANALYTIC METHODS

Planning A4206. Analytic methods B. **3 pts**

Mr. Clopton.

Prerequisite: satisfactory performance on statistical proficiency examination or the instructor's permission.

A basic introduction to quantitative techniques of wide use and importance in the planning profession. The quantitative methods examined include population estimation and forecasting, critical path methods, travel and location models, regression analysis, input-output analysis and linear programming theory. Examination of appropriate data sources, such as the U.S. Census. Review of statistics and financial analyses as necessary.

Planning A4208. Analytic methods A. **3 pts**

Ms. Scheff.

In-depth study of population as a whole or as subgroups, related to programming, advocacy, or societal planning. Methods studied; community study, event analysis, activity analysis, survey research, differentiation analysis, age cohort analysis, client analysis, typology construction.

Planning A4210. Introduction to computer application. **3 pts**

Mr. Clopton.

An introduction to basic computer terminology, equipment, use, and FORTRAN and WATFIV programming. An investigation and survey of the application of electronic data-processing in urban planning and municipal operations—data handling, information systems, data banks, and retrieval. The development and use of mathematical models; statistical analysis; methods and utilization of graphic output; critical-path scheduling and project management. Lectures are accompanied by demonstrations and student work in analysis, programming, and preparation of instruction decks. Auxiliary equipment and the equipment of the University Computer Center are utilized.

Planning A4212. Sources of community data. **3 pts**

Mr. Seley.

How we find out about life in urban communities. Emphasis on the practical aspects of collecting and analyzing the information necessary for effective intervention. Particular focus on the biases of existing techniques.

Planning A4214. Demographic techniques and population projection. **3 pts**

Ms. Scheff.

Sources of base statistics—censuses, vital registers, migration records, others. Population projection techniques and forms of presentation useful to planners. Lectures, readings, and problem assignment.

Planning A4216. Land use survey and modeling. **3 pts**

Mr. Grava.

Specific survey procedures and methods of data presentation regarding land uses; an examination of analytical and statistical approaches. Students undertake a project utilizing all the methods. A review of current efforts in modeling land uses and urban development.

Planning A4218. Graphic techniques for planners. **3 pts**

Mr. Karalis.

Workshops on graphic techniques used for organization and presentation of planning concepts and statistical information.

Planning A6217. Techniques of program evaluation. **3 pts**

Mr. Vernez.

Prerequisite: *Planning A4206* or the instructor's permission.
A selective review of the major evaluation techniques applied in the fields of urban planning and urban policy analysis: cost-benefit and cost-effectiveness analysis; PPBS; optimization, goal achievement, scenarios, and delphi procedures; metropolitan plan evaluation methods; simulation; sensitivity analysis; social experiments. Examination of theoretical issues and of the context and problems that define and constrain urban planning and program evaluation. Review of evaluation studies of new towns, metropolitan plans, and public services delivery. Lectures, seminars, and student projects.

Planning A6274. Regional science and economic methods. **3 pts**

Messrs. Kwok and Salama.

Prerequisite: *Planning A4116* or the instructor's permission.
Methods of regional analysis with emphasis on environmental, social, political, and economic variables; urban and regional accounts; economic base and multiplier models; structural (input-output) and multiple-equation (econometric approach) models; techniques relevant to market analysis, impact analysis, locational analysis, and forecasting.

Planning A6278. Concepts of equity and their planning application. **3 pts**

Mr. Vernez. Not given in 1976–1977.

Evaluation of planning performance; efficiency and equity of resource allocation; externalities of private production and public policy; distribution of income and wealth; social benefits, costs, and compensations; values and choice; conflicts and dilemmas; criteria for welfare judgment.

Architecture A4550. Critical/descriptive writing for architects and planners. **2 pts**

Ms. Berkeley.

Students experiment with different kinds of writing—"objective," descriptive, humorous, critical, analytical—on subjects of concern to architects and planners. In most cases, the specific subjects are chosen by the students. Discussion centers on the writing *process:* how to define the readership, how to organize thoughts and notes, etc. Emphasis is on writing as a means of communicating ideas encountered in fulfilling the normal demands of professional practice, or in a related activity such as architectural journalism.

O.R. E4000. Introduction to methods of operations research. **3 pts**

For a complete description of this course, see the bulletin of the School of Engineering and Applied Science.

SECTORS

HOUSING

Planning A4304. Housing: the economic and social elements. **3 pts**

Mr. Marcuse.

Prerequisite: the instructor's permission.
A fundamental understanding of housing in its social and economic aspects. Emphasis on the nature of the housing problem, the dynamics of the housing market, the history and current status of government attempts at intervention in the market and housing's place in resolving the major public issues of poverty, segregation, and urban growth and decay. Theory and analytic method are stressed.

Planning A4306. Housing in the suburbs. **3 pts**

Mr. Davidoff.

Attributes of the suburb as a location for a significant portion of metropolitan housing development; special emphasis on opportunity for racial and economic minorities; roles of public, private, and nonprofit sectors; zoning, real estate market and other constraints; mixed income housing; review of alternatives of current and emerging policies.

Planning A4308. The determinants of housing policy. **3 pts**

Mr. Marcuse.

How governmental housing policy is formed: political, social, economic, physical, technological, ideological components. Alternate explanations of policy formation: philanthropic, fiscal, interest group, structural, and other theories. Emphasis on analysis of history of housing policy in the United States and comparisons with other countries' policy evolution.

Planning A4310. Comparative housing problems and policies: developed nations. **3 pts**

Mr. Kolodny.

A comparative examination of housing policy in industrialized nations, focusing primarily on policy development in the United States and the United Kingdom, with some attention to other countries of Eastern and Western Europe. The historical role of housing in social and economic policy with emphasis on lessons which might have applications in the United States.

Planning A4315. Evaluation of housing quality. **3 pts**

Mr. Marcuse.

Conceptual issues and measurement techniques for assessing housing quality; concepts of substandard; other components of housing need; census approaches; United Nations and comparative standards; indicators of change; inspection techniques and problems.

Planning A4616y. Housing and urban development in developing nations. **3 pts**

Mr. Vernez.

The phenomenon of squatting and squatter-built housing; urban population growth and the demand for shelter; the impact of rapid urbanization on housing development; potential solutions to population growth and housing shortage.

Planning A6341. Seminar on residential renewal in the inner city. **3 pts**

Mr. Kolodny.

Prerequisite: *Planning A4304* or the instructor's permission.
Exploration of theories of urban growth and decay as they pertain to residential land uses, and of the basic strategies devised to redevelop the inner cities and rehouse their populations. Students are expected to become acquainted in depth with the principles and practices of programs of slum clearance, public housing, urban redevelopment, urban renewal, neighborhood conservation, neighborhood preservation, relocation, demonstration and model cities, new towns-in-towns, and new-town and suburban development as mechanisms for decanting urban populations. A significant project of research and analysis is required.

Planning A6344. Seminar in housing policy. **3 pts**

Mr. Kolodny. Not given in 1976–1977.

Prerequisite: *Planning A4304* or the instructor's permission.
Exploration of the major social, economic, and political issues confronting contemporary American housing policy. Examination in a small working-group setting of alternative policy approaches to racial and economic segregation, abandonment and residential decay, urban growth, forms of public subsidy, balancing rights of ownership with those of occupancy, etc. A significant research effort is required.

Architecture A4538. Development and finance. **3 pts**

Mr. Bell.

For a complete description of this course, see listing under *Architecture*–Practice and Skills.

Architecture A4539. Advanced development and finance. **3 pts**

Mr. Bell.

For a complete description of this course, see listing under *Architecture*–Practice and Skills.

Law-Planning W6141. Housing and community development. **2 pts**

Mr. Parker.

Federal, state, and city programs. Public, non-profit, cooperative, and private housing problems. The role of the entrepreneur. Housing and urban renewal financing. Social, legal, economic, and administrative aspects of land use, housing, and urban renewal. Community improvement and urban planning assistance programs.

Law-Planning W6299. Urban development controls. **3 pts**

Mr. Parker.

Problems of management and control of the development of housing in metropolitan areas. The economic and social impact of federal and state government control devices and the role of judicial intervention. The role of zoning in the inner city; regulation for aesthetic purposes; the exclusionary impact of land use controls on minority groups; new towns, planned unit development, and other innovations.

TRANSPORTATION

Planning A4404. Urban transportation planning. **3 pts**

Mr. Grava.

Examination of characteristics of the several modes of movement and the interdependencies between them. Appropriate analytical techniques for each mode are discussed. The transportation planning process, with its component analyses of the supply and demand functions of movement systems, is discussed in detail. Case studies of major transportation planning efforts are analyzed.

Planning A4406. Transportation in metropolitan development. **3 pts**

Mr. Clopton.

The fundamental role of transportation in metropolitan growth and development. The interaction between transportation and residential and non-residential activity patterns and locational decisions is analyzed, from both theoretical and empirical perspectives. The significance of these factors in urban spatial development, land use, and social and economic planning.

Planning A4408. Transportation study and methodologies. **3 pts**

Instructor to be announced.

The various advanced transportation methodologies currently utilized for the design of systems and services. Main emphasis placed on the comprehensive simulation model, with its several components and variations; Other methodologies based on precise estimates and calculations, including those that are incremental and sectoral.

Planning A6434. Transportation issues seminar. **3 pts**

Mr. Clopton.

Prerequisite: *Planning A4404* or the instructor's permission.
Discussion of major issues in transportation at several levels, from national to local, and covering the economic, political, and social implications of decision making in transportation. Current topics and case studies are investigated.

Logistics and Transportation B6942. Urban land use, transportation. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Business.

O.R. E4701. Transportation systems analysis. **3 pts**

For a complete description of this course, see the bulletin of the School of Engineering and Applied Science.

SOCIAL SERVICES

Planning A4512. Health service policy, planning, and programming. **3 pts**

Ms. Scheff.

Familiarization with concepts related to definitions of physical and mental health, to methodologies for analysis of need for and supply of health services, to available techniques for relating policies to plans, to programs for the planning of health services in operational terms that are susceptible to evaluation. Field work from the perspectives of the provider and the client at the neighborhood, municipal, and regional levels.

Planning A4514. Urban planning for manpower programs. **3 pts**

Mr. Rosen.

Manpower development and employment programs in the context of urban planning decisions; major contours of federal programs, with special focus on manpower revenue and sharing (CETA); economic, demographic, social, and political aspects of urban planning affecting manpower.

Planning A4516. Locational planning of public services. **3 pts**

Instructor to be announced.

An examination of theoretical principles and practical determinants in the locational decision-making process of public service facilities at a state level by considering the interrelationships of the intentions of a service program with its administrative, operational, social, and political aspects; the implications for physical design and location. Case studies in the health, mental health, and correctional fields provide the main background material; students are expected to examine other related areas.

Planning A4518. Planning and programming of correctional facilities. **3 pts**

Mr. Karalis.

Background discussion of contemporary views on prison reform. Specific examples and development of criteria for planning and programming of correctional facilities.

Planning A4520. Needs assessment. **3 pts**

Ms. Scheff.

Identification and assessment of needs for human services planning. Service utilization and citizen survey methods, client analysis, and social indicators. Lectures, readings, and review of actual needs assessment drawn from practice.

Planning A4620. Social service planning. **3 pts**

Ms. Scheff.

Development of scope and frames of reference for comparative analysis and evaluation of social services that contribute to development of the human and social resources existent under various types of social and political structures. Investigation of both unique and generalizable examples, through libraries, international organizations, and available experts.

Public Health P6012. Health, poverty, and the low income consumer. **2 pts**

For a complete description of this course, see the bulletin of the School of Public Health.

Public Health P6013. Health planning in developing countries. **2 pts**

For a complete description of this course, see the bulletin of the School of Public Health.

Public Health P6502. Health care delivery systems. **3 pts**

For a complete description of this course, see the bulletin of the School of Public Health.

Social Work T6121. Introduction to social work organizing and planning. **3 pts**

For a complete description of this course, see the bulletin of the School of Social Work.

Social Work T6707. The politics of social welfare policy. **3 pts**

For a complete description of this course, see the bulletin of the School of Social Work.

Social Work T6801. Social welfare policy. **3 pts**

For a complete description of this course, see the bulletin of the School of Social Work.

ENVIRONMENT

Planning A4622. Planning issues of the transnational environment. **3 pts**

Ms. Boyer.

Review of a selection of international conferences and procedures designated to consider the impact of economic-technical development and population growth on transnational issues of the sea, air, food, and energy. Questions such as national sovereignty over nonrenewable resources, the politics of global redistribution of resources and wealth, tensions between capitalist development and dependent nations, and property systems and international regimes.

Planning A4704. Planning issues and environmental planning. **3 pts**

Ms. Boyer.

Introduction of long-range planning concepts and methods into the *ad hoc* legal and legislative process of environmental control by exploring the juncture points where the courts, scientific and technical information review, public participation, and the rational process of planning come into contact over the quest for a quality environment.

Planning A4706. Infrastructure and the physical environment. **3 pts**

Mr. Grava.

A review of the studies and surveys leading to the development and construction of various physical service/infrastructure systems, as well as a discussion of their components and service capabilities. This includes planimetric and photogrammetric surveys, land description, soils analyses, street engineering, water supply, sewerage, drainage, and solid waste management. Short exercises under each. In all cases the planning dimensions at the municipal and regional levels are emphasized. The overall aim of the course is to give practical skills to the urban planner allowing constructive participation in the building of a livable environment.

Planning A4709. Quantitative methods of environmental analysis. **3 pts**

Instructor to be announced.

The management and development of data bases for environmental regulation and control, environmental resource management and decision models, population projections, evaluation techniques, etc.

Architecture A4652. Physical aspects of environmental planning. **3 pts**

Mr. Gisolfi.

For a complete description of this course see course listings under *Architecture and Architectural Technology*—Technology.

Architecture-Law W6010y. Environmental impact statements. **1 pt**

Messrs. Grad and Harris.

For a complete description of this course see course listings under *Architecture and Architectural Technology*—Practice and Skills.

Geography W4100. Environmental bases for regional and ecological studies. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Geography W4912. Resources of the seas. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Geography G9401–G9402. Seminar in National resource and environmental systems I and II. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Law L6242. Environmental law. **3 pts**

For a complete description of this course, see the bulletin of the School of Law.

DEVELOPING NATIONS

Planning A4507. Metropolitan economic development. 3 pts

Mr. Vietorisz.

The political economy of metropolitan and regional development, with examples drawn from both developed and developing countries. Emphasis on the world's major megalopolises and their hinterland: planning options, means of control, and long-term prospects.

Planning A4602. Planning issues and preliminary research in developing nations. 3 pts

Mr. Kwok.

Open only to students in the Planning Program for Developing Nations.
Fundamentals of planning history, theory, and concepts. Emphasis on background and terminology of modern planning and on fundamental planning issues in developing nations. Investigation of information and sources applicable to planning in a specific geographic area—statistical materials; demographic, economic, and social indicators; administrative organization; institutional structure; etc. Evaluation of the type, the extent, and the degree of detail of information available.

Planning A4609. Urban planning problems in developing nations. 2 pts

Mr. Dunham.

An investigation into the planning problems characteristic of nations in the early stages of economic development. Physical and social results of rapid urbanization. Emerging norms and theories. Administrative and training requirements. The role of international technical assistance agencies. Housing policies, programs, and projects. Case studies of selected areas.

Planning A4612. National development issues in developing nations. 3 pts

Mr. Kwok.

Exploration of economic issues and problems in development planning; review of the general conditions in developing nations; the social, cultural, and political dynamics of development; analysis of the principal factors of development and growth models; and examination of development policies and strategies with reference to the institutional structure.

Planning A4614. Planning and development in contemporary China. 3 pts

Mr. Kwok.

An investigation and survey of the problems in urban and rural planning, housing, and public service development of a socialist nation in view of its ideology and economy. The evolution of development and planning in attaining national goals under changing conditions. Analysis of planning concepts and policies, spatial pattern, implementation, causes and effects.

Planning A4624. Regional development in developing nations. 3 pts

Mr. Salama. Not given in 1976–1977.

Survey of different types of regions; objectives of regional development; balance of regional and national growth; technology, human resources, and social development; planning programs for regional development; institution factors and institution building; case studies.

Planning A6602. Advanced seminar in planning topics in developing nations. 3 pts

The staff.

Prerequisite: At least one basic planning course in the topic of the student's choice, and the instructor's permission.
Intensive investigation in a special planning sector in developing nations. Students may specialize in housing, transportation, social services, environment, metropolitan planning, regional planning, or methodology. Individual or small-group projects in consultation with a faculty member. Outlines and subjects to be determined jointly by the students and faculty member.

Geography W4005. The geography of hunger and food supply. 3 pts

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Geography W6221. Seminar on third world urbanization problems. 3 pts

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Political Science G4265. The social control of technology. 3 pts

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

TZ4000-TZ4001. Institutions and programs in international educational development. **3 pts**

For a complete description of this course, see the bulletin of Teacher's College.

Teachers College TF4406. Education and manpower planning. **3 pts**

For a complete description of this course, see the bulletin of Teachers College.

Teachers College TZ4510. Education planning in international development. **3 pts**

For a complete description of this course, see the bulletin of Teachers College.

For regional courses in developing nations, consult the bulletin of the School of International Affairs.

ADMINISTRATION

Planning A4056. Municipal budgeting. **3 pts**

Ms. Eisenstadt. Not given in 1976–1977.

Municipal budgeting and planning for physical development and service programs; the municipal budget and the urban economy; expenditures and how they are financed; political, fiscal, and administrative factors that affect budget decisions; impact of other levels of government; municipal accounting; criteria and techniques for evaluating and making municipal resource allocations. Examples from New York City situations.

Planning A4506. The theory and practice of advocacy planning. **3 pts**

Mr. Davidoff. Not given in 1976–1977.

Advocacy planning as a theory of democratic planning and as a contemporary practice. Students elect to write about the subject or participate in it. Discussion focuses on both the development of the practice as a part of the larger national movements combatting poverty and discrimination in the 1960s and as a contemporary practice. The example selected for the analysis of present practice is the movement to open the suburbs to economic and racial minorities who might choose to reside within them.

Planning A6052. Planning law and administration. **3 pts**

Mr. Schulman.

An analysis of the various legal controls available to carry out official planning policy: zoning, official map and building control, subdivision regulations, building and housing codes, aesthetic and sign regulations, urban renewal, public development. Emphasis is on basic principles of constitutional law and on the inter-relationships of legislation, administration, and litigation. Practice in formulation of regulations. The administration of the planning and renewal development functions.

Architecture A6862. The law and urban design. **3 pts**

Mr. Byard.

For a complete description of this course see course listings under *Architecture*—Urban Design.

Corporation Relations and Public Affairs B8450. Urban policy and management. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Business.

URBAN DESIGN

A sector on urban design is currently being developed. Students should consult the Chairman of the Division for further information.

PLANNING THEORY AND PRACTICE

Planning A4007. Economic, social, and political context of planning. **3 pts**

Ms. Boyer.

Focus on the structure and genesis of thought about the city and the urban public, and about the planning process in American city and regional planning. Particular emphasis on definitions of the boundaries of planning concepts in different historical periods and how they have limited the practice, policies, and programs of planning and have related and reacted to changing economic, social, and political contexts.

Planning A4058. Women in planning and architecture. **3 pts**

Ms. Leavitt.

A critical analysis of how the professions have reinforced traditional societal roles of women and of how women in the fields today might redirect the focus of the traditional male-dominated professions to create environments which meet the needs of women who demand greater control over their own lives. Examination of how fixed concepts of community have incarcerated women, of attempts by women to gain control over their environment, of the extent that struggles have had to suppress issues of sexism, of the success or failure of struggles to bring about significant change, of the practitioners' vocabulary and tools and their implications, and of how the profession can address itself to the unmet needs of women.

Planning A4508. The planner as a manager of change. **3 pts**

Mr. Kolodny.

Examination of community change: strategies and methods; application of methods to simulated and real problems; identification and development of planner's skills in managing change.

Planning A4510. Planning in socialist nations. **3 pts**

Ms. Hermanuz.

Investigation of the impact of socialism on the planning process. Place of planning in socialism and preconditions to planning as set up by the socialist ideology. Focus on case studies illustrating various types of socialism, as applied political systems, and their influence on the definition of goals, the setting of priorities, and the means of controls.

Planning A6220. Systems concepts in urban planning. **3 pts**

Mr. Grava. Not given in 1976–1977.

Specific mathematical or computer-use knowledge is not required.
Theory of decision-making, drawing from general systems theory and advanced simulation and evaluation techniques and applying this knowledge primarily to the urban situation. "Systemic planning" as a procedural approach combining scientific methodology with urban concerns and as one of the theoretical paths available to decision-makers generally and urban professionals specifically. Contrasts and similarities with other theories. Major cases, particularly those related to urban management and organization issues.

Planning A6911. Planning studio. **6 pts**

The staff.

An opportunity for students in the second year to work on real planning programs in collaboration with and under the supervision of faculty members. Emphasis on project and program planning for community and other public service organizations with limited technical-assistance resources, and on policy analysis and policy planning for government agencies at the city and state levels. Field work, team consultation, and seminars.

Planning A6913–A6914. Field practice. **3 pts**

Mr. Seley.

Prerequisite: a project outline.
Group planning projects to devise solutions to problems in the field. Projects may be initiated by faculty members or by a team of students and a faculty adviser, or they may result from a request by an agency or community group for technical assistance.

Planning A6917. Thesis preparation. **3 pts**

Ms. Scheff.

Modes of research applicable to differing types of themes: hypothesis testing, case studies, theoretical explorations, historical analysis; individual consultation and group seminar discussions of student work; review of current divisional research projects. Designed to assist students in transforming their individual research interests into manageable and productive thesis topics.

Planning A6918y. Thesis. **3 pts**

Ms. Scheff.

An in-depth examination of a single problem in planning. In most cases, an individual written report is prepared, based on the student's own research. In some cases, it may be combined with or stem from work in the planning studio or field practice. Students periodically meet with faculty members in seminar sessions for discussion of common problems and for progress reports

Planning A6920. Planning theory seminar. **3 pts**

Ms. Boyer.

A review of current theories of planning and policy formation as they relate to increasing state intervention in social and economic spheres, the overlapping complexities of intergovernmental relations, the legitimation and fiscal crises.

Planning A6925–A6926. Advanced research I and II. **2 or 3 pts**

The staff.

Either term may be taken separately.
Prerequisite: a project outline and the written permission of a faculty project superviser.
Individual or small-group research, in consultation with a faculty member, in areas of the student's choice. Students are responsible for planning and conducting research activities and enlisting the cooperation of a faculty adviser.

Planning A8900. Doctoral research colloquium. **3 pts**

Mr. Marcuse and staff.

Open only to Ph.D. degree candidates in planning or in closely related fields.
Discussion to center on advanced planning theory and on contemporary cases with methodological, conceptual, or policy implications, the specific format and subjects to be determined by the group.

Architecture A4410. Origins of design attitudes in modern *urbanisme*, 1750–1930. 3 pts

Mr. Plunz.

For complete description of this course, see course listings under "Theory" in "Architecture and Architectural Technology."

History W4203. The medieval and early modern European town and village. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

History W4673–W4674. American urban history. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

Political Science G4226. Political analysis of social programs. **3 pts**

For a complete description of this course, see the bulletin of the Graduate School of Arts and Sciences.

The following course is offered in Columbia College for students pursuing a major in urban studies:

Urban Studies W3880. Seminar in urban studies: theory and practice of urban planning. **Mr. Kolodny** **4 pts**

ADMISSION

OFFICE OF ARCHITECTURE ADMISSIONS: 400 Avery

Office hours: Monday through Friday, 10 to 4

Telephone: (Area code 212) 280-3510

All applicants receive consideration for admission without regard to race, creed, color, national origin, or sex.

In considering a candidate for admission to the Graduate School of Architecture and Planning, the Committee on Admissions is interested in the applicant's potential for intellectual and professional growth. Admission depends, therefore, on a student's demonstrated intellectual capacity and preparation in a field of study, and on the student's expectation of professional attainment.

Admission Procedure

Application forms may be obtained from the Office of Architecture Admissions and should be completed in accordance with the instructions accompanying them. Applicants should request the registrar of each of the colleges and professional schools they have attended to send an official transcript of their work directly to the Office of Architecture Admissions. Three letters of recommendation are required and should be submitted to the Office directly by the sponsors. A personal statement is required of all applicants. Information on additional required supporting materials is listed below under the name of the degree offered.

APPLICATION DEADLINES

FOR DEGREE CANDIDATES

Autumn term: Applications and all supporting material must be received by February 15.
Applications for the architectural technology program and for the health services planning and design program must be received before May 31.
Scholarship applications must be received by February 15.

Spring term: Only the architectural technology program offers spring admissions to beginning students.
Applications must be received by November 30.

FOR SPECIAL STUDENTS

Autumn term: Applications must be received by July 31.

Spring term: Applications must be received by December 15.

No application will be forwarded to the Committee on Admissions until all supporting documents and materials have been received. It is the applicant's responsibility to make sure that all of the materials he or she has requested and submitted have been received prior to the deadline for receipt of applications.

DEPOSIT

An applicant who has been accepted for admission as a degree candidate is required to pay a $50 deposit to the University within fifteen days after the notice of acceptance. This deposit is applied toward tuition when the applicant registers; if the applicant does not register, the deposit is not refunded for any reason except entry into military service or the Peace Corps. Application for refund must be made in writing at the time of the admissions cancellation. Credit for the deposit may be extended for (1) twelve months when an applicant fails to register due to illness or other causes beyond the applicant's control, or (2) the period of active duty in the military service or Peace Corps. Proof of any extenuating circumstances may be required.

If the fee is not paid within fifteen days after receiving the notice of acceptance, the applicant forfeits the place in the School that has been reserved for him or her.

Master of Architecture Degree (six terms)

Students are admitted to the M.Arch. program in the autumn term only, and they must attend on a full-time basis. The M.Arch. degree is the first professional degree in architecture; therefore students holding a B.Arch. degree are not eligible to apply to this program.

ACADEMIC PREPARATION

All applicants must have, at the time of enrollment, an undergraduate degree or the equivalent from an accredited college or university. An architecture major is not required. Candidates must have successfully completed the following courses for admission into the Master of Architecture program: one term of general physics (with laboratory), one term of drawing, painting, or sculpture, and two terms of a survey course in architectural history up to 1750. (All entering students will be given an architectural history proficiency examination. Based on the results of that examination, students will be advised to take one or more additional courses in architectural history presently offered in the School.) In special circumstances a student may be accepted for admission with a deficiency in one or more of the above on condition that such deficiency be removed by successful completion of the appropriate course or courses before entering the second year of the program.

Applicants are also required to take the Aptitude Test of the Graduate Record Examination. The test should be taken no later than two months before applications are due. Information may be obtained from the Graduate Records Examination, Educational Testing Service, Box 955, Princeton, New Jersey 08540.

A reading knowledge of a modern foreign language, a course in environmental studies, and some facility with mathematics (including an introduction to calculus) are recommended areas of preparation for applicants to the Master of

Architecture program. Ability in mathematics will be tested by a proficiency examination immediately prior to the start of the first year of work, and students who need more instruction will be required to take *Architecture A3009—Applied mathematics* during their first term. The materials covered in this course (and in the proficiency examination) are basic elements of algebra, trigonometry and analytic geometry, and the rudiments of differential and integral calculus. Candidates wishing to familiarize themselves with this material are referred to the text by Salvadori, *Mathematics in Architecture* (Englewood Cliffs, New Jersey: Prentice Hall, 1968).

SUPPORTING MATERIALS

In addition to the application form and supporting documents, applicants must submit evidence of their graphic ability: paintings, drawings, prints, or graphic designs. Do not send slides. Submitted material should not be enclosed in a binder, should not exceed 8½ by 11 inches, and should not measure more than ½ inch in thickness. The material will be returned by mail only if sufficient postage is included and the return address is clearly indicated.

ADMISSION AS A TRANSFER STUDENT

Applicants who wish to transfer from another architectural program may apply to the M.Arch. program for admission as transfer students. Advanced standing toward the M.Arch. degree for all relevant courses taken at other institutions is given only upon the recommendation of the faculty members in charge of the appropriate courses at Columbia and with the written approval of the Dean. Advanced standing will be awarded only in courses in which students have obtained a grade of C or better. No requests for advanced standing will be considered until official copies of relevant transcripts have been submitted to the Student Records Office. In some cases, faculty members may ask to see examples of previous course work.

Courses may be waived on the basis of professional experience or examinations in subject matter. Waivers do not carry point or course credit, and approved elective courses must be taken to fulfill the point requirements for the degree.

An estimate of the course work which prospective transfer students would be required to complete may be obtained during an interview with the Dean or one of his representatives and must be determined before or during the registration period. *All transfer students must complete a minimum of 60 points of course work at Columbia to obtain the Master of Architecture degree.*

PROFESSIONAL OPTION PLAN

The University provides opportunities for students in Barnard College and the School of General Studies to obtain their B.A. or B.S. degrees while completing the first year of the M.Arch. program in the Graduate School of Architecture and Planning. Since the details differ in each undergraduate division, students should consult the bulletins of the particular divisions in which they will be or are registered. Similar programs are available to or may be arranged for students enrolled in other colleges.

Applicants may enter only in the autumn term; they must attend on a full-time basis.

JOINT DEGREE PROGRAM IN ARCHITECTURE AND URBAN PLANNING

For further information, see *Division of Urban Planning*—Joint Degree Programs.

Master of Science Degree in Architecture and Urban Design (two terms)

All applicants for admission to the program leading to the M.S. degree in architecture and urban design must have a B.Arch. or M.Arch. degree or the equivalent. In addition to the application form and required supporting documents, applicants must submit a portfolio containing examples of their architectural designs, particularly from the last two years of undergraduate training. Preferably, the portfolio should not exceed 12 by 18 inches and should be submitted with the application. The portfolio will be returned by mail only if sufficient postage and packaging are included and if the return address is indicated on the portfolio.

Applicants for the M.S. program in urban design may enter only in the autumn term; they must attend on a full-time basis.

Master of Science Degree in Health Services Planning and Design (two terms)

All applicants for admission to this program must have a B.Arch. or M.Arch. degree or the equivalent or a professional degree in related fields. In addition to the application forms and required supporting documents, applicants must submit a portfolio containing examples of their architectural designs, particularly those executed during the last two years of their undergraduate training.

Applicants to the M.S. program in health services planning and design may enter only in the autumn term, but may attend on a full-time or part-time basis.

Master of Science Degree in Historic Preservation

Applicants for admission to the program leading to the M.S. degree in historic preservation must hold a first degree in architecture, landscape architecture, art history, American studies, history, or other related fields. It is recommended that candidates holding non-architectural degrees have taken two terms of history of architecture and one term of freehand or mechanical drawing.

Master of Science Degree in Architectural Technology (two terms)

Applicants for admission to the program leading to the M.S. degree in architectural technology must hold the B.S. degree in civil engineering or the equiva-

lent, or the B.Arch. degree or the equivalent. All applicants must take the Aptitude Test of the Graduate Record Examination; they are urged to take it no later than two months before their application is due. Information may be obtained from the Graduate Record Examination, Educational Testing Service, Box 955, Princeton, New Jersey 08540.

Since several of the requirements for this degree may be taken in the evening, it is possible to enroll in this program on a part-time basis. Applicants may enter in either the autumn or the spring term.

JOINT DEGREE PROGRAM IN ARCHITECTURAL TECHNOLOGY AND CIVIL ENGINEERING

For a description of this program see *Division of Architectural Technology*—Joint Degree Program in Architectural Technology and Civil Engineering.

Master of Science Degree in Urban Planning (four terms)

Since the program leading to the M.S. degree in urban planning is designed to prepare students from many different backgrounds for careers in the planning field, applicants may hold degrees in professional fields such as architecture, engineering, planning, and law. They may also hold degrees in the social sciences, usually sociology, political science, geography, or economics. Applicants may enter only in the autumn term; they must attend on a full-time basis. A course in statistics and one in economics, sociology, or political science (preferably related to urban issues) are required before entrance into the program. Courses in all three social sciences are recommended. Ability in statistics will be tested by a proficiency examination immediately prior to the start of the first year's work, and students needing more instruction will be required to take a recommended statistics course. The course will not carry credit toward the M.S. degree.

All applicants should, if possible, submit examples of term papers with their application and are required to take the Aptitude Test of the Graduate Record Examination. The test should be taken no later than two months before applications are due. Information may be obtained from the Graduate Record Examination, Educational Testing Service, Box 955, Princeton, New Jersey 08540.

JOINT DEGREE PROGRAMS IN URBAN PLANNING AND OTHER DISCIPLINES

For descriptions of these programs see *Division of Urban Planning*—Joint Degree Programs.

Doctor of Philosophy Degree

The programs leading to the Ph.D. degree are for students who wish to prepare themselves for professional careers in teaching or research. The University gives preference to applicants who have completed their undergraduate work within the last five years.

An applicant must hold, or expect to receive before enrollment, a bachelor's degree in arts, letters, philosophy, or science. The degree work must ordinarily include no less than 90 points of liberal arts: courses in the humanities, the social sciences, and the pure sciences. Professional courses, such as architecture, are not credited toward the liberal arts requirements. The liberal arts requirement is ordinarily not fulfilled by the usual degree in architecture or engineering. An applicant whose only degree is in one of these fields should therefore be prepared to complete certain liberal arts requirements which will be outlined to the applicant by the Graduate School of Arts and Sciences Director of Admissions before the applicant can be admitted as a regular student in the doctoral program.

Applicants must apply on the Graduate School of Arts and Sciences application forms and should not use School of Architecture forms.

For further information on the program, the applicant should consult *Division of Urban Planning*—Doctor of Philosophy Degree in this bulletin, as well as the bulletin of the Graduate School of Arts and Sciences.

Special Students

Under certain circumstances professionals in the field of architecture or planning may be eligible to take courses in the Graduate School of Architecture and Planning. These students must receive permission from the Office of the Assistant Dean for Admissions in order to obtain applications for admission as *special students* (nondegree candidates). Certain specified courses, including the design studios, are not open to special students. Requests for application forms and other information should be directed to the Office of Admissions.

If at a later date a special student wishes to apply for matriculation in either the M.Arch. or M.S. degree programs, the student must file a formal application before the stipulated deadline. The Admissions Committee will not treat the application preferentially.

Students who take courses as special students and are later admitted to a degree program may be awarded advanced standing for up to 15 points of work taken as a special student. Those who wish to apply for degree candidacy are therefore urged to do so at the earliest possible time.

Summer Session

Certain introductory courses are available to students during the Summer Session. Those interested in applying should contact the Office of Summer Sessions Admissions, 103 Low Memorial Library (telephone 280–3331) for bulletins and application forms.

Foreign Students

In general, only those foreign students (1) who can understand rapid idiomatic English and can speak, write, and read English with a high degree of facility and (2) who can prove their ability to support themselves financially while in the United States are eligibile for admission to Columbia. For a single student, a minimum of $7,437 for living and tuition expenses for each academic year (early September to mid-May), plus travel money, is considered essential. Since a for-

eign student holding a student visa (F) or exchange visa (J) is required by the United States Immigration and Naturalization Service to carry a full program of study, students should not plan to depend on income from outside employment.

All applicants who are admitted to Columbia and whose first language is not English, or who received their secondary or university education in countries where English is not the native language will, unless specifically exempted by the Office of Foreign Student Admissions, be required to take Columbia University's English Language Placement Test—even if they have taken the Test of English as a Foreign Language (TOEFL—see below). Students who do not meet the standards of the University may be required to take English language courses before beginning or in conjunction with their program of study. No point credit is given for these courses, and students should bear in mind the possibility that their period of study in the United States may be lengthened by their need to gain the required proficiency in English. Provision should therefore be made for the additional living and tuition expenses that may have to be met.

STUDENTS APPLYING FROM WITHIN THE UNITED STATES

Students applying from within the United States, whether non-immigrants or immigrants (permanent residents), should follow the standard application procedures.

If applying from outside the New York City area, students whose native language is not English or who did not receive their education in an English-speaking country should make arrangements to take the Test of English as a Foreign Language (TOEFL). Inquiries about this test, which is administered four times annually throughout the world, should be addressed to TOEFL, Educational Testing Service, Box 899, Princeton, New Jersey 08540. Applicants are urged to make arrangements to take either the November or the February examination.

If applying from within or near the New York City area, students should make an appointment with an adviser in the Office of Foreign Student Admissions, 102 East Hall, Columbia University, New York, N.Y. 10027 (telephone (212) 280-3587). They will then have to take the English Language Placement Test (in lieu of the TOEFL), unless exempted by this office.

STUDENTS APPLYING FROM OVERSEAS

Foreign students who expect to have non-immigrant status (F or J visa) and who are applying to Columbia from overseas should do the following: (1) Students should write for a preliminary application to the Office of Foreign Student Admissions, 102 East Hall, Columbia University, New York, N.Y. 10027, U.S.A. This office will evaluate the preliminary application and notify the student whether he or she should proceed with a formal application for admission. No documentation or application fee is required in submitting a preliminary application. (2) Students whose native language is not English or who did not receive their education in an English-speaking country should make arrangements to take the Test of English as a Foreign Language (TOEFL). Inquiries about this test, which is administered four times annually throughout the world, should be addressed to TOEFL, Educational Testing Service, Box 899, Princeton, New Jersey 08540, U.S.A. Applicants are urged to make arrangements to take either the November or the February examination.

FINANCIAL AID

Students desiring financial aid who reside in countries that have a United States Educational (Fulbright) Commission should apply through the Commission. Information about the Commission, and about Fulbright grants (both travel and full-support grants) may be obtained from the nearest United States Embassy, Consulate, or Information Service. Students in Great Britain who wish to request financial aid should apply through the English-Speaking Union, 37 Charles Street, London, W1X8AB, England. All other applicants should write to the Office of Foreign Student Service, 102 East Hall, Columbia University, for a preliminary application. If the preliminary application is found to be satisfactory, a final application for admission to the School will be sent by the Foreign Student Admissions Counselor. Students interested in applying should begin the application procedure one year before they wish to enter.

FOREIGN STUDENT SERVICES

The staff of the Office of the Foreign Student Adviser, 106 East Hall, provides advice and counseling to foreign students on such matters as housing, personal and financial problems, and regulations of the United States Immigration and Naturalization Service (visas, extensions of stay, work permission, temporary departure from the United States, transfer from Columbia to another school, termination of study). Information about the various foreign student clubs at Columbia and about opportunities to attend conferences, travel in the United States, and participate in community and cultural activities may be obtained from this office. Maps of New York City and discount tickets to concerts and plays are available.

The staff of the Office of Foreign Student Admissions, 102 East Hall, provides information and counseling on University admission, advanced standing, English proficiency examinations, and academic placement.

DEGREE REQUIREMENTS

The requirements for the various degrees are outlined in the programs of the three divisions. In addition, the student must meet the requirements given below.

Curriculum

Students are responsible for the completion of the curriculum in the stated order. Petitions for exceptions may be made, in writing, to the Dean.

Although the curricula, with the exception of the doctoral program, are for specified periods of one, two, or three years, these are minimum periods and not guaranteed times for completing the degree requirements, particularly in the design sequence.

Design Review

A comprehensive review by the faculty and staff of the design work of every M.Arch. candidate is made at an appointed time. The student must earn a satisfactory recommendation from the design review committee before being allowed to register for the next design course. The committee may recommend that the student be dropped or that the student be required to complete additional design work and submit to another review before being permitted to proceed to the next term of the design program.

Academic Standing

Quality performance is required of the students admitted to the School. Students receiving a grade of F in any design course, or in non-design courses more than one F (or its equivalent), are not allowed to continue. Although consideration is given to particular cases where a student's work has suffered because of illness, the student may be required to take additional work to demonstrate that he or she has overcome the problems which have resulted in a poor record.

Advanced Standing

No advanced standing may be granted until a student has successfully completed one year in the Master of Architecture degree program or one year in the program leading to the award of the M.S. degree in urban planning.

Courses applied toward one degree may not be applied toward another degree.

Leave of Absence

A leave of absence may be granted upon the student's written request after satisfactory completion of one year in the Graduate School of Architecture and Planning. A leave of absence assures readmission to the School provided the student complies with the terms of the leave. Leaves of absence are granted only to students in good standing.

Doctor of Philosophy Degree

The doctoral study program prepares candidates for academic careers in teaching and research; it is not intended to be an advanced professional training program. The academic orientation of the program is evident from the fact that it is sponsored by the Graduate School of Arts and Sciences rather than by the Graduate School of Architecture and Planning.

The course requirements and choice of fields of specialization have been defined broadly to allow candidates some freedom to follow their inclinations. For the specific requirements, the chairman of the division of Urban Planning should be consulted. Prospective students are also advised to consult the Graduate School of Arts and Sciences bulletin for further information on the general requirements for the Ph.D. degree.

In brief, the requirements for the Ph.D. degree are as follows:

Courses; every candidate is required to complete 60 points of course work, of which at least 30 points must be earned in residence at Columbia.

Languages: there is no general language requirement imposed on all Ph.D. students. An automatic review is conducted to determine whether a language requirement is appropriate for a given candidate prior to his or her Ph.D. examination or dissertation preparation.

Certifying examinations: after completing the course work and language requirements, a student must pass three examinations to be certified as a Ph.D. candidate.

Dissertation: a publishable research report presented in the form of a dissertation and its defense is the final requirement for the Ph.D. degree.

The student is expected to complete all requirements within a period of seven years after initial enrollment. Those granted advanced standing must complete their studies in a correspondingly shorter period.

Application forms and a bulletin of the Graduate School of Arts and Sciences can be obtained from the Graduate School of Arts and Sciences Office of Student Affairs, 106 Low Memorial Library, Columbia University, New York, N.Y. 10027.

REGISTRATION AND EXPENSES

Registration

The registration procedure for all students is as follows (see the Academic Calendar for dates):

1. The student reports to the Student Affairs Office, 400 Avery, where he or she obtains registration cards and instructions.
2. The student's program must be approved by his or her academic adviser. The student then proceeds to the Student Affairs Office in order to have the course cards signed.
3. The signed cards are then presented to the Bills and Charges department, after which the student pays the required fees. The location of the appropriate offices is given in the registration instructions.

Students in the master's program in health services planning and design report to Room 510 at the School of Public Health after they have completed the above registration procedure. They will be asked to fill out a Course Permission Form A-2 and a Course Application Blank A-3 for each course that they will take at the School of Public Health. Signatures are required on both forms: from the professor of the course and from the design critic in charge of the program. Students who do not complete these forms will not be considered registered by the School of Public Health.

On registration days the Registrar's Office, 208 Philosophy, is open from 10 a.m. to 6:30 p.m.

The Student Affairs Office is open during registration periods from 9 a.m. to 6:30 p.m.

All students will be asked to give Social Security numbers when registering in the University. Those who do not now have a number should obtain one from their local Social Security office well in advance of registration.

Registration for the second year will not be permitted until all entrance deficiencies have been removed unless special arrangements have been made with the Student Affairs Office before the end of the first year.

A student who is not a citizen of the United States and who is registering at the University for the first time must secure a clearance from the Office of the Foreign Student Adviser in East Hall before registering for courses. The Office will help the student to obtain a Social Security number.

Orientation Program for New Foreign Students

The Office of Foreign Student Services orientation program for new foreign students for the academic year 1976–1977 takes place on Tuesday, August 31. For further information, consult the Office of the Foreign Student Adviser, 106 East Hall (extension 3591). Foreign students who should attend the orientation program for the academic year 1977–1978 will be advised of the dates of the program by the Office of Foreign Student Services.

Students who are required to take the English Language Placement Test may do so as early as Tuesday, August 31, 1976 for the 1976–1977 academic year and Tuesday, August 30, 1977 for the 1977–1978 academic year. Test schedules will be available in 211 Lewisohn Hall or at the Office of Foreign Student Services, East Hall.

Auditing Courses

Degree candidates who are registered for 15 points or more in the current term may audit one or two courses in any division of the University without charge. Application is made at the Registrar's Office, 208 Philosophy, during the change-of-program period in each term. Applications may not be filed before or after the change-of-program period.

Applications require *(a)* the certification of the Registrar that the student is eligible to audit, and *(b)* the approval of the dean of the school in which the courses are offered. For approval to audit graduate courses, consult the Graduate School of Arts and Sciences Division in the Registrar's Office. For obvious reasons, elementary language courses, laboratory courses, studio courses, applied music courses, and seminars will not be open to auditors. Other courses may be closed because of space limitations. In no case will an audited course appear on the student's record, nor is it possible to turn an audited course into a credit course by paying the fee after the fact. Courses previously taken for credit may not be audited.

Changes in Programs of Study

Students who wish to drop courses or to make other changes in their programs of study must obtain written approval from the Student Affairs Office on a special form. The deadline for making program changes in each term is shown in the Academic Calendar. In no case will permission to drop courses be granted after the last day of classes in each term. *Failure to attend classes or unofficial notification to the instructor does not constitute dropping a course and will result in a failing grade in the course.*

Tuition for courses dropped during the change-of-program period will be refunded in full, but the comprehensive fee will not be reduced. For courses dropped after the last day for change of program, no adjustment will be made.

Grades

All students registered in the School of Architecture will be graded on the pass-fail system described below:

P = Pass (This grade indicates an acceptable level of work.)
F = Fail (The grade of F is a final grade and is not subject to reexamination.)

A written evaluation of each student's performance will be provided by the instructor. These evaluations will indicate how well the student succeeded in accomplishing the course objectives.

The mark of R (registration credit; no qualitative grade earned): accepted for degree credit only in the doctoral programs. The mark of R is given only to those students who indicate, upon registration, that they intend to take the course for R credit, or who file notice of change of intention with the office of the Registrar not later than the last day for change of program. Students wishing to change to R credit after this date are required to submit the Dean's written approval to the Registrar. (The mark of R is entered on the student's record by the Registrar, and thus is not a grade given by the instructor.) It should be noted further that a course which has been taken for R credit may not be repeated later for examination credit.

The mark of ABS (absent from the final examination): granted by the instructor not later than the day of the examination, to a student whose attendance and progress have been satisfactory and who cannot be present because of sickness or some other extreme emergency. The student must make arrangements with his or her department to take a special examination. If the ABS is not removed within one year, it will automatically be changed to an F. An application fee of $10 is charged for each special examination.

The mark of INC (incomplete): given to a student who has satisfactorily met all the requirements of a course except for the completion of certain assigned papers or reports which the student has been compelled to postpone for reasons beyond his or her control and satisfactory to the instructor. If the INC is not removed by the completion of the required work within one year, it will be automatically changed to an F. *The mark of INC cannot be assigned without approval from the Dean's Office.*

The mark of YC (year course): given at the end of the first term of a course in which the full year's work must be completed before a qualitative grade is assigned. The grade given at the end of the second term is the grade for the entire course.

The mark of CP (credit pending): given only in graduate research courses in which student research projects regularly extend beyond the end of the term. Upon completion, a final qualitative grade is assigned and credit allowed. The mark of CP implies satisfactory progress.

Regulations

According to University regulations, each person whose registration has been completed will be considered a student of the University during the term for which he or she is registered unless the student's connection with the University is officially severed by withdrawal or otherwise. No student registered in any school or college of the University shall at the same time be registered in any other school or college, either of Columbia University or of any other institution, without the specific authorization of the dean or director of the school or college of the University in which the student is first registered.

The privileges of the University are not available to any student until he or she has completed registration. Since, under the University statutes, payments of fees is part of registration, no student's registration is complete until the fees

have been paid. A student who is not officially registered for a University course may not attend the course unless granted auditing privileges (see "Auditing Courses" above). No student may register after the stated period unless he or she obtains the written consent of the appropriate dean or director.

ATTENDANCE AND LENGTH OF RESIDENCE

The minimum residence requirement for each Columbia degree is 30 points of course work completed at Columbia University. Therefore, a student who wishes to receive both a master's degree and a doctorate from Columbia should be aware that any advance standing awarded for graduate work completed elsewhere will not reduce the 60 points of residence credit required for obtaining both degrees.

Students are held accountable for absences incurred owing to late enrollment.

RELIGIOUS HOLIDAYS

It is the policy of the University to respect its members' observance of their major religious holidays. Officers of administration and of instruction responsible for the scheduling of required academic activities or essential services are expected to avoid conflict with such holidays as much as possible. Such activities include examinations, registration, and various deadlines that are a part of the academic calendar.

Where scheduling conflicts prove unavoidable, no student will be penalized for absence due to religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and the instructor involved, students and instructors should consult the appropriate dean or director. If an additional appeal is needed, it may be taken to the Provost.

Some of the major holidays occurring on weekdays during the academic year are:

1976–1977

Monday, October 4	Yom Kippur
Monday, April 4	Pesach
Friday, April 8	Good Friday

1977–1978

Tuesday, Wednesday, September 13, 14	Rosh Hashanah
Thursday, September 22	Yom Kippur
Tuesday, Wednesday, September 27, 28	First days of Succoth
Tuesday, Wednesday, October 4, 5	Concluding days of Succoth
Friday, March 24	Good Friday
Friday, April 28	Pesach

LEAVES OF ABSENCE

All degree candidates who enrolled for the first time in September 1962 or thereafter are required to attend the School continuously until they have completed all the course requirements for their degree. If a student wishes to interrupt his or her studies for any reason the student must apply in writing to the Dean, stating the reason and period of the leave. A leave already granted may be extended at the discretion of the Dean.

READMISSION AFTER AN UNAUTHORIZED ABSENCE

Students who absent themselves without obtaining a leave of absence must apply for readmission to the School. This formal application must be made to the Admission Office *at least one month* before the student expects to resume his or her studies.

ACADEMIC DISCIPLINE

The continuance of each student upon the rolls of the University, the receipt of academic credits, graduation, and the conferring of any degree or the granting of any certificate are strictly subject to the disciplinary powers of the University.

CONDUCT

All members of the University community, its visitors and guests, are governed by the Rules of University Conduct, which apply to all demonstrations, including rallies and picketing, that take place on or at a University facility. It is the student's responsibility to be aware of all provisions, regulations, and procedures contained in the Rules. Copies are available in the Office of the University Senate, 406 Low Memorial Library.

Estimated Expenses

The approximate cost of attending the University for the eight months of the academic year 1976–1977 is as follows:

Tuition and fees for a 30-point program	$4,215.00
Living expenses (room, board, books, clothing, laundry, travel, sundries)	3,000.00
	$7,215.00

MATERIALS

Books and supplies for first-year students will cost around $200; for others, around $100. The School furnishes lockers and drafting tables, but students must supply their own paper, instruments, and materials.

The School reserves the right to retain a copy of any work submitted for credit—drawings, designs, plates, essays, or models, as well as any fellowship competition drawings—whether submitted by graduates or by students in residence.

PERSONAL EXPENSES

The University advises each student to open an account in one of the local banks upon arriving in New York City. Since it often takes as long as three weeks for the first deposit to clear, the student should cover immediate expenses by bringing travelers checks or a draft drawn on a local bank.

Tuition and room rent may of course be paid by check, and any excess will be refunded to the student after the check has cleared.

INCOME TAX DEDUCTIONS

According to Treasury decision 6291, under Section 162 of the 1954 Internal Revenue Code, income tax deductions are allowed in many instances for tuition and other educational expenses. Students are referred to the federal ruling on income tax deductions for teachers and other professional people seeking to maintain or improve skills required in their employment.

Fees

The following fees, prescribed by statute *for each autumn or spring term,* are subject to change at any time at the discretion of the Trustees. Below are the fees that are in effect for the 1976–1977 academic year.

Tuition, the health service fee, health insurance premium, and special fees are payable each term in advance and as part of registration.* If these fees are paid after the last day of registration (see the Academic Calendar), they will not be reduced, and a late fee of $10 will be imposed. Checks for tuition and fees should be made payable to Columbia University.

COMPREHENSIVE FEE

For degree candidates engaged only in research	$165.00

TUITION

For all courses, per point, except where a special fee is fixed	$ 137.00
With the provision that for degree candidates the tuition for a program of 15 to 19 points shall be, per term	2,055.00

HEALTH INSURANCE FEE AND HEALTH INSURANCE PREMIUM

Payment of the health service fee, which is merely contributory to the total cost of health service, and of the health insurance premium is compulsory for some students and optional for others. Students for whom payment is compulsory

* However, the newly admitted degree candidate in the Graduate School of Architecture and Planning is required by the School, upon acceptance, to submit a deposit in order to reserve a place in the entering class. This amount is credited toward tuition when the student registers. See "Deposit" under *Admission*—Admission Procedure.

may waive participation in one or both of the health plans by showing proof of comparable coverage. For benefits attainable under these plans, for regulations governing waiver of participation, and for other information, see "Medical Care and Insurance" below.

Health service fee, per term	$26.00
Student accident and health insurance premium	
For the autumn term (September 1–February 1)	
Student only	$27.00
Additional cost for one dependent (optional)*	35.00
Additional cost for two or more dependents (optional)*	60.00
For the spring term and summer period (February 1–September 1)	
Student only	38.00
Additional cost for one dependent (optional)*	50.00
Additional cost for two or more dependents (optional)*	85.00

APPLICATION FEES AND LATE FEES

Application for admission as a degree candidate	$20.00
Application for admission as a special student	5.00
Renewal of application for a degree (see below)	1.00
Late registration	10.00
Late application, or late renewal of application, for a degree	10.00

WITHDRAWAL AND ADJUSTMENT OF FEES

A student in good academic standing who is not subject to discipline will always be given an honorable discharge if the student wishes to withdraw from the University. If the student is under twenty-one years of age, parent or guardian must first give consent in writing to the proper dean or director.

Any student withdrawing must notify the Registrar in writing at once; any adjustment of the tuition that the student has paid is reckoned from the date on which the Registrar receives this written notification. (For partial withdrawal, see "Changes in Programs of Study" above.)

The health service fee, health insurance premium, application fees, late fees, and special fees are not refundable.

In addition, at a minimum, the following amount of tuition will be retained:

Students registered for 12 or more points	$50.00
Students registered for less than 12 points	25.00

After the last day to change programs in each term (see *Academic Calendar*), the above amount is retained *plus* an additional percentage of the remaining tuition (as indicated in the adjustment schedule below) for each week, or part of a week, that the student remains registered after these dates. The student is considered registered until the date on which the student's written notice of withdrawal is received by the Registrar.

* Unmarried children must be under the age of nineteen. Dependent coverage is available upon application to William M. Mercer, Inc., 1221 Avenue of the Americas, New York, N.Y. 10020. The premium for this coverage is paid directly to the company by the student.

ADJUSTMENT SCHEDULE

	Minimum Tuition Retained	*Percentage of Remaining Tuition Retained*
Up to and including dates specified above	$25 or $50	0
Following week	25 or 50	10
Second following week	25 or 50	20
Third following week	25 or 50	30
Fourth following week	25 or 50	45
Fifth following week	25 or 50	60
Sixth following week	25 or 50	75
Seventh following week	25 or 50	90
Eighth following week	25 or 50	100 (no adjustment)

APPLICATION OR RENEWAL OF APPLICATION FOR A DEGREE

Degrees are awarded three times a year—in October, January, and May. A candidate for any Columbia degree (except the doctoral degree) or for a certificate must file an application with the Registrar, in 208 Philosophy in accordance with the dates shown in the Academic Calendar. A late fee of $10 will be charged after these dates and until the expiration of the *late* filing period for each conferral date. Applications received *after* the late filing period will automatically be applied to the next conferral date.

If the student fails to earn the degree by the conferral date for which he or she has made application, the student may renew the application by paying a renewal fee of $1. A $10 late fee will be charged for late filing of renewals of application according to the same schedule as for original applications (see above).

REQUESTS FOR TRANSCRIPTS

Transcripts can be requested by writing to the Office of the Registrar, 201 Philosophy Hall, Columbia University, New York, N.Y. 10027. *Official* transcripts must be sent by the University directly to an official address such as another university, a college, a business firm, or a government agency. However, a student may request that an unofficial transcript (stamped "Student Copy") be sent to him or her. There is a charge of $2 for each transcript requested except those which are sent between offices of Columbia University. Checks accompanying transcript requests should be made payable to Columbia University.

Medical Care and Insurance

The University has authorized a two-part program of medical service to protect and promote the health of its students. First is the University Health Service itself, which provides the following services to students who pay the health service fee: (1) ten days bed care in the infirmary each term and four days of ward care in St. Luke's Hospital; (2) laboratory studies and x-rays ordered by the Health Service; (3) medical, surgical, and psychiatric consultation in the Health Service; and (4) one consultation with a specialist when recommended by a Health Service physician. A student is not eligible for this care during the summer unless

the student has paid the Summer Session health service fee. See the bulletin of the Summer Session for further details.

Second is the Student Accident and Health Insurance (SAHI), which supplements the Health Service by providing coverage against in- or out-of-hospital accident and in-hospital illness anywhere in the world throughout the entire calendar year. The benefits under the policy are described in a brochure which may be obtained from the Columbia University Health Service, 1091 Amsterdam Avenue, New York, N.Y. 10025, or from the Registrar's Office, Bills and Charges Division, 208 Philosophy Hall, Columbia University, New York, N.Y. 10027. Basically, SAHI provides benefits of up to $1,000 for any one accident, after which it pays 80 percent of further expenses up to an additional reimbursement of $10,000. Within the limits of the schedule of benefits given in the brochure, coverage for an illness includes hospital room and board; surgeons', nurses' and physicians' fees; hospital services and supplies; and ambulance service. In addition to the basic illness benefits, Major Medical pays 80 percent of further expenses up to an additional reimbursement of $10,000 ($3,000 for mental or nervous disorders). The policy can, if the student elects to pay a higher premium, be extended to cover the student's dependents (see the schedule of fees).

The health service fee and the cost of the SAHI premium are automatically charged *(a)* all students registered for 12 or more points and *(b)* all students certified as full-time by their departments regardless of points. Students living in the University residence halls who are not included in categories *(a)* or *(b)* will be charged the health service fee only. A part-time student who is registered for less than 12 points may, if the student wishes, participate in the combined health service–SAHI program by filing application in the Registrar's Office not later than the last day to change programs in each term, and by paying the fee and the premium. A student who is not in the health service–SAHI program is entitled only to emergency first-aid care in the University Health Service.

A student who already has an accident and health insurance policy will be exempted from paying the SAHI premium if the student can show proof of comparable coverage (for example, a Blue Cross–Blue Shield Identification Card). The deadline for submitting proof of comparable coverage to the Registrar's Office is one week following the last day to change programs in each term.

Participation in the health service plan may be waived by students who present documentary evidence that they are covered by H.I.P., G.H.I., or Medicaid, or that they are members of the armed forces or the dependents thereof. It may also be waived for graduate students who are registering only to defend their doctoral dissertations and for students who present certification from their deans or departmental chairmen that they are registering for research or study *in absentia.* Such evidence must be presented in the Registrar's Office not later than the last day to change programs in each term.

The costs of the medical care and insurance program are listed under "Fees" above.

Housing

ON CAMPUS

The University provides limited housing for undergraduate and graduate men and women who are regularly registered either for an approved program of full-

time academic work or for work being done on a doctoral dissertation. The University residence halls are shown on the campus map (inside back cover). The rates below are for the academic year 1976–1977.

Rates in the residence halls (Harmony, Hudson, John Jay, Johnson, McBain, Ruggles, and 70 Morningside Drive) for single and double rooms range from $670 to $970 per person, with $852 the average rate. Meals are available in the John Jay or Johnson Hall dining rooms on weekdays when classes are in session. These may be paid for in cash or through subscription to a board plan. Inquiries from men students should be directed as early as possible to the Residence Halls Office, 125 Livingston Hall, Columbia University, New York, N.Y. 10027. Inquiries from women students should be directed as early as possible to Johnson Hall, 411 West 116th Street, New York, N.Y. 10027.

Woodbridge Hall, at 431 Riverside Drive, is a University residence hall for married full-time graduate students. Each apartment contains a living room, a bedroom, a complete kitchen, and a bathroom; basic furniture is provided. Rates range from $1,990 to $2,390 a year, including utilities, and assignment is for the full academic year. Inquiries should be directed to the Residence Halls Office, 125 Livingston Hall.

Burgess, at 542 West 112th Street, is a newly renovated, air-conditioned building for married full-time graduate students. Accommodations range from efficiency apartments (one room plus kitchenette and bath) to two-bedroom apartments; basic furniture is provided. Rates range from $158 to $252 a month, including utilities. Requests for further information and for application forms should be directed to the Office of University Housing, 400 West 119th Street, New York, N.Y. 10027. Students are urged to apply as soon as they apply to the School.

OFF CAMPUS

Students who wish to live in furnished rooms or apartments off campus may consult the Registry of Off-Campus Accommodations, McBain Hall, 562 West 113th Street, New York, N.Y. 10025, for information.

International House, a privately owned student residence near the campus, has accommodations for about five hundred graduate students, both foreign and American. Rates, which include a continental breakfast, linen and maid service, and membership and program fees, ranged from $108 to $140 a month during the 1975–1976 academic year; rates are expected to increase by approximately 10 percent each academic year. A cafeteria, recreational facilities, and a varied program are available to members. To be eligible for admission a student must be at least twenty-one years old and must be registered for at least 12 points or for a program of full-time research. Inquiries should be addressed to the Committee on Admissions, International House, 500 Riverside Drive, New York, N.Y. 10027.

FINANCIAL AID

Financial aid programs are administered without regard to race, creed, color, national origin, or sex.

Fellowships and Scholarships

The Graduate School of Architecture and Planning awards fellowships and scholarships to its students in annual competition. A fellowship is an academic honor accompanied by an award which defrays tuition and fees. A scholarship is an award, on grounds of scholarly competence and need, which defrays all or part of the cost of tuition and fees. The term of each award, except for traveling fellowships, is one academic year.

No services to the School or to the donor of the fellowship or scholarship are required, nor shall there be any restriction on publication of studies or research as a condition of the grant.

Fellows and scholars, unless they are traveling fellows, are expected to reside in New York City or its vicinity during the term of the award in order to devote full time to academic studies.

Application Procedure

Applicants for admission who are also applicants for fellowships or scholarships must submit the application by February 15. The Graduate School of Architecture and Planning is a participant in the Graduate and Professional School Financial Aid Service (GAPSFAS). Candidates applying for scholarships must also send an application to the service. Full information can be obtained from the Financial Aid Officer or by writing to Graduate and Professional School Financial Aid Service, Box 2614, Princeton, N.J. 08540.

Scholarship applicants should note that both the School scholarship application form and GAPSFAS information must be submitted before a scholarship decision can be made.

Applicants for financial aid who are currently enrolled in the School should apply for financial aid before March 1. Fulltime enrollment (12 points per term) is required of all students receiving financial aid.

ENDOWED FELLOWSHIPS AND SCHOLARSHIPS

ARCHITECTURE ALUMNI FUND FOR STUDENT AID

One partial tuition scholarship awarded annually. Gift of the Architecture Alumni Association.

LEOPOLD ARNAUD SCHOLARSHIP

One partial-tuition scholarship awarded annually. Gift of various donors.

QUINCY WARD BOESE FELLOWSHIPS
One fellowship awarded annually. Bequest of Quincy Ward Boese.

BORING FELLOWSHIP
One fellowship awarded annually. Gift of Edward C. Moore, Jr.

GEORGE W. ELLIS FELLOWSHIPS
Two fellowships awarded annually to graduate students who are residents of the state of Vermont or who are graduates of a Vermont college or university. These awards are open to students in other divisions of the University as well as to architecture students. The bequest of George W. Ellis.

WILLIAM KINNE FELLOWS TRAVELING FELLOWSHIPS
Several fellowships awarded annually. Open to members of the graduating class for study and travel for a period of at least three months during the summer before their final year or after graduation. For further information see "William Kinne Fellows Traveling Fellowships" under *The Graduate School of Architecture and Planning*–Facilities and Resources for Study.

EDWARD HALE KENDALL SCHOLARSHIP
One scholarship awarded annually. Bequest of Edward Hale Kendall.

VINCENT G. KLING SCHOLARSHIP
One scholarship awarded annually to a third- or fourth-year student who shows promise in design. Gift of the employees of Vincent G. Kling and Associates.

CHARLES MCKIM FELLOWSHIP
One fellowship awarded every sixth year. Open to graduates of the School. Gift of Charles F. McKim.

WILLARD B. PERKINS FELLOWSHIP
One fellowship awarded annually. Bequest of Willard B. Perkins.

JAMES RENWICK, JR., SCHOLARSHIP
One scholarship awarded annually. Bequest of Anna Cooper Renwick.

LYDIA C. ROBERTS FELLOWSHIPS
Several fellowships awarded annually. Open to students born in Iowa who have been graduated from an Iowa college or university. Each holder, when accepting the award, must state that it is his or her purpose to return to Iowa for at least two years after completing studies at Columbia. Holders are eligible to apply for reappointment. These awards are open to students in other divisions of the University as well as to architecture students. A gift of Lydia C. Chamberlain.

F. AUGUSTUS SCHERMERHORN SCHOLARSHIP
One scholarship awarded annually. Established by the Trustees in honor of F. Augustus Schermerhorn.

LILA W. VAN DER SMISSEN SCHOLARSHIP
One scholarship awarded annually.

GEORGE BRECHER WEITZMAN FELLOWSHIP
One scholarship for the study of architectural history awarded annually to a graduate student who has received a bachelor's degree in architecture. Gift of Morris Brecher.

NATIONAL, REGIONAL, AND FOUNDATION FELLOWSHIPS

AMERICAN INSTITUTE OF ARCHITECTS—AMERICAN INSTITUTE OF ARCHITECTS FOUNDATION SCHOLARSHIPS PROGRAM

Applications and information may be obtained from the American Institute of Architects, Scholarship Program, 1735 New York Avenue, N.W., Washington, D.C. 20006. The deadline for filing applications is usually December 31.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Since 1967 the United States Department of Housing and Urban Development has awarded fellowships (under its City Planning and Urban Studies Fellowship Program) to several School of Architecture applicants. Applications and further information may be obtained from the Office of Housing and Urban Development, Urban Studies Fellowship Program, Washington, D.C. 20410. The deadline for filing applications is March 1.

NEW YORK STATE REGENTS COLLEGE TEACHING FELLOWSHIPS

Annual predoctoral fellowships are open to legal residents of New York State for doctoral study in preparation for college teaching. Recipients must indicate their intent to teach in an institution of higher learning within the State upon graduation. Applications may be obtained from the State Education Department, Regents Examination and Scholarship Center, Albany, New York 12201, and are due December 1.

PUBLIC HEALTH SERVICE FELLOWSHIPS

Predoctoral fellowships are available to students in the basic sciences or the social sciences for work relating to problems of health and disease. Applications are obtained by writing to the Chief, Career Development Review Branch, Division of Research Grants, National Institute of Health, Bethesda, Maryland 20014, and are due by December 1.

JOHN HAY WHITNEY FOUNDATION OPPORTUNITY FELLOWSHIPS

The John Hay Whitney Foundation offers Opportunity Fellowships for seniors in college or college graduates planning or already engaged in graduate or professional studies who are United States citizens with racial or cultural backgrounds or regions of original residence as follows: Negroes, Spanish-Americans, American Indians, and residents of the Southern Appalachian and Ozark Mountain areas, Guam, Puerto Rico, Samoa, the Pacific Trust Territory, and the Virgin Islands. Applications can be obtained from the John Hay Whitney Foundation, 111 West 50th Street, New York, New York 10020. The deadline for filing applications is November 30.

INTERNATIONAL FELLOWS PROGRAM

The International Fellows Program was created for outstanding American graduate students who wish to use their professional training on an international level. The program is open to men and women under 30 who are American citizens and who have been admitted to graduate degree programs in Columbia University. Admission is based on the applicant's character, motivation, collegiate record, and professional promise; on the recommendations of the applicant's instructors; and particularly on the applicant's demonstrated ability and estimated potential for leadership in a chosen field and in the field of international affairs.

Each International Fellow follows the program of study prescribed by the graduate school or department of the University in which the fellow is enrolled. In addition fellows are required to take a full-year course, *IFP W6045-W6046—The role of the United States in world affairs,* open only to International Fellows. In both terms, each Fellow is required to give an oral summary of a proposed position paper on an international topic, to prepare the paper, and to take a final examination. Fellows of the School of Architecture receive elective credit for this course.

In addition to formal classes, the International Fellows have an extensive program of extracurricular activities. A special six-day session is held each September at the United Nations, and the Fellows make two three-day trips to Washington to meet with Congressional leaders and executives of the Pentagon, the State Department, the White House, USIA, AID, and other agencies.

Candidates in need of financial assistance may be granted stipends to defray part of their expenses. For information about the program and for application forms, write directly to the International Fellows Program, Box 18, Law School Building, 435 West 116th Street, Columbia University, New York, N.Y. 10027. Applications must be submitted by February 1.

UNIVERSITY FELLOWSHIPS AND SCHOLARSHIPS

Several fellowships and scholarships for graduate study are awarded annually from funds provided by the University. In order to be considered, applicants merely submit the financial aid request of the Graduate School of Architecture and Planning application to the Admissions Office by February 15. Current students submit a grant-in-aid application which can be obtained from the Admissions Office after spring registration and should be returned before February 15.

New York State Scholar Incentive Awards

Any student who has been a legal resident of New York State for the preceding year is entitled to a Scholar Incentive Award for each term in which the student is registered as a full-time degree candidate. The amount of this award is based upon the net taxable balance of the student's income and the income of those responsible for the student's support, as reported on the New York State income tax return for the previous calendar year.

Application forms and further information can be obtained from the Department of Education, Regents Examination and Scholarship Center, Albany, N.Y. 12201. Application for awards should be filed three months in advance of the beginning of the term for which the grant is to apply.

Medals and Prizes

ALPHA RHO CHI MEDAL

Awarded annually to the student who has shown ability in leadership and who gives promise of professional merit through his or her attitude and personality.

ALUMNI MEDAL

Awarded annually to the student in the graduating class who has shown throughout the course the greatest promise in design.

AMERICAN INSTITUTE OF ARCHITECTS MEDAL
A medal and a copy of Henry Adams' *Mont Saint-Michel and Chartres* awarded annually to the student who has maintained the best general standard in all departments during the entire professional course. A copy of the book is also given to the alternate for the prize.

AMERICAN INSTITUTE OF PLANNERS CERTIFICATE
Given to an outstanding graduating student in planning.

MORTIMER HIRSCH MEMORIAL PRIZE
A prize of $75 awarded to the student who submits the best research paper in the history or theory of architecture.

LUCILLE SMYSER LOWENFISH MEMORIAL PRIZES
Two cash prizes awarded annually for the purchase of professional books to the students in the graduating class who submit the best theses.

NEW YORK SOCIETY OF ARCHITECTS MEDAL
Awarded annually to the student who has maintained the highest standard during the entire professional course.

ROBERT C. WEINBERG PRIZE FOR ACADEMIC EXCELLENCE
Awarded by the New York Metropolitan Chapter of the American Institute of Planners.

Assistantships

Teaching assistantships are available in architecture and in urban planning. Assistants divide their time equally between their studies and various tasks, helping faculty members in instruction and in administration. Doctoral candidates may also be appointed.

Research assistantships are available to candidates for the M.S. or Ph.D. degrees in urban planning.

Loans

A student who must borrow money in order to meet expenses for study at Columbia University is urged to apply for a loan through the program administered by the state in which the student is a legal resident.

Most state programs now include residents who are attending out-of-state schools. They will allow the student to borrow up to $2,500 for the academic year with an interest rate of 7 percent and to arrange a ten-year repayment schedule that begins nine months after graduation.

The usual procedure for the transaction of state loans is for the student to obtain the appropriate state forms from a local bank where the student resides and to bring the completed forms to the school that the student will attend. After the application has received institutional certification, it is returned to the student for presentation to the loan officer at the student's local bank; then it is sent to the state corporation for approval, and finally the student receives the loan from the local bank.

As can be seen, this lengthy procedure, which takes about six weeks, demands that the student begin to inquire about his or her state student loan program immediately. Applications will be processed by this office as soon as they are received. The student must be sure that the application is legible, complete, and signed.

A student may receive National Direct Education Act loans or Columbia University loans only if the student can demonstrate ineligibility for a state loan, or if the student needs financial aid in excess of the maximum state loan. The interest rate for these loans is 3 percent and the repayment period is the same as for state loans. Student loan programs are designed to supplement the student's budget; they are not to be used as the sole means of support. Applications are available in the Office of Architecture Admissions after June 1.

Student Employment

The schedules of architecture students are so heavy that very little time is left for part-time work. However, those students who must work part time should consult the Financial Aid Officer, who will recommend jobs under the Work-Study Program.

Wives or husbands of students may consult the Office of Student Employment, 206 East Hall, for information. Those who are interested in full-time jobs on the campus should contact the University Personnel Office, 209 Dodge. Most of these jobs are clerical or secretarial in nature, usually requiring some typing and in some instances stenography as well. Regular full-time University employees are eligible for a limited number of points of tuition exemption providing they meet the stated requirements of the Supporting Staff Plan (a copy of which can be obtained from the University Personnel Office, 313 Dodge), as well as the admission requirements of the school or division in which they wish to enroll. Tuition-exempt courses are taken primarily in evening classes in the School of General Studies.

A list of opportunities in architectural offices for summer employment and full-time employment for graduates is maintained in the Dean's Office.

ACADEMIC CALENDAR: 1976–1977, 1977–1978

MAJOR RELIGIOUS HOLIDAYS

For a statement of University policy regarding religious holidays and applicable dates for each academic year, see *Registration and Expenses*—Regulations.

May	**31**	Monday. Last day to apply for autumn admission to the architectural technology M.S. program.
July	**31**	Saturday. Last day to apply for admission to the autumn term as a special student.
Aug	**2**	Monday.* Last day to apply or reapply for October degrees (see September 9).

AUTUMN TERM, 1976

Aug	**31**	Tuesday. Orientation program for new foreign students (see *Registration and Expenses*—Orientation Program for New Foreign Students).
Sept	**7–9**	Tuesday–Thursday.† Registration, including payment of fees.
	8	Wednesday. Classes begin.
	9	Thursday. Last day to apply for Ph.D. final examinations (defense) to be held this term. Last day to file late application or renewal of application for October degrees. Applications received after this date will automatically be applied to the next conferral date.
	10	Friday. Late registration begins.
	13	Monday. First day to change programs and apply to audit courses.
	17	Friday. Last day to (1) register for credit, (2) change programs, and (3) apply to audit courses. **No adjustment of fees for individual courses dropped after this date.**
Oct	**26**	Tuesday. Midterm date.
	27	Wednesday. Award of October degrees.
Nov	**1**	**Monday. Academic holiday.**
	2	**Tuesday. Election Day. Holiday.**
	5	Friday.* Last day to apply or reapply for January degrees (see December 10).

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* Students who apply after this date must pay a late fee.
† Students allowed to register after the period specified must pay a late fee.

Nov	**25–28**	**Thursday–Sunday. Thanksgiving holidays.**
	30	Tuesday. Last day to apply for spring admission to the architectural technology M.S. program.
Dec	**10**	Friday. Last day to file *late* application or renewal of application for January degrees. Applications received after this date will automatically be applied to the next conferral date.
	14	Tuesday. Classes end.
	15	Wednesday. Study day.
	15	Wednesday. Last day to apply for admission to the spring term as a special student.
	16–23	Thursday–Thursday. Midyear course examinations. Term ends.
	24	**Friday, through January 18, 1977 Tuesday. Winter holidays.**

SPRING TERM, 1977

Jan	**19–21**	Wednesday–Friday.* Registration, including payment of fees.
	21	Friday. Last day to apply for Ph.D. final examinations (defense) to be held this term.
	24	Monday. Classes begin. Late registration begins.
	26	Wednesday. Award of January degrees.
	27	Thursday. First day to change programs and apply to audit courses.
Feb	**2**	Wednesday. Last day to (1) register for credit, (2) change programs, and (3) apply to audit courses. **No adjustment of fees for individual courses dropped after this date.**
	15	Tuesday. Last day to apply for 1977–1978 admission to the Graduate School of Architecture and Planning (except for the architectural technology and the health services planning and design M.S. programs—see *Admission*—Admission Procedure). Last day for current graduate students in the school to apply for a second degree program. Last day to apply for financial aid.
	20	Sunday. Annual Commemoration Service in St. Paul's Chapel.
	21	Monday.† Last day to apply or reapply for May degrees (see April 11).
Mar	**10**	Thursday. Midterm date.
	13–20	**Sunday–Sunday. Spring holidays.**
Apr	**11**	Monday. Last day to file *late* application or renewal of application for May degrees. Applications received after this date will automatically be applied to the next conferral date.

* Students allowed to register after the period specified must pay a late fee.
† Students who apply after this date must pay a late fee.

May	**4**	Wednesday. Classes end.
	5	Thursday. Study day.
	6–13	Friday–Friday. Final course examinations. Term ends.

COMMENCEMENT, 1977

May	**15**	Sunday. Baccalaureate Service.
	18	**Wednesday. Conferring of degrees and certificates.**

July	**1**	Friday. Last day to apply for autumn admission to the architectural technology M.S. program.
	31	Sunday. Last day to apply for admission to the autumn term as a special student.
Aug	**1**	Monday.* Last day to apply or reapply for October degrees (see September 8).

AUTUMN TERM, 1977

Sept	**6–8**	Tuesday–Thursday.† Registration, including payment of fees.
	8	Thursday. Classes begin.
	8	Thursday. Last day to apply for Ph.D. final examinations (defense) to be held this term. Last day to file *late* application or renewal of application for October degrees. Applications received after this date will automatically be applied to the next conferral date.
	9	Friday. Late registration begins.
	12	Monday. First day to change programs and apply to audit courses.
	16	Friday. Last day to (1) register for credit, (2) change programs, and (3) apply to audit courses. **No adjustment of fees for individual courses dropped after this date.**
Oct	**25**	Tuesday. Midterm date.
	26	Wednesday. Award of October degrees.
Nov	**4**	Friday.* Last day to apply or reapply for January degrees (see December 9).
Nov	**7**	**Monday. Academic holiday.**
	8	**Tuesday. Election Day. Holiday.**
	24–27	**Thursday–Sunday. Thanksgiving holidays.**
	30	Wednesday. Last day to apply for spring admission to the architectural technology M.S. program.
Dec	**9**	Friday. Last day to file *late* application or renewal of application for January degrees. Applications received after this date will automatically be applied to the next conferral date.

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* Students who apply after this date must pay a late fee.
† Students allowed to register after the period specified must pay a late fee.

Dec	**14**	Wednesday. Classes end.
	15	Thursday. Study day. Last day to apply for admission to the spring term as a special student.
	16–23	Friday–Friday. Midyear course examinations. Term ends.
	24	**Saturday, through January 17, 1978, Tuesday. Winter holidays.**

SPRING TERM, 1978

Jan	**18–20**	Wednesday–Friday.* Registration, including payment of fees.
	20	Friday. Last day to apply for Ph.D. final examinations (defense) to be held this term.
	23	Monday. Classes begin. Late registration begins.
	25	Wednesday. Award of January degrees.
	26	Thursday. First day to change programs and apply to audit courses.
Feb	**1**	Wednesday. Last day to (1) register for credit, (2) change programs, and (3) apply to audit courses. **No adjustment of fees for individual courses dropped after this date.**
	15	Sunday. Last day to apply for 1978–1979 admission to the Graduate School of Architecture and Planning (except for the architectural technology and the health services planning and design M.S. programs—see *Admission*—Admission Procedure). Last day for current graduate students in the school to apply for a second degree program. Last day to apply for financial aid.
	19	Sunday. Annual Commemoration Service in St. Paul's Chapel.
	20	Monday.† Last day to apply or reapply for May degrees (see April 10).
Mar	**9**	Thursday. Midterm date.
	12–19	**Sunday–Sunday. Spring holidays.**
Apr	**10**	Monday. Last day to file *late* application or renewal of application for May degrees. Applications received after this date will automatically be applied to the next conferral date.
May	**3**	Wednesday. Classes end.
	4	Thursday. Study day.
	5–12	Friday–Friday. Final course examinations. Term ends.

COMMENCEMENT, 1978

May	**14**	Sunday. Baccalaureate Service.
	17	**Wednesday. Conferring of degrees and certificates.**

* Students allowed to register after the period specified must pay a late fee.
† Students who apply after this date must pay a late fee.

The Morningside Campus & Environs