In addition to the general systematic courses, tutorials, directed reading and research, graduate seminar courses are provided in co-operation with other Departments of the Faculty.

Students who wish to read for the M.Sc. in Physiology will take, or provide satisfactory evidence of having successfully completed the following courses, or their equivalent: Physiology 500, 501 and 514, a course in Biochemistry and such other courses as the Department may require.

Students who wish to read for the Ph.D. in Physiology will take or provide satisfactory evidence of having successfully completed the following courses, or their equivalent: Physiology 500, 501, 511, 512 and 614, a course in Biochemistry, a course in Statistics, and such other courses as the Department may require.

In arrangement with the Department of Biochemistry, students may take Biochemistry and Physiology as a major subject.

In addition to course and research work, graduate students and fellows in the Department must, as part of their training, demonstrate and tutor in various courses. Specific Departmental Regulations for the direction of candidates may be obtained from the Department.

COURSES

500. Mammalian Physiology.
501. General Physiology and Pharmacology.
511. Current Topics in Physiology A.
512. Current Topics in Physiology B.
514. Tutorial and Comprehensive in Physiology (M.Sc.).
541. Seminar.
542. Physiology of Exercise.
560. Advanced General Physiology and Pharmacology.
561. Systematic Mammalian Physiology.
562. Metabolic Physiology.
563. Neurophysiology.
564. Physiological Controls and Regulations.
565. Behavioral Physiology.
580. Laboratory and Tutorial.

Psychiatry

Graduate training in Clinical Psychiatry is provided for suitable applicants wishing to qualify for Certification or Fellowship examinations of the Royal College of Physicians and Surgeons of Canada.

This training utilizes the extensive psychiatry facilities available in the area. Application is made directly to the Head of the Department. Suitable stipend is provided during the period of training by the Ontario Department of Health.

Psychology

PROGRAM OF STUDIES

The graduate program provides advanced training in general psychology with specialization in learning and motivation, sensation and perception, physiological and comparative, verbal learning and memory, cognition, measurement, experimental child, personality theory and assessment, experimental social, psycholinguistics, educational, mental retardation, and experimental psychopathology.

FACILITIES OF THE DEPARTMENT

Facilities for experimental research include animal laboratories and rooms specially designed for research with human subjects in perception, psychophysicsology, learning, personality and experimental social psychology. Standard equipment is available, and additional special equipment necessary for a student’s research may be purchased. Facilities to aid in running experiments include a PDP-8S and a PDP-12 computer, complete with analog converter, oscilloscope, etc. An engineering shop, a work shop and electronic consultants are available. Data processing equipment includes programmable electronic calculators (in addition to standard mechanical and electronic calculators) and access to complete IBM 7040 and DEC PDP-10 computer facilities. The Department has a remote terminal, card reader and printer for use with the PDP-10. In addition to a library of computer programs, a full-time programmer is available for special programs or consultation.

Potential field settings (and sources of subjects) for research include, in addition to industry and schools, three mental hospitals, psychiatric wards in two general hospitals, an Alcoholism and Drug Addiction Research Foundation, a Child Guidance Clinic, a Children’s Psychiatric Research Institute, a Crippled Children’s Treatment Center and a nursery school. Four mobile laboratories are available for off-campus research with children.

M.A. DEGREE

The purpose of the master’s program is to increase the student’s general knowledge of psychology beyond that obtained in undergraduate courses and to train him for research and scholarly work. The program also provides a foundation for advanced training in applied psychology. Candidates are required to take three graduate courses, and to submit a thesis based on an empirical investigation of a problem within some area of psychology. The thesis research is supervised by a faculty member to whom the student is apprenticed.
The minimum residence requirement is one academic year of full-time study by a candidate entering with a Canadian Honors degree or its equivalent, but students who have not completed the requirements for the degree are expected to remain in residence during the summer.

Ph.D. DEGREE

The primary purpose of the doctoral program is to train scientists and university teachers. The program typically includes graduate seminars and tutorials, a reading knowledge of one foreign language, a comprehensive examination in one area of specialization, and a dissertation based on a research project. Individual programs of study are encouraged, and include teaching and research apprenticeship training with members of staff. The minimum residence requirement is three academic years of full-time study after an Honors level Bachelor's or two after a Master's degree. Frequently, more time is necessary. All students are expected to be in residence during the summer.

ADMISSION REQUIREMENTS

M.A. Degree: A student must have obtained at least second class honors in the final years of his undergraduate work to be admitted to the Faculty of Graduate Studies.

Ph.D. Degree: An M.A. degree in psychology is normally required for admission as a Ph.D. candidate in the Department. A copy of the M.A. thesis may be requested at the time of application.

Graduate Record Examination results (Aptitude and Advanced Tests) are required and should be made available at the time of application. M.A.T. scores may be accepted in certain cases.

COURSES

500-509. Learning and Motivation. Introduction to theories of Hull-Secoise, Logan Mowrer, Miller, Skinner, Estes; classical conditioning; operant conditioning; frustration; punishment; discrimination learning; partial reinforcement; mediation concepts; and, motivational models.

510-519. Sensation and Perception. Psychophysical theory and methods; physiological basis of sensory and perceptual processes and their stimulus correlates; spatial and temporal factors; color vision; adaptational processes; theories and models of perception; and, developmental and motivational aspects of perception.

620-529. Physiological and Comparative. Neural mechanisms of learning; memory; language; sensory and perceptual processes; attention; sleep and wakefulness; and, neural and endocrine integrations underlying drives and emotional behavior.

530-539. Experimental Child. Motivational and associative factors in children's learning; development of sensory integration; problem solving and cognitive development; behavioral modification in preschool children; assessment of brain-injury; and special problems in behavioral development.

540-549. Research Design and Measurement. Design of research and the analysis of data; general statistical principles; analysis of variance; correlation theory; multivariate techniques; methods and principles of measurement; numerical analysis; and, theory of errors.

550-559. Cognitive Processes. Concept formation; problem solving; computer simulation of cognitive processes; the creative process in literature; cross-cultural variation in thinking processes; decision-making and game theory.

650-659. Experimental Social. An overview of problems in social psychology; theory and method; social learning and motivation; person perception; attitudes; social influence; group structure and process.

570-579. Verbal Learning, Memory, and Psycholinguistics. Stimulus and response parameters; coding or mediating processes; structural aspects of language; theoretical interpretations of verbal learning; processes in short-term and long-term memory; psycholinguistic phenomena including developmental aspects; situational determinants, pathology, and individual differences in language and verbal behavior.

580-589. Personality Theory and Assessment. Critical evaluation of theories concerning the nature and function of the person as a psychological entity, and the theoretical and quantitative foundations of assessment; empirical foundations of personality theory; personality theory and practice; test theory; construct validation and test construction; classification and diagnosis; and, multivariate procedures.

600-609. Educational Psychology. Introduction to educational psychology; the analysis of the general principles of psychology as applied to education; education of exceptional children including children with emotional, neurological and perceptual disorders as well as the gifted, retarded, and culturally deprived; educational research; educational measurement; and the psychology of teaching and application of learning theory to classroom learning.


640. Current Topics. A seminar conducted in cooperation with many faculty members, this course is required of all M.A. students. Its purpose is to provide information on important current research areas.
680-689. Tutorial in Experimental and Theoretical Psychology.

590. M.A. Thesis.


Note: At least one seminar in each of the above areas is normally offered each academic year. Seminars are frequently inter-disciplinary with contributors from other departments, such as: Computer Science, Neurology, Physiology, Sociology, Psychiatry, Physics, and Paediatrics.

Surgery

Graduates in Medicine who have served a year of rotating internship in an approved hospital may apply for further training in Surgery in a plan utilizing the facilities of Victoria, St. Joseph's and Westminster Hospital and of the Health Sciences Centre of the University.

This training meets the requirement for Fellowship in the Royal College of Surgeons of Canada and candidates beginning the course are expected to proceed to this degree.

Research may be carried out during the period in training in general surgery or one of the surgical specialties and may lead to qualification for the degree of Master of Clinical Science (M.C.I.Sc.).

Therapeutic Radiology

The Department of Therapeutic Radiology is located in the London Clinic of the Ontario Cancer Treatment and Research Foundation, Victoria Hospital. Facilities are available for radiation therapy, nuclear medicine, radiation physics, radiobiology and chemotherapy of malignant disease. A close association with other clinical departments is maintained by joint consultative clinics. The department offers graduates in medicine who have served one year of rotating internship a full course of training leading to Fellowship or Certification by the Royal College of Physicians and Surgeons of Canada. Clinical or basic research may be carried out and submitted as partial fulfillment for the degree Master of Clinical Science (see page 17); with the approval of the College this may be used to satisfy the requirement for training in basic science.

Graduates in medicine or the basic sciences may carry on research in the Division of Nuclear Medicine, Radiation Physics or Radiobiology which may be used in partial fulfillment for the degrees, Master of Science or Doctor of Philosophy. These degrees are granted in the basic department in which the supervisor of the student holds a joint appointment, at present: Biochemistry, Biophysics or Physics. Research interests in the Department currently include, factors influencing the sensitivity of solid tumors to ionizing radiation, the role of the cancer cell membrane in the development of distant metastases, dosimetry of high-energy radiation sources and the application of new isotopes to clinical diagnosis.

A suitable stipend during the period of residency or graduate training may be obtained through the Ontario Cancer Treatment and Research Foundation.

COURSES

510a. Principles of Radiobiology

511b. Selected Topics in Nuclear Medicine. (Prerequisite: residency training in Therapeutic or Diagnostic Radiology, admission to such a training program or equivalent.)


514. Tutorial — Current Topics in Radiotherapy. (Prerequisite: residency training in Therapeutic or Diagnostic Radiology, admission to such a training program or equivalent.)

590. Master of Clinical Science Thesis

610. Physics of Radiology. (Prerequisite Physics 20 or equivalent).

Courses are full term unless followed by (a) denoting first term or (b) denoting second term.

All courses will not necessarily be offered in any one year.

Further information on residency, graduate training and courses may be obtained from the Head of the Department.

Zoology

COURSES

544. Embryology. A lecture, laboratory and seminar course emphasizing molecular and experimental biology of development./ J. Purko, H.I. Battles

546. Ultrastructure of Animal Cells. A seminar course on cell organelles and cellular constituents with emphasis on their roles in cellular metabolism. The fine structure of selected vertebrate and invertebrate tissues will be examined./ R.R. Shivers

552. Environmental Physiology. A lecture and seminar course dealing with the effects of environmental factors upon the physiology of animals./ R. Roth

553. Ecology of Vertebrates. A seminar course dealing with factors controlling the abundance of vertebrates./ W.N. Holsworth, C.D. MacInnes, R.J. Planck

554. Histology. A comparative and evolutionary study of the cellular structures of organs, as illustrated by selected vertebrates and invertebrates./ D.B. McMillan

555. Population Genetics. A lecture course dealing with large and small random and non-random populations, linkage, path analysis, inbreeding, generation matrix, mutation selection, subdivision and migration, inheritance of quantitative characters, and the implications of these considerations upon the process of evolution./ R.K. Miara
# Graduate Courses 1970-71

<table>
<thead>
<tr>
<th>Course No. and Title</th>
<th>Instructor(s)</th>
<th>Time</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 Learning</td>
<td>H. Lobb, S. Kendall</td>
<td>T 1:30-4:30</td>
<td>MC104</td>
</tr>
<tr>
<td>501 Advanced Learning</td>
<td>H. Murray, B. Roberts, F. Van Fleet</td>
<td>F 1:30-4:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>510 Perception</td>
<td>G. Rollman</td>
<td>T 9:30-12:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>520 Physiological and Comparative</td>
<td>D. Baran, J. Boles, D. Kimura, G. Mogenson, C. Vanderwolf</td>
<td>M 9:30-12:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>530 Experimental Child</td>
<td>A. Bartoshuk, D. Pederson, M. Simmer, V. Smeriglio</td>
<td>Th 1:30-4:30</td>
<td>MC104</td>
</tr>
<tr>
<td>540 Research Design</td>
<td>R. Gardner</td>
<td>M 1:30-4:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>550 Cognitive Processes</td>
<td>P. Denny, J. Siegel</td>
<td>T 1:30-4:30</td>
<td>MC200</td>
</tr>
<tr>
<td>562 Experimental Social</td>
<td>R. Gardner, M. Goodstadt, M. Rokeach, R. Sorrentino, N. Vidmar</td>
<td>W 1:30-4:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>563 Social Perception</td>
<td>D. Jackson, M. Rokeach</td>
<td>F 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>570 Verbal Learning and Memory</td>
<td>A. Paivio, L. Prytulak, W. Siegel</td>
<td>Th 9:30-12:30</td>
<td>MC105A</td>
</tr>
<tr>
<td>580 Assessment of Personality and Intellect</td>
<td>D. Jackson</td>
<td>M 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>- Laboratory</td>
<td>W. Reitz</td>
<td>T 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>600 Education</td>
<td>R. Stennett</td>
<td>W 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>621 Clinical Child</td>
<td>B. Bucher, H. Lobb</td>
<td>W 1:30-4:30</td>
<td>MC104</td>
</tr>
<tr>
<td>625 Behavior Modification</td>
<td>B. Bucher, P. Carlson</td>
<td>F 9:30-12:30</td>
<td>-</td>
</tr>
<tr>
<td>626 Clinical Neuropsychology</td>
<td>D. Kimura (first term)</td>
<td>Th 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>627 Psychopathology</td>
<td>W. Reitz (second term of above)</td>
<td>Th 9:30-12:30</td>
<td>MC104</td>
</tr>
<tr>
<td>640 Current Topics</td>
<td>G. Rollman (coordinator)</td>
<td>T-W-F 4:30</td>
<td>MC102</td>
</tr>
<tr>
<td>641 Clinical Proseminar</td>
<td>W. Reitz (coordinator)</td>
<td>T 7:00-10:00 p.m.</td>
<td>MC102</td>
</tr>
<tr>
<td>590 M.A. Thesis</td>
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<tr>
<td>690 Ph.D. Thesis</td>
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