Division of Biological Sciences

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Acting Director
Peter Cauwenbergs

Departments of the Division of Biological Sciences
Anatomy
Pathology and Microbiology
Physiology and Biochemistry

Department of Anatomy

Chair
Peter Cauwenbergs

Department Faculty
P. Cauwenbergs, D. Chapin, K. Grice, G. Harris, M. Kumka, A-R. Polyzotis, B. Shandling, A. Zabobonin (Technician)

The Department of Anatomy presents a comprehensive overview of the development, structure and function of the human body, providing the basic information necessary for further study. Courses are offered in lecture format along with a substantial component of laboratory work in gross anatomy and histology. As well, the Department is honoured to have the J.W.A. Duckworth Memorial Museum of Anatomy which serves as an additional learning environment for students.

AN 1101 HUMAN ANATOMY I (7 CREDITS)

Coordinator: P. Cauwenbergs Total hours: 57 Lecture
Blocks 1-5 44 Lab
05 Prep Time

Human Anatomy I (AN 1101) consists of lectures and laboratory study of the human body and incorporates both developmental and adult gross anatomy. Using a regional approach, emphasis is placed on the structural and functional relationships within the back, head and neck regions. Particular attention is paid to the clinical importance of the structures being studied. Included in AN 1101 will be material in which lecture presentations and laboratory dissections of the back region are provided in Blocks 1, 2, and 3 while the head and neck presentations and dissections are provided in Block 4 and 5. As well, material in AN 1101 includes developmental anatomy in which lecture presentations in developmental aspects of anatomy will be integrated with topics presented in gross anatomy. These topics range from early embryonic developmental processes to later organogenesis. Lectures in developmental anatomy will be given in Blocks 3, 4 and 5. Lecture content in AN 1101 is closely integrated with that of other courses presented by all three academic divisions.

AN 1102 HUMAN HISTOLOGY (3 CREDITS)

Coordinator: TBA Total hours: 39 Lecture
Blocks 1-3 26 Lab

Human Histology (AN 1102) presents the microscopic structure of cells, tissues and organ systems. Emphasis is placed on the relationships of structure to the function of cells and their aggregate performance in tissues, organs and systems using a case-based approach relevant to the primary contact practitioner. Following this course the student will be able to use the relevant vocabulary and concepts correctly in a clinical context. The lecture and laboratory sessions are designed to assist the student in fostering an understanding of how the structure of cells, tissues and organs is related to their respective functions in the active maintenance of wellness. The lectures will proceed from a consideration of the generalized cell to a presentation of the four basic tissue types and finish with a consideration of the microscopic structure of organs in each of the body systems. This course provides the student with the basic understanding necessary to interpret body functions in health and disease and is the foundation for further study in the chiropractic and clinical sciences.

AN 1104 NEUROANATOMY (3 CREDITS)

Coordinator: P. Cauwenbergs Total hours: 32 Lecture
Blocks 6, 7 26 Lab

Neuroanatomy (AN 1104) introduces the student to the study of the human central nervous system (CNS). Emphasis is placed on structural and functional relationships within the brain and spinal cord. Special attention is paid to the structure, function and blood supply of the brain, spinal cord and autonomic nervous system. The embryonic development of the CNS is also presented and the clinical implications of damage to the CNS or its blood supply are examined. Laboratory sessions have a tutorial format and focus on dissections of the brain and spinal cord. Relationships are drawn to clinical cases. This basic neuroanatomy course is the foundation for further study in neuroscience and neurodiagnosis.

AN 2101 HUMAN ANATOMY II (7 CREDITS)

Coordinator: P. Cauwenbergs Total hours: 58 Lecture
Blocks 10-13 60 Lab

Human Anatomy II (AN 2101) is offered in the second undergraduate year of the chiropractic programme and consists of the same lecture and laboratory format as the AN 1101 course. AN 2101 integrates both developmental and adult human anatomy using a regional approach with emphasis on the structural and functional relationships within the upper limb (Block 10), thorax, abdomen and pelvis (Blocks 11 and 12), and lower limb regions (Block 13). Developmental components of this course emphasize later organogenesis within each of these regions and are presented in Blocks 12 and 13.

Department of Pathology and Microbiology

Chair
Stephen Injeyan

Department Faculty
C. Borody, S. Injeyan, N. Kerenyi, J. Mayer, R. Moore, S. Tse, J. Teodorczyk-Injeyan, A. von Seefried

The Department of Pathology and Microbiology offers courses that highlight etiologic, diagnostic and preventive aspects of disease. The information gleaned from these areas provides students with a basis for better understanding of their clinical courses.

PA 1407 HEALTH PROMOTION (3 CREDITS)

Coordinator: C. Borody Total hours: 39 Lecture
Blocks 4, 5, 6

Health Promotion (PA 1407) discusses topics in health care that have effects on the health of individuals, communities and society at large. Several topics including epidemiology and research methods, disease prevention, the health care system in Canada, communicable and non-communicable diseases and principles and methods of health promotion are discussed.

PA 2201 GENERAL PATHOLOGY (2 CREDITS)

Coordinators: N. Kerenyi Total hours: 26 Lecture
Block 8,9,10

General Pathology (PA 1201) presents the basic mechanisms involved in cell death, necrosis, inflammation and repair and neoplasia. Pathological principles of disease processes are discussed. The student will be provided with the basic knowledge of disease processes so he/she may understand the clinical manifestations of disease and the rationale for treatment. Clinico-pathological correlations will be emphasized where applicable.

PA 2202 MICROBIOLOGY (3 CREDITS)

Coordinator: S. Injeyan Total hours: 48 Lecture
Blocks 8-12 08 Lab

Microbiology (PA 2202) introduces the fundamental concepts of bacteriology, virology, parasitology and mycology. The classification and characteristics of these organisms are described and the concepts of virulence, pathogenicity, disease transmission and the principles of prevention including immunization are discussed. Pathogenic microorganisms are introduced and discussed to clarify their role in the production of infectious diseases and prepare students for a discussion of clinical microbiology in year III.

PA 2204 IMMUNOLOGY (2 CREDITS)

Coordinator: J. Teodorczyk-Injeyan Total hours: 30 Lecture
Blocks 8,9,10

Immunology (PA 2204) discusses the basic concepts of immunology. The constituents of innate and acquired immunity are presented. Mechanisms involved in the immune response are presented and discussed from the perspective of defense against infectious agents and immune pathology. The course is designed in tandem with the microbiology course so as to maximize integration of topics dealing with immunity to infectious agents,

and with general pathology so as to provide students with a basic immunology background necessary for the presentation of immunopathologies. Topics of discussion will also include principles and the effectiveness of vaccination, immunoregulation, neuroendocrine immunology, and the effects of nutritional deficiencies on immunity.

PA 2306 TOXICOPHARMOCOLOGY (2 CREDITS)

Coordinator: J. Mayer Total hours: 30 Lecture
Blocks 12-14

Toxicopharmacology (PA 2306) emphasizes the general principles of toxicopharmacology. The metabolism of toxicants and drugs as well as the toxic responses of the central nervous system, the liver, the kidneys, the vascular system, the respiratory system and the reproductive systems, are discussed. The toxicology of metals, solvents, vapors, radiation and radioactive materials are presented. The chiropractic and clinical contexts are developed through the use of case studies.

PA 3201 SYSTEMS PATHOLOGY (5 CREDITS)

Coordinators: N. Kerenyi
Modules 1-9 Total hours: 60 Lecture

Systems Pathology (PA 3201) builds on information gained in General Pathology (PA 1201). This course provides the student with an understanding of disease processes. Specifically, the etiology and pathogenesis of the major diseases affecting each individual body system are presented. Where applicable, areas of current research into the etiopathogenesis of disease are highlighted. The course is taught in synchrony with the Clinical Microbiology (PA 3202) and Diagnosis and Symptomatology(CD 3305)courses in order to enhance integration.

PA 3202 CLINICAL MICROBIOLOGY (3 CREDITS)

Coordinator: S. Injeyan Total hours: 21 Lecture
Modules 1-9 18 Lab

Clinical Microbiology (PA 3202) builds on information gained in Microbiology (PA 2202). Using a systemic approach, this course is taught in synchrony with Clinical Pathology (PA 3201) and Clinical Diagnosis (CD 3305) courses in order to enhance integration.

PA 3305 CLINICAL LABORATORY DIAGNOSIS (4 CREDITS)

Coordinators: R. Moore, S. Injeyan Total hours: 37 Lecture
Modules 1-9 12 Lab

Clinical Laboratory Diagnosis (PA 3305) provides a background in the basic principles of haematology and clinical chemistry necessary to understand the role and proper use of the medical laboratory in chiropractic practice. The principles involved in the utilization of the laboratory in clinical decision making are presented. The role of specific laboratory tests in the diagnosis of various diseases is discussed using a body systems approach. The course is taught in synchrony with Systems Pathology (PA 3201) and Clinical Diagnosis and Symptomatology(CD 3305) courses, in order to enhance integration.

Department of Physiology and Biochemistry

Chair
Ian Fraser

Department Faculty
E. Aghdassi, I. Fraser, J. Meschino, D. Tomlinson, S. Tse

The Department of Physiology and Biochemistry provides courses in Biochemistry, Physiology, Neuroscience, and Nutrition. The information discussed in these courses serves to provide students with a foundation for understanding the physiologic and biochemical processes pertinent to later clinical study.

PH 1101 BIOCHEMISTRY (7 CREDITS)

Coordinator: I. Fraser Total hours: 76 Lecture
Blocks 1-7 25 Lab/Tutorial
07 Prep Time

Biochemistry (PH 1101) provides a foundation for the nutrition, systems physiology, and laboratory diagnosis courses. It presents a survey of biochemical principles important in health and disease. The structure, function and properties of various biomolecules (amino acids, proteins, carbohydrates, lipids, enzymes, vitamins, minerals, and hormones) are studied. Metabolic pathways and biological control mechanisms are emphasized. The application and analysis of these principles to common health problems encountered by the practicing chiropractor are studied through the integration of lectures, laboratory exercises, and tutorials.

PH 2204 SYSTEMS PHYSIOLOGY (6 CREDITS)

Coordinator: I. Fraser Total hours: 66 Lecture
Blocks 8-13 12 Tutorial
06 Prep Time

Systems Physiology (PH 2204) studies the physiology of the body fluids, blood, and the cardiovascular, respiratory, endocrine, renal and gastrointestinal systems. The function and control of all major organ systems are discussed as are the topics of cell physiology and mechanisms at the cellular and subcellular levels. Muscle performance, training and fitness assessments are also discussed. Problem solving and the application of physiological principles to chiropractic research are encouraged. The lectures are supplemented by case history and problem-oriented seminars.

PH 2205 NEUROSCIENCE (7 CREDITS)

Coordinator: R. Tomlinson Total hours: 92 Lecture
Blocks 8-14

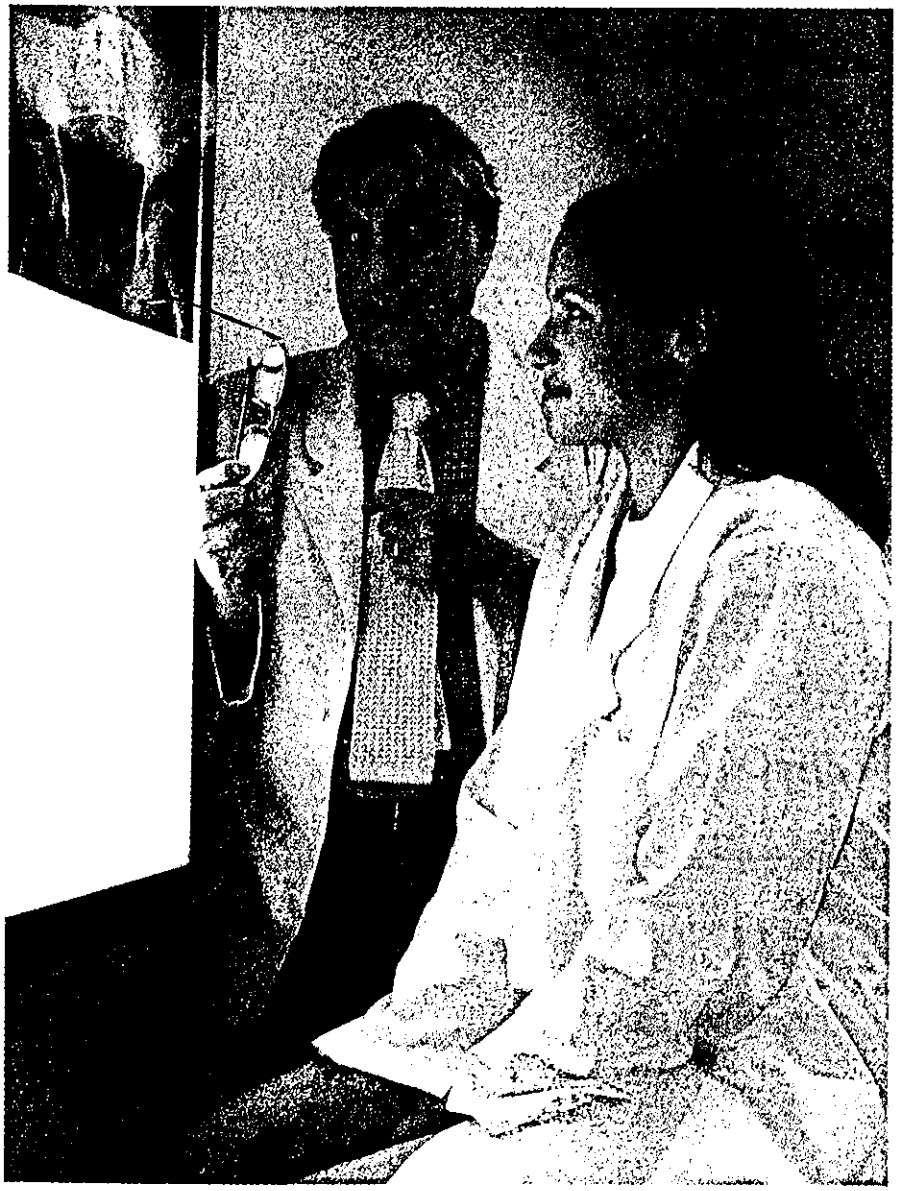
Neuroscience (PH 2205) focuses on the chemical, anatomical and physiological components of the sensory, motor and autonomic nervous systems. These topics are discussed and integrated with chiropractic where applicable. Topics such as cranial nerves, development and aging of the nervous system, the cerebral cortex and higher cortical function, and diseases of the central nervous system are also presented.

PH 2206 NUTRITION (4 CREDITS)
Coordinator: E. Aghdassi Total hours: 52 Lecture
Blocks 8-14 10 Prep Time

Nutrition (PH 2206) emphasizes the basic principles of nutrition including the chemistry and metabolism of carbohydrates, lipids, proteins, energy, vitamins and minerals. The course also presents a discussion of the basic food groups and the fundamentals of assessing nutritional status.

PH 3407 NUTRITIONAL SUPPLEMENTATION AND HERBAL MEDICINE (PASS/FAIL)
Coordinator: I. Fraser, J. Meschino Total Hours: 15 Lecture
Module 8-9

Nutritional Supplementation and Herbal Medicine (PH 3407) utilizes information presented in Nutrition (PH 2206). This course relates to health and disease as seen in the clinical chiropractic practice. Topics discussed include vitamin supplementation and herbal medicine as they relate to conditions such as arthritis and osteoporosis, cardiovascular, neural and liver diseases. This course provides a foundation for the application of nutrition in Year IV.



Division of Chiropractic Clinical Sciences

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Director
Glynn Till

Departments of the Division of Chiropractic Clinical Sciences
Applied Chiropractic Studies
Chiropractic Principles and Practice
Clinical Diagnosis
Radiology

Department of Applied Chiropractic Studies

Chair
Kim Ross

Department Faculty
A. Azad, D. Bereznick, L. deGraauw, B. Gleberzon, D. Hyde, R. Karim, S. Kinsinger, M. Locke, L. McLaren, G. Pecora, K. Ross, R. Ruegg, G. Ruhr, K. Schoonderwoerd, B. Schut, D. Sinclair, O. Swyszcz, Z. Szaraz, G. Till

The Department of Applied Chiropractic Studies provides the student with the necessary psychomotor skills to practice the art and science of chiropractic. Utilizing classroom discussion, small tutorial group laboratory sessions and mechanical and live models, the students acquire proficiency in the skills necessary to become competent in chiropractic diagnostic and therapeutic methods. The students acquire an understanding of tissue response to altered biomechanics, proficiency in static and motion palpation, postural evaluation and a variety of manipulative, adjustive and mobilization manoeuvres, and various soft tissue therapies.

Students gain a thorough understanding of the indications and contra-indications for manipulation, as well as the biomechanical model of the physical and mechanical properties of the human frame and its static and dynamic behavior. They acquire an appreciation of the effects of the chiropractic dynamic thrust in bringing about corrective change to patho-mechanical states.

AC 1101 BASIC BODY MECHANICS (6 CREDITS)

Coordinator: K. Ross Total hours: 81 Lecture
Blocks 1-7

Basic Body Mechanics (AC 1101) introduces students to basic biomechanical principles and properties of the spine. The student learns to relate the anatomy of the human locomotor apparatus to the static and dynamic behaviour of the body (e.g. posture). Also, the students are introduced to the mechanical concepts of basic body mechanics, linear and angular kinematics, and advanced topics such as two and three dimensional moments, force resultants, force-couples, momentum and friction. Emphasis is placed on

how these principles apply to spinal manipulative therapy. Tissue mechanics is described and related to the development of pathological conditions. The biomechanics of everyday motions such as throwing, kicking, jumping and running is examined. The literature is examined to determine the efficacy of various chiropractic therapeutic interventions. Finally the area of ergonomics is examined, as it relates to the work place and low back pain.

AC 1102 CHIROPRACTIC SKILLS (3 CREDITS)
Coordinator: O. Swyszcz Total hours: 75 Lab
Blocks 1-7

Chiropractic Skills (AC 1102) is coordinated with Basic Body Mechanics (AC 1101) and provides tutorial laboratory instruction to teaching and developing the skills necessary to locate all points of surface anatomy pertinent to a chiropractic examination including the role of informed consent. Students learn to determine normal and abnormal biomechanics and to perform static joint challenge. Body drop thrusts are taught as a prelude to the introduction of high velocity low amplitude (HVLA) adjustive procedures. The students are also introduced to soft and osseous non-thrusting procedures.

AC 2203 CLINICAL BIOMECHANICS (3 CREDITS)
Coordinator: D. Bereznick Total hours: 45 Lecture
Blocks 8-13

Clinical Biomechanics (AC 2203) in the first term teaches the biomechanics of spinal manipulation. Principles of biomechanics that are pertinent to manipulation are taught. These principles are emphasized as the students learn to decompose the spinal adjustments utilizing slow motion video. In addition the biomechanics of injury is examined along with strategies designed to minimize back injury. Electromyography and its application to biomechanics and the clinical environment is examined. In the second term, the functional anatomy of the extremity joints, gait analysis and foot orthotics are covered.

AC 2204 CHIROPRACTIC SKILLS (2 CREDITS)
Coordinator: B. Gleberzon Total hours: 36 Lab
Blocks 8-14

Chiropractic Skills (AC 2204) is coordinated with Clinical Biomechanics (AC 2203) and provides laboratory instruction to develop proficiency in general and specific spinal and extremity adjustive techniques. Students are taught how to deliver an adjustment with emphasis being placed on control, direction, speed and depth of thrust. Emphasis is placed on competence in conducting an analysis (including all forms of static and motion palpation procedures) of the spine, pelvis and extremities to arrive at a diagnosis that will enable accurate determination of the appropriate adjustive procedure. Screening procedures and the importance of informed consent are discussed. The importance of professionalism is emphasized throughout the labs.

AC 2410 INTEGRATED CHIROPRACTIC PRACTICE (2 CREDITS)

Coordinator: B. Gleberzon Total hours: 36 Lecture
Blocks 8, 9 6 Problem Based Learning (PBL)

Integrated Chiropractic Practice (AC 2410) is a combination of lectures and small group sessions presenting a wide variety of different chiropractic techniques. The emphasis is on case management including areas of examination, diagnosis and treatment, ethics and research, as they relate to the different techniques.

AC 3305 CLINICAL MANAGEMENT (3 CREDITS)

Coordinator: S. Kinsinger Total hours: 45 Small Group
Modules 1-9 45 Prep Time

Clinical Management (AC 3305) consists of small-group clinical discussions of conditions affecting the spine and extremities. Emphasis is placed on integration of examination findings, diagnosis, informed consent and management through problem solving. The clinical decision-making process is centred on a neurobiomechanical model integrating the clinical and biological sciences. Problems focus on the rationale for adjustive, manipulative, and mobilization techniques of the spine, pelvis and extremities.

AC 3306 CHIROPRACTIC SKILLS (2 CREDITS)

Coordinator: G. Ruhr Total hours: 53 Lab
Modules 1-9

Chiropractic Skills (AC 3306) consists of small group tutorials of advanced instruction centred around the material taught in Clinical Management (AC 3305). Emphasis is placed on proficiency in conducting a comprehensive static and motion palpation examination of the spine, extremities, pelvis and rib articulations. A focus is also placed on performing various adjustive, manipulative and mobilization techniques. The ability to correlate analysis with appropriate chiropractic techniques and procedures is developed.

AC 3307 AUXILIARY CHIROPRACTIC THERAPY (3 CREDITS)

Coordinator: R. Ruegg Total hours: 40 Lecture
Modules 1-9

Auxiliary Chiropractic Therapy (AC 3307) instructs students in the use of various therapeutic modalities. These include electrotherapy, hydrotherapy, mechanotherapy, phototherapy, thermotherapy and cryotherapy. Students become acquainted with basic physics, physiological principles, indications and contraindications as well as appropriate applications of modalities and appliances in a variety of conditions. The course also includes the contemporary use of exercise for the rehabilitation and functional restoration of the musculoskeletal system. This course also presents both theoretical and practical information to students to prepare them for planning, prescribing and monitoring exercise programmes. Students also learn the indications and contraindications to exercise, concepts of exercise physiology and have the opportunity to apply these during group assignments. The course is augmented by practical experience in a clinical laboratory setting where students are exposed to therapy equipment, using a variety of techniques. The application of auxiliary chiropractic therapy is supervised by the clinic faculty during the Year IV internship.

Department of Chiropractic Principles and Practice

Chair
Stuart Kinsinger

Department Faculty
D. Fitz-Ritson, B. Fligg, A. Freedman, P. Gold, A. Grice, K. Grice, K. Hammerich, S. Kinsinger, G. Ruhr, Z. Szaraz, G. Till, A. Trim, H. Vernon

The department offers courses designed to cover a broad area from the history of manipulation to contemporary knowledge and research in the area of chiropractic manipulative therapy. It also offers courses in the legal and ethical aspects of contemporary chiropractic practice, as well as courses in the area of practice development and management. Contemporary perspectives and concepts are emphasized throughout the programme. The role of the chiropractor as a member of the modern health care team with a unique approach to health care is stressed.

CP 1101 INTRODUCTION TO CHIROPRACTIC PRINCIPLES, PROFESSIONALISM AND ETHICS (6 CREDITS)

Coordinator: S. Kinsinger Total hours: 66 Lecture
Blocks 1-7 12 Small Group and Panel

Introduction to Chiropractic Principles, Professionalism and Ethics (CP 1101) introduces the student to the historical and contemporary approach to health which is unique to the chiropractic profession. It is presented in a weekly lecture format which is supplemented by small group tutorials which explore a number of issues unique to the chiropractic profession. It is an introductory programme designed to prepare the student to explore issues related to the philosophy, art, and science of chiropractic. As part of CP 1101, material on professionalism, informed consent and ethics will introduce students to a practical understanding of professional ethics and the terminology, issues and consequences related to this area of student and professional life. The unique ethical responsibilities of the health professional student and practitioner are explored.

CP 2202 CHIROPRACTIC PERSPECTIVES ON CLINICAL PRACTICE (3 CREDITS)

Coordinator: Z. Szaraz Total hours: 38 Lecture
Blocks 8-14 10 Lab

Chiropractic Perspectives on Clinical Practice (CP 2202) is an intermediate level course designed to help the student put together different theoretical concepts pertaining to chiropractic and relate them to the practice of chiropractic. One of several possible approaches to patient management has been chosen to elucidate how applied anatomy might be used to guide therapeutic selection. Informed consent is presented as part of the lecture material, which is interspersed with laboratory sessions which provide the student the opportunity to gain practical experience in the implementation of such a model. In the process, students are encouraged to differentiate between factually derived information and purely theoretical considerations, a dilemma faced by all health care professionals.

CP 3303 ADVANCED CHIROPRACTIC PRINCIPLES AND APPLIED ETHICS (4 CREDITS)

Coordinator: S. Kinsinger Total hours: 26 Lecture

Modules 1-8

Advanced Chiropractic Principles and Applied Ethics (CP 3303) is the thir and final course for the core series in chiropractic principles. This course is designed to integrate information and give it a clinical application so as to prepare the student for his/her clinical education. It explores the scope of chiropractic care and the role of the chiropractor as a member of the health care team. Emphasis is placed on the relationship between the musculoskeleta system and the nervous system and the importance of this relationship in the assessment and care of patients. The ethics content is entirely focused on clini cal issues between the practitioner and patient.

CP 3304 JURISPRUDENCE (4 CREDITS)

Coordinator: A. Freedman Total hours: 52 Lecture

Modules 1-9 30 Prep Time

Jurisprudence (CP 3304) acquaints the student with his or her rights and obligations together with, and more importantly, the rights and obligations of the patient. Emphasis is placed on risk management, informed consent, chiropractic legal issues, ethics and the law, the patient-doctor relationship, and writing a chiropractic-legal report. This course familiarizes the student with the relationship between chiropractic practice and the law. Jurisprudence Project (CP 4404) is introduced in this course but is completed in Year IV.

CP 4404 JURISPRUDENCE PROJECT (PASS/FAIL)

Coordinator: A. Freedman

Jurisprudence Project (CP 4404) is introduced in Year III as part of Jurisprudence (CP 3304) and is completed in January of Year IV. Students complete a jurisprudence project in which they describe in detail the creation of a chiropractic practice. Areas to be included in the project are a demographic study, a lease or an agreement to purchase the location, a design of the practice, the details of any improvements, financial information and proposals including financial statements (asset and cash flow statements), office policy, patient protocols including such matters as informed consent, associate agreements, insurance details, advertising information and any other pertinent information which reflects upon the establishment of the practice. Our experience has been that the preparation of such a project provides the students with an understanding of the depth of information required for the creation of a viable environment in which to provide proper patient care. One of the requirements of the project is that the students obtain the assistance of a licensed practitioner for the purposes of gathering relevant information.

Department of Clinical Diagnosis

Chair
Brian Schut

Department Faculty
M. Assayag, B. Gleberzon, R. Guerriero, G. Hamovitch, S. Howitt, D. Hyde, M. Locke, P. McCord, L. McLaren, J. Pikula, H. Platnick, D. Proctor, M. Rajwani, J. Reitav, M. Reux, G. Ruhr, V. Ricciardi, D. Schoales, K. Schoonerwoerd, B. Schut, I. Simonsen, C. Stants, O. Swyszcz, N. Tabrizi, G. Till, N. Tsaggarelis, M. Wiles, S. Zylich

The student is made aware of the importance of clinical diagnosis to the chiropractor as a primary contact practitioner. Development of the student's ability to analyze clinical data critically in the pursuit of an accurate diagnosis is emphasized. The importance of appropriate interdisciplinary cooperation and referral is also discussed.

CD 1301 INTRODUCTORY DIAGNOSIS & ORTHOPAEDICS I (4 CREDITS)

Coordinators: B. Schut, R. Guerriero Total hours: 37 Lecture
Blocks 5, 6, 7 25 Lab

Introductory Diagnosis & Orthopaedics I (CD1301) teaches the general principles of clinical diagnosis through a lecture and laboratory format. The student will be taught an undergraduate approach to history-taking and physical examination procedures with an emphasis on interviewing skills. This course emphasizes doctor-patient interactions, the issue of informed consent, as well as the use of standard diagnostic procedures. The orthopaedics section of this course will help the student understand the nature of normal musculoskeletal tissues and their response to injury. Students will approach the musculoskeletal system regionally from the perspective of relevant clinical anatomy, pathology, lesions and pathogenesis, diagnostic categories, current diagnostic tests and methods and treatment strategies. The laboratory section of the orthopaedics portion of the course will provide the student with a basis for acquiring the diagnostic skills necessary to make a competent diagnosis and a rationale for performing a focused orthopaedic examination.

CD 2301 INTRODUCTORY DIAGNOSIS& ORTHOPAEDICS II (4 CREDITS)

Coordinators: B. Schut, R. Guerriero Total hours: 35 Lecture
Blocks 11-14 32 Lab

Introductory Diagnosis &Orthopaedics II (CD 2301) adds to the discussion of the diseases and disorders of the musculoskeletal system in a lecture and laboratory format as taught in Introductory Diagnosis &Orthopaedics (CD 1301). The students will integrate previously acquired physical examination and orthopaedic examination skills while learning more specific orthopaedic approaches. Physical and orthopaedic examination procedures and informed consent are taught in the small group laboratory sessions. Emphasis is placed on the preservation and restoration of function of the articulations and supportive structures. The importance of interdisciplinary cooperation and referral is discussed.

CD 3303 NEURODIAGNOSIS (4 CREDITS)

Coordinator: S. Zylich Total hours: 49 Lecture

Modules 1-9

Neurodiagnosis (CD 3303) studies a broad range of common neurological disorders with particular emphasis on those conditions which are frequently seen by chiropractors. The student attains the knowledge and skills required to conduct a neurological examination and learns to correlate clinical neurological findings with other diagnostic data. The lectures are supplemented by videotaped cases, patient presentations, and laboratory demonstrations.

CD 3304 DIFFERENTIAL DIAGNOSIS (PASS/FAIL)

Coordinator: B. Schut Total hours: 2 Lecture

Modules 5-9 14 Small Group

04 Prep Time

Differential Diagnosis (CD 3304) fosters the integration of the material learned from other clinical diagnosis courses in a small group, problem-based learning setting. This course enables the student to correlate past and present levels of knowledge in the diagnosis of patient conditions, as well as develop systematic analytical and diagnostic skills. To this end, the student works through the history, physical examination, special tests, and plans the management of several chiropractic cases under the guidance of a faculty facilitator.

CD 3305 DIAGNOSIS AND SYMPTOMATOLOGY (5 CREDITS)

Coordinator: P. McCord Total hours: 60 Lecture

Modules 2-9

Diagnosis and Symptomatology (CD 3305) studies the diagnosis of disorders of the various body systems at an advanced level. Emphasis is placed on etiology, pathology, signs and symptoms, differential diagnosis and treatment. Areas of study include disorders of the cardiovascular, genitourinary, respiratory, gastrointestinal and endocrine systems, as well as dermatology, EENT, hematology, allergic reactions and immunology. Particular attention is focused on knowledge of those disease processes which confront the primary contact health care practitioner.

CD 3406 CLINICAL PSYCHOLOGY (2 CREDITS)

Coordinators: G. Hamovitch, J. Reitav Total hours: 27 Lecture

Modules 1-9

Clinical Psychology (CD 3406) is designed to equip the student with the necessary background to identify psychological problems and respond to them effectively. Emphasis is placed on understanding the full spectrum of normal and abnormal behaviours with a specific focus on the syndromes most commonly met in chiropractic practice. Students will be introduced to clinical observation, systematic inquiry and evaluation, and management and treatment of these patients within the context of a chiropractic practice.

CD3407 EMERGENCY CARE II (2 CREDITS)
Coordinator: P. McCord Total hours: 26 Lecture
Modules 1-9

Emergency Care II (CD 3407) builds upon the foundation of Emergency Care I (CD 1407) and the skills taught in that course. CD 3407 teaches the student to achieve the knowledge and skills required to be competent in handling first aid emergencies. Topics covered include head and spinal injuries, stroke, shock, respiratory emergencies and chest injuries, burns, heat and cold emergencies, diabetics, poisoning and emergency childbirth. A current Ontario Heart and Stroke Foundation CPR Basic Rescuer Certification is required for completion of this course.

CD 3408 CHILD CARE (2 CREDITS)
Coordinator: S. Zylich Total hours: 26 Lecture
Modules 1, 2, 4, 5, 7, 8

Child Care (CD 3408) teaches the diagnosis and chiropractic management of conditions affecting children which are amenable to chiropractic care. Consideration is given to the consultation, case history, examination, treatment, and referral of the young patient. Such topics as disorders of the neuromuscular system, orthopaedics, infectious diseases and common malignancies are presented for study. Special emphasis is placed on prevention and correction of structural problems and on drugless therapeutics.

CD 3409 FEMALE CARE (2 CREDITS)
Coordinator: D. Schoales Total hours: 22 Lecture
Modules 5, 6, 9 4 Lab

Female Care (CD 3409) presents conditions of the female reproductive system and standard diagnostic gynecologic procedures. Students become proficient in eliciting the information necessary to satisfy the criteria for chiropractic care or referral to a gynaecologist. Treatment of those gynecological conditions amenable to chiropractic care is discussed. The differential diagnosis of functional and organic causes of gynecologic signs and symptoms are emphasized and related to specific clinical cases. Prenatal care, childbirth and postpartum care are discussed and emphasis is placed on chiropractic management issues.

CD 3410 GERIATRICS (1 CREDIT)
Coordinator: B. Gleberzon Total hours: 17 Lecture
Modules 3-6

Geriatrics (CD 3410) introduces the student to conditions affecting the geriatric patient. This course covers the study of the process of aging and relates it to the practice of chiropractic. Emphasis is placed on the practical aspects of the treatment and care of older patients.

Department of Radiology

Chair
Cynthia Peterson

Department Faculty
A. Crooks, G. Engel, C. Peterson

The specific objective of the department is to provide the student with the academic and practical skills necessary for the production and diagnostic interpretation of radiographs. Radiation protection and radiobiology are stressed. The student is also oriented to the role of diagnostic radiology in patient evaluations and its importance as it relates to chiropractic practice.

RN 1101 RADIOGRAPHIC INTERPRETATION I (6 CREDITS)

Coordinators: C. Peterson, A. Crooks Total hours: 52 Lecture
Blocks 1-7 32 Lab

Radiographic Interpretation I (RN 1101) introduces students to radiation physics and the safe production of quality images. A comprehensive introduction to normal radiographic anatomy of the spine and skull is made, including paediatric and adult congenital anomalies and normal variants. Structural deformities, such as scoliosis, other congenital malformations and various pathomechanical states are studied. Students are introduced to categories of bone pathology, including neoplasms, infections and metabolic/endocrine and vascular disorders. An introduction to the use and interpretation of special imaging of the spine is included.

RN 2201 RADIOGRAPHIC INTERPRETATION II (4 CREDITS)

Coordinator: C. Peterson Total hours: 23 Lecture
Blocks 8, 9, 10, 14 18 Lab

Radiographic Interpretation II (RN2201) extends the teachings of Radiographic Interpretation I (RN1101). The student will focus on normal radiographic anatomy of the extremities along with their congenital anomalies and normal variants. The radiographic signs pertaining to specific categories of bone diseases as they target the extremities will be presented and integrated with clinical and laboratory features. Specific disease processes covered include tumours and tumour-like lesions, infections of bone, metabolic and endocrine disorders, vascular conditions, fractures and dislocations. Additionally, special imaging procedures are included and integrated throughout the topics. Film quality assessment and radiation dose considerations are an integral part of all radiology courses.

RN 2203 RADIOGRAPHIC INTERPRETATION III (2 CREDITS)

Coordinator: C. Peterson Total hours: 18 Lecture
Blocks 11, 12 09 Lab

Radiographic Interpretation III (RN 2203) addresses arthritic conditions as they relate to chiropractic practice. This course presents the etiology, pathology, signs and symptoms, X-ray features, and discusses the management of the major rheumatic diseases as they relate to chiropractic practice. Special emphasis on spinal degenerative joint disease and inflammatory conditions such as ankylosing spondylitis leads to the development of a differential diagnosis and pertinent therapeutic scenarios. Related topics address clinical judgment in ordering and interpreting the appropriate radiographic studies. A thorough review of the clinical and physiological characteristics related to the rheumatologic conditions listed in the course content and the appreciation of their prognoses is presented. The rheumatology section also focuses on specialized orthopaedic examination procedures and diseases of rheumatic origin. Interdisciplinary referral and case management are discussed and the student gains an understanding of the tenacity of the self-perpetuating inflammatory process.

RN 3301 RADIOLOGICAL TECHNOLOGY (3 CREDITS)

Coordinator: A. Crooks Total hours: 30 Lecture
Modules 1-3 23 Lab

Radiological Technology (RN 3301) builds on the information presented in RN 1101. The production of radiographs of good diagnostic quality with minimum patient exposure are emphasized. Areas of discussion include patient positioning, calculation of proper technique factors, equipment operation, film processing and operator protection. Students utilize simulated and live X-ray equipment and phantom exposures, under the supervision of faculty technologists.

RN 3302 RADIOGRAPHIC INTERPRETATION IV (2 CREDITS)

Coordinator: C. Peterson Total hours: 15 Lecture
Modules 6-9 12 Lab

Radiographic Interpretation IV (RN 3302) Soft tissue radiology presents the range of normal appearances of Chest and Abdominal radiographs, patterns of abnormal disease processes in these regions, and indications for prompt referral. Additionally, the indications for contrast studies and special imaging procedures of the chest and abdomen are reviewed. The material is presented in a problem based format, linking clinical findings with the diagnostic images.

Division of Clinical Education

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Of paramount importance to the student's educational experience at CMCC is training in the application of academic knowledge and technical skills to patient care. This training is provided in one of CMCC's clinics.

CE 1101 CLINICAL PRACTICE (3 CREDITS)

Coordinator: E. Crowther Total hours: 03 Lecture
Blocks 1-7 24 Small Group
36 Prep and Observation

The first year clinical practice programme begins with a comprehensive introduction to the structure and function of CMCC's clinical teaching environment followed by instruction in the theory and application of evidence-based clinical practice. The student will be exposed to the skills required to effectively retrieve, critically appraise and apply current health care information and literature. Throughout the year, in a small group format, the student will review selected readings in clinical chiropractic theory. The practical component of this course allows for the integration of skills and knowledge learned in other areas of the first year programme, including interviewing, informed consent and clinical examination skills. The observation component of CE 1101 provides an opportunity for the first year student to observe the clinical management of patients within CMCC's teaching clinics. The observation programme is designed, in both a theoretical and practical manner, to reinforce the clinical skills and knowledge acquired in other areas of the first year training.

CE 2202 CLINICAL PRACTICE (3 CREDITS)

Coordinator: E. Crowther Total hours: 26 Small Group
Blocks: 8-14 38 Prep and Observation

The second year clinical practice programme builds on the first year programme. In small group format, the second year student, through selected readings, will explore current clinical and practical issues in chiropractic and health care in general. The practical component of the course will enable the student to build upon the knowledge gained in other areas of the academic programme. A more comprehensive observation programme allows an opportunity for the student to develop an enhanced appreciation for the application of evidence-based practice management principles.

CE 3303 CLINICAL PRACTICE (3 CREDITS)

Coordinator: E. Crowther Total hours: 18 Small Group
Modules 1-9 42 Prep and Observatio

The third year clinical practice programme continues to build on the previous years' programmes. Small group tutorials and discussion groups will explore issues relevant to the chiropractic management of a variety of clinical conditions.

The third year clinical practice programme continues to emphasize evidence-based care in building upon the first and second year clinical practice programmes. Small group tutorials and discussion groups will continue using case studies to refine history taking, physical examination and patient management skills. An expanded observation programme facilitates the refinement of the third year students' ability to develop appropriate patient management skills.

CE 4405 CLINICAL PRACTICE: INTERNSHIP (30 CREDITS)

Coordinator: E. Crowther Total hours: 1560 Clinic
Throughout Year IV Rotation I & II

As a chiropractic intern, the student assumes patient care under the supervision of a primary clinical faculty member within one of the patient management clinics. CMCC operates seven clinics: the 6100 Leslie Street Walk-In Clinic (main campus), and clinics at Anishnawbe Health Toronto, the Muki Baum Centres, Sherbourne Health Centre, South Riverdale Community Health Centre, St. John's Rehabilitation Hospital and 5855 Leslie Street.

In addition to developing and maintaining a patient practice under the supervision of a clinician, the intern will attend and participate in clinical rounds where special interest topics and investigative research or issues will be discussed. These rounds sessions provide an opportunity for the intern to engage in enhanced critical thinking and application of the concepts of best practice. Complementary programmes, such as those associated with business skills will be offered.

Clinical faculty will continue to support the development of the intern's written and oral communication skills, physical examination and psychomotor skills. During the course of the year, each intern completes rotations in the clinical laboratory (20 hours), X-ray technology(70 hours) and radiology interpretation (30 hours).

Division of Research

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Associate Dean
Judith Waalen

Division Faculty
C. Hagino, C. McDermaid

Research Administrator
C. McDermaid

The undergraduate student is required to obtain research skills as both a clinical consumer and investigator, and submit a research paper completed under the direction of a CMCC faculty member. The objectives of the research division are to: (1) provide new graduates with the curiosity for, and fundamentals of, scientific research; (2) to promote continued research through the graduate residency programmes of CMCC and the Continuing Education programmes at CMCC; and (3) to encourage and facilitate individual research that promotes the advancement of the art, science, and philosophy of chiropractic.

RM 1301 APPLIED RESEARCH AND BIOMETRICS (2 CREDITS)

Coordinator: C. Hagino Total hours: 26 Lecture
Blocks 1-3

While Clinical Practice (CE 1101) concentrates on the clinical application of critical appraisal skills, Applied Research and Biometrics (RM 1301) is a 1st year course designed to develop the student's initial theory, knowledge and skills for critically appraising, and clinically applying the scientific literature and research methodology.

RM-USIP (FORMERLY RM 4402) UNDERGRADUATE STUDENT INVESTIGATIVE PROJECT (PASS WITH DISTINCTION/PASS/FAIL)

Coordinator: C. Hagino
Year 1-4

RM-USIP requires the student to prepare a research proposal and final report for an investigative project on an approved topic. This is a self-directed course in which students can work alone, or in groups of up to 4 members, under the supervision of a CMCC faculty advisor. As of 2003, the course is introduced during the final RM1301 session, and can be completed any time prior to graduation. The process of developing a research proposal for approval will involve approximately 15 hours of preparation, including formal contact with the advisor/supervisor. As would be expected, several more hours of informal contact will take place with respect to completion of the project, but this will vary with the nature of project.

資料 4