UBC Vancouver Summer Program 2015

Course Package Offerings

Enhance your students' learning experiences with study in an international setting in Vancouver, BC Canada! We welcome each university to organize a group of students to study course packages in the beautiful campus of the University of British Columbia. Many course packages have a minimum and maximum class size, so we encourage you to register your students early. Course packages that do not have the minimum number of students will not be offered, but students may transfer to other packages. For further information, please visit our website at http://vancouversummerprogram.ubc.ca or contact us at:

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Applied Science

Engineering

Civil Engineering Materials

The structure and properties of common Civil Engineering materials: Portland cement concrete, asphalt concrete, timber and steel. The emphasis is on the relationship between the structure of these materials and their mechanical properties and durability. Will include field visits to construction sites and presentations from industry personnel.

Project Based Learning in Civil Engineering Materials

Some topical problems will be identified in the performance of civil engineering materials such as Portland cement concrete, asphalt concrete, timber and steel, and students in groups will carry out laboratory and field experiments to study the materials involved. This is a laboratory based course where site-visits and external consultations are an integral requirement.

Architecture

Urban Design

Sustainability by Design: The Design of the North American Sustainable City and its Implications for the World

This class will introduce the basic principles of sustainable urban design with tours of internationally significant local examples. Relevance of these examples to global development is isolated and discussed. A typical day includes a lecture focusing on one principle of sustainable city design, followed by a tour of a place in the region where this principle is obvious. Students will be exposed to significant suburban, urban, and downtown developments. Course material is framed and delivered in the form of seven simple and related principles of sustainable urbanism.

UBC Vancouver Summer Program 2015

Course Package Offerings

Perspectives on the Development of the City of Vancouver

This class will cover the development of the City of Vancouver from the eyes of those who were a part of it. There will be tours and special presentations from those who played a role in specific development projects. Students will gain an insight into both the practical and theoretical considerations that have led to the city as we know it. The course will be taught by Sam Sullivan who served for 15 years as both City Councillor and Mayor and currently serves in the BC Legislature as the representative for Downtown Vancouver.

Arts

Package A – The World of Manga and Anime

This package brings together leading expertise from two of the most well- established academic units in the Faculty of Arts: Asian Studies and Creative Writing, offering a unique and hands on educational experience. UBC's Creative Writing is one of Canada's oldest and most respected creative writing programs.

Manga and Anime in the World

This course explores two of Japan's most important export media, including the way those media circulate in East Asia and around the world. Study the structural and cultural aspects of Japanese manga and anime, and their relationship to similar media such as Korean manhwa and Chinese manhua. The writing skills that students learn in the Writing for Graphic Forms: Manga course will also be used in this course to foster understanding of manga and anime's unique message delivery systems, in order to study the ways these "soft power" forms are transforming international relations.

Writing for Graphic Forms: Manga

This course will explore the practical techniques of creating, developing, and writing for graphic forms with particular emphasis on Japanese manga. The contemporary manga is the result of a creative interaction between Eastern and Western traditions of story telling, so students will study the Western three-act structure and then consider ways in which manga can assimilate, adapt, or differ from that approach. Students will develop a script and then, through the use of story boards, consider panel construction, focusing on the conventions of the genre. The ability to draw is not required.

Package B – Global Journalism, Culture and Communications: Practice and Principles

This package is being offered for its second year, partnering the award-winning UBC Graduate School of Journalism with the Anthropology Department.

Culture and Communication
This course will examine the relationship between language and culture by covering key debates in the field including animal vs. human communication, language change and language standardization. Students will explore how language is involved in cultural constructions of race, gender, class and ethnicity. They will also analyze how language is understood in relation to power, political economy and language ideologies.

Global Journalism
This course will examine the development of media technologies, their applications, and their cultural, political and social impacts. Students will also gain hands-on experience in learning how to think and operate like a professional journalist in a simulated multimedia environment. It is designed to introduce students to the grammar and syntax of media across platforms, based on a core journalistic skill set of interviewing, reporting, news writing, and research methods in tandem with the most current technical tools.

Package C – Environmental Economics & Introduction to Resource and Sustainable Practices

This package pairs the Vancouver School of Economics (VSE), a global centre ranked in the top 20 of its peer departments worldwide, and number one in Canada, with the Geography Department, ranked as one of the ten best geography programs in the world and best in Canada, according to the 2014 QS University Rankings.

Environmental Economics
This course provides an introduction to economic aspects of environmental problems and sustainability. It will begin with an overview of selected environmental problems, such as the effects of air and water pollution on human health, threats to biodiversity from habitat destruction, and climate change. Trends and indicators of environmental sustainability, both within and across countries, will be reviewed. The course will focus on questions such as why environmental problems occur, whether or not globalization is increasing the severity of such problems, what types of policies have been successful in improving environmental quality, and whether or not current consumption levels are sustainable. Policies will be analyzed from the perspective of efficiency, effectiveness, political feasibility and fairness, and examples will be drawn from different countries.

Environment, Resources, and Sustainable Development: An introduction to sustainable practices
Designed to introduce students to the policies and practices of environmental resource management and sustainable economic development. Discussions of human impacts on the environment are applied to the examination of international resources (water, energy, forestry, and fisheries) and urgent environmental issues (climate change, urban development). Local field trips (e.g. to local watersheds;

key sites of urban development) are used to illustrate the policies and practices of environmental management and sustainable development in the Vancouver region.

Package D – International Trade, Financial Markets and Politics

This package combines the Vancouver School of Economics (VSE), a global centre for research and hands-on learning about pressing economic issues, ranked in the top 20 worldwide and number one in Canada, and UBC's highly regarded Political Science Department. The only two British Columbians to become Prime Minister of Canada – John Turner and Kim Campbell – graduated from this department.

International Trade and Financial Markets

The modern global economy is intricately tied together through networks of trade and financial interconnections. This course will give students an understanding of the structure and function of international trade and international financial markets. The course will give a basic introduction to the forces driving international trade in goods and financial assets among nations of the world. The major theories of international trade and financial markets will be reviewed. Topics covered will include the determinants of a country's trading pattern, recent trends in international trade such as offshoring and global supply chains, the role of financial markets in international development, the future of the Renminbi as an international currency, the understanding of international financial crises, and sovereign debt crises.

Dynamics of International Politics

This course challenges students to investigate the powerful, worldwide appeal of democratic government. Genuine democracy is contrasted with symbolic democracy. It also challenges students to analyze why democracy has succeeded in only a minority of cases and failed to take root in many other places. For example, why is India a genuine democracy? Among the factors examined are the characteristics of elites, patterns of economic development and social structure. These complex issues are examined by comparing established democracies (e.g. Canada, Japan and India) with countries that struggle to become democratic (e.g. Egypt, Afghanistan, Turkey and Thailand) and with countries where democracy has not taken root (e.g. Russia, Saudi Arabia and Somalia). The experience of many other countries will be examined with a view to understanding why and where democracy takes root.

Package E – Intensive Beginning Japanese

This package is offered by Department of Asian Studies, designed to kill two birds with one stone: Start your studies of Japanese while also challenging your English in North America's safest and most beautiful city from expert instructors in North America's largest Japanese language program.

Intensive Beginning Japanese I

Integrated course in modern spoken and written Japanese focusing on the development of

communication skills through various kinds of activities, tasks and oral/aural practices. By the end of the course, students will be able to handle basic daily life situations including introducing themselves, making and declining invitations, describing daily routines, and doing shopping. They will also learn the basic writing system (Hiragana, Katakana, 20 Kanji), as well as some basic grammatical structures. Students will also develop an awareness for the importance of intercultural communication.

Intensive Beginning Japanese II

A continuation of Intensive Beginning Japanese I. While basic functions acquired in Intensive Beginning Japanese I will be reinforced through more practice throughout the course, by the end of the course, students will be able to handle more daily life situations including making requests, giving permission, explaining reasons, asking for/giving directions, expressing likes and dislikes, and recounting past events and experiences. They will also learn 40 more kanji, and more grammatical structures.

Business

Package A – International Business and International Marketing

International Business Management

Development of general environmental framework for international business studies by drawing on international and development economics, research into government-business relations and studies in comparative socio-cultural systems and political systems.

International Marketing

An analysis of the scope and significance of contemporary international business operations with particular reference to the marketing management problems encountered by firms with multinational branches and subsidiaries.

Package B – Introduction to Marketing and Organizational Behaviour

Introduction to Marketing

Basic considerations affecting the domestic and international marketing of goods and services. This course is designed to provide a broad introduction to the field of marketing. Marketing is far more than just selling or advertising within a business setting; it is a major part of everyday life. This course will illustrate the importance of marketing and will help you develop fundamental marketing knowledge and skills applicable to all specializations within business.

Organizational Behaviour and Management

Behaviour in organizations as it affects people as individuals, their relationships with others, their performance in groups and their effectiveness at work. The primary objective of this course is to teach you about the effects of organizational structures and interpersonal processes on the behaviour of individuals in organizations and the wider implications for the effectiveness and success of organizations.

UBC Vancouver Summer Program 2015

Course Package Offerings

Package C – Strategic Management and New Enterprise Development

Strategic Management

Concepts and processes for the strategic management of private sector, single and multi-business unit enterprises are analysed using the case method. Methodologies which draw on economic and organizational theory are integrated to form the foundations for strategic analyses.

New Enterprise Development

The particular problems and experiences encountered in starting, developing and managing new enterprises. The emphasis in this course is on applying concepts and techniques from marketing, finance, organizational behaviour, accounting and other relevant fields within the context of new venture development.

Dentistry

Oral Cancer: Why haven't the clinical outcomes improved?

Cancer of the oral tissues is the 6th most common type in the world. In some developing countries oral cancer is much more common due to oral habits and exposure to chemicals that can cause cancer. The five year survival rates for oral cancer remain low with nearly half of all the affected individuals dying from the disease. Early diagnosis of oral cancer is the most effective approach to decrease the mortality and morbidity. Pre-malignant lesions exist that have a much higher chance of becoming oral cancer and the recognition and management of these lesions can prevent cancer development. Oral cancer occurs in an anatomic location that is amenable to early diagnosis. Many techniques have been developed to aid in the recognition and diagnosis of both pre-malignant and malignant oral lesions. In this course the development of oral cancer, the clinical signs of the condition, the clinical and laboratory procedures for diagnosis and the long term consequences of an oral cancer diagnosis will be covered.

Dental Caries: the most common infectious disease in humans

Dental caries affects more than 90% of all humans. The disease requires a combination of bacteria, a sugar and a susceptible mineralized tooth surface. The bacteria metabolize the sugar and a by-product is acid. The acid removes mineral from the surface of the tooth. Extensive destruction of the tooth mineral leads to the pathology, dental decay. Dental decay is a progressive process and if it is allowed to continue it can progress into the dental pulp and then into the supporting bones. If a bacterial abscess forms in the bone supporting the tooth it is often necessary to remove the tooth. Dental caries is the leading cause of tooth loss in the world. The loss of teeth affects the ability to eat, alters nutrition and has a dramatic impact on the quality of life. This course will take a comprehensive look at dental caries to understand how this disease impacts human populations.

UBC Vancouver Summer Program 2015

Course Package Offerings

Education

Package A – Educational Psychology and Special Education

Classroom Management

The course is designed to empower educators to develop a positive classroom climate and an effective learning environment in which teachers and their students engage in meaningful and successful learning experiences together. To achieve this goal, students will be introduced to current, evidence-based practices in school-wide, classroom and individual behaviour support. Classes will include lecture, discussion and small group activities that provide opportunities to develop skills in the application of these practices. Specific objectives of the course include developing student knowledge and skill in: (a) a proactive, preventive approach to classroom management; (b) school-wide positive behaviour support; (c) the design of a positive classroom environment; (d) the development of positive, nurturing relationships with students; (e) the use of positive reinforcement to strengthen prosocial behaviour; and (f) effective ways to respond to problem behaviour.

Assessment and Positive Behaviour Support in School and Community Settings

The course introduces students to the philosophy and methods of behavioural assessment and positive behaviour support with persons who engage in challenging behaviour in school and community contexts. Specific objectives of the course include developing student knowledge and/or skill in: (a) basic principles of behaviour change; (b) the features and values of positive behaviour support; (c) ecological assessment of environments and functional assessment of persons with challenging behaviour; (d) the completion of summary hypothesis statements and competing behaviour pathway diagrams; (e) the design of multi-component behaviour support plans that are logically-linked to assessment results; and (f) the design of plans that are both technically sound and contextually-appropriate.

Package B – Teaching English as a Second Language (TESL)

Applied Linguistics for Teachers

This course explores basic theories of linguistics and their application to classroom practice. As an introduction to the linguistic foundations of first and second language teaching, the course will assist teachers in making linguistically informed decisions about teaching. The course is not a comprehensive survey of Linguistics, but restricts its topics to those generally agreed to have relevance to language teaching and learning.

Introduction to Teaching English as a Second Language

This course aims to apply linguistic insights to effective lesson/unit planning in teaching English as a second/foreign language. Specific objectives of the course include developing student knowledge and skill in: (a) phonology, syntax, meaning, and discourse in their application to the ESL classroom; (b) a range of techniques related to the skills of listening, speaking, reading and writing which promote

language learning; (c) promoting communicative competence by contextualizing teaching points; (d) preparing lesson and unit plans for a particular class that will show focus, variety, integration, expansion and balance; and (e) relating the main current methods of language teaching to their underlying assumptions and to instructional choices.

Package C – Early Childhood Education and Development

Our early childhood courses focus on creating exceptional educational programs for children between the ages of three to eight. The courses are carefully designed to introduce international students to research and theory pertaining to the education of young children. International students will be provided with opportunities to learn how theory is connected to practice by engaging in field study activities such as observing early childhood classrooms, participating in organized meetings with local educators, and studying educational materials and resources that are used in Canadian early childhood classrooms.

Designing High Quality Programs in Early Childhood Settings

This course addresses the notion that children are natural learners. Students will learn about, discuss, and clarify important concepts and theories relative to early childhood education, including child development theory and the holistic nature of learning in the early years. The course highlights the idea that young children's innate capacity to learn and teachers' responses to children's inquiries provide the foundation for the development of high quality early learning experiences for young children and impacts the type of programming that is created. Students will learn about designing appropriate daily schedules and implementing teaching strategies for integrating different areas of learning, such as literacy, math, science, and art through inquiry and project-based learning. The course will also include observations in local early childhood settings.

Creating Environments to Support Learning in Early Childhood Settings

This course introduces students to the significant role that designing stimulating and nurturing early childhood classroom environments plays in children's learning and in supporting all aspects of their development and growth. Students will learn about creating dynamic indoor and outdoor learning spaces for young children and the importance of providing children with original and natural educational materials and resources. The course will include visits to local state-of-the-art early childhood environments for young children.

Package D – Physical and Outdoor Experiential Education

Pedagogical Approaches in Physical Education

The content of this course focuses on understanding about, because of, and through movement and the ways in which it pertains to the whole education of children and youth. This course covers a wide range of learning experiences, which reflect the physical education curriculum. Planning, assessment, and

evaluation are discussed along with ways to modify and adapt learning experiences to meet the diverse needs of youth. Through an inquiry approach to teaching and learning students engage in the construction of knowledge through active involvement to develop deep understandings, critical consciousness, and problem-solving faculties. Visits to outdoor locales in the Vancouver area are part of the learning experiences in this course.

Outdoor Experiential Learning

This course is an interdisciplinary exploration of curriculum and pedagogy in outdoor environmental education and experiential learning. Students will participate in land and water based experiences in and around the Vancouver area on a daily basis. This course also includes overnight excursions in the wilderness. Topics may include adventure education, environmental education, experiential education, challenge and initiative games, safety and risk management, ecology, food systems and other content related to the field. Through an inquiry approach to teaching and learning students engage in deepening their understanding of outdoor environmental matters and pedagogies for experiential learning.

Forestry

Package A – Forest Management and the Effects of Carbon

An Introduction to the Ecology, Economics and Politics of Carbon

Humans use carbon-based molecules in almost all aspects of daily life – food, shelter, clothing, and power generation are but a few examples. Unfortunately, deforestation, land degradation, and fossil fuel emissions are responsible for the build-up of carbon in the atmosphere. This is causing the atmosphere to heat up which in turn is changing the global climate. To understand why this is a problem and what we can do about it, students will be provided with an introduction to the ecology of carbon (where it is, and how it cycles through the living and non-living world). We will then discuss the challenges of limiting carbon emissions by considering the interaction between economics and politics.

Sustainable Forest Management

This course represents an attempt to integrate knowledge and processes relating to forest management across a wide array of disciplines, but it is centrally concerned with bringing the underlying ecological and management science together. It involves a mix of lectures, group discussions and field visits to increase the understanding of students about problems involved with managing forest ecosystems for a variety of societal goals and objectives. The course is heavily geared towards ecological, economic and policy context of British Columbia; however, international implications and issues of forest management are also covered. The objective of the course is to familiarize the students with a variety of forest ecosystem values and their management issues and to enable meaningful analysis of the current issues in forest sustainability.

UBC Vancouver Summer Program 2015

Course Package Offerings

Package B – Forest Products, Trade and Business Management

Forest Product Markets and International Trade

Canada's rich forest endowment combined with increasing global demand for forest products for much of the past century has enabled it to become the world's largest exporter of forest products. However, there have been some structural shifts both in global demand, as well as timber supply within Canada and from other countries. At the same time, non-market factors (such as trade barriers) are also playing a greater role in how Canada can access its export markets. In this course, we will examine Canada's changing competitive condition in the context of these different factors. We will also explore the importance of export markets for the Canadian forest industry as well as seek to understand how changes in those markets impact demand for Canadian forest products.

The Wood Industry and Business Management

This course will be an introduction to fundamental business management practices used in the wood industry. Students will be exposed to a wide range of important business management concepts common to the wood industry, most notably marketing, business plan development, strategic planning, finance, customer research, product development and design. To complement the theories and principles introduced in this course, examples from current industrial situations and the media will be offered throughout the course.

Package C – Urban Forestry

An Introduction to Urban Forestry

This course will provide a general introduction to the concept of Urban Forestry and why this is an important topic in today's rapidly urbanizing society. There is a growing need to adapt to multiple impacts of climate change; and increasing demand from the public for the recreational, psychological and health benefits that green-space networks provide. With increased urban populations, global warming, urban heat islands, flooding and pollution, cities may become unlivable or demand massive energy-use for cooling, unless we can establish large scale, healthy urban forest systems.

Green-Space Management in North America

Urban forestry is about planning and managing urban green-spaces and ecosystems for human welfare, ecological health, and protection of our cities' support systems. Urban forest networks, parks, wetlands, and other green infrastructures are vital in moderating heat waves and cooling demands, maintaining biodiversity and carbon sinks, controlling forest fires, storm-water flood mitigation, bio-energy production, etc. Urban Forests improve and protect our health, property values, local jobs and businesses, outdoor recreation opportunities, and community character. This course will give the students an introduction to the importance of understanding urban forestry in the face of today's rapid urbanization as forests and green systems compete for space among buildings, roads/transit, storage facilities, and energy infrastructure.

UBC Vancouver Summer Program 2015

Course Package Offerings

Kinesiology

Package A – Sport and Exercise Performance

Sport and Exercise Psychology

A practical overview of core topics and applications in sport and exercise psychology. The course is intended to develop students' understanding of psychological factors that impact participation and performance in sport and exercise settings. Emphasis will be placed on using psychological concepts and methods in physical activity contexts. Students will have the opportunity to observe athletes and exercisers, participate in group activities, and develop mental skills to demonstrate the application of psychological approaches.

Applied Exercise Physiology

This lab-based course will provide a practical overview of fundamental exercise-related human anatomy and physiology and its application in exercise and high performance sport training and conditioning. Diverse class activities, including problem-based case studies, group projects, hands-on lab experiences, and meeting with coaches and strength and conditioning specialists will facilitate active learning. Upon completion of this course, students will have an understanding of how the human body responds and adapts to the physiological demands of exercise and athletic training and have basic skills for performing fitness assessment, data collection and analysis.

Package B – International Sport Marketing and Culture

International Sport Marketing

A comprehensive overview of sport marketing through examination of international sports sponsorship and event case studies including NBA events, 2014 FIFA World Cup, and the 2008 Beijing Olympic Games Torch Relay. The course will enable students to gain a working knowledge of the principles, frameworks and benefits of sport marketing, as well as assist in developing practical skills to make marketing and sponsorship decisions. Trends of new technology, social media, and mobile media will be discussed to develop students' capacity to identify how these trends can help leverage sport marketing.

Leisure and Sport in a Global Context

An overview of contemporary perspectives on the social, cultural, environmental, and economic dimensions of leisure and sport. The course is intended to help students identify and analyze comparative aspects of leisure and sport in national and international contexts and provide familiarity with the ways that sociological concepts and methods can help to understand contemporary consumer culture. Small group work, case studies, and field trips to sports facilities will provide students with the opportunity for cross-cultural engagement of sport and leisure.

UBC Vancouver Summer Program 2015

Course Package Offerings

Land and Food Systems

Package A – Food: Science and Safety

Introduction to Food Science

An introduction to key concepts related to the science of food: the Canadian food system, chemical and physical properties of foods, government regulations, food additives, food preservation techniques, food safety, and trends in foods for nutrition and health. Students will learn to arrive at an informed position about controversial issues relating to the food that they encounter as consumers in the marketplace, and that they hear about in the media.

Food Safety and Food Safety Management

Learn about food safety within the food processing environments and the regulatory systems in various jurisdictions such as the US, Canada, as well as the Codex Alimentarius. Identify physical, chemical and biological hazards and understand the process of developing a food safety management system. Students will learn about the Hazard Analysis and Critical Control Points (HACCP) system and how to proactively apply the food safety concept to any other food safety and quality management systems, such as International Organization for Standardization (ISO) 22000, British Retail Consortium (BRC) and Safe Quality Food (SQF).

Package B – Agribusiness Management

Food and Agribusiness Enterprise Management

This course is designed to introduce the principles of financial and business management that are most relevant to agri-food and related firms. The content of the course will provide students with the insights and skills necessary to develop, evaluate and implement financial and management strategies. This will be accomplished through the presentation of management fundamentals, financial principles, decision and project planning frameworks, completion of cases and current article reviews, class discussions and final enterprise management presentation. Emphasis will be placed on the unique considerations of management within the agriculture, food and agribusiness sectors.

Food and Agribusiness Marketing Management

This course is designed to introduce the principles of marketing management and assessment that are most relevant to agri-food and related firms. The content of the course will focus on the macro and micro aspects of marketing management. Specific topics include basic principles and types of marketing such as production, selling and social marketing; marketing frameworks to assess industry and competitive landscape; identification of the ideal customer; market research survey development and assessment, use of excel for market survey and data analysis and secondary research methods and the sources.

Package C – Nutritional Science

Essentials of Nutrition

In this introduction to nutrition, students will learn about nutrients: what they are, why they are important to health, recommended intakes, and common Canadian food sources. Controversial topics in nutrition will be explored. Upon completion of the course, students will be able to sort out fact from fiction by applying their knowledge of nutrition to everyday scenarios and to their personal diets.

Healthy Eating – The Canadian Way

This course will focus on the life applications of nutrition concepts learned from the Essentials of Nutrition, from a Canadian perspective. Students will also learn principles of food preparation based on the physical and chemical properties of food. The objective of this course is to give students practical, hands-on experience with various aspects of food choice, food preparation, and fundamental skills and knowledge in recipe modification and sensory evaluation of food. Students will expand their knowledge of food and nutrition through exposure to a wide variety of foods from the many cultures making up Canada's cultural mosaic, working in small groups to prepare recipes that illustrate key concepts. Upon completion of the course, students should be able to demonstrate understanding of fundamental knowledge and skills including the practice of kitchen and food safety, practical outcomes of recipe modification and measurement techniques; apply knowledge and principles of food preparation to a wide variety of foods; understand the role and interactions of ingredients in food preparation; be familiar with the wide variety of foods available to consumers, their preparation techniques, and their nutritional attributes.

Law

Topics in Law: International Business and Canadian Common Law

The Law and Practice of International Business

Business actors face unique challenges when their activities cross international borders. This course introduces students to the legal and practical aspects of international business regulation. It familiarizes students with the analytical tools used by lawyers who advise on international business issues. Through guest lectures from international business lawyers and in-depth study of actual business case studies, the course addresses the complex economic, social, political, cultural, and legal factors which shape international business. In addition, students will get to experience the adrenalin of deal-making and business negotiations through negotiation exercises and document-drafting role-plays.

Canadian Common Law – Rights & Responsibilities

For lawyers and business practitioners working in a globalized world, knowledge of the common law is an essential skill. This course introduces students to the rights and responsibilities which underlie common law systems – with a focus on Canadian law – and the nature of the judicial process. Students take a rich journey through Canadian criminal law and constitutional law frameworks. This highly

interactive class involves field trips to see how the Canadian courts work and allows students to participate in 'mock trials' or 'moot court competitions' where students take on the role of serving as lawyers and judges.

Medicine

Package A – Clinical Research and Clinical Medicine

Introduction to Clinical Research in the Sciences

This course provides a window into how clinical research is conducted in the medical sciences. Research methodologies, research process, ethical considerations and practical tips for conducting high-yield, evidence-driven research with patients will all be presented and discussed.

The course includes lectures, workshops and a hands-on mentored individual research project by students that will be presented at the end of the course. A wide variety of health care providers and medical educators will participate in the course and provide examples of research conducted at UBC and other academic institutions. Engaging speakers, visits to clinical research facilities, and effective mentorship techniques will provide students with a once-in-a-lifetime opportunity to take part in the most advanced learning in basic clinical research.

Introduction to Clinical Medicine at the Bedside

This course will bring medical and science students close to the real life of medicine in the 21st century. Students will be able to meet up close with practicing clinicians who manage complex patients every day as part of their work in the hospital and clinic setting.

Using advanced teaching tools such as medical simulation, and together with experienced physicians from multiple disciplines of medicine, students will learn how to approach patients with medical history taking, physical examination, development of a medical differential diagnosis, and will gain knowledge in determining the need for investigations in order to reach a diagnosis and develop a treatment plan.

A combination of lectures, simulation labs, case-based workshops and visits to laboratory and clinical areas, will enhance the hands-on experience and understanding of the medical and other sciences.

Package B – Pharmacology

Pharmacology of Everyday Life

Students will gain insight into how drugs produce both desired and adverse effects through exploration of their underlying mechanisms of action on the body. Through historical and present-day analysis of selected prescription, over-the-counter, and social drugs, students will gain an understanding and appreciation of pharmacology directly applicable to their everyday lives. Course objectives will be met through a combination of lectures and small group discussion/tutorial/laboratory sessions designed to introduce students to the challenges of pharmacological research.

Systems Pharmacology

Students will explore the basic science and clinical applications of drugs in many of the different physiological systems of the body. Lectures and small group sessions will allow students to learn drug mechanisms and effects throughout the body, from both the basic science and clinical perspectives. Among the many topics discussed in this course, students will gain a detailed appreciation of the important drugs and drug classes of the cardiovascular, respiratory, gastrointestinal, reproductive and endocrine systems, as well as the fields of neuropharmacology and autonomic pharmacology.

Please note: A basic background in biology and human anatomy/physiology is recommended but not required for this package.

Package C – Medical Imaging and Medications for Controlling Pain

Introduction to Medical Imaging

This course will provide an introductory understanding of the imaging modalities (plain radiographs, ultrasound, CT and MRI, plus some limited discussion of interventional radiology) used to solve common clinical problems in all body systems. Considerable time will be spent reviewing imaging normal anatomy, using gross anatomy-cross sectional imaging correlation, and this will be followed by demonstration of the critical role that modern imaging plays in Cardiac, Pulmonary, GI, Neurologic and Musculoskeletal disorders. Students will gain an understanding of the indications and contra-indications for specific imaging tests, and the advantages and disadvantages of each modality in common clinical scenarios. Case-based learning, interactive sessions, and possible hands-on ultrasound will augment didactic lectures, which will be given by subspecialty Radiologists, Fellows, and Residents. A tour of a modern tertiary care hospital imaging department will form part of the course. The course will conclude with a presentation entitled: 'Top ten not to miss cases in Radiology'.

Medications for Controlling Pain in Everyday Life and in Surgery

This course will explore the treatment of pain at the pharmacological level. Students will gain an appreciation of the role of analgesia and anesthesia throughout history and in present-day society. Classes will be a mix of academic and clinical instructors, providing two different but complementary perspectives on pain management, as well as regional and general anesthesia. Course objectives will be met through a combination of lectures, small group discussions and tutorial sessions, as well as utilization of high fidelity computer-simulation demonstrating how anesthesia is provided and how emergencies in the operating room are practiced.

Package D – Biochemistry & Molecular Biology in Human Health, Disease, and the Environment

Molecular Mechanisms of Disease

This course will provide an introduction to key principles of biochemistry and molecular biology in the

context of human health and disease. Students will gain an appreciation of basic human biochemical pathways and learn how perturbations in these pathways can lead to disease. Through studies of selected examples, students will gain an understanding of the molecular basis of common diseases such as diabetes, cardiovascular disease, vision loss and cancer. Several case-based topics will be presented featuring work from world-renowned UBC faculty. Specific topics may include the roles of the gut microbiome, antimicrobial peptides, personalized medicine, gene therapy, protein structure-function as a guide to drug design and stem cell cures. Course objectives will be met through a combination of lectures, small group discussion and tutorial sessions, as well as student led presentations.

Environmental Biochemistry

This course will critically examine biochemical and chemical processes in the world at large and the impact on human health. Environmental biochemistry will provide students with the scientific principles and concepts required to understand key interrelationships of the natural world and tackle the most daunting challenges of the 21st century. We will explore and debate key processes central for human and environmental sustainability. In a case-based manner, topics are structured as follows: a) a natural biochemical process is examined (system in-balance), b) a specific perturbation is introduced, c) the consequence is analysed (system out of balance), and d) predicative effects and possible corrective measures considered. Possible topics discussed will have a biochemical focus and include water and its dependency to life (quantity and quality), pH and ocean acidification, energy flow, cycles of carbon & nitrogen, human introduced chemicals in the environment (e.g. glyphosate, neonicotinoids, heavy metals, crude oil, SO2, etc.), food security (synthetic fertilizers, genetically modified organisms, pesticides, herbicides,). The course material is oriented toward issues of contemporary and future relevance. Students will incorporate current issues into their work featuring small group discussions, learn to evaluate the relative risks of many present-day problems and gain the tools to further explore these topics.

Package E – Neuropsychopharmacology and Neuropsychiatry

Introductory Neuropsychopharmacology

This course will cover the understanding of neurochemical alterations in the major mental illnesses, and the actions of major classes of drugs on these neurochemical systems. Practical approaches to the pharmacological treatment of the major mental illnesses including psychosis, mood disorders, anxiety disorders and sleep will be included. These course objectives will be met through a combination of lectures and student participation in case-based exercises led by an experienced clinician. The Clinical Handbook of Psychotropic Drugs (Bezchilbnyk, Jeffries and Procyshyn, Hogrefe Publishing, 2013) will be one of the texts used. Dr. Ric Procyshyn from the Department of Psychiatry will be a lecturer along with Dr. Alasdair Barr from the Department of Anesthesia, Pharmacology and Therapeutics.

Introductory Neuropsychiatry

This course will cover the anatomical and physiological basis of major mental disorders, both functional and organic. A neuropsychiatric perspective will include the key features of the history, physical examination, and mental status examination related to the diagnosis of mental disorders. The course objectives will be met through a combination of lectures and student participation in case-based exercises led by an experienced psychiatrist or neurologist. The Casebook of Neuropsychiatry (Hurwitz and Lee, American Psychiatric Publishing, 2013) will be one of the texts used. Prof. Trevor Hurwitz, a psychiatrist and neurologist, from the Department of Psychiatry will be the central lecturer.

Package F – Understanding the Recovery and Treatment from Injury and Chronic Disease

Exercise is Medicine

This course will provide an exploration of exercise and physical activity in the treatment of chronic disease and aging. Through an exploration of chronic diseases such as stroke, arthritis and cardiopulmonary disease, students will gain an appreciation of the effects of exercise on brain function, bone health, and cardiovascular function. Topics will also include the epidemiology of physical inactivity across the world, measurement of physical activity in chronic disease, strategies to get a nation more active, role of health professionals in physical activity prevention and treatment, and mobile technology to motivate physical activity in chronic disease. Students will use a variety of interactive methods to understand the content, including case studies, small group tutorials, and problem-based learning. Students will also complete hands-on labs in a state-of-art fitness and exercise research facility designed to enable access for people with chronic disease and disability.

Introduction to Rehabilitation Sciences: A case-based approach to understanding the recovery from injury and disease

This course will introduce students to the science of rehabilitation within the World Health Organization framework. Through this approach, students will understand how severe injuries and chronic diseases can impact the patient and family, both physically and emotionally. Conditions such as spinal cord injury, concussion, stroke, cerebral palsy, arthritis, chronic obstructive lung disease and amputation will be used to illustrate the journey through rehabilitation, the road to recovery and adjustment to disability. Along this journey, students will be introduced to concepts about the musculoskeletal, cardiovascular, pulmonary and neurological systems, as well as coping mechanisms and quality of life. In addition, cutting-edge research on novel rehabilitation treatments will be introduced, including mirror therapy for reducing phantom pain after amputation, robotic suits to permit walking after spinal cord injury and e-Health (e.g., tele-medicine, video games, wearable sensors) to improve function. Students will use a variety of interactive methods to understand the content, including multimedia virtual patient cases, small group tutorials, and problem-based learning.

Package G – Population and Public Health

The Social Determinants of Health

It is now generally accepted that a variety of personal, social and economic factors influence health status. There is, however, still a great deal of debate about what the specific or most important influences are, and the mechanisms or pathways by which health is either damaged or promoted, and whether and how these factors can be influenced by public policy.

This course focuses on the meaning of health, its measurement, and examination of the factors that influence the health, well-being and quality of life of individuals, families, communities and nations. The course uses two core, interrelated notions of health promotion and population health to examine social, cultural, genetic, environmental, economic, gender and health-system influences on health.

Biological Concepts of Public Health Practice

This is an introductory course in human biology /physiology and pathophysiology in relation to public health. It explores biological principles of diseases in relation to public health. Topics include a variety of diseases and conditions that are most frequently discussed in current public health settings. It begins with an introduction to common medical terminology, basic cell biology and general anatomy. Subsequent classes discuss common and relevant illnesses using an organ system approach, and explore how these diseases influence individuals' lives and public health initiatives. Class discussions include evolving issues of lifestyle, interventions, screening and diagnosis for these diseases, and explore biology and illness from an individual's perspective.

Examples of possible topics: Communicable Diseases; Mental Health & Addiction; Chronic Pain; Diabetes & Obesity; Cardiovascular Disease; Reproductive Disease; Cancer.

Science

Package A – The Dynamic Earth and its Beautiful Treasures

Our Dynamic Planet

Using international and Canadian examples, we will examine the origin of our planet, its composition and structure. From mountains to glaciers, earthquakes to volcanoes, ancient rocks and mighty dinosaurs, Canada is a wonderful natural laboratory that we will use to investigate our active and dynamic planet.

Earth Treasures

Canada is also known for its spectacular precious metals and gems, some of them housed in our departmental museum, The Pacific Museum of the Earth. The origin, valuation and exploration strategies for gems such as diamonds and jade, precious metals such as gold and platinum will be investigated in the second half of this package and placed into a fascinating international and Canadian geological context.

No background knowledge of geology is required for package A.

UBC Vancouver Summer Program 2015

Course Package Offerings

Package B – Fossils, Fuels and Mineral Resources

The Active Earth and its Resources

This course considers how an active and evolving Earth system has created a planet rich in natural resources. Resources such as metals, fossil fuels and the processes that create them will be investigated with a reference to international and Canadian examples.

Earth and Life Through Time

Earth's biosphere has been evolving for over 4 billion years. This package will introduce some of the basic techniques paleontologists use such as stratigraphy, biostratigraphy and paleobiology that help them read the story of life hidden in the rocks. Topics will cover many of the fascinating developments of Earth's biosphere including life's origins, major developments and the five mass extinctions that threatened to wipe out all living things.

No background knowledge of geology or paleontology is required for package B.

Package C – The Geometry of Nature

The Size of Things

This multi-disciplinary course on scaling will use the unifying theme of size to examine a wide range of physical and biological systems. In each case we will see that "size matters". This will be shown true in the most basic sense, that of spatial size, shape, area and volume. In a more general sense this truism holds in that the geometry, kinematics, and dynamics of phenomena are largely determined by the relative size of underlying factors and processes. We will identify a set of general scaling laws that reflect these facts, and learn a set of conceptual, graphical, and mathematical tools for working with them. Both the laws and the tools transcend traditional disciplinary boundaries within science and beyond science.

Symmetry

Symmetry touches all areas of science. In geometry, symmetry is the property by which the sides of a figure or object reflect each other across a line or surface. In biology, symmetry is the orderly repetition of parts of an animal or plant. Symmetry is important to chemistry because it explains observations in spectroscopy, quantum chemistry and crystallography. In physics symmetry is a concept of balance illustrated by such fundamental laws as the third of Newton's laws of motion. In this course we will explore many aspects of symmetry.

First year university science and math would be recommended for these courses.